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Turnkey Manufacturing

FOR EDUCATION & INDUSTRY

Educational Equipment, Hand, Power & Drilling Tools, TMI Products, Swithgear & Automation, 3D Scanners & Civil Surveying, Seismograph, Earthquake Equipment, Software, UAV/Drones, Lab Furniture, Mining Valves, Laboratory Plasticware/Glassware, IT-Computers Networking, Electronic Components, Other Products



About Company

Tesca Technologies Pvt. Ltd. is World's Leading ISO & CE Certified Manufacturer & Exporter of Test, Measuring, Vocational, Didactic, Educational Training Equipment, LMS & Workshop Tools & Machines. Member for Electronics & Computer Software Export Promotion Council, New Delhi, India having sales in more than 85+ Countries Worldwide. Tesca's operations are spread out in 23000 Square Feet encompassing more than 3000 manufactured Innovative Products and Turnkey Project Capabilities for International Tenders. Tesca is an Export House established in December 2009 with our Registered & Corporate Office both set up at Jaipur. We are actively doing business in Middle East, CIS, South East Asia, Africa as well as South America Countries. We have our representatives in almost all Countries. Please be noted that we are doing projects meant for School Education, Vocational Training, Laboratory, Health Center, Hospital Equipment, Agricultural Modernization, Industrial Modernization, Rural Water Supply as well as Small Scale Enterprises funded by Ministry of Education, World Bank, Asian / African Development Bank as well as GOI LOC.

Tesca At A Glance:

- ISO & CE Certified Manufacturer & Exporter of TVET, Skill Development for Education & Industry
- Member of CII, ESC, Electronics & Computer S/W Export Promotion Council, Delhi, India
- Member of FORTI, REPC, IVETA, Worlddidac Association, Switzerland
- 23000 Sq. Feet of Operations, **10000 Innovative Products**, "You Name It & We Have It"
- Turnkey Projects for International, World Bank, AFDB, ADB, UNDP, FAO Tenders
- Amongst top most Qualified & Reputed Exporter in India
- Sales to more than 85+ countries, Your Sourcing Partner in India
- Worldwide Installation/ Exhibitor in Africa, Dubai, Switzerland, Hong Kong

Quality:

Our products are accepted across global market. The prime reason for such widespread acceptance is an undying pledge to quality. To actualize and maintain such quality levels, we adhere to international quality management system. Our products are tested by our technical experts in various stages of production to ensure 100% quality. A devoted team of quality experts are entrusted with this job and they ensure that our products are in line with the global standards.

Mission:

Be the World's Leading Manufacturer & Exporter of TVET, Skill Development, Bridge Gap between Industries & Institutes, Vocational Training by imparting Environment Friendly Technologies, Solutions and Innovations to make a Better World.

Vision

Contribute towards United Nation's Sustainable Development Goals of Quality Education, Industry, Innovation & Infrastructure.



Corporate Office



Production Floor



Conference Hall



Products Showroom



Reception



Collection of World Art

Certificates



CE Certificate



ESC Certificate



IVETA Member



Worlddidac Member



ISO Certificate



CII Certificate



REPC Member



FORTI Member





Kenya - 2016



Kenya - 2017



Mauritius - 2018

Worldwide Products Installation



Uganda - 2018



India - 2021



Ethiopia - 2021



Gambia - 2023

**Sales in
85+ Countries
Worldwide**



India - 2022

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Electronics Lab

Educational Trainer Kit is one of the teaching methods to strengthen the acquisition of knowledge and technical skills. Tesca Technologies Pvt. Ltd. is a pioneer in manufacturing a wide range of Educational Trainer kits. Having a core range in Analog & Digital Lab Trainer | Electrical Machine Trainer | Bread Board Trainer | Power Electronics Trainer | Basic Electricity Trainer | Analog & Digital Communication Trainer | Embedded Trainer | Fibre Optics | Antenna Trainer | PLC Trainer | Process Control Trainer | Hydraulic Trainer | Pneumatic Trainer | etc. For Students of | Electrical | Electronics & Communication | Instrumentations | Applied Electronics | Mechanical in Higher Studies at Schools to Universities.



LINEAR I.C. TRAINER

To measure the quiescent supply current, To null the offset voltage, To measure open-loop voltage gain under closed loop condition, To measure output resistance, To measure differential input resistance, To measure unity gain bandwidth



T AND Π NETWORK TRAINER

Study and verification of Image Impedance of Unsymmetrical T-Network, Study and verification of Image Impedance of Unsymmetrical p-Network, Study and verification of Characteristic Impedance of Symmetrical T-Network, Study and verification of Characteristic Impedance of Symmetrical p-Network.



36111

TWO STAGE R-C COUPLED TRANSISTOR AMPLIFIER

Voltage distribution along open circuit line, Voltage distribution along short circuit line, Study of Ferranti effect, Study of distortion-less line, Velocity of propagation.



36121

AUDIO AMPLIFIER (CE) WITH POWER SUPPLY

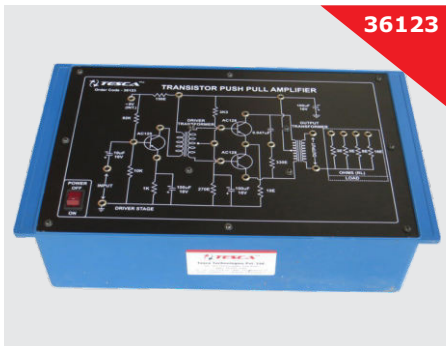
To study and plot the forward & reverse bias characteristics of a Germanium semiconductor Diode, To study and plot the forward & reverse bias (breakdown) characteristics of a Zener Diode.



36122

EMITTER FOLLOWER (CC) WITH POWER SUPPLY

Voltage Gain, Input Impedance, Output Impedance, 9V D.C. at 50mA, IC regulated Power Supply internally connected, NPN transistor, Adequate no. of other electronic components, Mains ON/OFF switch, Fuse and Jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



36123

PUSH PULL AMPLIFIER

To measure output power, To plot the frequency response characteristics, Distortion Measurement, -9V DC at 50mA, IC regulated Power Supply internally connected, Driver Transformer and Output Transformer, Four different output loads selected by a band switch.



36124

WIEN BRIDGE AUDIO OSCILLATOR

To study the main features of the Wien Bridge Audio Oscillator, To obtain oscillation of different frequencies by varying R-C, To study the frequency response of phase shift network, Variable gang condenser, Potentiometer, Two PNP transistors.



36125

PHASE SHIFT AUDIO OSCILLATOR

To study Phase Shift Audio Oscillator circuit using a single transistor, To study the improved Phase Shift Audio Oscillator circuit using two transistors.



Analog Electronics Trainers



36125A

AMPLIFIER AND OSCILLATOR WORK BOARD

To study the Phase Shift Audio Oscillator circuit, Study of CE amplifier circuit and to measuring voltage gain. (AV), To plot the frequency response characteristics of the CD amplifier.



36126

R.F. (L-C) OSCILLATORS (HARTLEY'S, COLPITT'S, CLAPP'S)

Hartley's Oscillator, Colpitt's Oscillator, Clapp's Oscillator.

PNP transistor, Variable gang condenser, Adequate no. of other electronic components, Mains ON/OFF switch, Fuse and Jewel light.



36127

FREE RUNNING MULTIVIBRATOR (ASTABLE)

To study the operation of a Transistor Free (Astable) Running Multivibrator, To study the waveform at various places on the Free Running Multivibrator Circuit, To study the operation of improved free Running multivibrator and to observe the output wave shape.



36128

BI-STABLE MULTIVIBRATOR

To study the operation of a Transistor Bistable Multivibrator, To trigger the Bistable Multivibrator with Square wave signal and to compare output frequency with the trigger waveform frequency.



36129

DE-SAUTY BRIDGE APPLICATIONS

Measurement of capacitance of gang condenser using De-Sauty Bridge., Measurement of a dielectric constant of a non-conducting liquid using De-Sauty Bridge.



36229

MONO-STABLE MULTIVIBRATOR

To study the operation of a Transistor Monostable Multivibrator and to produce a pulse train of varying repetition rate from a square wave input, To study the voltage waveforms at various points in the Transistor Monostable Multivibrator circuit.



36130

REGULATED POWER SUPPLIES

To study half wave rectification, To study full wave rectification, To study measurement of ripple and ripple reduction methods using the following: Capacitor filter, Inductor filter, Choke input of L.C. filter, CLC or π filter, To study Zener - diode voltage regulator circuit.



36131

SERIES & PARALLEL RESONANCE

Series resonance for different values of resistances, capacitances, inductances and plotting of resonance curves, Parallel resonance for different values of resistances, capacitances, inductances and plotting of resonance curves, Measurement of Q for both series and parallel resonances.



36132

ANDERSON BRIDGE

Anderson Bridge circuit with arms values, Potentiometer for varying one arm, Three different value inductances. Potentiometer with calibrated dial, Five capacitors selected by a band switch, Audio Amplifier with its IC regulated Power Supply, One KHz Sine Wave Oscillator with its IC regulated Power Supply.



36133

VOLTAGE MULTIPLIERS

Full wave Voltage Doubler, Half wave Voltage Doubler, Voltage Tripler, Voltage Quadrupler.



36134

PASSIVE FILTERS (CONSTANT-K, LOW, HIGH AND BAND M-DERIVED LOW & HIGH)

Low-Pass constant-K filter, High-Pass constant-K filter, Band-Pass constant-K filter, Low-Pass M-Derived filter, High-Pass M-Derived filter, Different types of Passive Filters, Adequate no. of other electronic components.



36135

BOOT STRAP SWEEP GENERATOR

Amplitude variation of the output waveform, Frequency variation of the output waveform, Linearity of the output waveform.



36136

PUCKLE'S SWEEP GENERATOR

Amplitude variation of the output waveform, Frequency variation of the output waveform, Linearity of the output waveform.



36140

DIFFERENTIAL AMPLIFIER

To study the operation of a Differential Amplifier, To measure the Common Mode Gain and Differential Mode Gain of the Differential Amplifier and determine its Common Mode Rejection Ratio(CMRR).



36141

DIODE LIMITERS

To draw the transmission characteristics of the different Diode Limiter configurations, To observe the limiting action of the sine wave on the Oscilloscope, To observe the effect of diode capacitance at very high frequencies.



36142

F.E.T. AMPLIFIER

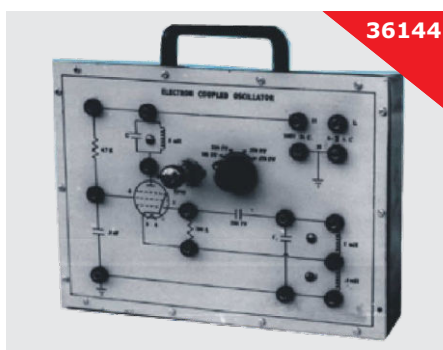
To design and calculate the finite gain of FET Amplifier, To draw the overload characteristics, To draw the frequency response, To measure the input impedance, To measure the output impedance.



36143

SCHMITT'S TRIGGER

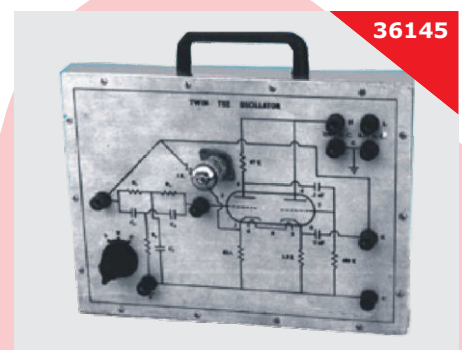
To find loop gain of the binary circuit and to see the parameters responsible for making the loop gain to 1, To adjust the loop gain to be less than 1 and to see linear amplification, To adjust the loop gain to be slightly greater than 1 and to observe the switching action.



36144

ELECTRON COUPLED OSCILLATOR

To see the effect of loading on an Oscillator, To reduce the effect of loading on the oscillator by electron coupling the oscillations to a different tuned circuit.



36145

TWIN-TEE OSCILLATOR (V.V)

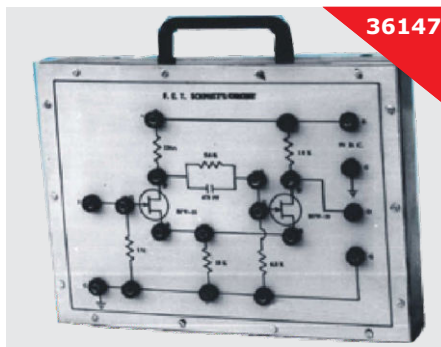
Study of the Twin-Tee Oscillator. A valve with base fixed on panel and wired internally, A band switch for changing values of RC combinations, Adequate no. of other electronic components.



36146

TWO STAGE R-C COUPLED TRANSISTOR AMPLIFIER

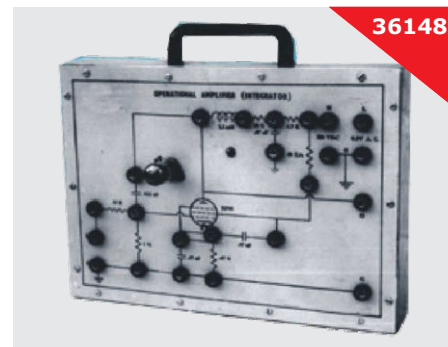
Study of the overload characteristics of the amplifier, Study of the frequency response of the individual as well as the cascade amplifier, Calculate the output and input impedance of the individual stages as well as that of cascade amplifier.



36147

SCHMITT'S F.E.T. BINARY

To find out the loop gain of the binary circuit and study the output waveform for different amplitudes of audio signal, To study the supply voltage change on the output waveform, To study the effect of the frequency variation on the output waveform.



36148

AMPLIFIER (INTEGRATOR) (V.V)

To find the Gain of a Wide Band Amplifier, To use the Amplifier as an Integrator.



36149

DIODE CHARACTERISTICS

To draw the plate voltage V/s plate current curve for different values of filament voltages, To determine the plate resistance from the characteristics thus obtained.



36150

TRIODE CHARACTERISTICS

To obtain static plate and mutual characteristics of a given triode, To determine the co-efficients, g , r and m of the triode valve from its characteristics. m p



36151

PENTODE CHARACTERISTICS

To obtain plate and mutual characteristics of a given pentode, To calculate tube constants from the characteristics.



36152

DIODE & ZENER DIODE CHARACTERISTICS

To study and plot the forward & reverse bias characteristics of a Germanium semiconductor Diode, To study and plot the forward & reverse bias (breakdown) characteristics of a Zener Diode.



36152A

DIODE CHARACTERISTIC CURVE APPARATUS

To Study and Plot the Forward and Reverse Bias characteristics of (Si) Semiconductor Diodes, To Determine the Static and Dynamic resistances of Forward Biased p-n junction of the given Diodes.



36153

TRANSISTOR CHARACTERISTICS

Common Emitter Mode, Common Base Mode, Common Collector Mode, Transfer Characteristics of Transistor.



36154

F.E.T. CHARACTERISTICS

Measurement of IDSS, Plot the static drain characteristics of FET, Drain Current V/s Drain Voltage Characteristics for different fixed values of VGS, Drain Current V/s Gate Bias Characteristics for different fixed values of VDS, Show that FET work as VVR (voltage variable resistance).



36155

INTEGRATING DIFFERENTIATING AND CLAMPING CIRCUITS

Study of Integrating Circuit response at 1KHz and 10 KHz for different combinations of R and C, Study of Differentiating Circuit response at 1 KHz and 10 KHz for different combinations of R and C, Study of series and shunt Clamping Circuits.



36156

SILICON CONTROLLED RECTIFIER CHARACTERISTICS

To study the D.C. gate control characteristics (firing characteristics) of a SCR, To study and plot the anode current characteristics of a SCR, To measure the holding current of a SCR, To study the plot the phase firing characteristics of a SCR.



36157

TRANSISTOR FEED BACK AMPLIFIER

To observe the gain of the amplifier at 1 KHz with and without negative feed back in the emitter circuit and external feed back network disconnected, To observe the variation of the gain of the amplifier with different amount of feed back in the external circuit at 1 KHz, To measure the input and output impedances of the feed back amplifier.



36158

VERIFICATION OF CHILD'S LAW

To study the static characteristics of a diode and to verify the Child's Law. A valve with base fixed on panel and wired internally, 0-300V D.C. at 100mA, continuously variable regulated Power Supply for plate voltage, D.C. Meter, 65mm rectangular dial with rotary switch selectable voltage ranges of 30V & 300V and current range of 0-100mA.



36159

DETERMINATION OF BAND GAP IN SEMICONDUCTOR DIODE

To draw the characteristics of a P-N junction Diode for reverse saturation current and temperature, To determine the Energy Band Gap in a P-N Junction Diode.



Installation at Wolaita Sodo University Ethiopia

Analog Electronics Trainers



36160

THERMISTOR CHARACTERISTICS

To draw Resistance V/s Temperature characteristics of a Thermistor, To find temperature co-efficient of thermistor from graph and to verify it by comparing with theoretical value.



36161

TRANSISTOR BIAS STABILITY

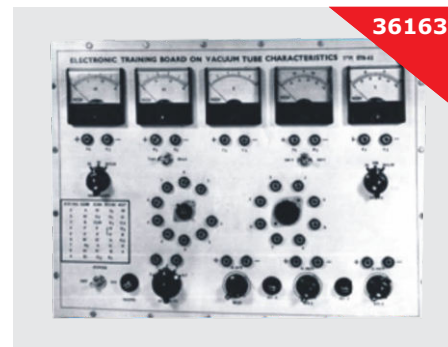
To study the leakage current variation with temperature, To see the shift in Q point at different operating temperatures, To see the effect of temperature on stability of an amplifier, To see the distortion in a single stage amplifier as a result of change in Q point.



36162

TETRODE CHARACTERISTICS

To draw the characteristics of the given Tetrode, To calculate the negative resistance from the graphs plotted.



36163

VACUUM TUBE CHARACTERISTICS (FOR DIODE, TRIODE, TETRODE & PENTODE)

To study the characteristics of following Vacuum Tubes: Diode, Triode, Tetrode, Pentode.



36164

SEQUENTIAL TIMER

To study various aspects of Sequential Timer, 12V at 200mA, IC regulated Power Supply, Circuit based on three Timer ICs, LEDs, for indication of each timer operation, Three sequences with variable time (time period can be varied from approx. 2 sec. to 15 sec.).



36165

VERIFICATION OF LAWS & NETWORK THEOREMS

Verification of Ohm's Law, To verify Kirchoff's current law and voltage law, Verification of the series & parallel laws for resistances, Verification of Superposition Theorem, Study of potential divider, Verification of Maximum Power Transfer Theorem.



36166

TRIAC CHARACTERISTICS

To study T2 positive with respect to T1 and gate positive/negative with respect to T1, To study T2 negative with respect to T1 and gate positive/negative with respect to T1, To study T2 positive/negative with respect to T1 and gate positive with respect to T1, Triac as a static switch (D.C. control), Control of A.C. with A.C. signal.



36167

DIAC CHARACTERISTICS

To plot V-I Characteristics of a DIAC and study the Breakover voltage, VBO, Negative resistance region, VBO symmetry and delta V, To study the applications of a DIAC as Saw tooth waveform generator, Pulse train generator.



36168

DE-SAUTY BRIDGE

To study the working of a De-Sauty Bridge and to compare the capacitance of two capacitors.



36169

SEMI-CONDUCTOR DIODE CHARACTERISTICS

To Study and Plot the Forward and Reverse Bias characteristics of (Ge & Si) Semiconductor Diodes, To Determine the Static and Dynamic resistances of Forward Biased p-n junction of the given Diodes.



PN JUNCTION / SEMICONDUCTOR DIODE CHARACTERISTIC APPARATUS

To study and plot the forward & reverse bias characteristics of a Silicon semiconductor Diode, To study and plot the forward & reverse bias (breakdown) characteristics of a Zener Diode.



FUNCTION GENERATOR

To study the operation of a function generator. 12V D.C. at 100mA, IC Regulated Power Supply, $\pm 6V$ D.C. at 100mA, IC Regulated Power Supply, Function Generator chip (566) mounted on a I.C. base, Control voltage is set with the help of band switches and potentiometer.



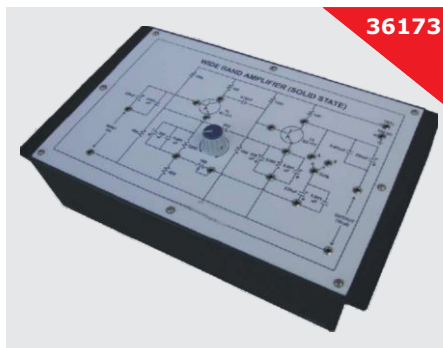
TWO STAGE TRANSFORMER COUPLED AMPLIFIER

The Different circuit boards of PC/AT Computer are exposed on a PCB, Troubleshooting and fault finding procedure explained in details, Artificial fault creation facilities are provided by the switches, About more than 60 faults



STUDY OF OPERATIONAL AMPLIFIER (UA 741)

Study of OP-AMP 741 as Integrator and Summing Amplifier, Study of OP-AMP 741 as Differentiator, Study of OP-AMP 741 as Scalar and Summer, Study of OP-AMP 741 as Oscillator, Study of OP-AMP 741 as Differential Input Amplifier, Study of OP-AMP 741 as Voltage Follower.



WIDE BAND AMPLIFIER

To study the Wide Band Amplifier with and without Feedback, To draw the frequency response of the Amplifier, To obtain the input and output Impedance of the Amplifier Stage.



STUDY OF UNIUNCTION TRANSISTOR (U.J.T.)

To plot V-I characteristics of a given U.J.T. (Unijunction Transistor), To use the given U.J.T. as a Relaxation Oscillator.



STUDY OF CRYSTAL OSCILLATOR 1MHZ (V.V.)

To study the Miller Crystal Oscillator and to observe its waveform and frequency, To study the Pierce Crystal Oscillator and to observe its waveform and frequency.



TIMER APPLICATIONS IC-555

Astable Multivibrator, Mono-Stable Multivibrator, Frequency Divider, Linear Ramp Generator, Square Wave Generator, Missing Pulse Detector, Pulse Width Modulation, Pulse Position Modulation, Schmitt Trigger, Sequence Generator, Bistable Multivibrator, Simple Clock Generator.



ACTIVE FILTERS

To study characteristics of various Active Filters, $\pm 12V$ DC at 50mA, IC regulated Power Supply internally connected, Four Operational Amplifier ICs, Adequate no. of other electronic components, Mains ON/OFF switch and Jewel light, The unit is operative on $230V \pm 10\%$ at 50Hz A.C.



36179

MOS-FET CHARACTERISTICS

To determine experimentally the Drain characteristics of a given MOSFET, To study the use of MOSFET as an amplifier and to measure its voltage gain in common source configuration.



36180

VOLTAGE REGULATOR TUBE CHARACTERISTICS

To study and plot the variation in output voltage with variation of load keeping input voltage constant, To study and plot the variation in output voltage with the variation of input voltage keeping load constant.



36181

THYRATRON CHARACTERISTICS

To study and plot DC grid control characteristics (firing characteristics) of a Thyratron Tube, To study and plot the phase control characteristics of a Thyratron.



36182

JUNCTION DIODE RECTIFIER & FILTER CHARACTERISTICS

Study of Junction Diode Rectifier output and ripple content for different resistive loads for Half wave, Full wave (Centre Tap), Full wave (Bridge), Voltage Doubler Circuit, Study of filter and load regulation characteristics for half wave and full wave rectifier having different resistive loads and filters of the type Capacitor filter.



36183

CHARGING AND DISCHARGING OF A CONDENSER

To study the charging of a condenser, to plot a graph of voltage (V) across it against time (t) and to determine the time constant from this graph, To plot a graph of charging current (i) against time (t) and to determine the time constant from this graph.



36184

SEMI-CONDUCTOR DEVICES CHARACTERISTICS

Germanium and Silicon Diodes, Zener Diodes, (Bipolar) PNP and NPN, FET, UJT, LED, Photo Diode, Photo Transistor, Thermistors N.T.C. and P.T.C., V.D.R., L.D.R., Opto-Coupler, DIAC, SCR, TRIAC, Varactor Diode (Varicap Diode).



36184A

SEMICONDUCTOR CHARACTERISTICS

Light Emitting Diode (LED), Thermistors N.T.C, Light Dependent Resistor (L.D.R.), Voltage Dependent resistor (V.D.R.).



36185

DISCRETE COMPONENT TRAINER

Rc & Lc Circuits, Series & Parallel Resonance Circuit, Germanium & Silicon Diodes, Zener Diode, Clipping & Clamping Circuits, Common Emitter Configuration Of a transistor, Common Collector Configuration Of a transistor, Emitter Follower (Transistor), Cascaded Amplifier.



36185A

DISCRETE COMPONENT TRAINER

Verification of ohm's law, Verification of kirchoff's current law, Verification of kirchoff's voltage law, Verification of superposition theorem, Verification of thevenin's theorem, Verification of reciprocity theorem, Study of diode characteristics, study of Zener diode characteristics.



36186

VOLTAGE REGULATOR IC 723

To study and measure the Load Regulation, Line Regulation, To study the Low voltage regulator circuit 2 to 7V, High voltage regulator circuit 7 to 27V, Voltage regulator with increased current capability using external NPN power transistor, Voltage regulator with increased current capability using external PNP power transistor.



36187

THREE TERMINAL VOLTAGE REGULATOR

To study the effect of capacitors at input and output of the regulator, To study the effect of ground reference level on the output voltage, To study the minimum voltage differential required for proper working of regulator, To measure load regulation.



36188

D.C. POWER SUPPLIES AND 2 DUAL RANGE METERS

Use of a diode as a rectifier (Half wave rectification), Study of full wave rectification using a centre tapped transformer, Study of full wave rectification using a bridge rectifier, Using a zener diode for regulation, To use a transistor as a series regulator, To use a transistor as a shunt regulator.



36189

DIFFERENTIAL COMPARATOR

To study and measure the Open loop gain, Differential input resistance, Output resistance, Input offset voltage, Input offset current, Full power response, Study of Use of IC-710 as a voltage comparator, Use of IC-710 as a Schmitt trigger.



36190

PHASE LOCKED LOOP IC 565

To study and measure the free running frequency or centre frequency of VCO, To study the VCO sensitivity, To study the VCO linearity PLL Characteristics, To study and measure the capture range and lock range.



36191

HYBRID PARAMETERS OF A TRANSISTOR

To measure the hybrid-parameters i.e. H_{11} , h_{12} , h_{21} & h_{22} of a transistor, at 1 KHz and at different collector current values, To derive Z and Y parameters from the hybrid parameter results.



36192

OP-AMP PARAMETERS

Measurement of quiescent supply current of OP-AMP, To null the offset voltage of an OP-AMP, To measure open loop voltage gain under closed loop condition, To measure output resistance, To measure differential input resistance, To measure unity gain bandwidth. To measure the rated output.



36193

REACTIVE ELEMENTS & TIME DEPENDENT NETWORK ANALYSIS

To study Charging & Discharging of a Capacitor, To Calibrate D.C. meter for A.C. voltage measurements, To construct the vector (phasor) diagram for series L-R circuit and to calculate the power factor and "Q" at 50 Hz, To study series LCR resonance circuit and its "Q".



36194

OSCILLATORS WITH POWER SUPPLY

To study R.C. Phase Shift Oscillator of phase advance type, To study R.C. Phase Shift Oscillator of phase retard type, To study Wien-Bridge Oscillator, To study Hartley's Oscillator, To study Colpitt's Oscillator, To study Pierce (X-Tal) Oscillator, To study method of



36195

MULTIVIBRATORS

Design of multivibrators, To study the waveforms of a free running multivibrator, To design and make a bistable multivibrator and to study its D.C. conditions, To design and make a monostable multivibrator and to adjust its delay time, To design and make schmitt-trigger and study its hysteresis.



36197

OPERATIONAL AMPLIFIER TRAINER

Inverting/Non-inverting A.C. Amplifier, Multiplication by a constant, Synchronised sawtooth generator with negative going pulse trigger, Monostable multivibrator, Monostable multivibrator, Basic reference voltage source with negative output, Sign changer with variable output



36198

VARIABLE THREE TERMINAL VOLTAGE REGULATOR

Measurement of load regulation of IC LM 317, Study of short circuit shut down of LM 317, 1.25 to 20 Volt variable voltage regulator, Increasing the current capacity using external power transistor, Short circuit current limiting by using an external transistor.



36199

PEAK & AVERAGE VOLTAGE DETERMINATION IN AN A.C. CIRCUIT

To determine the peak voltage of A.C. and from it to calculate the average voltage of rectified half wave A.C, To determine the peak value of A.C. by null deflection method.



36200

TO CONVERT A GALVANOMETER INTO VOLT/ AMP. METER AND TO STUDY RESISTANCE LAWS

To determine the resistance of a Galvanometer by half deflection method, To determine the figure-of-merit of a Galvanometer, To convert a Galvanometer into an Ammeter of a given range and to calibrate it.



36201

PHASE DIFFERENCE IN L.C.R. CIRCUITS

To study the phase difference in L-C, L-R, C-R and L-C-R circuits by Vector diagram method, To study the phase difference in L-C, L-R, C-R and L-C-R circuits by Superposition method.



36202

INTEGRATING SYSTEM USING JUNCTION DIODE

Charging of a condenser by unidirectional varying voltage pulses and then integrate them, Charging of a condenser by alternating voltage pulses and then to integrate them, Charging of a condenser by sinusoidal voltage pulses and then to integrate them.



36203

TRANSISTOR BIASING TECHNIQUES & STABILITY

Study of Q-point variation due to transistor replacement (Changes in β) in Fixed-bias circuit, Collector to base bias circuit, Self bias (Emitter bias) circuit, Self bias (Emitter bias) in addition to voltage divider bias circuit, A qualitative comparison of the effect of temperature on bias stability of the above four biasing circuits.



36204

STUDY OF VOLTAGE AND CURRENT REGULATED

To study a zener diode voltage regulator, To study a series pass transistors voltage regulator, To study an IC voltage regulator, To study a transistor current regulator employing one of the following devices : (a) Zener Diode, (b) Silicon Diodes, (c) LED.



36205

SWITCHING MODE POWER SUPPLY (SMPS)

To observe various voltages and Switching waveforms on the SMPS Circuit, To demonstrate the effect of load variation on the switching waveform, To measure the following : (a) Ripple, (b) Load regulation, (c) Line regulation.



36206

TRANSISTOR SERIES & SHUNT VOLTAGE REGULATED POWER SUPPLIES

To study a transistor-shunt voltage regulator with fixed current limiting, To study a transistor-shunt variable regulator with fixed current limiting, To study a transistor-shunt voltage regulator with variable current limiting.



36207

ZENER REGULATED POWER SUPPLIES

To study the standard zener diode voltage regulated power supply, To study the zener diode voltage regulated supply having two zener diodes in series, To study a dual polarity voltage regulated supply employing two zener diodes.



36208

SINGLE PHASE TRANSFORMER TRAINER

To Study transformer for the Transformation Ratio, To Study transformer for the Copper loss, To Study transformer for the The efficiency of transformer.



36209

STUDY OF LR CIRCUIT WITH A SOURCE OF ALTERNATING EMF

The power factor, $\cos \phi$ of the inductive load, The equivalent power loss resistance of the inductor, The inductance of the inductor, The phase difference between applied voltage and that across resistance.



36210

COMPARATIVE STUDY OF CE, CB & CC AMPLIFIERS

Study of Common Emitter (CE) transistor amplifier circuit and evaluation of its input & output resistance, voltage gain, current gain and power gain, Study of Common Base (CB) transistor amplifier circuit and evaluation of its input and output resistance, voltage gain, current gain and power gain.



36211

STUDY OF DIODE CLIPPING CIRCUITS

Positive base clipping with diode in series, Positive base clipping with diode in shunt, Negative base clipping with diode in series, Negative base clipping with diode in shunt, Negative peak clipping, Positive peak clipping.



36212

OPTO ELECTRONIC DEVICES CHARACTERISTICS

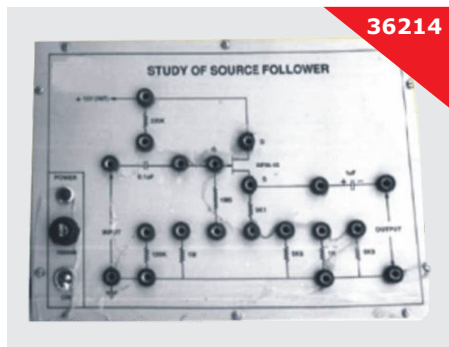
Light Emitting Diode (LED), Photo Diode, Photo Transistor, Light Dependent Resistor (L.D.R.), Photo Voltaic Cell, Optocoupler.



36213

STUDY OF CRYSTAL DETECTOR

To measure voltage gain of the Source Follower, To measure input impedance of the Source Follower, To measure output impedance of the Source Follower, To study the above parameters with different biasing arrangements.



STUDY OF SOURCE FOLLOWER

To measure voltage gain of the Source Follower, To measure input impedance of the Source Follower, To measure output impedance of the Source Follower, To study the above parameters with different biasing arrangements.



VERIFICATION OF KIRCHOFF'S LAW

To verify Kirchoff's current law, To verify Kirchoff's voltage law.



DETERMINATION OF IMPEDANCE OF R-C CIRCUITS AT DIFFERENT FREQUENCIES

To determine the impedance of a R.C. series combination at different frequencies.



STUDY OF AUDIO FREQUENCY TRANSFORMER

To measure the transformer ratio of an A.F. Transformer, To find out the optimum value of load resistance to match with A.F. Transformer, To plot transmission curve for A.F. Transformer, To plot linearity curves for A.F. Transformer.



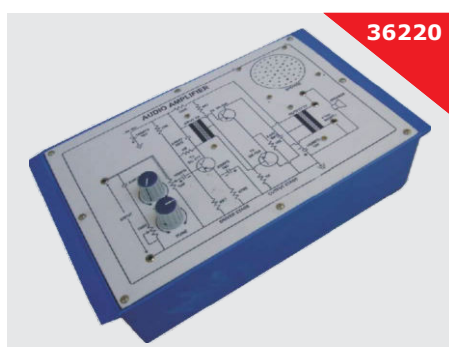
STUDY OF FOURIER ANALYSIS

To determine the Fourier component of : A square wave, A clipped sine wave.



TIME DELAY RELAY (C.R.)

To study the time delay relay circuit with controlling ON time, To study the time delay relay circuit with controlling OFF time.



AUDIO AMPLIFIER (5W, 4 OHMS)

Study of the Audio Amplifier. Input & output transformers, AF driver and output stage, Speaker 4 ohms (5W), Volume & tone control, Adequate no. of other electronic components, Mains ON/OFF switch, Fuse and Jewel light.



DE-SAUTY BRIDGE APPLICATIONS

To study De-Sauty Bridge Applications. Measurement of capacitance of gang condenser using De-Sauty Bridge, Measurement of a dielectric constant of a non-conducting liquid using De-Sauty Bridge.



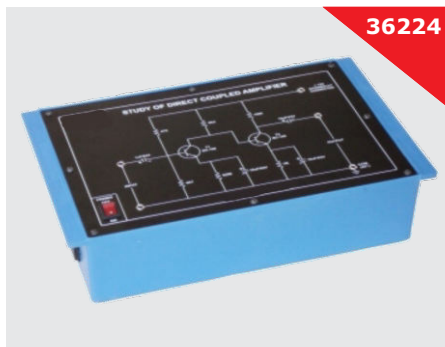
STUDY OF R.C. TRANSMISSION LINE AT 50 HZ

To study R-C Transmission Line at 50Hz, To draw a curve, showing the variation of magnitude and phase of the Voltages along the R.C. ladder network and to find the Attenuation.



VERIFICATION OF OHM'S LAW, SERIES & PARALLEL CIRCUITS

Verification of ohm's Law, To study series circuits, To study parallel circuits.



STUDY OF DIRECT COUPLED AMPLIFIER

To study the Measurement of Gain of the Two Stage Direct Coupled Amplifier, To draw the Frequency response curve of Direct Coupled Amplifier.



STUDY OF COMPLIMENTARY-SYMMETRY TRANSISTOR POWER AMPLIFIER

To measure the D.C. Voltage at certain test points with signal and without signal, To measure the D.C. bias current (with and without signal) and also to measure the idling current, To measure input and output impedances and power gain.



POWER & POWER FACTOR IN SERIES LCR CIRCUITS

Study of Series RLC / R-L / R-C Circuit using Single Phase A.C. and to determine Power & Power Factor and also draw the vector diagram.



MEASUREMENT OF TEMPERATURE CO-EFFICIENT OF RESISTANCE

Measurement of positive Temperature Co-efficient of resistance, Measurement of negative Temperature Co-efficient of resistance.



STUDY OF R-C CIRCUITS WITH VARYING EMF

To study the charging of a capacitor with pulses of width greater than the time constant of the circuit, To study the charging with rectangular pulses of width much less than the time constant of the circuit, To study the charging with short rectangular pulses of equal and unequal widths ($t \ll RC$).



STUDY OF R-C CIRCUITS WITH A SOURCE OF ALTERNATING E.M.F.

To study a R-C Circuit with a source of alternating E.M.F., To study of R-C Circuit using A.C. mains, To measure the impedance of a R-C Circuit.



MAXWELL'S L/C BRIDGE

To study Maxwell's L/C Bridge, To measure value of unknown capacitance, To measure value of unknown Inductance.



MEASUREMENT OF CAPACITANCE BY WIEN BRIDGE

To study Wien Bridge, To measure the capacitance by Wien Series Bridge, To measure the capacitance by Wien Parallel Bridge.



36232

TO STUDY THE BEHAVIOR OF LIGHT EMITTING DIODE (LED)

To understand the operation of an LED : On D.C. Voltage, On A.C. Voltage, To plot and study the forward voltage current characteristics of different colour discrete LEDs, To practically understand the operation of a seven segment LED display.



36233

STUDY OF DARLINGTON PAIR AMPLIFIER

To experimentally calculate and compare the following circuits : Emitter Follower Circuit, Darlington pair Amplifier for the following parameters : Input Impedance, Output Impedance, Current gain, Voltage gain.



36234

STUDY OF BLOCKING OSCILLATOR

To observe on a C.R.O. the waveforms at the base and collector of an Astable Blocking Oscillator: Without connecting the diode, After connecting the diode, To measure the pulse width and the frequency of the pulse-train with various combinations of C and R values.



36235

STUDY OF HIGH FREQUENCY AMPLIFIER

To study the frequency response, bandwidth and voltage gain of high frequency amplifier, To observe the effect of negative feedback on bandwidth and voltage gain of high frequency amplifier.



36236

STUDY OF MULTIVIBRATORS (BMV, AMV & MMV) USING IC 555

Study of Multivibrators (BMV, AMV & MMV) using IC 555. To study Bistable Multivibrator using IC 555, To study Astable Multivibrator using IC 555, To study Monostable Multivibrator using IC 555.

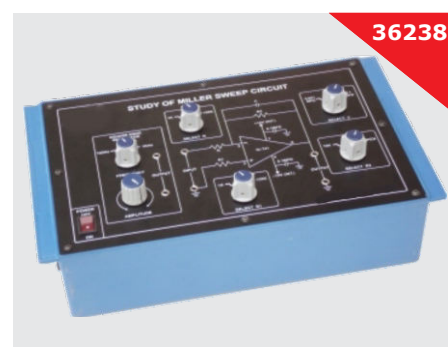


36237

STUDY OF NULL-BALANCING TECHNIQUES OF OP-AMP

For Inverting OP-AMP Circuit, For Non-Inverting OP-AMP Circuit, For Voltage follower Circuit, Inverting Amplifier, offset voltage applied to the Inverting input, Inverting Amplifier, offset voltage applied to the Non-Inverting input, Off setting circuit for low gain non-inverting OP-AMP.

Installation at
World Skill Center,
Odisha, India



36238

STUDY OF MILLER SWEEP CIRCUIT

To get familiar with the Miller Sweep Circuit and experimentally observe the effect of C and R value on the sweep waveform, To experimentally observe the effect of the frequency of input step waveform on the sweep waveform, To observe the linearity of the sweep waveform.



36239

STUDY OF R.C. CIRCUIT WITH AN ULTRA LOW FREQUENCY AC SOURCE

To get familiar with the Miller Sweep Circuit and experimentally observe the effect of C and R value on the sweep waveform, To experimentally observe the effect of the frequency of input step waveform on the sweep waveform, To observe the linearity of the sweep waveform.



ELECTRONICS



36240

MEASUREMENT OF TEMPERATURE WITH THERMISTOR

To calibrate the ammeter for temperature measurement using in-built electrical oven and a Mercury thermometer, To measure temperature of a hot object.



36241

STUDY OF LCR CIRCUITS WITH AN AC SOURCE

To determine the equivalent power loss resistance of an inductor, To analyse a complex LR circuit by drawing vector diagrams, To analyse a complex RC circuit, To study a circuit with two inductors in series, To study a circuit with two capacitors in series, To study if V and V are always in the opposite phase L C.



36242

STUDY OF CASCODE AMPLIFIER

To study Cascode Amplifier or CE-CB configuration for AC analysis and to determine the following parameters: The input resistance, The output resistance, The overall voltage gain, The overall current gain



36243

STUDY OF TEMPERATURE ON-OFF CONTROLLER WITH THERMISTOR

To turn ON or OFF an external load at a particular temperature, To control and maintain the temperature of the internal oven.



36244

MEASUREMENT OF POWER & POWER FACTOR OF L-R CIRCUITS

Measurement of Power and Power factor of R-L circuit with a single phase of AC voltage source using voltmeters, current meters and wattmeter.



36245

STUDY OF OP-AMP COMPARATOR

Non-Inverting Cooperator, Inverting Cooperator, Fast Precision Voltage Comparator, Comparator for signals of opposite polarity, Single ended comparator with Hysteresis and clamped feedback, Comparator for A.C. Coupled signals, Zero Crossing Detector, Schmit Trigger, Voltage



36246

STUDY OF OP-AMP MATHEMATICAL OPERATIONS

Inverting Amplifier, Non-inverting Amplifier, Frequency Response of Inverting A.C. Amplifier, Frequency Response of Non-inverting A.C. Amplifier, High Input Impedance Inverting Amplifier, High Input Impedance Non-inverting Amplifier.



36247

OP-AMP APPLICATIONS

Square Wave generator, Pulse & Ramp generator, Triangular Generator, Sine Wave Generator using Wien Bridge, Phase Shift Network, Active Filters: Low Pass Filter, High Pass Filter, Band Pass Filter, Notch Filter, Voltage Regulators, Null Detector, D.C. Microammeter,



36248

TIMER APPLICATIONS IC-555

To study the Pulse Generator, Timer, Sequential Timer, Pulse Width Modulator (PWM), Time Delay Circuits.



36249

STUDY OF VARACTOR DIODE CHARACTERISTICS

To determine the Junction(transition) Capacitance of a Varactor Diode as a function of the reverse bias voltage and to evaluate the internal contact potential, To use the Varactor Diode as a variable capacitor.



36250

STUDY OF INVERTING & NON- INVERTING OPERATIONAL AMPLIFIER

To study Inverting Operational Amplifier, To study Non-Inverting Operational Amplifier, To study frequency response of Inverting A.C. Operational Amplifier, To study frequency response of Non-Inverting A.C. Operational Amplifier.



36251

STUDY OF DIODE DETECTOR

To modulate the carrier with audio signal and measure modulation index, To demodulate the amplitude modulated waveform by the basic diode detector, To demodulate the amplitude modulated waveform by the improved diode detector, To study the detection efficiency of a Diode by direct method.



36252

DETERMINATION OF THE RESISTANCE & CAPACITANCE

To determine the resistance and capacitance of a capacitor using three ammeters and a voltmeter.



36253

STUDY OF VARIATION OF TOTAL THERMAL RADIATION WITH TEMPERATURE

To study the variation of the Total Thermal Radiation with Temperature.



36254

APPLICATIONS OF OPERATIONAL AMPLIFIER

Inverting Amplifier, Non-Inverting Amplifier, Summing Amplifier or Adder, Voltage Follower or Buffer Amplifier.



TRANSISTOR AUDIO AMPLIFIER

To measure the voltage gain of (CE) R.C. Coupled Transistor Audio Amplifier, To plot the frequency response characteristics of (CE) R.C. Coupled Transistor Audio Amplifier, To find out the Input Impedance of (CE) R.C. Coupled Transistor Audio Amplifier, To find out the output Impedance of (CE) R.C. Coupled Transistor Audio Amplifier.



STUDY OF RECOVERY TIME OF DIODES

To find out Recovery Time (reverse recovery time) of given Diodes, To study Recovery Time (reverse recovery time) as a function of frequency of operation and switching current.



DETERMINATION OF ELECTRONIC CHARGE

To note, change of current I with change of low voltage V in forward bias case and to plot the variation in $\log I$ & V and investigate linear region of the graph, To determine the electronic charge (e) by using rectifier equation.



STUDY OF PHASE MEASUREMENT BY SUPER POSITION

To study the relative phase difference between voltage across resistors and capacitors in series, To measure the phase difference between V and V in a simple RC circuit. R C, To study more about phase relationship in an RC network, To study the phase relationship in an LR circuit.



COMPARATIVE STUDY OF BRIDGE RECTIFIER AND PRECISION RECTIFIER

Comparative Study of Bridge Rectifier & Precision Rectifier.



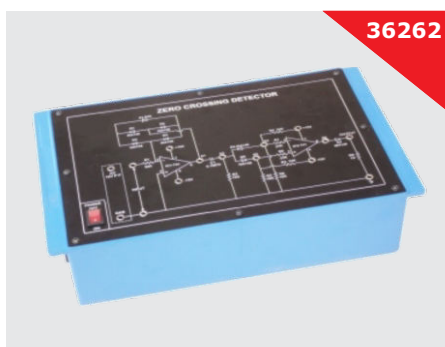
SQUARE AND TRIANGULAR WAVE GENERATOR WITH POSITIVE & NEGATIVE FEEDBACK

To Study Generation of Square wave & Triangular wave using Schmitt Trigger, Integrator and Inverting Amplifier, To Study Principle of positive & negative feedback.



SCALING AMPLIFIER

To Study Scaling Amplifier, configured in such a way so that any type of transfer function i.e. Direct or Inverse with D.C. Offset (ve or -ve) can be scaled, To Study Adjustment of Angle of Transfer Function.



ZERO CROSSING DETECTOR

To generate synchronized pulses whenever A.C. Mains crosses zero line using Comparator, RC Differentiating Circuit etc.



WINDOW DETECTOR

To detect certain inputs when lying within specified range of voltages (window) using Inverting and Non-inverting Comparator.



VOLTAGE TO CURRENT CONVERTER (V TO I)

To Study the conversion of input voltage into proportional current irrespective of load for Inverting & Non-Inverting modes.



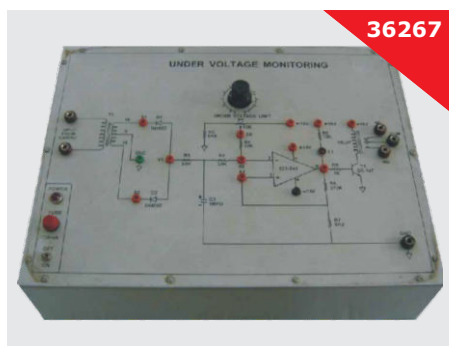
CURRENT TO VOLTAGE CONVERTER (V TO I)

To Study principles of voltage controlled current source, To Study conversion of current to proportional voltage in Inverting & Non-Inverting modes.



VOLTAGE TO FREQUENCY CONVERTER (V TO F)

To Study the conversion of Analogue D.C. voltage into proportional frequency with 50% duty cycle having linear relationship using Integrator, Schmitt Trigger and Master Slave J.K. flip flop in toggle mode.



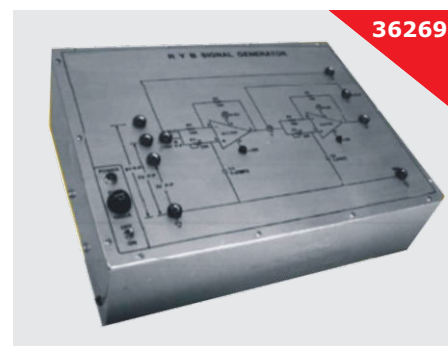
UNDER VOLTAGE MONITORING

To Study the under voltage state of AC mains with LED indication using OP-AMP as a closed loop Comparator in hysteresis operation.



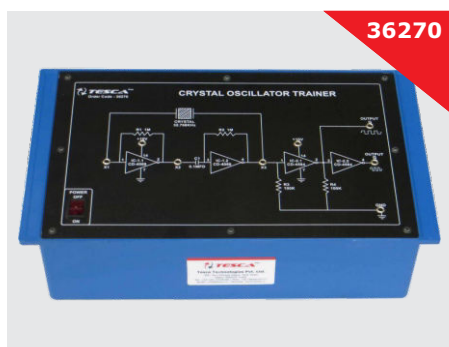
ACTIVE LIMITER

To study active limiting of input at either polarity with adjustable limits using summing amplifier, unity gain amplifier and open loop comparator, To study the comparison between Zener Limiter and Active Limiter.



R Y B SIGNAL GENERATOR

To study generation 3 phase R Y B low voltage signals from single phase low voltage input.



CRYSTAL OSCILLATOR USING CMOS ICs

To Study Crystal Oscillator using CMOS ICs with crystal of frequency 32.768 KHz.



BINARY RATE MULTIPLIER

To Study Binary Rate Multiplier to achieve output of desired frequency in binary steps, by dividing the available clock frequency with a selectable number (which is the Binary Rate) using Binary Rate Multiplier IC 4089.



SYNCHRONIZED PULSE GENERATOR

To Study generation of synchronized pulses for triggering of Thyristor at the desired position.



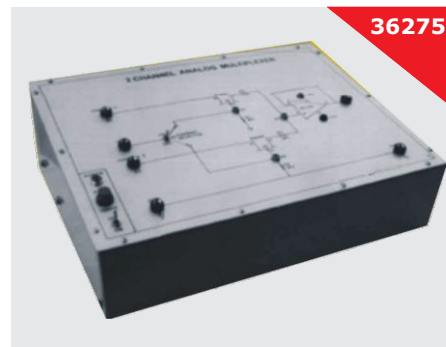
PHASE SEQUENCE MONITORING

To study Detection of the Incoming low voltage R Y B phase sequence.



PHOTO TRANSISTOR TRAINER

To Study generation of voltage corresponding to the change of light intensity on photo transistor, To Study an application to drive a relay with OP-AMP used in comparator mode and a Transistor as control switch to operate the relay.



TWO CHANNEL ANALOGUE MULTIPLEXER

To study multiplexing of two analog signals to give multiplexed output using JFETs.



STUDY OF SCHMITT'S TRIGGER CIRCUIT

Upper threshold voltage, Lower threshold voltage, Hysteresis, Effect of feedback on threshold voltage.



CURRENT AMPLIFICATION FACTOR OF A TRANSISTOR

To determine the current amplification factor of a Transistor graphically.



DETERMINATION OF INTERNAL RESISTANCE OF A D.C.

To determine the internal resistance of a D.C. source by matching a load for maximum power transfer.



SMPS TRAINER KIT (FOR COLOUR TELEVISION)

To study different sections of SMPS, To locate typical components and Input/Output signals, To measure the voltages at test points and Input/Output signals, To study the circuit in detail, To create faults by removing components and observe their effect.



SMPS TRAINER KIT (FOR COMPUTER)

To study the different sections of SMPS, To locate typical components and Input/Output signals, To measure the voltages at test points and Input/Output signals, To study the circuit in detail, To create faults by removing components and observe their effect.



SOLAR EDUCATIONAL KIT

To study Photo Voltaic Module characteristics by plotting I-V curve, To demonstrate the electrical appliances on both the Solar Module and the battery.



36283

ELECTRONIC SIREN USING TIMER ICs

To Study an Electronic Siren using Timer ICs, 5V D.C. at 100mA, IC regulated power supply internally connected, Two Timer ICs, Speaker (8W) for output, Two potentiometers, "Push to ON" switch for putting Siren ON, Adequate no. of other electronic components.



36284

BURGLAR ALARM USING 555 TIMER & LDR

To Study Burglar Alarm using Timer IC & LDR, 12V D.C. at 1A, IC regulated power supply internally connected, Timer IC, Speaker (8E) for output, LDR mounted on panel, Adequate no. of other electronic components.



36285

STEFAN'S LAW OF RADIATION BY USING AN INCANDESCENT LAMP

To verify the Stefan's law of radiation by using an incandescent lamp.



36286

STUDY OF THE CHARGE AND DISCHARGE OF CONDENSER THROUGH A RESISTANCE

To study the Charge and Discharge of a condenser through a resistance using neon bulb, To study the dependence of the period on the source voltage and deducing striking voltage and extinction voltage of the neon bulb.



36287

L.C. TRANSMISSION LINE (48 SECTIONS)

To study Propagation along L-C ladder network having. 48 sections and find out the propagation constant.



36288

R Y B SIGNAL GENERATOR

To study generation 3 phase R Y B low voltage signals from single phase low voltage input.



36289

QUADRATURE OSCILLATOR

To study constructional features of quadrature oscillator, To verify the generation of two signal (sine & cosine) that are in quadrature i.e. out of phase by 90°, To study the variation in frequency by varying the values of components.



36290

CONVERSION OF GALVANOMETER INTO A VOLTMETER

To determine the resistance of a Galvanometer by half deflection method, To determine the figure of merit of the Galvanometer, To convert the Galvanometer into a Voltmeter of a given range and to calibrate it.



36291

CONVERSION OF GALVANOMETER INTO AN AMMETER

To determine the resistance of a Galvanometer by half deflection method. To determine the figure of merit of the Galvanometer, To convert the Galvanometer into an Ammeter of a given range and to calibrate it.



36292

IONISATION POTENTIAL OF MERCURY USING GAS FILLED DIODE

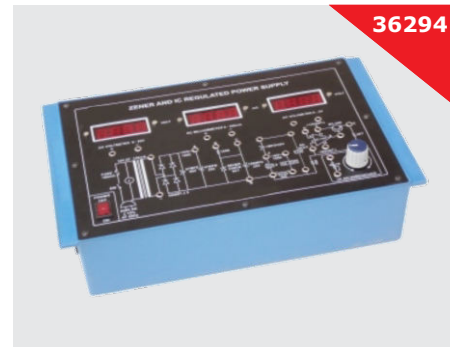
To find the ionisation potential of mercury using gas filled diode.



36293

ELECTRICAL THERMIONIC FUNDAMENTALS TRAINER

Determination of the thermionic work function of tungsten using directly heated valve, Verification of Richardson equation of thermionic emission.



36294

ZENER REGULATED AND IC REGULATED

To study unregulated Power Supply, To study zener regulated Power Supply, To study IC regulated Power Supply.



36295

STAIRCASE GENERATOR

To study Staircase Generator, 12V D.C. at 30mA IC regulated Power Supply internally connected, Two transistor one NPN and another PNP, One Potentiometer to control division ratio, One Unijunction Transistor, Adequate no. of other electronic components, Mains ON/OFF switch, fuse and jewel light.



36296

VERIFICATION OF SUPERPOSITION, THEVENIN'S & RECIPROCITY THEOREMS

To verify the Superposition Theorem and to calculate current in any branch of a multisource using Superposition Theorem, To verify Thevenin's Theorem and to calculate Thevenin's equivalent of given circuit.



36297

CRITICAL POTENTIALS OF AN ATOMIC GAS FILLED IN ELECTRONIC VALVE

Determination of Excitation Potential of an atomic gas filled in electronic valve, Determination of Ionization Potential of an atomic gas filled in electronic valve.



36298

VOLTAGE CONTROLLED OSCILLATOR (V.C.O.) TRAINER

Constant frequency, Wide range VCO, variable from near zero to above 1.5 KHz, Wide range VCO with frequency fully variable down to zero, Restricted range VCO, Universal Clock/Square wave Generator, FSK Generator.



36299

STUDY OF FORBIDDEN ENERGY GAP

To study the Forbidden Energy Gap in Semiconductor Diode, 2V D.C. at 10mA, regulated Power Supply, Digital Microammeter, 3½ digits having range 200mA D.C., Semiconductor Diode, Thermometer 0-110 °C, Oven, Electrically heated to heat the Semiconductor Diode.



36300

ACTIVATION ENERGY OF A THERMISTOR

To determine the activation energy of a thermistor, To determine the material constant of the thermistor material.



FREQUENCY TO VOLTAGE CONVERTER (F TO V)

To verify that the output voltage varies in accordance with the input frequency. Frequency to voltage converter IC, Potentiometer to calibrate the output voltage according to input frequency, Adequate no. of other electronic components, Mains ON/OFF switch, fuse and jewel light.



CLASS A, B, C & AB AMPLIFIER

To study Class A amplifier, To study Class B amplifier, To study Class C amplifier, To study Class AB amplifier.



OP-AMP USED AS SCALAR, SUMMER AND VOLTAGE FOLLOWER

To study Scaling Amplifier, configured in such a way so that any type of transfer function i.e. Direct or Inverse with D.C. Offset (ve or -ve) can be scaled, To study Summing amplifier or adder, To study Voltage follower or Buffer Amplifier.



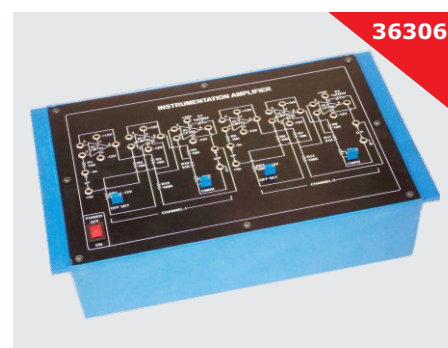
OP-AMP DIFFERENTIATOR AND INTEGRATOR

To study Integrating Amplifier for DC input signals, To study Integrating Amplifier for AC input signals, To study Differentiator Amplifier, To study Non-inverting differentiator Op-Amp 741.



STUDY OF OP-AMP (INPUT-BIAS CURRENT, OUTPUT-OFFSET VOLTAGE & SLEW RATE)

To study the input-bias current, To study the output-offset voltage, To study the slew rate.



INSTRUMENTATION AMPLIFIER

Test the performance & characteristics of an Instrumentation Amplifier circuit, Two independent Instrumentation Amplifiers in a single Training Board, Programmable - gain Amplifier, with an internal high precision feed back network, It has high common - mode - rejection ratio (CMRR).



PHASE AND FREQUENCY DETERMINATION OF ELECTRICAL SIGNALS USING A CRO (LISSAJOUS FIGURES)

To study analog CRO, Measurement of time period, amplitude, frequency and phase angle using Lissajous Figures, To study of CRO.



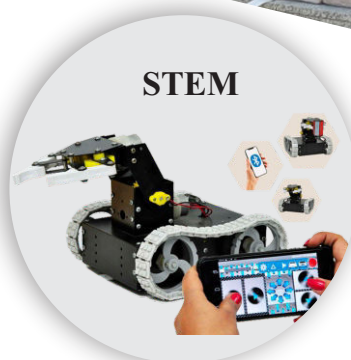
TRANSISTOR AS A SWITCH

To study Delay time, To study Rise time, To study On time, To study storage time, To study Fall time, To study Off time, Transistor as a switch application.



APPLICATION OF THERMISTORS

To study Temperature / Fire alarm, To study over Temperature control alarm with NTC Thermistor, To study Temperature / Fire alarm, To study under Temperature alarm with PTC Thermistor.



STEM

Our more Product

Kenya
Shipment



36310

FEEDBACK AMPLIFIER (4 TYPES USING TRANSISTORS)

To Design Current series Feed Back Amplifier, To Design Voltage series Feed Back Amplifier, To Design Voltage shunt Feed Back Amplifier, To Design Current shunt Feed Back Amplifier.



36311

FEEDBACK AMPLIFIER (4 TYPES USING FET & TRANSISTORS)

To study Voltage shunt Feed back Amplifiers using Transistor, To study Current shunt Feet back Amplifier using Transistor, To study Voltage series Feed back Amplifier using FET, To study Current series Feed back Amplifier using FET.



36312

WIEN BRIDGE OSCILLATOR USING JFET

To design and setup a Wien Bridge Oscillator using JFET to generate a sinusoidal signal of three frequencies at 3V PP, 12V DC at 100 mA, IC Regulated Power Supply internally connected, Potentiometer to vary the amplitude.



36313

MEASUREMENT OF INDUCTANCE BY HAY'S BRIDGE

To Measure the Value of Unknown Inductance by Hay's Bridge, Hay's Bridge circuit with arm values, $\pm 12V$ DC at 100 mA, IC Regulated Power Supply internally connected, 1 KHz Sinewave oscillator Output 0 - 15 Vpp.



36314

MEASUREMENT OF UNKNOWN CAPACITANCE BY SCHERING BRIDGE

To Measure the Value of Unknown Capacitance by Schering Bridge, Schering Bridge circuit with arms values, $\pm 12 VDC$ at 100 mA, 1KHz Sinewave oscillator having output 0-15 Vpp.



36315

MEASUREMENT OF SELF INDUCTANCE BY OWEN'S BRIDGE

To Measure the Value of Unknown Self Inductance by Owen's Bridge, Owen's Bridge circuit with arm values, $\pm 15V$ DC at 100 mA, IC Regulated Power Supply internally connected, 1 KHz Sinewave oscillator Output 0 - 15 Vpp.



36316

VOLTMETER CHARACTERISTICS: OHMS PER VOLT

Study of Voltmeter characteristics : Ohms per volt, Voltmeter 65mm rectangular dial of 1V range, having resistance of $1K \pm 10\%$ and full scale deflection current is 1mA, IC regulated variable DC power supply of 0-20V at 100mA, Necessary resistance.



36317

WHEATSTONE BRIDGE

To study Wheatstone Bridge, To measure value of unknown resistance, 5V D.C. At 100mA IC regulated power supply internally connected, Galvanometer, 65mm rectangular dial to read 30-0-30.



36318

OP-AMP CHARACTERISTICS

To study nullify the offset voltage, To study measure the slew rate, To study the inverting amplifier circuit, To study the non-inverting amplifier, To study the adder circuit in Inverting & Non Inverting Mode.



36319

PUT CHARACTERISTICS & RELAXATION OSCILLATOR

To draw the V-I characteristics of PUT, To study PUT relaxation oscillator, 0-10V D.C. At 20mA, IC regulated power supply, 0-3V D.C. At 20mA, IC regulated power supply.



36320

OPTOELECTRONIC APPLICATIONS USING 741 AND 555

To Study Burglar Alarm Using Timer IC-555 & Breaking of wire and LDR, To Study Burglar Alarm Using Timer IC-555 Breaking of Wire & Photo Transistor, Burglar Alarm Using Timer IC-555 Breaking of wire and Photo Diode.



36321

ZENER DIODE (CHARACTERISTICS AND TEMPERATURE EFFECT)

To study and plot the forward & reverse bias characteristics of a Germanium semiconductor Diode, To study and plot the forward & reverse bias (breakdown) characteristics of a Zener Diode, To study the Temperature Coefficient of Zener Diode and plot Power Rating curves.



36322

TRANSFORMER WINDING PRACTICE

To design a step up/step down transformer, To construct and study the step up/step down transformer, This kit consists of Bobbins, E-I core plates, Winding wires, Insulation Paper, Varnish material, Nuts and Bolts.



36323

AUDIO AMPLIFIER USING IC LM- 380

To measure the voltage gain (A) of audio v amplifier, To plot the frequency response characteristics of audio amplifier, To find out the input impedance of the audio amplifier, To find out the output impedance of the audio amplifier.



36324

LOGARITHMIC AMPLIFIERS DESIGN & TEST (USING IC-741 OP-AMP)

To Design operational amplifier based Logarithmic Amplifier, 0-10V D.C. at 50mA, continuously variable Power Supply, Digital Voltmeter DC $3\frac{1}{2}$ Digit Having Dual range of 200mV / 20V.



36325

BASIC ELECTRONIC TRAINER - SET OF 6 BOARDS

To study of basic gates & verification of their truth tables (AND, NAND, NOT, OR, NOR & EX-OR Gate), The board consists NAND Gate, NOT Gate, OR Gate, NOR Gate, EX-OR Gate, Switches for logic selection, LED's for visual indication of status.



36326

POWER & DIFFERENTIAL AMPLIFIER TRAINER

Study of working principle of Differential Amplifier, Study of working principle of class B push-pull Amplifier, In-built DC power supply, In-built sine wave generator, Compact design.



36327

BJT AMPLIFIERS & EMITTER FOLLOWER TRAINER

Determination of Excitation Potential of an atomic gas filled in electronic valve, Determination of Ionization Potential of an atomic gas filled in electronic valve.



36328

OP-AMP APPLICATIONS TRAINER

Study and observe Op-Amp as voltage Computer, Study and observe Op-Amp as phase shift oscillator and its phase shift at every RC combination, Study and observe Op-Amp as half wave precision rectifier, Study and observe Op-Amp as active second order high pass filter.



36329

BUTTERWORTH FILTER (1st & 2nd ORDER)

To study 1st Order Low Pass Filter, To study 2nd Order Low Pass Filter, To study 1st Order High Pass Filter, To study 2nd Order High Pass Filter, $\pm 12V$ DC at 50mA, IC regulated Power Supply internally connected, Four Operational Amplifier ICs, Adequate no. of other electronic components.



36330

TRANSISTOR AMPLIFIER DEMONSTRATOR

To study the Voltage Gain of Transistor Audio Amplifier (CE), To plot the Frequency Response characteristics, To find out Input Impedance, To find out Output Impedance, To find out Current Gain, To find out Power Gain.



36331

AC/DC SOURCES EXPERIMENTAL TRAINER

A very useful component trainer to show all the components used in electronics circuits / laboratory, Useful, low cost. Multipurpose, minilab for linear, digital & hybrid circuits, Saves time and money in experimentation as no soldering is required to try out new circuit and component can be reused.



36332

SYNCHRO TRANSMITTER & RECEIVER

Study of Synchro Transmitter, Study of Synchro Transmitter and Receiver pair, Study of Synchro Transmitter and Receiver pair with phase difference, Calibrated dials for reference and output position, Switch for Transmitter and Receiver rotor supply.



36333

ACTIVATION ENERGY OF A THERMISTOR

Study the transient response of a series RC circuit and understand the time constant concept, Study the transient response of a series RL circuit and understand the time constant concept, Study the transient response of a series RC circuit and understand the time constant concept with square wave TTL.



36334

TRANSIENT ANALYSIS TRAINER

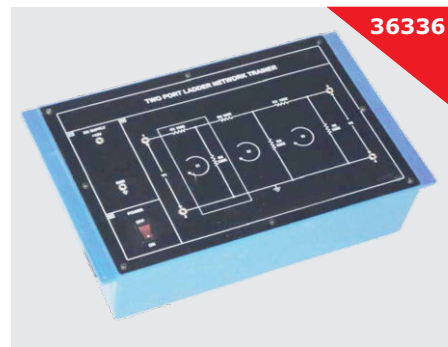
Study the transient response of a series RLC circuit with TTL for under damped, critically damped and over damped cases, Easy experimental illustration of Transient Analysis of RLC circuit, built-in Signal Generator.



36335

TWO PORT NETWORK TRAINER

Study of Z-Parameters of a Passive Two Port Network, Study of Y-Parameters of a Passive Two Port Network, Study of ABCD-Parameters of a Passive Two Port Network.



36336

TWO PORT LADDER NETWORK TRAINER

Study and verification of Transfer Function of Two Port Ladder Network, Exclusive and Compact design, Inbuilt 12 V DC Power Supply.



36337

T AND PIE ATTENUATOR TRAINER

Study of Symmetrical T Attenuator, Study of Symmetrical π Attenuator, The board consists Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections / observation of waveforms.



36338

INTERCONNECTION OF TWO PORT NETWORK

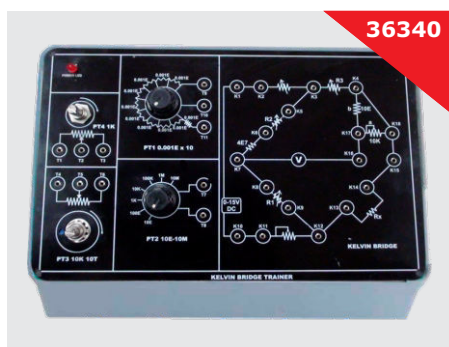
Study of cascade connection of two port networks, Study of series connection of two port network, Study of parallel connection of two port network, Study of loading effect with cascade connection of two port networks, Study of loading effect with series connection of two port network.



36339

POST OFFICE BOX TRAINER

Determination of unknown resistance, Determination of resistivity of the material of wire, Verification of effects of resistance in series and parallel, Provided with DC power supply, Easy to operate.



36340

KELVIN BRIDGE TRAINER

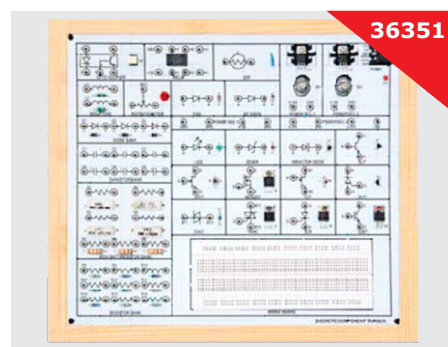
Potentiometer of 1Kohm, 10Kohm potentiometer is a helical 10 turn pot mounted with dial for easy measurement, Block Description Screen printed on glassy epoxy PCB, One LED indicator to indicate Power input.



36341

TRANSISTOR DESIGNER TRAINER

To design Common Emitter Amplifier, To design Common Collector Amplifier, To design Combination Amplifier (C.E. & C.C.), To design Common Emitter current feedback Amplifier, To design Phase Shift Audio Oscillator, To design Wien-Bridge Audio Oscillator, To design Free Running Multivibrator, To design Monostable Multivibrator.



36351

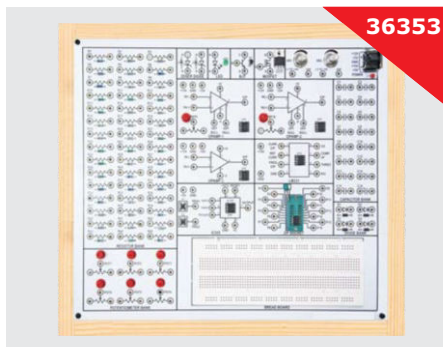
DISCRETE COMPONENT TRAINER KIT

Study the working of Resistors, Capacitors, Inductors, Potentiometer, Relay, Study the Characteristics study of Si-Diode, FSD-Diode, Ge-Diode, Zener Diode, LED, Varactor Diode, VDR, Study the Characteristics study of BJT in CE, CB and CC mode.



TRANSISTOR APPLICATION TRAINER

To identify and check type of Transistor NPN, PNP, CE amplifier-frequency response, signal handling capacity, input and output impedance, Voltage series feedback (negative) amplitude, frequency response, input and output impedance calculation, Series and shunt regulator, calculate ripple factor.



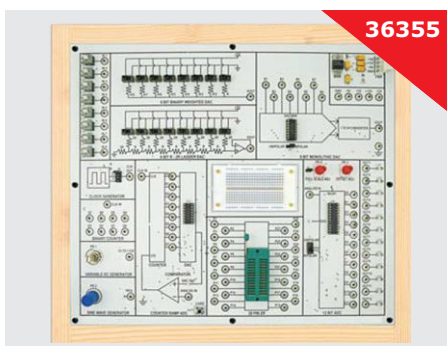
POWER & DIFFERENTIAL AMPLIFIER TRAINER

Study of working principle of Differential Amplifier, Study of working principle of class B push-pull Amplifier, In-built DC power supply, In-built sine wave generator, Compact design.



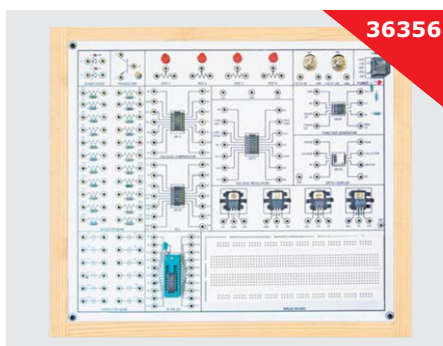
NETWORKS AND BRIDGES TRAINER

To study Superposition theorem, To study Thevenin's theorem, To study Reciprocity theorem, To study Two port network parameter (Z and Y parameter).



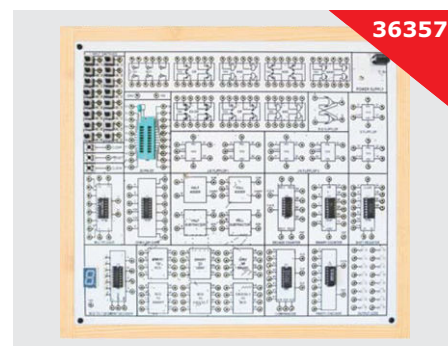
ANALOG TO DIGITAL & DIGITAL TO ANALOG CONVERTER TRAINER

8-bit discrete ADC, 12-bit successive approximation monolithic ADC IC, On-board signal generator with adjustable amplitude levels, On-board LED bank to observe digital outputs, 8-bit binary weighted resistors DAC, 8-bit ladder type D to A converter.



BUTTERWORTH FILTER (1st & 2nd ORDER)

To study 1st Order Low Pass Filter, To study 2nd Order Low Pass Filter, To study 1st Order High Pass Filter, To study 2nd Order High Pass Filter, $\pm 12V$ DC at 50mA, IC regulated Power Supply internally connected, Four Operational Amplifier ICs, Adequate no. of other electronic components.



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POWER ELECTRONICS TRAINER

Study of Synchro Transmitter, Study of Synchro Transmitter and Receiver pair, Study of Synchro Transmitter and Receiver pair with phase difference, Calibrated dials for reference and output position, Switch for Transmitter and Receiver rotor supply.



ANALOG, DIGITAL & MIXED-SIGNAL SIMULATION ACADEMIC RESEARCH 5 USER

More than 25,000 analog, digital and mixed-signal parts including realistic behavioral models for resistors, inductors and capacitors, A large selection of active device models with no less than six distinct MOSFET models including BSIM4 and BSIM4.



36362

EXPERIMENTATIONS WITH KELVIN'S BRIDGE

Determination of unknown resistance using kelvin's bridge method, Kelvin's Bridge circuit with arms values, Unknown Resistance 0.5W, 1.0W, 1.5W, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



36363

DIODE, ZENER DIODE AND LED CHARACTERISTICS

To study and plot the forward & reverse bias characteristics of a Germanium semiconductor Diode, To study and plot the forward & reverse bias characteristics of a Silicon semiconductor Diode, To study and plot the forward & reverse bias (breakdown) characteristics of a Zener Diode.



36364

ZENER DIODE VOLTAGE REGULATOR

Study of Zener Diode as a Voltage Regulator, when input voltage, (V_{in}) is fixed while load resistance (R_L) is variable, Study of Zener Diode as a Voltage Regulator, when input voltage, (V_{in}) is variable while load resistance (R_L) is fixed, To measure the Line and Load Regulation in Zener Diode Voltage Regulator.



36365

SINGLE AND TWO STAGE R.C. COUPLED TRANSISTOR AMPLIFIER

To Study of common emitter (CE) single stage transistor amplifier circuit and to measure its voltage gain (A_v), To plot the frequency response characteristics, To find out the input-impedance, To find out the output impedance, To find out the current gain, To find out the power gain of the single stage CE Amplifier.



36366

DE SAUTY BRIDGE WITH OSCILLATOR AND DETECTOR

To Study of common emitter (CE) single stage transistor amplifier circuit and to measure its voltage gain (A_v), To study the working of a De Sauty Bridge and to compare the capacitance of two capacitors.



36367

F.E.T. CHARACTERISTICS AND AMPLIFIER

To study the characteristics of Field Effect Transistor, Measurement of I_{DSS} , Plot the static drain characteristics of FET, Drain Current V/s Drain Voltage Characteristics for different fixed values of V_{GS} , Drain Current V/s Gate Bias Characteristics for different fixed values of V_{DS} .



36368

VOLTAGE MULTIPLIERS WITH AC VOLTAGE 10, 20, 30, 40V AT 10MA.

Study of Full wave Voltage Doubler, Study of Half wave Voltage Doubler, Study of Voltage Tripler, Study of Voltage Quadrupler.



36369

TIMER APPLICATIONS USING IC-555

To Study Pulse Generator using IC-555, To Study Timer using IC-555, To Study Sequential Timer using IC-555, To Study Pulse Width Modulator (PWM) using IC-555, To Study Time Delay Circuits using IC-555, To Study Burglar Alarm Using Timer IC-555 & Breaking of wire and LDR.



36370

APPLICATION USING OP-AMP IC-741

To Study Voltage to Frequency Converter using 741, To Study Light Based PWM using 741 & Voltage to Frequency Converter, To Study Shadow Sensing using 741 & LDR, To Study Temperature to Voltage Converter using 741 & Thermistor.



36371

STUDY OF PROXIMITY SENSOR

To Study the Inductive Proximity Sensor as a Metal Detector, To Study the Capacitive Proximity Sensor as an Object Detector, To Study the Optical Sensor as an object Detector, To Study Hall Effect Sensor as a Magnetic Pole Detector.



36372

TO STUDY OF LOGARITHMIC AND ANTI-LOGARITHMIC AMPLIFIER

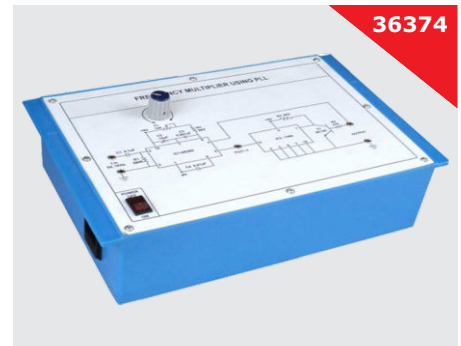
To Study Temperature Compensated Logarithmic Amplifier and Study its Frequency Response, To Study Temperature Compensated Anti-Logarithmic Amplifier and Study its Frequency Response, Two Digital DC Voltmeter ranging from $\pm 1.999V$ displaying input and output voltage, Four OP-AMPS.



36373

STAIRCASE GENERATOR (USING IC 555 AND OP-AMP IC-741)

To study the free running Staircase Generator, $\pm 15V$ D.C. at 60mA IC regulated power supply internally connected, One IC 555 Timer, Two OP AMP 741.



36374

FREQUENCY MULTIPLIER USING IC-555 AND OP AMP IC-741

To study frequency multiplier using PLL chip to multiply the input frequency by a factor of five, 10 V and -10 V D.C. at 100mA, IC regulated power supply, 5 V DC at 50mA, IC regulated power supply.



Products Installation at Kenya - 2018



10006

PC BASED MOTORISED ANTENNA TRAINER

Variation of field strength with distance, Plot radiation pattern of omni directional antenna, Plot radiation pattern of directional antenna, Polarization of vertical and horizontal antenna.



10008

ANTENNA TRAINER WITH 11 ANTENNAS

Sine Waveforms, 750 MHz approximately (output adjustable) RF Generator, 1 KHz approximately (output adjustable) Tone Generator, Forward & Reverse (selectable) Directional Coupler, Slider type Matching Stub, 0-360 deg. Resolution 1 deg. Antenna Rotation.



10009

ANTENNA TRAINER WITH 22 ANTENNAS

Sine Waveforms, 750 MHz approximately (output adjustable) RF Generator, 1 KHz approximately (output adjustable) Tone Generator, Forward & Reverse (selectable) Directional Coupler, Slider type Matching Stub, 0-360 deg. Resolution 1 deg. Antenna Rotation.



10010

MOTORISED ANTENNA TRAINER WITH PLOTTING SOFTWARE AND 22 ANTENNAS

Microcontroller Based High Precision DC Stepper Motor, Automatic Zero Point setting, 4 Built-in DC Power Supply, Instant Plotting of radiation Pattern, Resolution 1.80, RS232 data link to PC.



10011

ADVANCED ANTENNA TRAINER WITH VARIABLE FREQUENCY (550 MHZ - 850 MHZ) AND 11 ANTENNAS

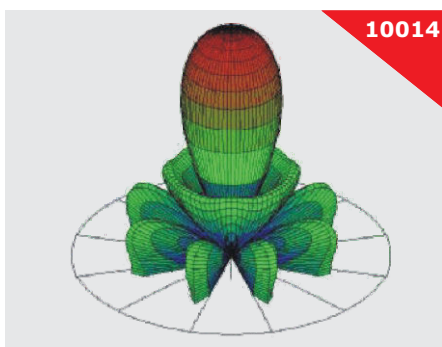
Study of Simple Dipole I/2 Antenna, Performing Polarisation Test and Modulation Test, Study of Reciprocity Theorem, Study of variations in the radiation strength at a given distance from the antenna.



10012

ADVANCED ANTENNA TRAINER WITH VARIABLE FREQUENCY (550 MHZ - 850 MHZ) AND 22 ANTENNAS

Study of Simple Dipole I/2 Antenna, Performing Polarisation Test and Modulation Test, Study of Reciprocity Theorem, Study of variations in the radiation strength at a given distance from the antenna.



10014

PERSONAL COMPUTER AIDED ANTENNA DESIGN SOFTWARE

3-D color pattern plots, Impedance matching with Smith chart, Analysis of circular planar arrays, V-dipole antenna analysis, Wire loop antenna analysis, Log periodic dipole array analysis, More general wire antenna geometries.



10020

ANTENNA TRAINER

RF Generator provides RF generated output of approx. 750 MHz, Provision for output adjustments provided, Tone Generator provides Tone generated output of approx. 1 KHz, Provision for output adjustments provided, Direction Coupler forward And Reverse Direction Coupler.



10020M

ANTENNA TRAINER (MOTORISED)

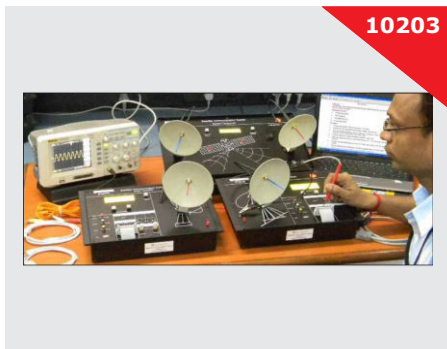
Slider Type Matching Stub provided, Digital meter is provided for Forward & Reverse Indication, Microcontroller based stepper motor to rotate Antenna in steps, Windows based software, RS232 interfaces to communicate with PC, Goniometer is provided on main panel.



10025

MOTORISED ANTENNA TRAINER

Single training system to teach all types of antenna measurement, Covers UHF, L, and ISM Bands, Software controlled PLL Synthesized Source and Detector working upto 3GHz with high dynamic range of power Transmission.



10203

SATELLITE COMMUNICATION TRAINER

Transmitter with selectable frequency conversion, Simultaneous communication of three different signals, Communicate Audio, Video, Digital data, PC data, Tone, Voice, function generator waveforms etc, 2414 - 2468MHz PLL microwave operation, Communication of external broad band digital signal.



10203B

SATELLITE COMMUNICATION TRAINER KIT

Simultaneous communication of three different signals, Communicate Audio, Video, Digital data, PC data, Tone, Voice, function generator waveforms etc, 5740-5880 MHz PLL microwave operation, Communication of external broad band digital signal, Choice of different transmitting and receiving frequencies.



10204

POWER & DIFFERENTIAL AMPLIFIER TRAINER

Study of the working of a Doppler Radar, Study of determine the Velocity of the object moving in the Radar range, Study of understand the principle of Doppler Radar of Time and Frequency measurement with the help of moving pendulum, Study of an Alarm System by using Radar.



10205

DOPPLER RADAR TRAINING SYSTEM

Demonstrates the principle of Doppler shift of reflected electro magnetic wave from a moving object Speed, rotation, level control, contact less vibration measurement, Observation and measurements with software, High gain Parabolic antenna provided for narrow beamwidth and clutter reduction.



10208

RF SPECTRUM ANALYSER

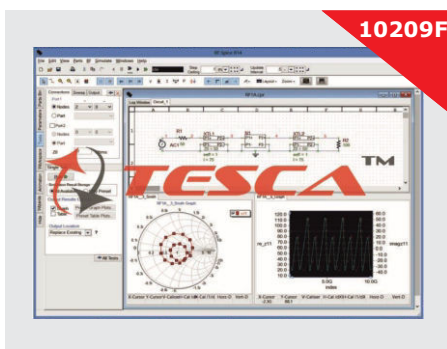
50MHz to 500MHz measurement range, Waveform and modulation independent, Low cost with high performance, Inbuilt frequency counter, Wide input range -85dBm to 20Vp-p, RF modules for experimentation, Tracking signal source for network analysis.



10209

BASIC RADIO FREQUENCY (RF) LAB

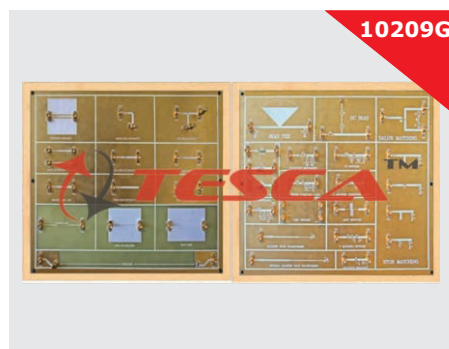
A very useful component trainer to show all the components used in electronics circuits / laboratory, Useful, low cost. Multipurpose, minilab for linear, digital & hybrid circuits, Saves time and money in experimentation as no soldering is required to try out new circuit and component can be reused.



10209F

RF DESIGN SIMULATION SOFTWARE ACADEMIC RESEARCH 5/10 USER

Streamlined user interface and quick schematic entry using a large set of keyboard shortcuts for generic parts and a versatile wiring tool, More than 25,000 analog, digital and RF parts including hundreds of realistic behavioral models for resistors, inductors and capacitors.

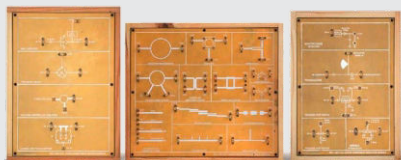


10209G

RF TRAINING KIT (BOARD 1 AND 2)

Study of RF Matching Circuit, Study of High Frequency Effect, Study of RLC Resonance Circuits, Measurement of DC Bias Circuits, Study of Impedance Matching Network, Study Discontinuities in Microwave Circuits, Study Microstrip transmission line technologies.

10209H



ADVANCED MICROSTRIP COMPONENT TRAINER (3GHZ)

Determination of insertion loss (S21) of Microstrip Ring Resonator, Measurement of Isolation Characteristics of Circulator, Measurement of Attenuation Power for Pi Attenuator, Gain Measurement of MMIC Amplifier, PIN Diode Modulator Investigations.

10209
HM

MOTORISED MICROSTRIP TRANSMISSION LINE TRAINER

Observation of standing wave pattern at various frequency, Analysis of minima and maxima creation at various frequency, Analysis of various load condition on Microstrip transmission line, Determination of unknown Load Impedance Characterization.

10209I



3GHZ RF GENERATOR AND DETECTOR

Determination of insertion loss (S21) of Microstrip Ring Resonator, Measurement of Isolation Characteristics of Circulator, Measurement of Attenuation Power for Pi Attenuator, Gain Measurement of MMIC Amplifier, PIN Diode Modulator Investigations.

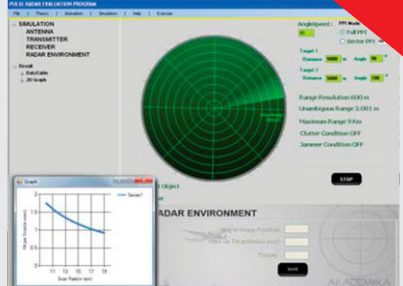
10211A



DOPPLER RADAR TRAINER

Introduction to Doppler Radar, Study of Doppler Shift and How it is being used in various applications, To find out the time period and frequency of pendulum To measure the speed of fan in RPM, To measure the frequency of peizo electric buzzer.

10211D



PULSE RADAR SIMULATION SOFTWARE-SINGLE USER

Antenna, Transmitter, Receiver characteristic simulation, Jammer, surface clutter, rain characteristic simulation, Target data and display characteristic simulation, Study of antenna gain vs range, Study of target RCS vs range, Study of pulse width vs pulse energy.

10211E



PULSE RADAR SIMULATION SOFTWARE-05 USER

Antenna, Transmitter, Receiver characteristic simulation, Jammer, surface clutter, rain characteristic simulation, Target data and display characteristic simulation, Study of antenna gain vs range, Study of target RCS vs range, Study of pulse width vs pulse energy.

10212



GPS TRAINER

Understanding concept of GPS, Establishing Link between GPS Satellite & GPS Trainer, Measurement of Latitude & Longitude, To Study Effect of DOP, Study of HDOP & VDOP, Analysis of Elevation Azimuth SNR, Study of PRN code.





DIGITAL LAB

To Study Logic gates operation, To verify De-morgan's theorem with boolean logic equations, To Study Binary to Gray code conversion, To Study Gray code to Binary conversion, To Study Binary to Excess-3 code conversion, To Study Binary Adder and Subtractor, To Study Binary Multiplier.



DIGITAL ELECTRONICS LAB SET UP

To Study transistor as a switch, To Study AND, OR, NOT, NAND, and NOR gates 03 Logic families (S24), different types of outputs, To Study NAND synthesis, To Study Combinatory circuits 06 XOR AND XNOR, To Study comparator, Decoder, To Study BCD Decoder and BCD to 7 segment decoder.



ANALOG LAB

Study of Diodes in DC circuits, Study of Light Emitting Diodes in DC Circuits, Study of Half wave rectifier, Study of Full wave rectifier, Study of Zener Diode as a voltage regulator, Study of Low pass filter, Study of High pass filter, Study of band pass filter, Study of CE configuration of NPN transistor.



ANALOG ELECTRONICS LAB SET UP

Study the Type of Resistor, Study the Type of capacitor, To Study and test Diode as Half wave, Full Wave & Full Wave Bridge Rectifier, Study of Voltage regulator, Study of Voltage Transistor, Study of BreadBoard, Study of Power Amplifier.



DIGITAL - ANALOG LAB

Study of Diodes in DC circuits, Study of Light Emitting Diodes in DC Circuits, Study of Half wave rectifier, Study of Full wave rectifier, Study of Zener Diode as a voltage regulator, Study of transistor series voltage regulator, Study of transistor shunt voltage regulator.



DIGITAL-ANALOG TRAINING SYSTEM

Study of Diodes in DC circuits, Study of Light Emitting Diodes in DC Circuits, Study of Half wave rectifier, Study of Full wave rectifier, Study of Zener Diode as a voltage regulator, Study of transistor series voltage regulator, Study of transistor shunt voltage regulator, Study of Low pass filter.



DIGITAL TRAINER

To Study AND Gate (static operation), To Study OR Gate (static operation), To Study Dynamic Operation of AND Gate and OR Gate, To Study NOT Gate, To Study NAND Gate, To Study NOR Gate, To Study Exclusive OR Gate (Also called XOR Gate), To Study XNOR Gate, To Study Three State Buffer, To Study RS Latch.



LOGIC LAB

To Study Logic gates operation, To Study To prove De-morgan's theorem with boolean logic equations, To Study Binary to Gray code conversion, To Study Gray code to Binary conversion, To Study Binary to Excess-3 code conversion, To Study Binary Adder and Subtractor.



DIGITAL LAB STATION

To verify the dual nature of Logic Gates, Study of Flip-Flops RS, JK, D&T, Study of Multiplexer and Demultiplexer, Study of 4 Bit Binary up and down counter, Study of 8 to 3 Line Encoder, Study of 3 to 8 Line Decoder, Study of Shift Register (SIPO).



POWER PROJECT BOARD

Unique solder-less large size, spring loaded breadboard consisting of 3 Terminal Strips with 1920 tie points and 5 Distribution Strips with 500 tie points, totaling to 2420 tie points, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



POWER PROJECT BOARD (I.C. BREAD BOARD SYSTEMS)

Two full terminal strips, Tie points 1280, One distribution strip, Tie points 100, (total of 1380 tie/contact points) and two terminals (Binding Posts).



POWER PROJECT BOARD (I.C. BREAD BOARD SYSTEMS)

Two full terminal strips, Tie points 1280, Three distribution strips, Tie points 300 (total of 1580 tie/contact points) and three terminals (Binding Posts).



BREAD BOARD CIRCUIT LAB

Study of basic gates and verification of their truth tables, Study and verifications of the law of Boolean algebra and De-Morgan's Theorems, Study of important TTL terminologies. Verification of important TTL Circuit parameters, Construction and verification of various types of flip - flops using gates and IC's.



DIGITAL ELECTRONIC TRAINER

Study of NOT, OR, AND, NOR, NAND, EX-OR, EX-NOR gates, Study and verifications of the law of Boolean algebra and De-Morgan's Theorems, Study of important TTL terminologies, Verification of important TTL Circuit parameters.



DIGITAL LOGIC TRAINER (TTL)/LOGIC TRAINER BOARD (BASED ON 74 SERIES)

Study of Quad 2-input NAND Gate, Study of Quad 2-input NOR Gate, Study of Hex Inverter, Study of Quad 2-input AND Gate, Study of Dual 4-input NAND Schmitt Trigger, Study of Quad 2-input OR Gate.



DIGITAL LOGIC TRAINER (CMOS)/LOGIC TRAINER BOARD (BASED ON 74C/4000 SERIES)

Study of Quad 2-input NAND Gate, Study of Quad 2-input NOR Gate, Study of Inverter Circuit, Quad 2-input AND Gate, Study of Quad 2-input NAND Schmitt Trigger, Study of Quad 2-input OR Gate, Study of Dual 2-wide 2-i/p AOI Gate.



DIGITAL I.C. TRAINER (TTL) (FOR VERIFICATION OF TRUTH TABLE)

Output D.C. Voltage Fixed 5V $\pm 1\%$, Output Current 1.5 Amp, Load Regulation $\pm 1\%$ of the highest specified output voltage, Ripple And Noise less than 5 mV, Variable Clock Frequency 1 Hz -100 Hz, 100 Hz -10 KHz, 10 KHz - 1 MHZ, Logic Inputs Four switches for High/Low.



BREAD BOARD TRAINER

Output D.C. Voltage Fixed 5V $\pm 1\%$, Output Current 2 Amp, Load Regulation $\pm 1\%$ of the highest specified output voltage, Clock Pulses 1 Hz and 1 KHz by manual pulser, Logic Inputs 8 switches for High/Low.



33514

LOGIC GATES CIRCUIT TRAINER

Ripple and Noise less than 5 mV, Clock Input Device Clock pulse of 1 second, Debounced Logic Switch 4 Input voltage of HI level 3 2.25V, Input voltage of LO level 0.8V, 4Bit LED Ouput Indicator Maximum input voltage less than or equal to 5V D.C.



33515

ELECTRICITY TRAINER

5V. 200 mA DC power Supply, 12V. 200 mA DC power Supply, 6V, 1A AC power Supply, 12V Relay, 80 Ohm Galvanometer Resistance, 1 Pole, 2 Way Toggle Type Switch.



33516

ELECTRICITY LAB

Switch SPDT, Switch DPDT, Push switch, Logic Switches 2 Push type, Relay 12V DC One change over, Buzzer/Electric Bell, Transformer Input 6-0-6V and Output 6-0-6V.



33517

POWER ELECTRONICS LAB

To study the characteristics of SCR and plot its V-I Characteristics, To study the Gate control characteristics of SCR and It's graph, To study the characteristics of UGT and calculate interbase resistance and intrinsic standoff ratio, To study the characteristics of MOSFET, To study the characteristics of IGBT, To study the characteristics of DIAC and plot its V-I Characteristics curve.



33519

ELECTRICAL & ELECTRONIC SYSTEM TRAINER MASTER UNIT

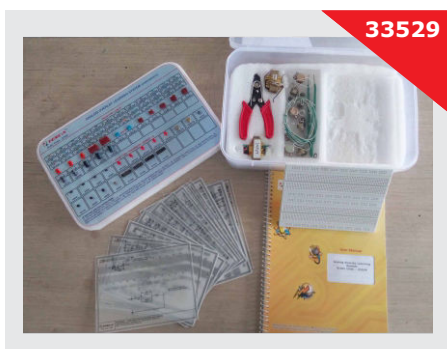
less overlay showing circuit & its connect ion tag numbers for easy connectivity, Connection through Sturdy 4mm Banana Sockets & Patch Cords, Hands on learning by constructing circuits using built in power bread board panel as well as optionally using Discrete component panel.



33528

DIGITAL OVERLAY LEARNING SYSTEM

Basic logic functions, Boolean algebra and simplification of logic equations, De Morgan's theorem, TTL NAND/NOR gates definitions and operation, NAND/NOR gates definitions and operation, The exclusive-OR and its applications, The full-adder and full-subtractor, The bistable or flip-flop (FF).



33529

ANALOG OVERLAY LEARNING SYSTEM

To Study Light Emitting Diodes in DC Circuits, To Study Silicon Diodes in Half Wave Rectification, To Study Silicon Diodes in Full Wave Rectification, To Study use of a Diode Bridge in DC Circuits, To Study use of a Diode Bridge in AC Circuits, To Study Filtering and Regulation of a Pulsating DC Voltage.



33530

CIRCUIT DEVELOPMENT PLATFORM

Unique solder-less large size, spring loaded breadboard consisting of two Terminal Strips with 640 tie points and 2 Distribution Strips with 100 tie points each, totaling to 840 tie points, Input for positive or negative pulse triggering from external source.

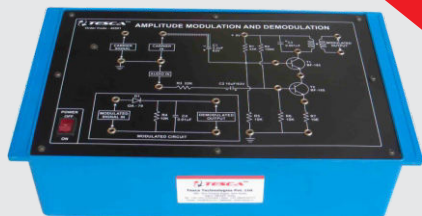


33534

ANALOG COMPUTER

Computer assisted Training through use of Lab view based executables, optionally supported by variety of virtual instrumentation like toggle switches, LEDs, DMM, CRO etc. interface through USB IO module, Emphasis on troubleshooting skill through fault switches, locate hidden the experiment panels.

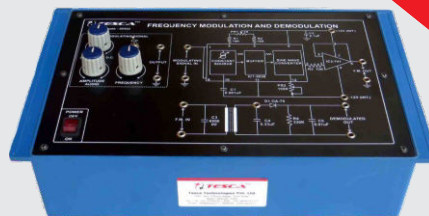
40501



AMPLITUDE MODULATION & DEMODULATION TRAINER

To study Temperature / Fire alarm, To observe the carrier waveforms on C.R.O, To modulate carrier with audio signal and to observe waveforms on C.R.O, To measure percentage modulation of the amplitude modulated waveform.

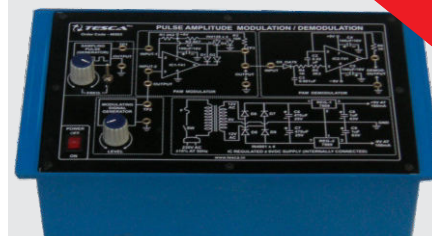
40502



FREQUENCY MODULATION & DEMODULATION TRAINER

To observe the effect of D.C. voltage on frequency of carrier waveform, To frequency modulate the carrier with Audio signal, observe F.M. waveform on C.R.O., and measure its modulation index, To demodulate the F.M. signal and observe the output on C.R.O.

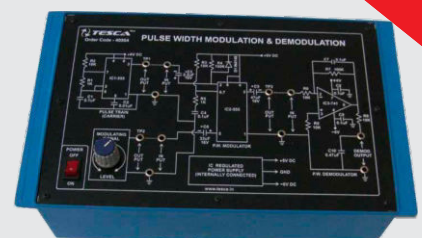
40503



PULSE AMPLITUDE MODULATION & DEMODULATION (PAM) TRAINER

To demonstrate sampling of a sine wave audio signal thereby converting it into Pulse Amplitude Modulated Signal (PAM), To demonstrate demodulation of PAM signal thereby recovering the sine wave audio signal, To demonstrate the effect of sampling-rate on the distortion in recovered sine wave audio signal.

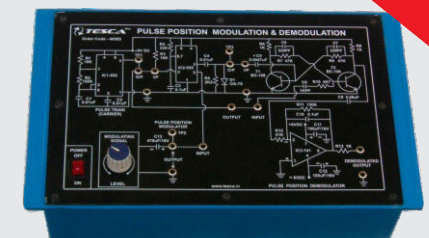
40504



PULSE WIDTH MODULATION & DEMODULATION (PWM) TRAINER

To modulate a pulse carrier with sinusoidal signal to obtain a Pulse Width Modulated signal, To demodulate the Pulse Width Modulated signal to obtain the modulating signal.

40505



PULSE POSITION MODULATION & DEMODULATION (PPM) TRAINER

To modulate a pulse train (carrier) with a sinusoidal signal and to obtain a Pulse Position Modulated signal, To demodulate a Pulse Position Modulated signal to recover the modulating signal.

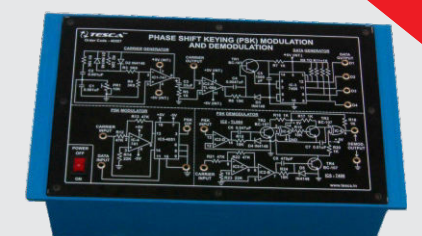
40506



(FSK) MODULATION & DEMODULATION TRAINER

Study of NOT, OR, AND, NOR, NAND, EX-OR, EX-NOR gates, Study and verifications of the law of Boolean algebra and De-Morgan's Theorems, Study of important TTL terminologies, Verification of important TTL Circuit parameters.

40507



PHASE SHIFT KEYING MODULATION AND DEMODULATION (PSK) TRAINER

To study the generation of the Phase Shift Keyed output and also to demodulate the PSK output, $\pm 5V$ D.C. at 100mA IC regulated power supply internally connected.

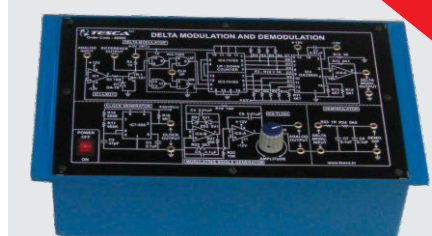
40508



AMPLITUDE SHIFT KEY MODULATION AND DEMODULATION (ASK) TRAINER

To study the generation of the Amplitude Shift Key output and also to demodulate the ASK output, Binary Counter (Divided by 16 counter), Carrier Signal Generator 4 to 10KHz, Amplitude Shift Key (ASK) Modulator.

40509



DELTA MODULATION & DEMODULATION TRAINER

To study delta modulation and demodulation, Quad Op-Amp IC, Two Up/Down counter IC, Digital to Analog convertor DAC IC, The unit is operative on $230V \pm 10\%$ at 50Hz A.C. Mains.



40510

TRANSMISSION LINE TRAINER

Measuring the characteristics of a line, Measuring the attenuation of a line, Measuring the Input Impedance of the line, Phase displacement between the current & voltage at input of line, Frequency characteristic of the line.



40511

DIGITAL TIME DIVISION MULTIPLEXING TRAINER

To study Digital Time Division Multiplexing & Demultiplexing, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains, Adequate no. of patch cords stackable from rear both ends 4mm spring loaded plug length $\frac{1}{2}$ metre.



40512

(PCM) TRAINER

To study Pulse Code Modulation & Demodulation, Data display with LED's. Adequate no. of other electronic components, Mains ON/OFF switch, fuse and jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



40513

ANALOG SIGNAL SAMPLING & RECONSTRUCTION TRAINER

To generate PAM signal by modulating with audio signal by natural sampling, To generate PAM signal by modulating with audio signal by Flat-Top sampling, To generate PAM signal by modulating with audio signal by Sample / Hold circuit, To demodulate using Low Pass Filter to reconstruct input(sine wave).



40514

DIFFERENTIAL PULSE CODE MODULATION & DEMODULATION TRAINER

To study Differential Pulse Code Modulation & Demodulation, Audio Frequency Oscillator 10Hz to 100Hz for modulation, DPCM Modulator (DPCM ENCODER), DPCM Demodulator (DPCM DECODER).



40515

DIFFERENTIAL PHASE SHIFT KEYING MODULATION & DEMODULATION (DPSK) TRAINER

To study Differential Phase Shift Keying Modulation and Demodulation, IC-2 B & C, IC-3 C & D, IC-4 D-FF2 and Transistor 2, 3 & 4 are used as Demodulator, Adequate no. of other electronic components, Mains ON/OFF switch, fuse and jewel light.



40516

DSB / SSB AMPLITUDE MODULATION & DEMODULATION TRAINER

To Study of Amplitude Modulation & Demodulation, Generate AM signal by modulation with audio signal generator. Measure modulation index of A.M. signal, Demodulate AM signal using diode detector(envelope detector), Generate voice signal AM modulation and demodulation using Mic.



40517

DSB / SSB AM TRANSMITTER TRAINER

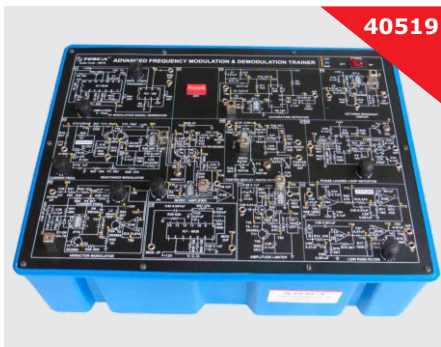
Study of carrier frequency generation, Study of DSB / SSB AM Generation & Transmission, Study of Transmitter tuned circuits, Modulators (Two Nos) : Double Balanced Amplitude modulator, Ceramic Band Pass Filter 452 KHz to 458 KHz.



40518

DSB / SSB AM RECEIVER TRAINER

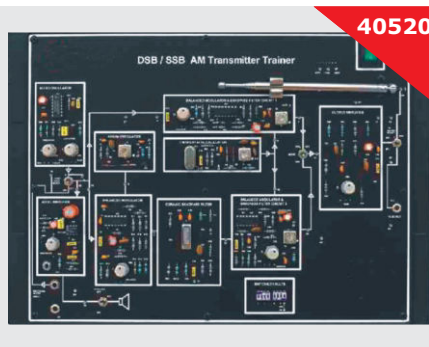
Study of DSB & SSB AM reception & deletion by diode / product detectors, Study of AGC, Study of receiver tuned circuits, Study of Sensitivity, Selectivity & Fidelity of Receiver.



40519

ADVANCED FREQUENCY MODULATION & DEMODULATION TRAINER

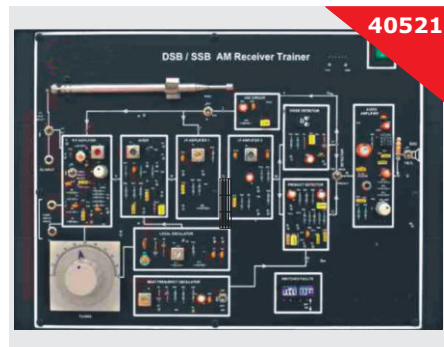
To Study Frequency Modulation via varactor / reactance Modulation, To Study Frequency Demodulation via Detuned Resonant / Ratio / Quadrature / Foster - Seeley / Phase locked loop detector, To Study Separate VCO circuit to demonstrate FM waveform.



40520

DSB/SSB AM TRANSMITTER TRAINER

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



40521

DSB/SSB AM RECEIVER TRAINER

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.



40522

FREQUENCY MODULATION/DEMODULATION TRAINER

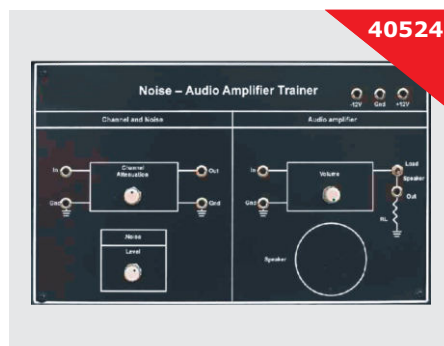
Study of 2 types of FM modulators & 5 different types of demodulators, Effect of noise on FM transmission & Study of tuned circuits, Separate VCO circuit to demonstrate FM Waveforms.



40523

FM COMMUNICATION TRAINER

To Study Frequency deviation and modulation index, To Study Marker insertion to evaluate frequency deviation, To Study Spectrum of FM signal, To Study FM demodulation (PLL Detector).



40524

NOISE-AUDIO AMPLIFIER TRAINER

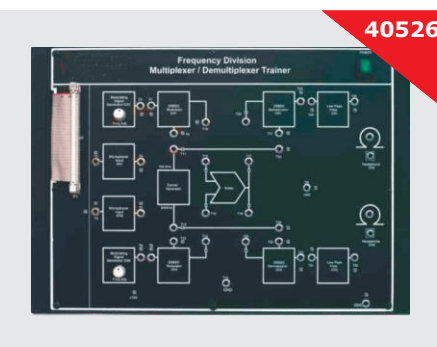
Examine the operation of a noise generator, Examine the operation of a signal attenuation network, Measurement of the frequency response and power output.



40525

SYNCHRO AM DETECTOR

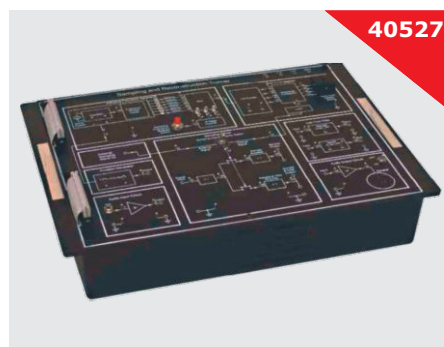
Study and observe the working of Amplitude Modulator, Study and observe frequency of Synchronous detector, A self contained learning platform, Functional blocks indicated on board mimic, On board modulator and demodulator.



40526

FDM TRAINER

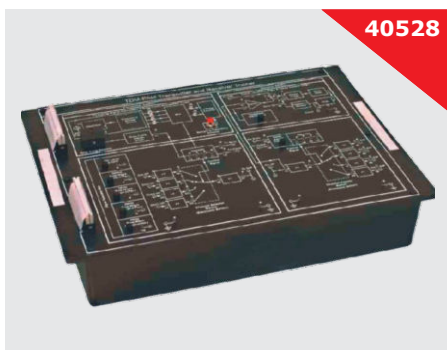
Study of Frequency Division Multiplexing / Demultiplexing with sinusoidal & audio inputs, Study of Fourier Spectrum of FDM, Study of DSBSC modulation / Demodulation, Study of Fourier Transform of DSBSC Modulation.



40527

SAMPLING & RECONSTRUCTION TRAINER

Study of Signal Sampling and Reconstruction Technique, Study of Nyquist criteria for sampling & reconstruction, Study of Aliasing & Effect on Reconstruction of Signal due to various Sampling Frequencies, Study of Effect on Amplitude of Reconstructed signal by varying Sampling.



40528

TDM PULSE AMPLITUDE MODULATION AND DEMODULATION TRAINER

To Study Pulse Amplitude Modulation technique, To Study Time Division Multiplexing and Demultiplexing, To Study PLL as Frequency Multiplier to generate clock from sync signal.



40529

TDM PULSE CODE MODULATION AND TRANSMITTER TRAINER

To Study Pulse Code Modulation, To Study A/D Converter, Parallel to Serial Data conversion, To Study Time Division Multiplexing of PCM Data, To Study Synchronization by Pseudo random Code, To Study Error Check Codes with switched faults.



40530

TDM PULSE CODE MODULATION RECEIVER TRAINER

To Study PCM Demodulation Technique, To Study Time Division Demultiplexing of PCM data, To Study Clock Regeneration by PLL, To Study Effect of induced faults in the transmitter & receiver, To Study Signal recovery in 3 connecting modes between transmitter & receiver.



40531

DELTA, ADAPTIVE DELTA AND DELTA SIGMA MODULATION / DEMODULATION TRAINER

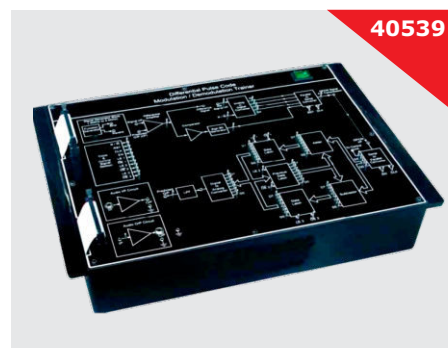
Delta Modulation & Demodulation, Effect of slope overload and increased integrator gain in Delta Modulation, Transmitter and Receiver on same board, Clock generation from crystal, Switch selectable sampling rates.



40536

PAM-PPM-PWM MODULATION & DEMODULATION TRAINER

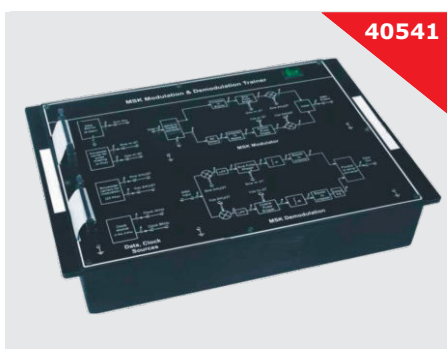
PAM-PPM-PWM Modulation & Demodulation techniques, using Natural & Flat-top sampling, Analog Sample, Sample & Hold and Flat-top outputs, Selectable 4 different sampling pulse frequencies on board, Input-output and test points provided on board.



40539

DIFFERENTIAL PULSE CODE MODULATION (DPCM) TRAINER

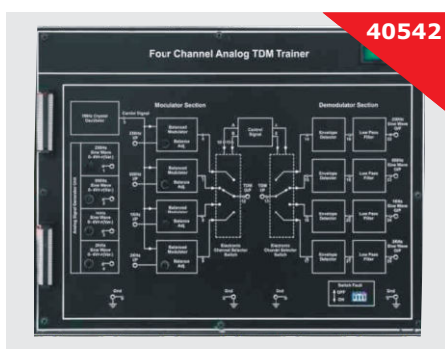
Onboard DPCM Transmitter and receiver, Onboard Signal generator block, Onboard Audio input processing circuit, Onboard audio output processing circuit, Clock and entire control Signal section.



40541

MSK MODULATION/DEMODULATION TRAINER

Self contained and easy to use, Functional blocks indicated on board mimic On board Data Generator, On board Carrier Generator, On board clock generators, MSK Modulator, MSK Demodulator.



40542

FOUR CHANNEL ANALOG TDM TRAINER

Study of DSB & DSBSC AM generation, Study of Time division multiplexing & demultiplexing of analog signals, Study of the effect of induced faults, Study of carrier frequency generation, Study of DSB & DSBSC AM reception & detection by Envelope detectors.



40543

BASIC CDMA TRAINER

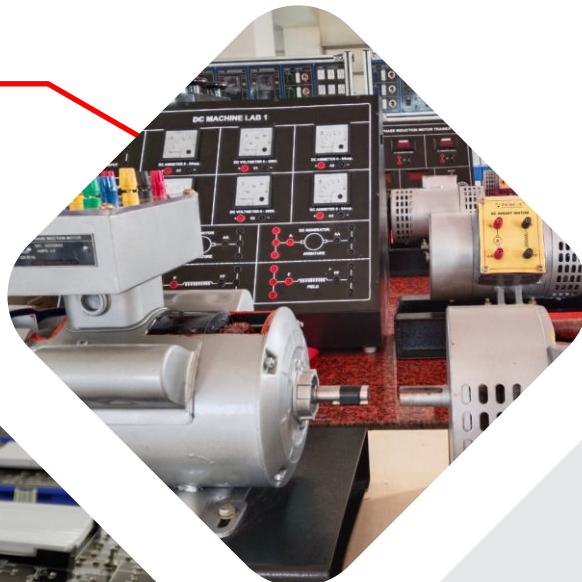
To study theory of CDMA DSSS modulation & Demodulation, To generate CDMA-DSSS signal, To demodulate CDMA-DSSS signal using BPSK, To study pseudo random bit sequence generation.



CDMA - DSSS/FHSS TRAINER

Study of Data and PN Sequence Generation, Study of Direct Sequence Spread Spectrum (DSSS) Based Modulation, Study of Demodulation of DSSS Modulation, Study of Generation of PN Sequence, To Study Generation of FHSS Modulation Signal, Demodulation of FHSS Modulation.

Iraq
Shipment
2023



Shipments



PC BASED 32 CHANNEL LOGIC ANALYZER: 250MHZ, 256K MEMORY, 2 TRIGGER LEVELS (EXPANDABLE TO 64 CHANNELS)

High sampling (Up to 250M Sa/s), 32 data input channels, Data buffer (up to 256K samples per channel), High data bandwidth of 125MHz, Connects to Desktop PC or Notebook via USB Interface (Version 1.1/2.0).

Greece
Shipment
2023

Rwanda
Shipment
2023



BASIC GSM TRAINER

GSM 900 / 1800, E - GSM, Asynchronous, Transparent GSM data services, Transparent modes 14.4 kbits/s, 3 V SIM Interface, 63 dB Dynamic range.



OPTIONAL APPLICATION MODULE FOR BASIC GSM TRAINER

4"Scienterminal" software tool, Description / Explanation / Visualization of the AT commands on one screen, Study of GSM real time working fundamentals, Appliances switching by SMS using AT commands.



ISDN TRAINER WITH POWER SUPPLY

To Study Star, Ring, Bus Topology, To Study 5 Port Hub, To Study 4 port ADSL connection with router, To Study WLAN access, To Study Access point creation.



40554

DATA COMMUNICATION TRAINER

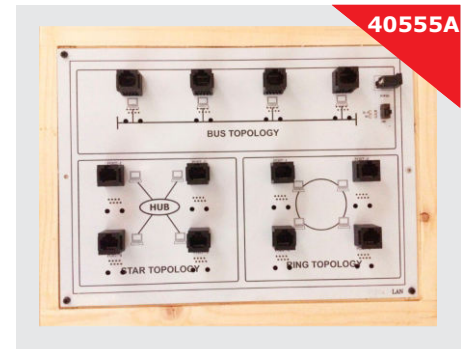
Study of Synchronous Serial Communication, Study of Asynchronous Serial Communication, Study of PC-PC Serial Communication using RS-232 cable, Study of different Modem used in Serial Communication.



40555

LAN TRAINER

Study & implementation of cable designs in networking, Implementation of PC to PC with IEEE 802.3, Implementation of Star topology using 10BaseTx, Implementation of Bus topology using 10Base2, Implementation of Ring topology using Db9, Implementation of Peer to Peer network.



40555A

LOCAL AREA NETWORK TRAINER

Study of network topologies, Study of Ethernet LAN and Wireless LAN, Study of data encryption and decryption, Implementation and study of stop and wait protocol, Implementation and study of go back to n protocol.



40555B

LAN NETWORK TRAINER

Study the working of PC to PC Communication, Study the working of Bus Topology, Study the working of Star Topology, Study the working of Wireless Communication, Study the working different protocols such as Stop and wait, Go back to n, Selective repeat and sliding window.



40556

LAN TRAINER

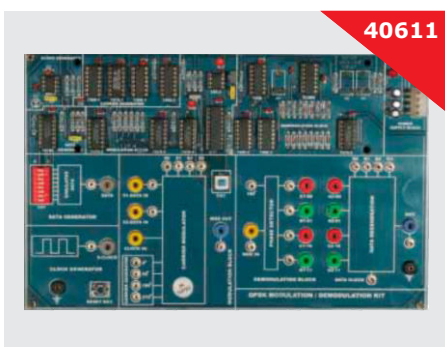
Three sets of onboard cabling setup for Ethernet, On board parallel port direct cable connection setup, On board serial port direct cable connection setup, A 10 mbps hub is provided onboard with the circuitry exposed, The power supply circuit for Hub is provided onboard.



40557

ADVANCED COMMUNICATION SYSTEM TRAINER

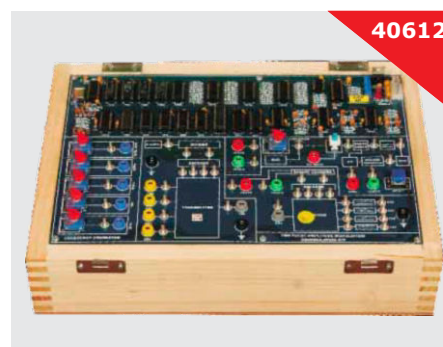
To Study DC Characteristics of transmitter diodes, To Study Sensitivity of Optical Fiber, To Study AC Frequency Response - Analog Link & B.W, To Study Digital Frequency Response - Digital Link & B.W, To Study Numerical Aperture, To Study Losses in cable.



40611

QPSK MODULATION/DEMULATION TRAINER

All interconnections are made using 2mm banana Patch cords, Test points are provided to analyze signals at various points, All ICs are mounted on IC Sockets, Bare board Tested Glass Epoxy SMOBC PCB is used.



40612

TDM PULSE AMPLITUDE MODULATION/DEMULATION TRAINER

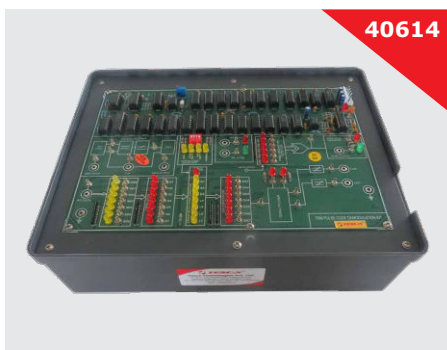
Study of Time Division Multiplexing and Demultiplexing using Pulse Amplitude modulation and demodulation, Study of TDM Pulse Amplitude modulation and demodulation With Channel Identification Information, Study of TDM Pulse Amplitude modulation and demodulation using PLL method.



40613

TDM PULSE CODE MODULATION TRAINER

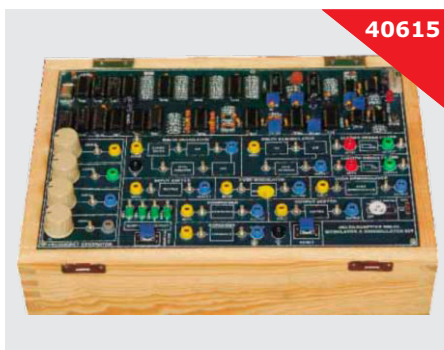
Study of Pulse Code Modulation, To study the principles of Analog to Digital and Digital to Analog Conversion, Study of Pseudo Random Sequences, Study of Error Check Code Logic None Parity Coding, Odd Parity Coding, Even Parity Coding, Hamming Coding.



40614

TDM PULSE CODE DEMODULATION TRAINER

Study of Pulse Code Demodulation, Study of Error Check Code Logic - None Parity Coding, Odd Parity Coding, Even Parity Coding, Hamming Coding, Study of Synchronization techniques using PLL, Study of effect of faults in Modulation & Demodulation Techniques.



40615

DELTA/ADAPTIVE DELTA MODULATION/DEMODULATION TRAINER

Study of delta modulation and delta demodulation, Study of Slope Overload and Increased Integration Gain in Delta Modulation, Study of Adaptive Delta modulation and CVSD, Study of companding systems, Study Voice modulation and Demodulation (Delta).



40616

DATA CONDITIONING TRAINER

Study of Data Coding and Decoding Techniques for Non return to Zero Format, Study of Data Coding and Decoding Techniques for Phase Encoded Format, Study of Data Coding and Decoding Techniques for Return to Zero Format and Multilevel binary format, Study of Amplitude Shift Keying Modulation Techniques.



40616A

LINE CODING & DECODING KIT

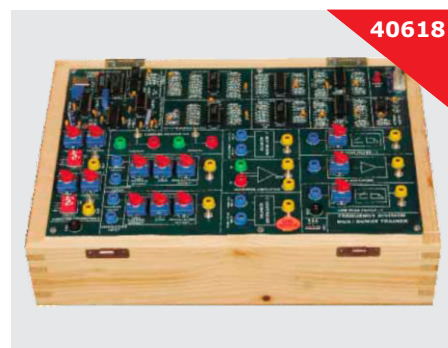
Study of Data Coding and Decoding, All interconnections are made using 2mm banana Patch cords, Techniques for Non-return to Zero Format, Study of Data Coding and Decoding, Techniques for Phase Encoded Format, Study of Data Coding and Decoding Techniques for Return to Zero Format and Multilevel binary format.



40617

DATA RECONDITIONING TRAINER

Study of different Data formats to NRZ-L Format, Study of Amplitude Shift Keying Demodulation Techniques, Study of Frequency Shift Keying Demodulation Techniques, Study of Phase Shift Keying Demodulation Techniques.



40618

FDM TRAINER

Study of Carrier Frequency Generation, Study of DSBAM Generation Circuit, Study of DSBAM Demodulation Circuit, Study of Generation of Frequency Division Multiplexer signal, Study of Generation of Frequency Division Demultiplexer signal.



40619

SYNCHRO AM DETECTOR

Study and observe the working of Amplitude Modulator, Study and observe frequency of Synchronous detector, A self contained learning platform, Functional blocks indicated on board mimic, On board modulator and demodulator.



40620

BPSK/DEPSK/DPSK MODULATION/DEMODULATION TRAINER

Study of Frequency Division Multiplexing / Demultiplexing with sinusoidal & audio inputs, Study of Fourier Spectrum of FDM, Study of DSBSC modulation / Demodulation, Study of Fourier Transform of DSBSC Modulation.



40621

QPSK/DQPSK DEMODULATION TRAINER

List of experiments are same for both 40620 and 40621, 40620 and 40621 are combined to perform the experiments, Receiver Clock generated by PLL method, Switch faults are provided to study its effects on circuits.



40622

BASE BAND TRANSMISSION/RECEPTION TRAINER

Study of pulse amplitude modulation of digital data for base band transmission, Study of data extraction and recovery in base band digital transmission, Study of transmission and reception of band limited pulse train in base band digital transmission system, Study of eye pattern.



40623

QAM/DQAM MODULATION TRAINER

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



40624

QAM/DQAM DEMODULATION TRAINER

To study Tribit decoding technique, To study Differential decoding of Data, Observation of constellation diagram, To study bandwidth efficiency of 8-QAM/DAQM, To study 8-QAM Demodulation technique, To study DQAM Demodulation technique.



40625

DPCM/ADPCM MODULATION/DEMULATION TRAINER

To study DPCM modulation and Demodulation, To study ADPCM modulation Demodulation, To study Quantization Error, To study voice communication for DPCM / ADPCM.



40626

MSK MODULATION/DEMULATION TRAINER

On Board synchronized RF carrier signal generators with frequencies of 120 KHz, 200 KHz, All interconnections are made using 2mm banana Patch cords, Bare board Tested Glass Epoxy PCB is used, Set of 2mm Patch cords for interconnections.



40627

CRC CODE/DECODE TRAINER

8 bit Digital Data generator to generate any binary input word, Selection of Data using 8-way DIP Switch, One LED indicator to indicate Power input, CRC Encoder/ Transmitter Circuit for 16 bits CRC Polynomials, CRC Decoder/ Receiver Circuit for 16 bits CRC Polynomials, Data Receiver Circuit for 8 Data bits.



40628

DATA COMMUNICATION TRAINER

Study of Serial and Parallel Port, Study of Serial Communication, Study of flow controls in Serial Communication, Study of Protocols in Serial Communication, Study of Fibre optic Communication, Study of Modem Communication, Study of Wire less Communication.



40628A

GPS TRAINER KIT

Study of satellite azimuth and elevation window using sky plot, Geographical location with (GMT/IST) with navigation window, To study geographical position using survey plotting, Study of NEMA received sentences using trace window.



40629

GSM TRAINER

Study of GSM technology, Getting started with GSM trainer, Study of GSM MODEM and it's components, Voice communication using AT commands, Sending text message using AT Commands, Study of SIM, Introduction to AT commands, Data communication using AT commands.



4G GSM TRAINER

Study of GSM technology, Getting started with GSM trainer, Study of GSM MODEM and its components, Study of SIM, Introduction to AT commands, Voice communication using AT commands.

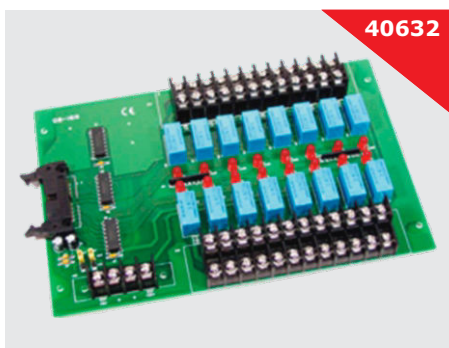


ASK, FSK, BPSK, DBPSK, MODULATION & DE-MODULATION
Study and analysis of Amplitude Shift Keying Modulation and Demodulation, Study and analysis of Integrator and Comparator block, Study and analysis of Differential encoder and decoder, Study and analysis of Differential Binary Phase Shift Keying Modulation and Demodulation.



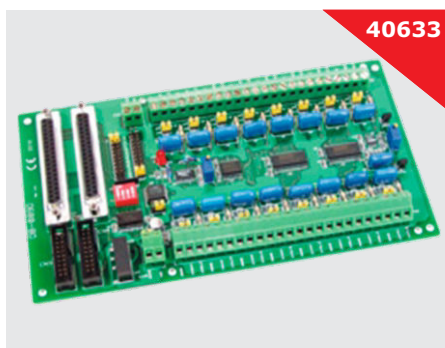
16 BIT PCI DAS CARD

The 40631 card has a universal PCI interface supporting both 3.3 V and 5 V PCI bus, This card features a continuous, 250 k Samples/Sec 16-bit resolution A/D converter, 8 K samples hardware FIFO, 2-ch 16-bit D/A converter, 32-ch programmable digital I/O and DO read back.



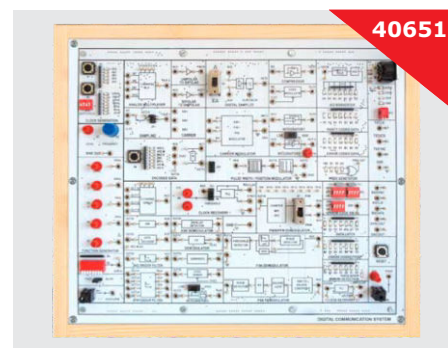
16 CHANNEL RELAY OUTPUT BOARD

The 40632 16 channel Relay Output Board consists of 16 form C relays for efficient switch of load by programmed control, It is connector and functionally compatible with 785 series board but with industrial type terminal block.



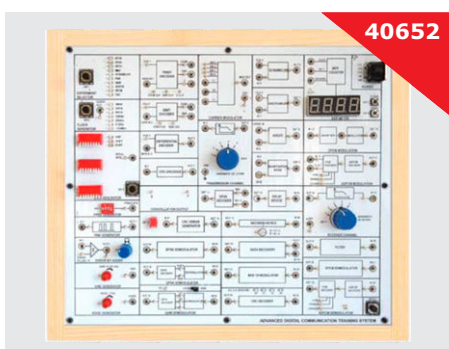
16 CHANNEL MULTIPLEXER BOARD

The 40633 is an expansion multiplexer/amplifier board for use with 82X, 1800 series 818 families, Each 40633 multiplexes 16 differential analog input channels into one analog input of the DAS board, The high grade instrumentation provides software programmable gains of 0.5, 1, 5, 10, 50, 100, 500, and 1000.



VLSI BASED ADVANCE DIGITAL COMMUNICATION TRAINING SYSTEM

Study of Carrier Frequency Generation, Study of DSBAM Generation Circuit, Study of DSBAM Demodulation Circuit, Study of Generation of Frequency Division Multiplexer signal, Study of Generation of Frequency Division Demultiplexer signal.



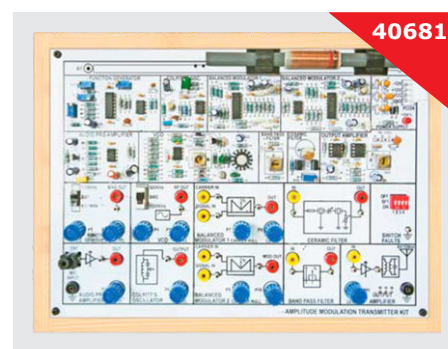
ADVANCED DIGITAL COMMUNICATION TRAINING SYSTEM

Study of BPSK modulation and demodulation, Study of transmission and reception of band limited pulse train in base band transmission system, Measurement of bit error rate using digital data, Study of DPCM modulation and demodulation.



SOFTWARE DEFINED RADIO PRINCIPLE OF COMMUNICATION ENGINEERING CONSISTING OF SDR HARDWARE (350 MHz TO 3.5GHz)

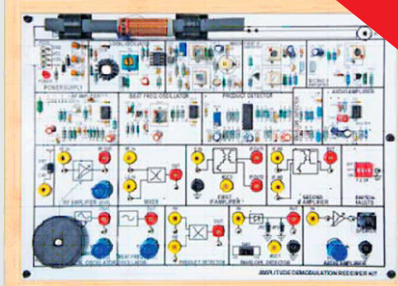
Single-core ARM® Cortex™-A9 MPCore™ @ 667 MHz, Streams up to 4MSPS with no dropped samples, Quad-core 64-bit @ 1.4GHz, Orthogonal Frequency Division Multiplexing (OFDM) Modulation.



AMPLITUDE MODULATION TRANSMITTER KIT

Study of double side band AM generator, Study of single side band AM generator, Study of adjustment of transmitter tuned circuits, Voice transmission with DSB/SSB AM transmission.

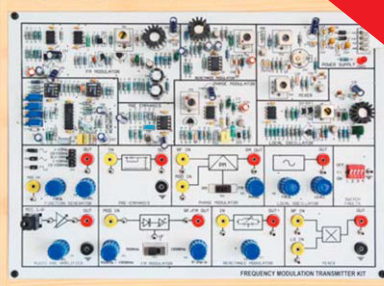
40682



AMPLITUDE DEMODULATION RECEIVER KIT

Study of DSB, SSB reception using envelope diode detector and product detector, Study of image frequencies, Study of adjustment of receiver tuned circuits, Voice reception using DSB/SSB AM receiver (super heterodyne receiver).

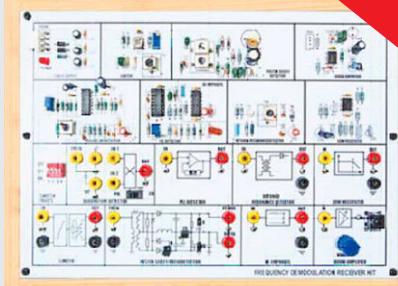
40683



FREQUENCY MODULATION TRANSMITTER KIT

Study of varactor modulator, Study of frequency modulation via phase modulator, Study of phase modulation, Voice transmission on various modulation methods, Effect of switch faults.

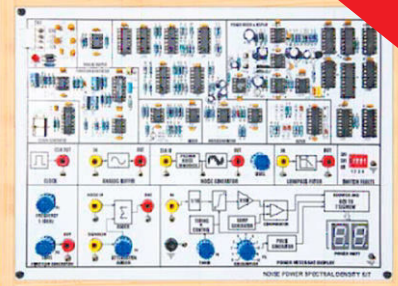
40684



FREQUENCY DEMODULATION RECEIVER KIT

Study of FM demodulators, Foster seely detector, Ratio detector, Quadrature detector Phase locked loop detector, Study of phase demodulator, Voice reception on various demodulation methods.

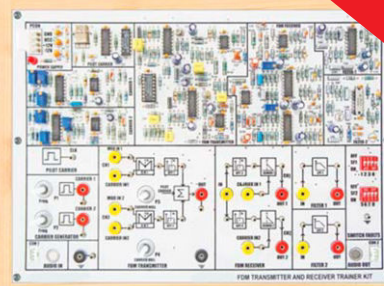
40685



NOISE POWER SPECTRAL DENSITY MEASUREMENT KIT

To observe the effect of noise on various analog systems, To calculate signal to noise ratio, To calculate noise figure, To calculate noise power and noise power spectral density, To study the effects of low pass filter on noisy signal, To study the effects of switch faults.

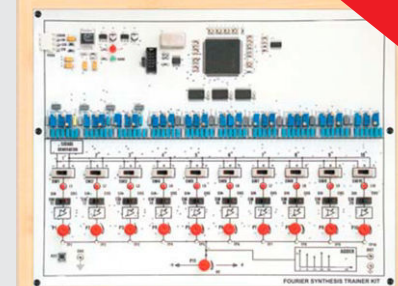
40686



FDM TRANSMITTER / RECEIVER KIT

To study frequency response of band pass filters, Study of DSB modulation, To study the operation of frequency division multiplexing, Study of DSB demodulation, To study the operation of frequency division demultiplexing, To study the effects of out of band signaling, To study effect of switch faults.

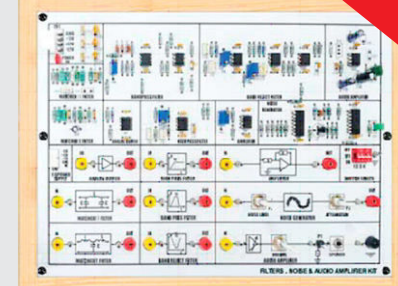
40687



FOURIER SYNTHESIS KIT

To study square wave synthesis, To study triangular wave synthesis, To study saw-tooth wave synthesis, To study AM wave synthesis.

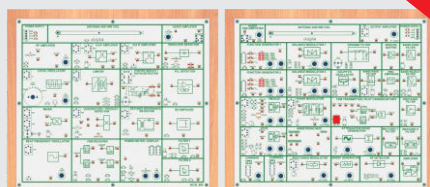
40688



FILTERS/NOISE AND AUDIO AMPLIFIER KIT

Examine the operation of a noise generator, Examine the operation of a signal attenuation network, Measurement of S/N ratio, Measurement of noise figure, Measurement of the frequency response and power output of an audio amplifier.

40689



Transmitter

Receiver

ANALOG COMMUNICATION TRAINING SYSTEM

The System is completely self-contained with all required Modulating Signals, Carriers generated on Board and the students can connect respective functional blocks using patch-chord to build their required Modulation / Receiver Scheme.

For More Info
Contact us
+91-9829132777
info@tesca.in



10901

TELEPHONE TRAINER

Understanding of telephone, Study of telephone features, Study of speech circuit, Study of ringer, Study of tone dialing, Study of pulse dialing, Study of switching mechanism between subscriber.



10902

PA (PUBLIC ADDRESS) SYSTEM TRAINER

To study the circuit & operation of a PA system and observe various intermediate waveforms, The complete circuit of a public address amplifier is printed on a single PCB, All part are soldered on PCB, Explanation, Observation, Alignment and adjustment of internal and external control possible due to single PCB.



10903A

GSM MOBILE PHONE TRAINER

Study of Transmitted/Received RF signals, Study and observe signal constellation of GMSK signal (Tx I/Q), Study of switch faults in Battery section, Study and observe signals of LCD display section, Study of switch faults in LCD display section.



10903B

4G MOBILE PHONE TRAINER

To study the 4G Smart Phone Trainers, Study of Block Diagram of the trainer, Working of 4G Smart Phone Trainer, Charging of 4G Smart Phone Trainer, Voltages and signals at different test points.



10904

DVD-VCD-CD TRAINER

The complete circuit of a CD/VCD player is printed on a single P.C.B., The digital signal processing section is in assembled open out P.C.B., Explanation, Observation, Alignment and adjustment of Internal and external possible due to single P.C.B., Easy identification of different parts and Mechanism at a glance.



10905

AM / FM RADIO TRAINER

To Study AM Radio Receiver, To Study FM Radio Receiver, 520 KHz – 1620 KHz Tuning Range, 455 KHz IF Frequency, 3 db from 700 KHz to 1400 KHz Tracking, 10 db Signal to Noise at 200 microvolt typical, Uses Ratio detector and full time auto frequency control, 10 db Signal to Noise at 12 microvolt typical.



10906

MULTIMEDIA COMPUTER TRAINER

The Different circuit boards of PC/AT Computer are exposed on a PCB, Troubleshooting and fault finding procedure explained in details, Artificial fault creation facilities are provided by the switches, About more than 60 faults can be demonstrated at a glance.



10906A

LAPTOP TRAINER

Study of Switching Transformer, Study of PWM switching device, Study of Optocoupler, Study of Regulation, Study of SMPS with Variac input.



10907

COLOUR TV TRAINER 36 CM

Study of RF-Section through test points, fault simulation & rectification, Study of VIF- section through test point, fault simulation & rectification, Study of Video/Chroma section through test points, fault simulation & rectification, Study of System Control Section through test points, faults simulation & rectification.



10908

COLOUR TV TRAINER 51 CM

Study of RF-Section through test points, fault simulation & rectification, Study of VIF-section through test point, fault simulation & rectification, Study of circuit of Horizontal & Vertical Oscillator & Output sections, Study of circuit of Horizontal & Vertical output sections through test points fault simulation & rectification, Study of RGB video output Section.



10909

OSCILLOSCOPE/ DEMONSTRATOR TRAINER

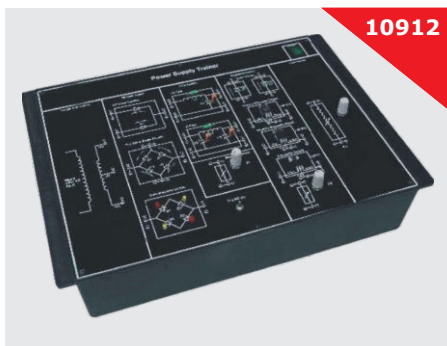
Amplifier, Time base, Channel section signal available on test points, Separate sections for PS, EHT, VA, HA, TB & Trigger for easy identification, Fault creation & rectification provided, Track printing with different colours on different sections on component board for easy circuit training.



10911

FACSIMILE DYNAMIC DEMONSTRATOR

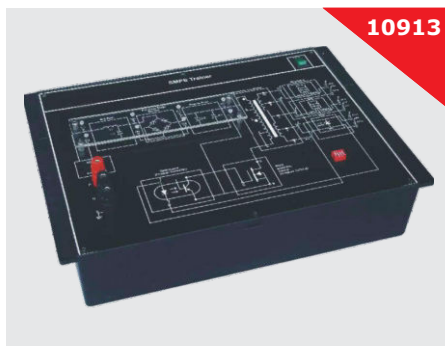
Facsimile Demonstrator is a complete educational system designed to give a clear accurate and realistic in-sight into the working of the Fax Trainer. This trainer is designed on CAD system.



10912

POWER SUPPLY TRAINER

Study of Transformers and its working, Study of Two diode Full Wave Rectifier, Study of Full Wave Bridge Rectifier, Study of Demonstration Bridge, Study of Ripple Factor and to calculate Ripple Factor of Half Wave, Full Wave and Bridge Rectifier, Study of LC and π filter, Study of Bleeder Resistor and its effect on load current.



10913

SMPS TRAINER

Study of Switching Transformer, Study of PWM switching device, Study of Optocoupler, Study of Regulation, Study of SMPS with Variac input, Study of various faults and their removal in SMPS circuit.



10914

UPS TRAINER

Study of PWM Technology, To understand the overall functioning of UPS Trainer, Study of AVR transformer section of UPS, To study the UPS circuit in load condition, To identify different faults and to study the systematic procedure of their troubleshooting in UPS circuit, To study Temperature / Fire alarm.



10915

FUNCTION GENERATOR TRAINER

Study of Electrical Waveforms generated by Function Generator, Study of Triangular Waveform Generation, Study of Sinusoidal Waveform Generation, Study of Square Waveform Generation, Study of Duty Cycle of Square Waveform, Study of TTL Waveform Generation.



10916

FREQUENCY COUNTER TRAINER

Study of Frequency Counter, Study of Attenuator Circuit, Study of Wave Shaping Circuit, Study of Frequency Divider Circuit, Study of Frequency Counter and Display Driver Circuit, Study of Gate Time Circuit, Study of Sensitivity of Frequency Counter.



10917

RFID TRAINER

Highly integrated analog circuitry to Demodulate, Decode and Respond, 3.56 MHz multi protocol support, Provided with LCD and software, RS-232 Interface, On board LED Indication. On board Buzzer indication.



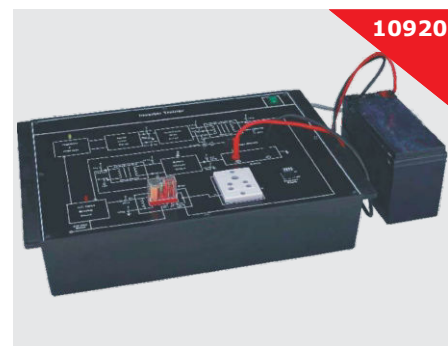
ATM TRAINER

Study of ATM Demonstrator operation, Study of Micro controller based ATM card, Study of Microcontroller processing with Keypad and LCD, Study of ATM PC interfacing, Study of ATM Application Software.



BLUETOOTH TECHNOLOGY TRAINER

Study the functioning of Bluetooth Trainer, Pairing of Slave unit with Master unit using software, Study of AT commands, Data Communication using UART, Data Communication using USB. Study of Communication using internal data, Study of RF signals.



INVERTER TRAINER

To understand the function of Inverter Trainer, To understand the function of Inverter in presence of main supply and understand the charging of battery, To understand the working of Relay, To study the AC Mains sensing circuit of Inverter, To study the Inverter circuit.



INVERTER TRAINER

Study of PWM Technology, To understand the overall functioning of Inverter Trainer, Study of AVR transformer section of Inverter, To study the Inverter circuit in load condition, To identify different faults and to study the systematic procedure of their troubleshooting in Inverter circuit.



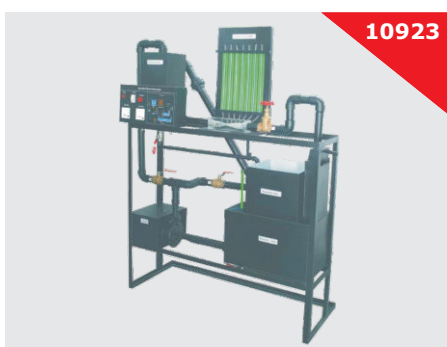
BAR CODE TECHNOLOGY TRAINER

To Understand the working of Barcode Trainer, To study the conversion of Light into an Electrical signal, To understand the scanned output of ADC Barcode signal, To study Digital Signal Processing Block, To understand the generation of Barcodes, To understand commercial applications of Barcode.



REFRIGERATION TRAINER

To study the Simple Vapour Compression Refrigeration System (SVCR), To calculate the Co-efficient of Performance (C.O.P), To calculate the power consumption of the compressor.



BERNOULLI'S THEOREM TRAINER

To verify Bernoulli's Theorem, To observe (visually) types of flow (laminar or turbulent) and calculation of Reynolds Number.



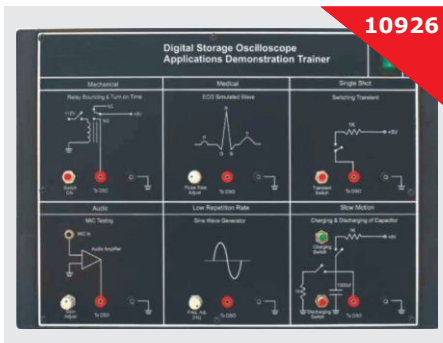
SMD TECHNOLOGY TRAINER

SMD Identification Board The user is familiarized with different SMD Components -Resistors, Capacitors, Inductors, Diodes, Transistors & IC's packages, Proto BOARDS are special PCB's with readymade solder pads for various SMD components & IC's, which makes the soldering much easy, SMD Soldering Jig.



SPECTRUM APPLICATION DEMONSTRATOR TRAINER

The manual describes 18 experiments that can be performed with this trainer and Spectrum Analyzer, All experiments are housed in a single attractive box which is self contained, ready to use having built-in DC power supplies.



10926

DSO DEMONSTRATOR TRAINER

Switching transient of a push to on switch is demonstrated, Charging and discharging of an electrolytic capacitor, ECG Simulated wave with pulse rate adjustment, Sine wave generator of low frequency, Relay bouncing and turn ON time, MIC Testing with variable gain audio amplifier.



10927

TAPE RECORDER TRAINER

Compact design, Fault creation and diagnosis, 42 Test Points, More than 15 faults can be demonstrated on this trainer, No soldering and de-soldering is required to simulate faults, The main IC's are provided on socket to provide a facility to check similar IC' and also to create the faults by inserting faulty IC's in the sockets.



10928

EPABX TRAINER

Generation of various Tones Dial, Tone, Busy Tone, Ring Back Tone, Measurement of Ring generation, Study & Analysis of Cross point Space Division switching, Study & Analysis of Manual switching, Analysis of Pulse / DTMF dialing from telephone, Measurement of Relay & Ring control signals.



10929

FM STEREO TRAINER

A self contained trainer with built in power supply, Functional block indicated on board mimic, Various test points provided on board, Switch fault are provided to study different effects on circuit, Operation manual provided, Complete FM Stereo Receiver with on board stereo, Signal (LED) indicator, Capable of receiving signal between 88 to 108 Mhz.



10930

VCD PLAYER TRAINER

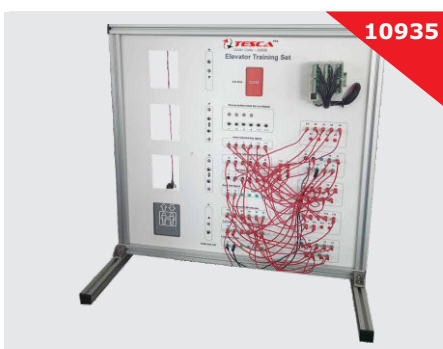
Manual and remote control operation, * Video CD 1.1 and 2.0 and Audio CD Compatible 31 Test points, MP-3 Audio playback, NTSC/PAL formats, Composite video and RF output, PLL Based clock synthesizer (27 MHz), Operating manual with test point details and fault diagnose.



10934

RFID TRAINER

Software for understanding/working on Applications, Demo, Product Videos, Contactless RFID Reader at 13.56 MHz with 6cm range, Can be used for Active RFID tags, Read/Write ISO 14443A protocol Mifare 1K memory RFID cards, 16 x 2 LCD Display with 89C51 Micro controller, On board Breadboard with 840 tie points for designing other applications.



10935

ELEVATOR TRAINING SET

It is composed of the floor, has car, stroke limit institutions, call light, car door, control panel, control motor, sensor, actuator, etc, Electrical aspects is composed of dc reducer motor and sensors, limit switch, light, etc, Configure configuration software, and provide application guidance and application engineering example.



10936

THREE LEVEL ELEVATOR TRAINING SET

Open and close control experiment, Second floors inside choose up and down, open close control experiment, Third floors inside choose up and down control experiment, Third floors outer call up and down, open and close control experiment, Third floors elevator comprehensive control experiment.



10937

LED TV TRAINER

Study the specifications of full HD LED Television, Study the block diagram and operating principle of LED TV, Study the functions of front panel controls/ keys of LED TV, Study the functions of controls on Remote, Study of circuit description and functions of different sections.



10937A

LED HD TV TRAINER - 24 INCH

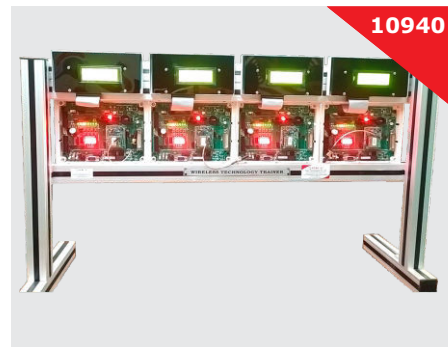
LED/HD TV kit Mounted in all open fashion on a PVC board, firmly supported on compact table top aluminium profile demo rack for easy viewing through transparent acrylic cover provided, LED/HD TV kit provided with the trainer is the latest one which based on modern Technology with remote control and not on any outdated ICs.



10939

GSM MOBILE TRAINER KIT

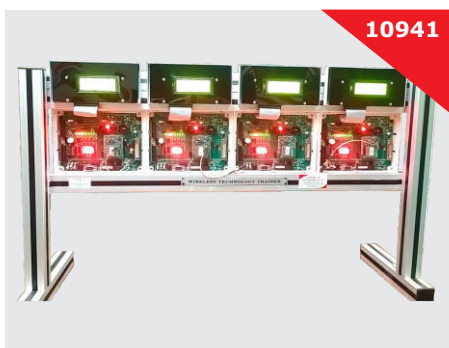
SIM identification for getting self number, network name etc, Execution of AT commands via PC, Voice communication using AT commands, Study of text or PDU data formats & interface with modem, Network status intimation via AT commands, Read Message Delete Message on PC.



10940

BLUETOOTH WIRELESS TECHNOLOGY TRAINER

Operating Freq. Band ISM 2.4Hz 2.48GHz, Modulation Method : Gaussian Freq. Shift Keying Output, Output Interface: UART, Serial UART speed up to 921.6kbps, Bluetooth Specification : v2.0+EDR, Transmit Power Max. 18dBm, Receiving Sensitivity : 30dBm (0.1%BER), Compact size 27.5 X 30.0 X 14.0 (mm).



10941

ZIGBEE WIRELESS TECHNOLOGY TRAINER

Operating Frequency Band ISM 2.4GHz, Indoor/Urban : Up to 133' (400m), Outdoor line-of-sight : up to 400' (120m), Transmit Power : 2mW (3dBm), Receiver Sensitivity, 95dBm RF Data Rate: 250,000bps, TX Current: 40mA (3.3V) RX Current : 40mA (3.3V).



10942

LOCAL AREA NETWORK TRAINER

Set of Users Guide provided with each unit, Table top setup made using light but sturdy aluminum profile (4X2) Rack complete with cables connectors, Optionally external USB to RS232 Converter is Provided, One PC with serial required for monitoring or as user not in scope of supply, Useful for post Graduate projects and research purpose.



10943

PRINTER/SCANNER/FAX/ PHONE TRAINER

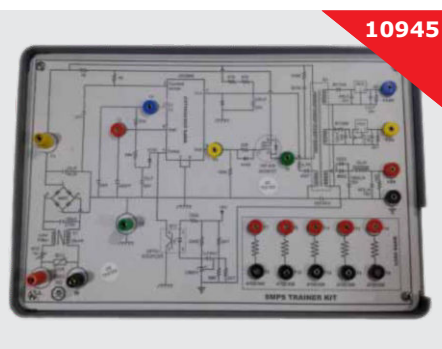
Various components of the printer are made accessible to the students by spreading out on a cuboid demo rack made from aluminum profile, Non-destructive simulated faults have been implemented through sliders switches located on Fault Panel to teach section wise faults & their troubleshooting.



10944

LED TV TRAINER

To Study Specifications of HDTV, To Study the Block Diagram and working principle, To Study Input/output signals of different sections, To Study Complete circuit with different sections. To Study Remote Section, To understand/observe the function of external and Internal controls.



10945

SMPS TRAINER BOARD

Study of Switching Transformer, Study of PWM switching device, Study of Optocoupler, Study of Regulation, Study of SMPS with Variac input.



10946

EPABX TRAINER

Non-Blocking type tone dialling, Distinctive Ringing, Line Status Indication on the Exchange, Executive Telephone with special features, Control methods, Abbreviated Dialling, DTMF/ Pulse Dialling, Music on hold.



10947

REFRIGERATION & AC TRAINER

± 12V/500 mA, +5V/300mA, Unregulated 17V dc/750 mA, line Synchronizing signal, 13V / 3 Amp, Multi channel DPM for digital display of process parameters, 20pin FRC power bus to supply power to neighbouring panels.



10948

DIGITAL SATELLITE RECEIVER TRAINER

Introduction and basics of DTH System, Understanding various components of DTH receiver system, Study of various blocks of DTH system, Various types of fault creation and Troubleshooting, Study of working principle of DTH system.



10949

LASER PRINTER TRAINER

Study of Laser Printer based on ARM-9 Processor, To understand the overall functioning of Laser Printer, Study the section of Laser Printer, To identify different faults CRUM, Thermistor, Stepper Motor, Pickup Clutch, Feed Sensor, Width Sensor, Power Switch, Printer Switch and to study the troubleshooting in Laser Printer.



10950

COPIER/SCANNER/LASER PRINTER TRAINER

Study of Laser Printer based on ARM-11 Processor, To understand the overall functioning of Copy, Scan, Laser Printer. Study the section of Copy, Scan, Laser Printer, To identify different faults CRUM, Thermistor, Stepper Motor, Pickup Clutch, Feed Sensor, Width Sensor, Scanner, Stepper Motor, Scanner Sensor and to study the troubleshooting in Laser Printer.



10951

WASHING MACHINE TRAINER

To study of Fully Automatic Washing Machine, To study the different sections of Washing Machine, To identify different faults of Washing Machine like Buzzer, Pressure sensor, Drain Actuator, Feed Valve Safety Lid sensor, Motor clock wise and Motor anticlockwise, To study the Functions of Keypad like Power On Start/ Hold, Process, Program and Water Level.



10952

CCTV TRAINER

Display : 9"Diagonal Size ,Flat panel LED/LCD display, Analog Video Input : RGB VGA (HD-15), Analog Video Input : S-Video, Composite Video Input : RCA Yellow, Audio Input : RCA- Left (White), Right (Red), Antenna RF Input : RF - SDTV/ PAL.



10953

MICROWAVE OVEN TRAINER

Study of Microwave oven, Study the hardware details of Microwave trainer, Understand the working of Microwave trainer, To measure the Voltages at various test points, Study of fault switches.



10954

THREE LEVEL ELEVATOR TRAINING SET

To accelerate the wheels by increasing the RPM and pressure consumes by the wheels during press the brake pedal, USB To connect the data logging software with computer, Light reflects the braking effort being brake pedal applied.



10955

MIXER GRINDER TRAINER

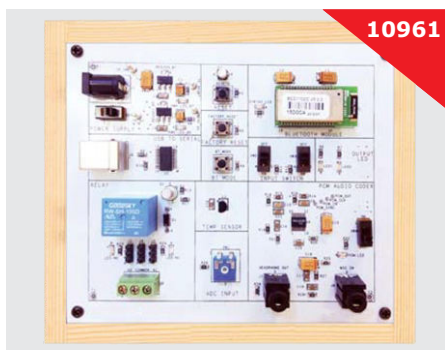
Motor Power : 550 Watt, Flow Breaker and Easy Lock Jars, Attractive Metal Enclosure, Mixer Grinder Body : Metallic ABS, Jar : Liquidizer Jar 1.8 Ltr, Dry, User Manual for Experiments, AC Input : 190 to 260 V 10%, 50 Hz.



10956

MULTIMETER DEMONSTRATOR TRAINER

Study of DC and AC Current Measurement, Study of DC and AC Voltage Measurement, Study of Resistance Measurement, Study of Continuity Tester.



10961

BLUETOOTH + ZIGBEE + GPRS + WI-FI TRAINER KIT

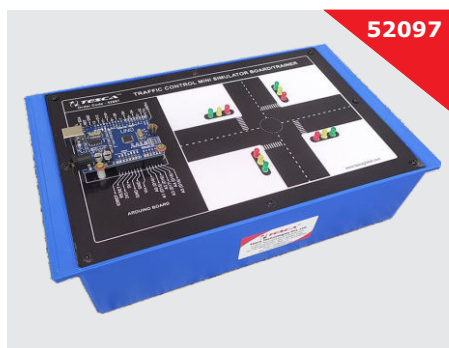
To Study Configuring Bluetooth as Master and Slave, To Study Data Communication with Master Module to Slave Module Interfacing The Peripherals, To Study Interfacing on board Peripherals like LEDs and Switches, Relay, ADC using Variable Resistor, Temperature Sensor.



52072E

AUTOMATIC AND INTELLIGENT WEATHER MONITORING TRAINER

High Accuracy Reliability, Communication over cloud, Battery Charging from Solar Panel, Real time Data Access on Web, Low Maintenance.



52097

TRAFFIC CONTROL SIMULATOR BOARD/TRAINER

Arduino UNO, LED - Red, Yellow, Green Circuit Diagram, USB cable for interfacing Type-A to Type-B, Dimension: 200 x 300 x 73mm, Weight: 500gm.



52098

ELECTRONIC TRAFFIC COUNTER

Object Counting, Debounce, Serial Monitoring, Flag-Based Counting, Adjustable Timing, User-Friendly Interface, Visual Feedback, Compact and Portable Design.





38606

LOGIC TRAINING BOARD OR/NOR FUNCTION

To study the principle of OR/NOR logic gates and to compare the truth table with experimental results, + 5V D.C. at 100mA, IC Regulated Power Supply internally connected, 3-input NOR gate followed by an inverter (NOT gate) to give 3-input OR/NOR gate, Switches for logic selection, LEDs for visual indication of status.



38607

LOGIC TRAINING BOARD AND/NAND FUNCTION

To study the principle of AND/NAND logic gates and to compare the truth table with experimental results, + 5V D.C. at 100mA, IC Regulated Power Supply internally connected, 3-input NAND gate followed by an inverter (NOT gate) to give 3-input AND/NAND gate, Adequate no. of other Electronic Components.



38608

LOGIC TRAINING BOARD NOT/BUFFER FUNCTION

To study the principle of NOT/BUFFER logic gates and to compare the truth table with experimental results, Adequate no. of other Electronic Components, Mains ON/OFF switch, Fuse and Jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



38609

LOGIC TUTOR BOARD

To study OR/NOR Function, To study AND/NAND Function, To study NOT/BUFFER Function, To study Simple function of several variables, To study Distributive Law, To study Commutative Law, To study Associative Law, To study De Morgan's Theorem.



38610

LOGICOM

Study of Compound Logic Function, Verification of "AND/NAND" Function, Verification of "OR" Function (inclusive OR), Study of Function $F = A \cdot (B \cdot C)$, Study of Coincidence Function $F = A \cdot B$, Study of Majority Logic $F = ABC$, To study Exclusive OR, To study Half Adder, To study Full Adder.



38611

LOGICOM-I

To study and verify AND/NAND function, To study and verify OR function, To study and verify Function $F = A \cdot (B \cdot C)$, To study and verify Exclusive OR function, To study and verify Coincidence circuit, To study and verify Full Adder, To study and verify Majority logic, To study and verify Even parity check, To study and verify Odd parity check, To study and verify Binary storage elements.



38612

LOGICOM-II

To study and verify the OR/NOR function, To study and verify the AND/NAND function, To study and verify the Exclusive OR function, To study and verify the Function $F = A \cdot (B \cdot C)$, To study and verify the Coincidence circuit, To study and verify the Majority logic.



38613

LOGICOM-III

To study and verify the OR/NOR function, To study and verify the AND/NAND function, To study and verify the Exclusive OR function, To study and verify the Function $F = A \cdot (B \cdot C)$, To study and verify the Coincidence circuit, To study and verify the Majority logic, To study and verify the Minority logic.



38614

LOGICOM-IV

To study Up-Counter, To study Down Counter, To study Decimal Counter, Nine J-K Flip-Flops, A clock generator with a repetition frequency of 500 Hz, Two LED driver circuits each of which individually drives a LED and is connected to the binary output of the Flip-Flop, Two pulsar switches.



38615

LOGIC LABORATORY (LOGICOM I, II, III, IV)

To study Half Adder, To study Majority logic, To study Set-Reset Flip-Flop, To study Type D Flip-Flop, To study J-K Flip-Flop, To study Master Slave J-K Flip-Flop, To study UP-Counter, To study DOWN Counter, To study Minority logic, To study Even parity check, To study Type T Flip-Flop, To study OR/NOR function.



38616

LOGIC TRAINING BOARD ON COUNTERS & SHIFT REGISTERS

To design, fabricate and test Ripple Counters, To Study Synchronous Counters, To Study Series Parallel Counters, To design, fabricate and test Ring Counter, To Study Johnson Counters.



38617

ANALOG TO DIGITAL CONVERTER (A TO D)

To study the basic principle on conversion of analog signal to digital signal, To study the working of Digital Voltmeter, Seven LEDs to display the state of various important points, Two seven segment displays for visual indication of output status, Provision for manual pulses as well as for internal clock.



38618

DIGITAL TO ANALOG CONVERTER (D TO A)

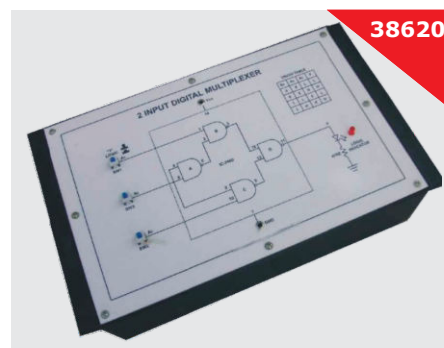
To study the basic principle on Digital to Analog Conversion, D.C. Voltmeter, 65mm rectangular dial to read 0-5V, Four, D-type Flip-Flops, Four Level Amplifiers, Continuous monitoring of analog signals on a voltmeter.



38619

BINARY TO DECIMAL ENCODER

To study the Binary To Decimal Encoder, BCD-to-7-Segment Decoder/Driver, A selector switch to set digits from 0 to 9 with corresponding binary code indicator, A DPDT switch for lamp test of seven segment display, Switch for logic selection, LEDs for visual indication of binary code A,B,C,D.



38620

2 INPUT DIGITAL MULTIPLEXER

To study the operation of a 2-Input Digital Multiplexer, One Digital Multiplexer IC, Three switches to set the data and control bits, LED for visual indication of selected channel, Adequate no. of other Electronic Components.



38621

DIGITAL I.C. TRAINER

NAND CMOS, NOR CMOS, Boolean Algebra (CMOS), Astable Multivibrator & Schmitt Trigger With Adjustable Triggering (CMOS), Monostable Multivibrator (CMOS), Flip Flops (CMOS), Half & Full Adder (CMOS), Presettable Divide-by-n Counter (CMOS).



38622

BOOLEAN ALGEBRA TRAINER

To study Single variable theorems, To study More than one variable theorems, To study Demorgan's theorems, Three switches for giving binary logic input states, Two LEDs, driven by LED driver circuit for visual indication of output.



38623

STUDY OF OR, AND, NAND GATES TRAINER

To Study the OR, AND & NAND logic gates and to verify the truth tables, To make various logic functions (OR, NOR, NOT, AND & EX-OR gates) by using NAND gates and verify their truth tables.



38624

STUDY OF OR, AND, NOT LOGIC GATES (USING DISCRETE COMPONENTS) AND COMPARISON WITH TTL IC'S

To study the OR, AND, NOT logic gates using discrete components and compare it with TTL IC, Three switches for giving binary logic input states, Two LEDs, driven by LED driver circuit for visual indication of output, Adequate no. of other Electronic Components.



38625

TO STUDY THE CHARACTERISTICS AND OPERATION OF A PROGRAMMABLE COUNTER

To study the Programmable Counter in up-mode and carry pulse, To study the Programmable Counter in down-mode and borrow pulse, To study the presettable mode of the Programmable Counter.



38626

STUDY OF UNIVERSAL LOGIC GATES & APPLICATIONS

To study the operation and characteristics of a TTL NAND / NOR gate, To prove the De-morgan's Theorem by using NOR & NAND gates, To perform various logic functions using NOR and NAND gates i.e. OR, AND, NOT, NOR, NAND, Exclusive OR (EX-OR), Half adder and Full adder.



38627

STUDY OF VARIOUS MODULE COUNTERS

To construct & study Count-Up mode, To construct & study Count-Down mode, To construct & study Count-Up/Down mode, To construct & study Four stage Ring Counter, To construct & study Variable Modulo Counters.



38628

STUDY OF (ARITHMETIC LOGIC UNIT) ALU CHIP

To study the Arithmetic Logic Unit (A.L.U.) chip 74181, To study Arithmetic operation, To study Comparison of Two Binary numbers, One Logic state indicator to check the logic state of various pins of IC, Switches for logic selection, LEDs for visual indication of output data.



38629

STUDY OF VARIOUS DECODERS USING IC

To study the operations of a BCD to decimal decoder, To demonstrate the operations of BCD to seven segment decoder/Driver, Adequate no. of other Electronic Components, 08. Mains ON/OFF switch, Fuse and Jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



38630

STUDY OF VARIOUS TYPES OF FLIP-FLOPS

To Study R.S. Flip-Flop without clock, To Study R.S. Flip-Flop with clock, To Study D Flip-Flop, To Study J-K Flip-Flop, To Study T Flip-Flop, To Study Master Slave J-K Flip-Flop.



38631

STUDY OF DECADE COUNTER USING ICs 7490 & 7493

Study of Decade Counter using IC 7490 in 2 X 5 mode, Study of Decade Counter using IC 7490 in 5 X 2 mode, Study of Decade Counter using IC 7493 in direct clearing mode.



38632

STUDY OF LEFT AND RIGHT SHIFT REGISTER & RING COUNTER

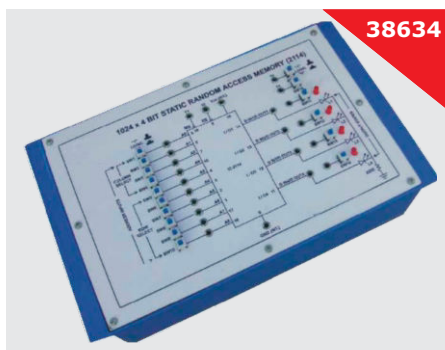
To study right shift register, To study left shift register, To study ring counter, Two dual J-K Flip-Flop with preset & clear arrangement, One inverter (NOT gate), One press switch for clear & one pulser switch for the clock, Four switches to preset the Flip-Flops.



38633

DECIMAL TO BCD CONVERTER

To study Decimal to BCD converter, Four, 2-input NAND gates, One driver circuit to drive LEDs, Nine switches to enter the decimal data, LEDs for visual indication of BCD output conditions, Adequate no. of other Electronic Components.



38634

1024 X 4 BIT STATIC RANDOM ACCESS MEMORY (2114)

To study the Write operation of 1024 X 4 Bit Random Access Memory, To study the Read operation of 1024 X 4 Bit Random Access Memory, To study the Dynamic checking of 1024 X 4 Bit Random Access Memory.



38635

STUDY OF EX-OR AND EX-NOR GATES

To study the EX-OR logic gate and verify its truth table, To construct the EX-OR logic gate using NAND gates and verify its truth table, To study the EX-NOR logic gate and verify its truth table, To construct the EX-NOR logic gate using NAND gates and verify its truth table.



38636

BILATERAL SWITCH (CAPABLE OF TRANSMITTING AND RECEIVING DATA BETWEEN DATA BUSES)

To Study Functioning of a Bilateral Switch and to understand two way data communication between 4-bit data buses using IC 74LS243, Two Tristate Octal Buffers ICs 74LS244, Quad Bus Transceiver (Bilateral Switch) IC 74LS243.



38637

8-BIT ANALOG TO DIGITAL CONVERTER (A TO D) (BASED ON ADC 0800) TRAINER

To Study Conversion of Analog signal to 8-bit Digital signal using IC ADC 0800, $\pm 5V$ D.C. at 50mA, IC regulated power supply internally connected, Timer IC 555, A to D convertor IC ADC 0800, Buffer IC 74240, LEDs for visual indication of status.



38638

8-BIT MULTIPLYING DIGITAL TO ANALOG (D TO A) CONVERTER (BASED ON AD1408) TRAINER

To Study 8-Bit Multiplying Digital to Analog Converter with 8-Bit Input Digital Signals and Analog output signal representing the product of Inputs and Reference source.



38639

PRESETTABLE COUNTER USING CMOS IC-4018 AND 4011

To study beginning of counting for a Preset initial number, To study divide by N programmable counter to give gating pulse of desired duration, 10V D.C. at 50mA, IC regulated power supply internally connected, Timer 555 IC, Presettable Counter IC 4018, Two NAND GATE ICs 4011.



38640

DIGITAL MULTIPLEXER (8-BIT)

To Study 8-bit Digital Multiplexer with 8 inputs & one multiplexed output using IC 74151, 5V D.C. at 50mA, IC regulated power supply internally connected, Multiplexer IC 74151, LEDs for visual indication of status, SPDT switches for logic selection.



38641

1:8 LINE DEMULTIPLEXER (DIGITAL)

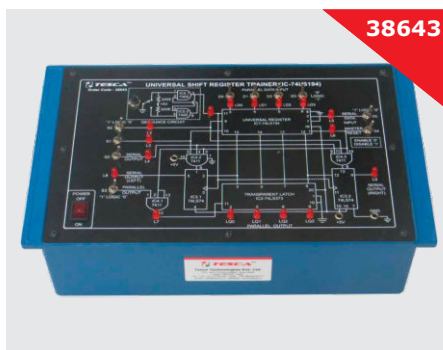
To Study 8-bit 1:8 Line Demultiplexer using IC 74138, 5V DC at 50mA, IC regulated power supply internally connected, Demultiplexer IC 74138, Timer IC 555, SPDT switches for logic selection, LEDs for visual indication of status, Adequate no. of Electronic Components.



38642

MONOSHOT MULTIVIBRATOR USING CMOS IC-4047

To Study Monoshot Multivibrator in both rising edge and falling edge triggering mode with different RC Combinations using CMOS IC4047, 10V D.C. at 50mA, IC regulated power supply internally connected, 02. Monoshot Multivibrator CMOS IC 4047, 03. DPDT and single pole three way switches, 04. SPDT switches for logic selection.



38643

UNIVERSAL SHIFT REGISTER USING IC-74LS194

To Study the shifting of 4 bit data using IC 74LS194 Serial Left IN - Serial Left OUT, To Study Serial Left IN - Serial Right OUT, To Study Serial Right IN - Serial Left OUT, To Study Serial Right IN - Serial Right OUT, To Study Serial Left IN - Parallel OUT.



38644

8212 SINGLE INPUT/OUTPUT (I/O) PORT

To Study Input and output modes of IC 8212 I/O Port, 5V D.C. at 50mA, IC regulated power supply internally connected, Single I/O port IC 8212, Tristate buffer IC 74244, Transistor BC 177.



38651

8155 SIMPLE PROGRAMMABLE INTERFACE

To Study 8155 simple programmable interface for Memory operations in IC 8155, To Study Interface operations to configure different ports as input port or output port or in combinations of Input/Output, To Study Different modes of Timer Operation.



38652

8255 PROGRAMMABLE PERIPHERAL INTERFACE

To Study 8255 programmable peripheral interface IC for interface operations to configure different ports as input port or output port or in combination of input/output.



38653

8253 PROGRAMMABLE TIMER

To Study MODE 0 - Interrupt on Terminal Count, To Study MODE 1 - Programmable one shot, To Study MODE 2 - Rate Generator, To Study MODE 3 - Square Wave Generator, To Study MODE 4 - Software Triggered Strobe, To Study MODE 5 - Hardware Triggered Strobe.



38654

4 LINE TO 16 LINE DECODER/1 TO 16 DEMULTIPLEXER

To demonstrate the operation of a 1 line to 16 line demultiplexer, To demonstrate the operation of 4 line to 16 line decoder, To demonstrate how 4 line to 16 line decoder can be used to sequence among any number of states, between one and fifteen.



38655

16 LINE TO 1 LINE MULTIPLEXER

To verify the operation of 16 line to 1 line digital multiplexer, To demonstrate how multiplexer can be used to convert a parallel data input to a serial data output device.



38656

16 X 4 BIT STATIC RANDOM ACCESS MEMORY (7489)

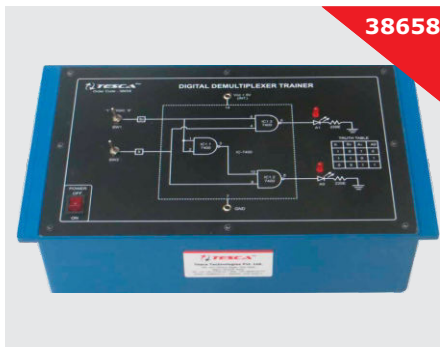
To study Operation of a 16 X 4 Bit Static Random Access Memory, 5V D.C. at 50mA, IC regulated power supply internally connected, Switches to set the memory data and address, LEDs for visual indication of output data (Read out).



38657

1024 X 1 BIT STATIC RANDOM ACCESS MEMORY (2102)

To study Operation of a 1024 X 1 Bit Static Random Access Memory, 5V D.C. at 50mA, IC regulated power supply internally connected, Switches to set the memory data and address, LEDs for visual indication of output data (read out).



38658

DIGITAL DEMULTIPLEXER

To study the operation of a Digital Demultiplexer circuit, A separate LED provides the indication of logic level of any pin of IC, Adequate no. of other electronic components, Mains ON/OFF switch, fuse and Neon Indicator are provided.



38659

DECIMAL-TO-BCD (BINARY) ENCODER USING DIODE-MATRIX

To demonstrate conversion of Decimal to BCD (binary coded) using diode matrix encoder, Diodes arranged in matrix, LEDs (14 No's) for visual indication of status, 'Push to ON' (10 No's) switches for decimal selection, Adequate no. of other Electronic Components, Mains ON/OFF switch, Fuse and Jewel light.



38660

STUDY OF PARITY CIRCUITS

Verification of even parity or odd parity by using EX-OR gates (parity checker), To generate odd and even parity (parity generator), Two, Quad 2-Input Exclusive OR gate IC's, Hex Inverter IC. LEDs (24 No's) for visual indication of status, SPDT (9 No's) switches for logic selection.



38661

8-BIT ANALOG TO DIGITAL CONVERTER (A TO D) (BASED ON ADC 0800) TRAINER

To Study Conversion of Analog signal to 8-bit Digital signal using IC ADC 0800, $\pm 5V$ D.C. at 50mA, IC regulated power supply internally connected, Timer IC 555, A to D convertor IC ADC 0800, Buffer IC 74240, LEDs for visual indication of status.



38662

8-BIT MULTIPLYING DIGITAL TO ANALOG (D TO A) CONVERTER (BASED ON AD1408) TRAINER

To Study 8-Bit Multiplying Digital to Analog Converter with 8-Bit Input Digital Signals and Analog output signal representing the product of Inputs and Reference source.



38663

CONSTRUCTION OF MULTIVIBRATORS USING DIGITAL IC

To design and demonstrate Astable multivibrator, To design and demonstrate Monostable multivibrator, To design and demonstrate Bistable multivibrator.



38664

DUAL NATURE OF LOGIC GATES

To demonstrate a combinational logic function and to provide practice in using Boolean variables, To provide practice in evaluating a truth table, To verify dual nature of logic gates.

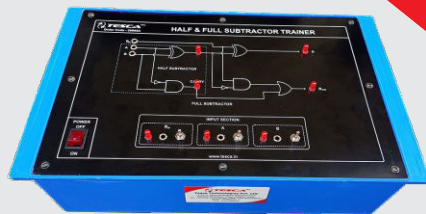


38665

4 BIT BINARY FULL ADDER & SUBTRACTOR

To study the operation of 4-bit binary full adder and subtractor for Addition of two 4-bit binary numbers, To study the operation of Subtraction of two 4-bit binary numbers.

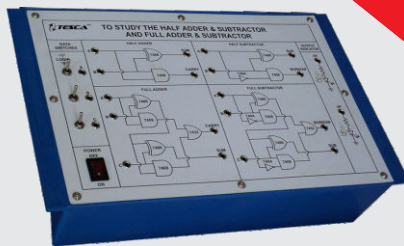
38665A



HALF & FULL SUBTRACTOR TRAINER

Study and verification of the Truth Table of Half Subtractor, Study and verification of the Truth Table of Full Subtractor, AND gate IC 7408, NOT gate IC 7404, OR gate IC 7432, X-OR gate IC 7486, Four LEDs for visual indication of status.

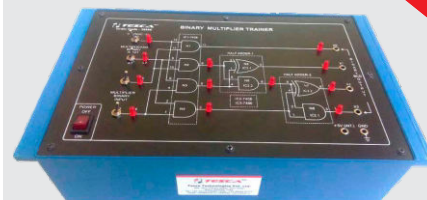
38665B



HALF AND FULL - ADDER & SUBTRACTOR TRAINER

To study the Half Adder and Verify the Truth Table, To study the Half Subtractor and Verify the Truth Table, To study the Full Adder and Verify the Truth Table, To study the Full Subtractor and Verify the Truth Table.

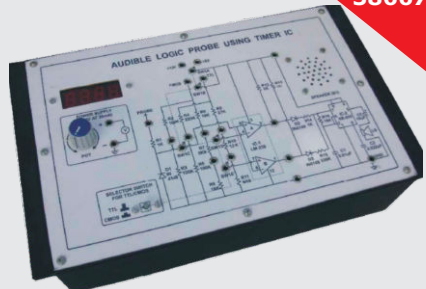
38666



BINARY MULTIPLIER

To demonstrate Binary multiplier using combinational logic gates by verifying truth table for a two bit by two bit multiplier and compare the binary and decimal multiplication tables.

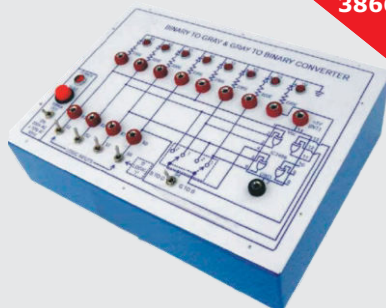
38667



AUDIBLE LOGIC PROBE USING 555

To study of constructional and operational features of Audible Logic Probe using timer IC. (for TTL and CMOS ICs), 5V & 12V D.C. at 100mA, IC regulated power supply internally connected, 0-12V D.C. at 20mA, continuously variable power supply also provided.

38668



BINARY TO GRAY AND GRAY TO BINARY CONVERTER

To study of Binary to Gray code conversion, To study of Gray to Binary code conversion, Quad 2-input Ex-OR gate, Switch for code selection, Switches for logic selection, LEDs for visual indication of status.

38669



OPEN COLLECTOR WIRE-OR & WIRE-AND CONNECTION

To study open collector gates, To study the logic function of 1 Wire-OR connection of logic gates, 2 Wire-AND connection of logic gates, Four SPDT Switches for logic selection.

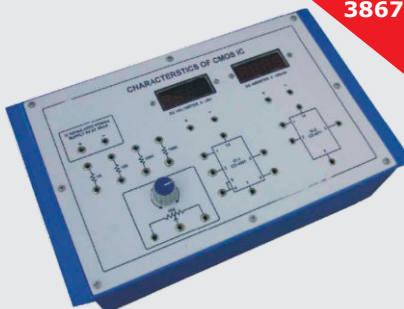
38670



INTERFACING CMOS IC'S TO TTL & TTL TO CMOS IC'S

To study interfacing of TTL IC to CMOS IC, To study interfacing of CMOS IC to TTL IC, Quad, 2-input NAND gate TTL IC, 05. Quad, 2-input NAND gate (open collector) TTL IC, 06. Quad, 2-input NAND gate CMOS IC.

38671



CHARACTERISTICS OF CMOS IC

To study Switching characteristics, To study Current sourcing characteristics of a CMOS inverter, To study Current sinking characteristics of a CMOS inverter, To study Paralleling of outputs (current sourcing), To study Paralleling of outputs (current sinking).

38672



VERIFICATION OF EXCESS-3 TO DECIMAL CONVERTER

To verify Excess-3 to Decimal converter, 5V D.C. at 100mA IC regulated Power Supply internally connected, Two, Quad, 2-input NAND gate IC, Hex inverter IC, Two, Tripple, 3-input NAND gate IC.



38673

60 HZ CLOCK PULSE GENERATOR (USING IC 5369)

To construct 60Hz, 10Hz & 1Hz using IC 5369 and observe the output of 60Hz, 10Hz & 1Hz, 5V D.C. at 50mA IC regulated Power Supply internally connected, IC precision time base for digital clock, Two, Decade counter Ics, Crystal of frequency 3.58 MHz.



38674

BCD TO BINARY CONVERTER

To study of BCD to Binary conversion, Two, BCD to Binary Converter Ics, 8, SPDT switch for logic selection, One, SPDT switch for Enable/Disable, 15, LEDs for visual indication of input and output status, Adequate no. of other Electronic Components.



38675

4 BIT MAGNITUDE COMPARATOR

To understand logic system of IC 7485, To study how to connect it with other components, 5V DC at 100mA, IC Regulated built in Power Supply, Toggle switch SPDT and LED have been provided for input simulation, For output of IC, three LED have been provided for these logic states.



38676

DUAL 4 LINE TO 1 LINE MULTIPLEXER

To study Dual Four Line to One Line multiplexed output, Dual 4 Line to 1 Line Multiplexer IC, 14 LEDs for visual indication of logic status, 12 SPDT switches for Logic selection, Circuit of the IC displayed on the panel for better understanding.



38677

DUAL 1 LINE TO 4 LINE DEMULTIPLEXER

To study DUAL one line to four line Demultiplexer, Demultiplexer IC, 6 SPDT switches for Logic selections, 14 LEDs for visual indications of the status, Adequate no. of other Electronic Components.



38678

OCTAL TO BINARY ENCODER

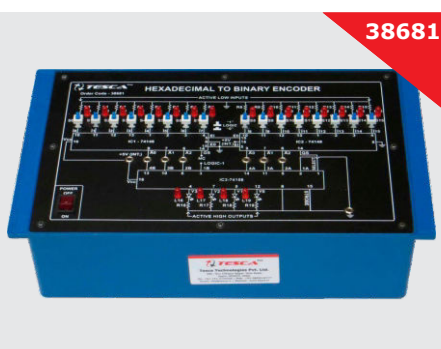
To Study of Octal to Binary Encoder, 5V DC at 100 mA, IC Regulated Power Supply internally connected, 8 Data lines to 3 lines IC-74148, 9 SPDT switches for Logic selections, 14 LEDs for visual indications of the status, Adequate no. of other Electronic Components.



38679

BCD TO SEVEN SEGMENT DISPLAY

To demonstrate the working of BCD to seven segment display, 5V at 100mA, IC regulated Power Supply, Seven segment display of Common Anode, LED type, Decoder Driver IC, Four SPDT switches corresponding to four variables A, B, C and D for giving logic '1' and logic '0' inputs, Adequate no. of other Electronic Components.



38681

HEXADECIMAL TO BINARY DECODER

To study of Hexadecimal to Binary Encoder, 16 data lines to 4 lines Ics, 16 SPDT switches for logic selections, 20 LEDs for visual indications of the status, Mains ON/OFF switch, Fuse & Jewel light.



38682

DIVIDE BY 12 - COUNTER USING IC-74177

To Measure Clock Frequency using Divide by 12 Counter, The unit is operative on 230V $\pm 10\%$ at 50Hz AC Mains, Good Quality, reliable terminal/sockets are provided at appropriate places on panel for voltage measurements.



38684

KARNAUGH MAPPING APPLICATIONS

To simplify any given boolean function of four variables using karnaugh mapping, Designing & Implementation of two level circuits, Seven segment decoder : One BCD to Seven Segment Decoder/ Driver IC with termination, The unit is operative on 230v $\pm$ 10% at 50 Hz A.C. mains, Mains ON / OFF Switch and LED indicator are provided.



38685

LOGIC SIMULATOR

Output D. C. Voltage : Fixed 5V, Output Current : 200mA, Load Regulation : $\pm$ 1% of The Highest Specified Output Voltage, Ripple And Noise : Less Than 2mV, Logic Inputs : 10 Switches For High/Low, Output Indicators : 10mm bright Red LEDs.



38686

ELECTRONIC SEQUENCER WITH 4 MM SAFETY SOCKETS

Study Of Basic Gates And Verification Of Their Truth Tables, Study And Verifications Of The Law Of Boolean Algebra And De-morgan's Theorems, Study Of Shift Register (sipo).



38687

ELECTRONIC SIMULATOR WITH 4 MM SAFETY SOCKETS

Study Of Basic Gates And Verification Of Their Truth Tables, Study And Verifications Of The Law Of Boolean Algebra And De-morgan's Theorems, Construction and verification of various types of flip-flops using gates and IC's, Construction and verification of various Types of combinational circuits.



38688

ADVANCE LEVEL LOGIC TRAINER

To study Re-triggerable Monostable Multivibrator using IC 555 and output through LED, To study Synchronous Counters, To study Series Parallel Counters, To study Serial to Parallel Data Converter, To study 1024 X 4 Bit Static Random Access Memory (2114).



38689

ANALOG COMPUTER TRAINER

To study building blocks, To study summing amplifier (Adder), To study the inverting amplifier, To study summing & difference amplifier (Adder & Subtractor), To study analog computer.



38690

SEQUENTIAL LOGIC TUTOR

Study Of Basic Gates And Verification Of Their Truth Tables, Study And Verifications Of The Law Of Boolean Algebra And De-morgan's Theorems, Study Of Shift Register (sipo).



38691

LOGIC GATES TUTOR

Study of basic gates and verification of their truth tables, Study and verifications of the law of Boolean algebra and De-Morgan's Theorems, Study of important TTL terminologies, Verification of important TTL Circuit parameters, Construction and verification of various types of combinational circuits.



38695

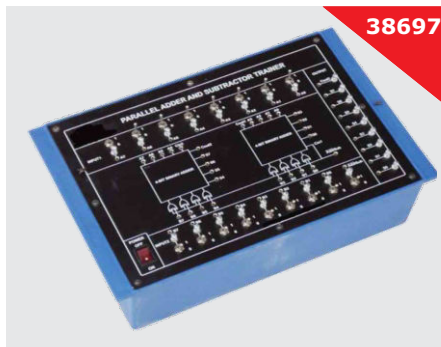
UNDERSTANDING AND EXPERIMENT WITH DIGITAL IC

Study of Adder and subtractor, Study of Multiplexer and De-Multiplexer, Study of BCD to 7 Segment Display, Study of Encoder, Decoder and Generator, Study of Code Converter, Study of Magnitude Comparator, Study of Flip-Flop, Study of Register, Study of Counter.



TTL AND CMOS CHARACTERISTIC TRAINER

To study TTL NAND Gate, To study TTL Schmitt trigger NAND gate, To study TTL NOT gate, To study TL Schmitt trigger NOT gate, To study CMOS NAND gate, To study CMOS Schmitt trigger NAND gate.



PARALLEL ADDER AND SUBTRACTOR TRAINER

To study 4 bit binary addition & subtraction operation, To study 8 bit binary addition & subtraction operation, 4-bit/8-bit Binary Addition & Subtraction, Easy switching between addition and subtraction modes, LEDs for visual indication of input-output & carry out logics.



BCD TRAINER AND SUBTRACTOR TRAINER

Study of 1bit to 8Bit BCD Addition operation, Study of 1bit to 8bit BCD Subtraction operation, Facilitates 1 bit to 8bit BCD addition and subtraction modes, LED's for visual indication of input output logic states, Easy switching between addition and subtraction modes.



SOP AND POS IMPLEMENTATION TRAINER

Design a function using K-map and verify its performance using SOP and POS Form, Use QUINE McCLUSKEY method for designing function and realize its Nor Or implementation, Stand alone System, Easy illustration of different types of canonical forms, LEDs for visual indication of input and output logic states.



MULTIPLEXER - DEMULTIPLEXER 8:1 AND 1:8

Study and verification of the Truth Table of 8-to-1 Line Multiplexer, Study and verification of the Truth Table of 1-to-8 Line De-Multiplexer, Multiplexer IC 74151, De-multiplexer IC 74138, Eight LEDs for visual indication of status, Eleven SPDT switches for logic selection low and High.



TO VERIFY THE TRUTH TABLE OF BASIC LOGIC GATES OR AND NOR, NAND, EX-NOR, EX-OR, EX-NOR AND NOT

To verify the Truth Table of with Two input, To verify the Truth Table of Basic Logics Gates with Three input, To verify the Truth Table of Basic Logics Gates with Four input.



MULTIPLEXER-DEMUTIPLEXER 4:1 AND 1:4

Study of verification of the truth table of 4 to 1 line multiplexer, Study of verification of the truth table of 4 to 1 line demultiplexer, 5V DC at 100mA IC regulated power supply internally connected, Multiplexer IC 74153, De-multiplexer IC 74139, Five LED's for visual indication of status.





38704

ENCODER & DECODER TRAINER (8:3 AND 3:8 LINE)

Study and verification of the Truth Table of 8-to-3 Line Encoder, Study and verification of the Truth Table of 3-to-8 Line Decoder, 5V D.C. at 100mA, IC regulated power supply internally connected, AND gate IC 7411, NOT gate IC 7404.



38705

DIGITAL TRAINER WITH ZIF SOCKET

To Study NAND CMOS, To Study NOR CMOS, To Study Boolean Algebra (CMOS), To Study Astable Multivibrator & SCHMITT Trigger with adjustable triggering (CMOS), To Study Monostable Multivibrator (CMOS), To Study Flip Flops (CMOS).

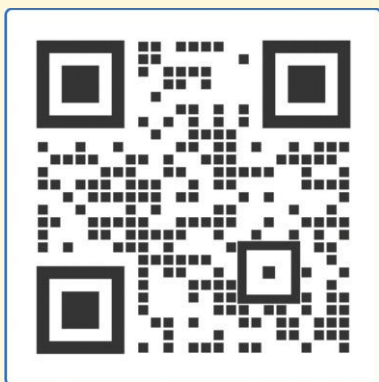


38706

TTL/CMOS TRAINER

To Study NAND CMOS, To Study NOR CMOS, To Study Boolean Algebra (CMOS), To Study Astable Multivibrator & SCHMITT Trigger with adjustable triggering (CMOS), To Study Monostable Multivibrator (CMOS), To Study Flip Flops (CMOS).

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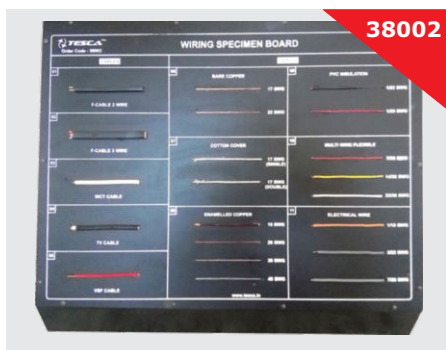
<https://www.instagram.com/tescaglobal/>



38001

ELECTRICAL SPECIMEN BOARD

Low voltage electrical C25 m6 conical busbar insulator for 1500V-01 set, 600 x 455mm, using aluminum steel, for batter safety, rigidity and contrast. Fixed on iron box with black powder coated.



38002

WIRING SPECIMEN BOARD

F-cable 2 wire, F-cable 3 wire, 600 x 455mm, using aluminum steel, for batter safety, rigidity and contrast. Fixed on iron box with black powder coated.



38003

STUDY OF DIFFERENT RESISTORS & COLOUR CODING

Carbon Resistors 1/4, 1/2, 1 & 2 Watt of different tolerances, Metal Film Resistors 1/4, Watt, High Precision, Wire Wound Resistors of different types with complete theory description, Total 20 Resistors.



38004

STUDY OF DIFFERENT POTENTIOMETERS

Vertical Preset, Horizontal preset, Carbon linear, Carbon log, Carbon ganged (Dual) Multi-turn Horizontal Trimpot, Vertical Trimpot, Cermet, Sliding and wire wound pot with complete theory, description, Total 10 pots.



38005

STUDY OF DIFFERENT CAPACITORS & COLOUR CODING

Ceramic disc, Mica button, Tantalum radial, Tantalum axial, Non-electrolytic disc, Electrolytic Radial, Polyester foil, Styroflex, Ceramic Tabular paper, Metalised Polyester, Metalised Poly-Carbonate, Metalised Poly - propylene, Metalised film, Trimmer and Gang Condenser with theory and description, Total 16 Capacitors.



38006

STUDY OF DIFFERENT SWITCHES

PUSH to 'ON', PUSH to 'OFF', Slide, Key Board, DIP Switch, Leaf Switch, SPST Toggle, Miniature DPDT Toggle, Rocker and Rotary Thumb wheel with complete theory and description, Total 13 Switches.



38007

STUDY OF DIFFERENT BAND SWITCHES

1 Pole 11 Way, 2 Pole 5 Way, 4 Pole 3 Way for Radio etc, 1 Pole 11 Way Miniature and 2 Pole 5 Way Miniature, 6 Pole 3 Way for Transistors Mega type Band switches with complete Theory and description, Total 7 Band Switches.



38008

STUDY OF DIFFERENT DIODES

Silicon detector, Silicon rectifier, Bridge rectifier, Germanium diode, Hot Carrier diode, Power diode, Varactor diode, Photo diode, Trigger Diode and Zener diode with complete theory and description, Total 10 diodes.



38009

STUDY OF DIFFERENT TRANSISTORS

A small signal, IF/RF Amplifier, High speed switching Power, General purpose, All above are PNP & NPN both type, Matched pair, Darlington Pair, High Voltage, Photo transistor, UJT, FET and MOSFET, Total 19 transistors.



38010

STUDY OF SEMICONDUCTOR DEVICES AND HOW TO TEST THEM

Silicon Diode, Germanium Diode, Zener Diode, Varactor Diode, Varistor, Thermistor, U.J.T., Transistor NPN & PNP, Power Transistor NPN & PNP, JFET, MOSFET, SCR, TRIAC, LED, Photo Diode, LDR, Photo Transistor and Opto Coupler with Theory and testing procedure, Total 20 devices.



38011

STUDY OF DIFFERENT WIRES & CABLE

Study of Bare Copper, Cotton Cover, Enamelled Copper, PVC Insulation, Multiwire Flexible, Electrical Wire and Flat Cable, Transmission Cable, Wave Guide Rectangular and Single Fibre Cable.



38012

STUDY OF DIFFERENT CONNECTORS

To study Eyelet, Test pin, Insulated post, IC bases, Relay socket, Vacuum tube socket solder type, PCB terminal, One piece edge connector, Two piece connector, Rack and panel connector, Plug & receptacle connector, Cylindrical connector and Tape cable connector.



38013

ELECTRONIC SIMULATOR WITH 4 MM SAFETY SOCKETS

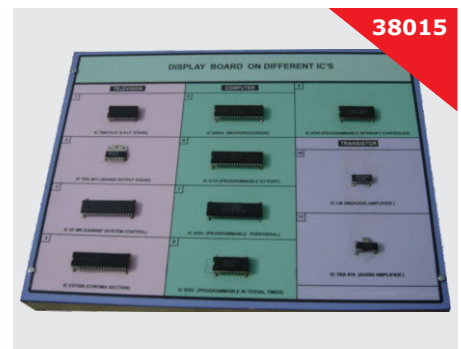
Board Size 300 X 400mm, with better safety, rigidity and contrast, Symbolic representation of Components, Actual components mounted right across the place, Individual working without direct teacher supervision, Stimulates independent student activity.



38014

TRANSFORMERS DEMONSTRATION UNIT

Isolation Transformer, Pulse Transformer, Voltage Transformer, Current Transformer, Impedance Transformer, AutoTransformer, Power Transformer, Constant Voltage Transformer.



38015

DISPLAY BOARD ON DIFFERENT IC'S

IC CD 7680 VIF & SIF stage, TC TDA 2611A sound output stage, IC STMB 78237VM / 23A9950F System control, IC TA7698 Chroma section, IC 8085A Microprocessor, IC 8155A Programmable I/O Ports & Timer, IC 8255A Programmable peripheral Interface, IC 8253 Programmable interval timer.



38016

SEQUENTIAL LOGIC TUTOR

Board Size 300 X 400mm, with better safety, rigidity and contrast, Symbolic representation of Components, Actual components mounted right across the place, Individual working without direct teacher supervision, Stimulates independent student activity.



38017

TRANSFORMER DEMONSTRATION BOARD

Isolation Transformer, Pulse Transformer, Voltage Transformer, Current Transformer, Impedance Transformer, AutoTransformer, Power Transformer, Constant Voltage Transformer.



38018

DEMONSTRATION TRANSFORMER

In the basic transformer set all coils are fitted with 4mm socket connections, All coils are of enamelled copper wire wound round on high impact plastic moulded bobbins 75mm long with cheeks 75 x 60mm, A simple channel and wing-nut clamping arrangement facilitates quick assembly and interchange of coils.



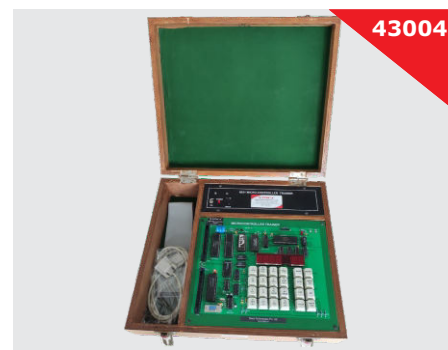
8085 MICROPROCESSOR TRAINING BOARD

Program to perform integer division 8-bit by 8-bit, Program to perform integer division 16-bit by 8-bit, Transfer of a block data in memory to another place in memory in the direct and reverse order, Finding the parity of number, Sorting of array in Ascending order, Sorting of array in Descending order.



8086 MICROPROCESSOR TRAINER

Program to perform 16-bit addition, Program to perform 16-bit subtraction, Program to perform 16-bit multiplication, Program to perform 16-bit division, Program to display largest no. in an array.



8031 MICROCONTROLLER TRAINER

Terminal emulation software is supplied along with the trainer. This supports UP LOAD and DOWN LOAD function, In addition to this, it has features to modify and display internal as well as external memory locations, Dump memory contents in some other location as specified, Execute from a specified memory location.



8051 MICROCONTROLLER TRAINER

Dump memory contents in some other location as specified, Move a block of memory from a source address to destination address, Execute from a specified memory location, Display contents of all register and alter a few or all registers, Facility to stop execution once a break point location reaches.



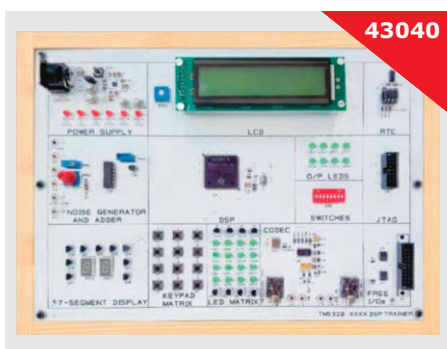
DSP LAB - DSK6713

To Study Sampling & Waveform Generation, To Study PCM Encoding, To Study Delta Modulation, To Study Digital Modulation Schemes (ASK, PSK, FSK), To Study Read Write from CODEC.



COMPUTER INTERFACE TRAINER

To Study Traffic Light Controller, To Study 5 x 7 Matrix LED Display, To Study Forward Reverse LED Display, To Study Running Message Display, To Study Seven Segment Display as a Calculator. Counter and Timer, To Study Controlling of Electrical Appliances using PC.



TMS320C6745 DSP TRAINER KIT

1 Pole 11 Way, 2 Pole 5 Way, 4 Pole 3 Way for Radio etc, 1 Pole 11 Way Miniature and 2 Pole 5 Way Miniature, 6 Pole 3 Way for Transistors Mega type Band switches with complete Theory and description, Total 7 Band Switches.



8085 MICROPROCESSOR TRAINER

8K Bytes of EPROM with 8K bytes of Battery Backup RAM, 46 I/O Lines, Three Channel Timer/Counter, PC Serial Interface, Seven Segment Display with 28 Keys Hex Keypad, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/ Register, Uploading & Downloading to and from PC in Windows98/XP/NT.



8085 MICROPROCESSOR TRAINER (LCD)

Based on 8085 CPU operating at 6.144 Mhz, 16K bytes of Powerful Monitor Program using 27512 EPROM, 8K bytes of RAM using 6264 with Battery Backup using NICD Battery, On-board one memory expansion up to 56KB, Uploading & Downloading to and from PC in Windows98/XP/NT.



8086 MICROPROCESSOR TRAINER

8086/8088 CPU operating at 2.5/5MHz, 8086 Processor can be replaced by 8088 Processor, On-board sockets provided to facilitate the use of 8087 Coprocessor and 8089 I/O Processor, 16K bytes of RAM using two nos. of 6264 with Battery Backup expandable up to 256KB, 16K bytes of powerful monitor EPROM using two nos. of 27512.



8086 MICROPROCESSOR TRAINER (LCD)

8086 Processor can be replaced by 8088 Processor, On-board sockets provided to facilitate the use of 8087 Co-processor and 8089 I/O Processor, 6K bytes of RAM using two nos. of 6264 with Battery Backup expandable up to 256KB, 16K bytes of powerful monitor EPROM using two nos. of 27512.



8086 MICROPROCESSOR TRAINER

16K Bytes of EPROM with 16K bytes of Battery Backup RAM, 72 I/O Lines, Three Channel Timer/Counter, PC Serial Interface using USART, Interrupt Controller, 20x2 LCD Display with 101 ASCII Keyboard, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/ Register.



8051 MICROCONTROLLER TRAINER (LCD)

8051/89C52/89C51RD2/89C61X2 CPU operating @ 11.0592MHz, 32K user RAM using 6264 with Battery Backup using NICD Battery, One socket is provided for RAM expansion up to 64K, 16K bytes of powerful monitor EPROM using 27512, 48 I/O lines using 2 Nos. of 8255 brought at 26 Pins FRC Connector to interface with IC-XX Series.



LABVIEW I/O INTERFACE LAB

A/D and D/A converters provide signals to analog/digital hardware device for various input and output applications, Hardware such as stepping motors, EEPROMs and LCDs as well as external hardware can be used for control application, DC power supplies are provided for internal and external circuits.



80196KC MICROCONTROLLER TRAINER

16K Bytes of EPROM with 16K bytes of Battery Backup RAM, 24 I/O Lines, Three Channel Timer/Counter, PC Serial Interface, Seven Segment Display with 25 Keys Hex Keypad, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/ Register.



8085 MICROPROCESSOR TRAINER

8K Bytes of EPROM with 8K bytes of Battery Backup RAM, 22/24 I/O Lines Using 8155/8255, 46 I/O Lines Using 8255/8155, 48 I/O Lines Using 8255, Three Channel Timer/Counter, PC Serial Interface, Interrupt Controller, USART, RTC, Seven Segment Display with 28 Keys Hex Keypad.



MICROPROCESSOR TRAINER (LCD)

16K Bytes of EPROM with 8K bytes of Battery Backup RAM, 48 I/O Lines, Three Channel Timer/Counter, PC Serial Interface, ADC, DAC, Relay, Opto, Interrupt Controller, USART, EPROM Programmer, 20x2 LCD Display with 101 ASCII Keyboard.



8085 MICROPROCESSOR TRAINER

8K bytes of EPROM with 8K bytes of battery backup RAM, 48 I/O Lines, Three Channel Timer/Counter, PC Serial Interface, Seven Segment Display with 28 Keys Hex Keypad, Power-full Command like Single Stepping, Break Point, Full Clock Execution, Examine Memory/ Register.



43225

ADC-0809 INTERFACING MODULE

Connect to 8255 using 26 pin FRC Connector.



43226

DAC-0800 INTERFACING MODULE

Connect to 8255 using 26 pin FRC Connector.



43227

8AD574 INTERFACING MODULE

Connect to 8255 using 26 pin FRC Connector, ADC module using ADC-0809, 8 bit accuracy ADC chip, Eight Channel on-chip multiplexed ADC, A/D Conversion time 100 micro sec, SOC, EOC, O/P enable can be accessed by user.



43228

DIGITAL INPUT & OUTPUT INTERFACING MODULE

8 Digital Inputs provided through 8 way DIP Switch, 8 Input LED Indicators are provided, 8 Output LED Indicators are provided, Connect to 8255 using 26 pin FRC Connector, User's Manual with Sample Programs.



43229

ELEVATOR SIMULATOR INTERFACING MODULE

Four Floor Elevator Simulator model, Each Floor LED indication are provided, Up & Down Lift position indication by 10 LEDs, Four Keys are provided to access each floor, Connect to 8255 using 26 pin FRC Connector.



43230

IC TESTER INTERFACING MODULE FOR IC-7400

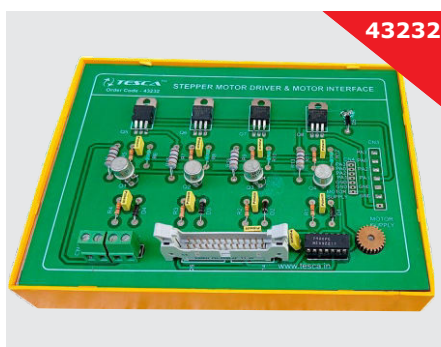
14 Pin IC-7400 IC is provided, IOn-board two nos. of 14 pin socket and one no. of 16 pin, Socket provided, I Connect to 8255 using 26 pin FRC Connector, I User's Manual with Sample Programs.



43231

FOUR DIGIT SEVEN SEGMENT DISPLAY MODULE

Four Digit Seven Segment display, Serial in Parallel out shift register technique is used to display, Two port pins are used to display in seven segment, Connect to 8255 using 26 pin FRC Connector, User's Manual with Sample Programs.



43232

STEPPER MOTOR CONTROLLER CARD WITH MOTOR

Two/Four phase motor can be controlled, Half Step, Full Step can be controlled, Clock Wise & Anti Clock wise rotation can be controlled, Speed can be controlled by this controller, Maximum 2Kg cm Motor can be controlled, 0.25Kg cm Motor supplied along with module.



43233

5X4 KEY'S MATRIX KEYBOARD INTERFACING MODULE

5x4 Keys matrix Keyboard, Keyboard consist of 20 keys, Consist of Hexadecimal numerals from 0 to 13, Keys are organized as Four Rows & Five Columns, Connect to 8255 using 26 pin FRC Connector.



43234

16X1 LCD DISPLAY MODULE

16x1 Liquid Crystal Display, One 16 rows Alphanumeric Characters will be Displayed, Facility for backlite display, Connect to 8255 using 26 pin FRC Connector.



43235

16X2 LCD DISPLAY MODULE

16x2 Liquid Crystal Display, Two 16 rows Alphanumeric Characters will be Displayed, Facility for backlit display, Connect to 8255 using 26 pin FRC Connector.



43236

TRAFFIC LIGHT CONTROLLER MODULE

Single square traffic light display controller, East, west, north, south post are defined on the PCB for the square, For each post four LEDs are provided in form of Red, Yellow & Green, Connect to 8255 using 26 pin FRC Connector.



43237

TEMPERATURE MEASUREMENT MODULE

ADC module using ADC-0809, 8 bit accuracy ADC chip, A/D Conversion time 100 micro sec, Op amps are provided for signal conditioning to output from sensor, K-type thermocouple are used for the measurement.



43238

DC MOTOR CONTROLLER CARD WITH MOTOR

8 bit accuracy DAC chip using DAC-0800, SPDT Relay is provided for direction control, Clock Wise & Anti Clock wise rotation can be controlled, Speed can be controlled by this controller, 9 Volt DC Motor, 9 Volt AC Adaptor.



43239

RELAY & OPTO COUPLER INTERFACING MODULE

Four SPDT Relay are provided, NO, NC, COM Relay outputs are provided at Screw Terminals, Four Opto isolater inputs are provided using MCT2E, Opto Inputs are provided through 10 pin FRC Connector.



43240

8X8 LED MATRIX DISPLAY MODULE

8x8 LED Matrix Display, Display consists of 64 nos. 3mm LEDs, LEDs are organized as Eight Rows & Eight Columns, All LEDs should be buffered, Connect through 26 pin FRC Connector using 8255.



43241

THUMB WHEEL SWITCH CARD

Two Digit Thumb Wheel Switch, I Thumb wheel switch can be set from 00 to 99, I Output of Thumb wheel switch should be in BCD Format, I Connect to 8255 using 26 pin FRC Connector.



43244

OPTO ISOLATED INPUT MODULE

8 bit OPTO Isolated input using MCT-2E IC, OPTO inputs indication are provided by 5mm LEDs, OPTO inputs are provided through 16 pin Connector, Connect to 8255 using 26 pin FRC Connector.



43245

OPTO ISOLATED INPUT MODULE

8 bit OPTO Isolated output using MCT-2E IC, OPTO outputs indication are provided by 5mm LEDs, OPTO output are provided through 16 pin Connector, External +12V provision is provided for isolation, Connect to 8255 using 26 pin FRC Connector.



43248

SEVEN SEGMENT DISPLAY WITH MATRIX KEYBOARD MODULE

5x4 Keys matrix Keyboard, Keyboard consist of 20 keys, Consist of Hexadecimal numerals from 0 to 13, Keys are organized as Four Rows & Five Columns, Study of techniques like software debouncing, Keyboard scanning, key closer, two key lockout, keyboard encoding & Pausing.



43249

16X2 LCD DISPLAY WITH MATRIX KEYBOARD MODULE

5x4 Keys matrix Keyboard, Keyboard consist of 20 keys, Consist of Hexadecimal numerals from 0 to 13, Keys are organized as Four Rows & Five Columns, On-board 16x2 Liquid Crystal Display, Two 16 rows Alphanumeric Characters will be Displayed.



43250

8 BIT AD/DA INTERFACING MODULE

ADC module using ADC-0804, 8 bit accuracy ADC chip, Single channel ADC, A/D Conversion time 100 micro sec, 8 bit accuracy DAC chip using DAC-0800, DAC Settling time 100 ns.



43251

LEVEL SIMULATOR MODULE

Four Level Simulator model, Each Level LED indication are provided, Up & Down Level position indication by 10 Nos. Of LEDs, Lower & upper level limit can be set by software.



43252

SIX DIGIT SEVEN SEGMENT DISPLAY MODULE

Six Digit Seven Segment display, Decoder technique is use to display, Two port pins are used to display in seven segment, Connect to 8255 using 26 pin FRC Connector.



43253

PARALLEL TO SERIAL & SERIAL TO PARALLEL MODULE IC 74595 & IC-74165

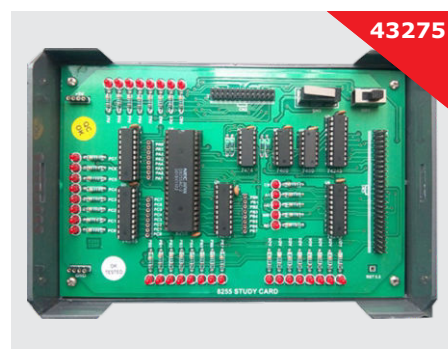
8 bit Parallel to serial convertor using IC-74165, Eight Parallel Input are indicated by LEDs, Serial to 8 bit parallel convertor using IC-74595, Eight Parallel Output are indicated by LEDs, Connect to 8255 using 26 pin FRC Connector.



43254

TWO SQUARE TRAFFIC LIGHT MODULE

Two square traffic light Display Controller, East, west, north, south post are display on the PCB for the square, For each post four LEDs are provided in form of Red, Yellow & Green, Connect to 8255 using 26 pin FRC Connector.



43275

8255 (PPI) STUDY CARD

24 bit I/O using 8255 Programmable Peripheral IC, All Input/Output ports pins are terminated on 3 eight pin terminals & 26 pin FRC Connector, All Input/Output ports are indicated by 3 mm LEDs, Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, A0, A1, Read, Write are indicated by 3mm LEDs.



8253 (PTC) STUDY CARD

Three channel Timer/Counter using 8253 Programmable, Timer Counter IC, All Input/Output ports pins are terminated on terminals & 10 pin FRC Connector, Clock for Counter-0 is internally provided, Data lines from AD0 to AD7 are indicated by 3mm LEDs.



8155 (PPI WITH TIMER) STUDY CARD

22 bit I/O with single channel timer using 8155 Programmable Peripherals IC, All Input/Output ports pins are terminated on 3 eight pin terminals & 26 pin FRC Connector, All Input/Output ports are indicated by 3 mm LEDs, Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, IO, Memory, Read, Write are indicated by 3mm LEDs.



8251 (USART) STUDY CARD

Serial communication using 8251 Universal Synchronous/ Asynchronous Receiver Transmitter IC, Output are provided on 9 pin D-Type connector, Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, Read, Write, A0, A1, DTR, DSR, RTS, CTS, TxRDY, RxRDY are indicated by 3mm LEDs.



8257 (DMA) STUDY CARD

Programmable Direct Memory Access controller using 8257 IC, On-board 2K RAM Provided using 6116 IC for DMA Operation, 8 Inputs are fed through input terminals with 3 mm LED indicator.



8259 (PIT) STUDY CARD

8 Channel Programmable Interrupt controller using 8259 IC, 8 Inputs interrupts are fed through input terminals, Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, Read, Write, INTA, INTR are indicated by 3mm LEDs.



8279 (PKDC) STUDY CARD

Programmable Keyboard Display Controller using 8279 IC, All scan lines/return lines are fed through input terminals & 26 pin FRC connector, Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, Read, Write, INTA, A0 are indicated by 3mm LEDs.



8212 (LATCH) STUDY CARD

8 bit Latch output using 8212 IC, 8 buffered latch output are indicated by 3mm LEDs, Hardware Single Step and Full Clock Execution modes are provided, Single stepping can be performed using micro switch provided on board.



LATCH / BUFFER STUDY CARD

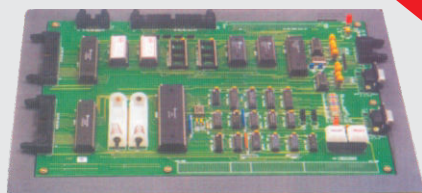
8 bit Latch output using 74373 IC, 8 bit Buffer input using 74245 IC, 8 buffered latch output are indicated by 3mm LEDs, Eight Way DIP Switch is provided for buffer input, Eight bit buffered output are indicated by 3mm LEDs, Chip Select for IC-74245 and IC-74373 are indicated by 3mm LEDs.



6116/6264/62256 RAM STUDY CARD

Data lines from AD0 to AD7 are indicated by 3mm LEDs, Chip Select, Read, Write are indicated by 3mm LEDs, Hardware Single Step and Full Clock Execution modes are provided, Single stepping can be performed using micro switch provided on board.

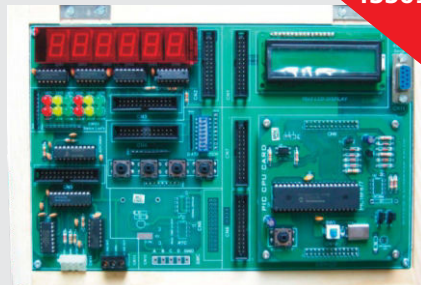
43307



68000 MICROPROCESSOR TRAINER (16 BIT)

Operates on single +5V power supply with a PC compatible system through its RS 232 C serial communication interface, Powerful system monitor permits entry of programs, debugging through breakpoint, trace and instruction step facilities, Hardware debugging through Read loop, Write loop and Test memory commands.

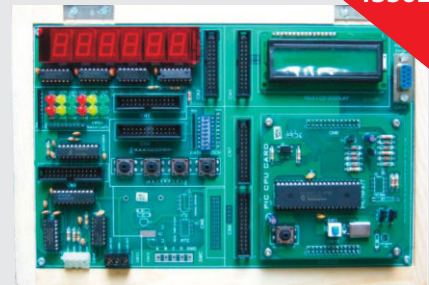
43501



89C51 EMBEDDED TRAINER

Philips 89C61X2 Microcontroller CPU, ISP Programming facility, 8 LEDs to display Digital Output, 8 Switches to give Digital Input each indicated by LED, 16*2 Alphanumeric LCD, 4 digit Seven segment displays.

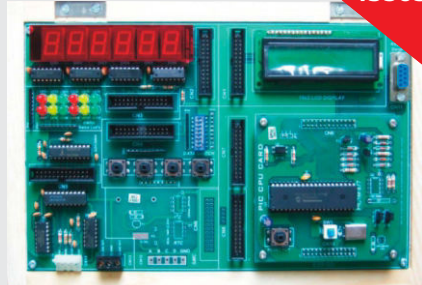
43502



LPC2148 ARM EMBEDDED TRAINER

Philips LPC 2148 Microcontroller CPU, ISP Programming facility, 8 LEDs to display Digital Output, 8 Switches to give Digital Input each indicated by LED, 16*2 Alphanumeric LCD, 4 digit Seven segment displays.

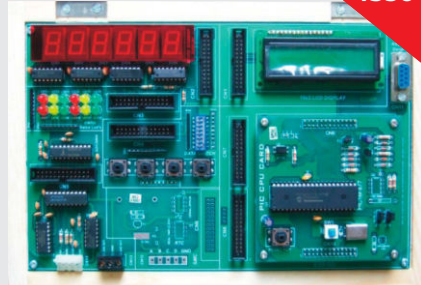
43503



PIC16F877A/18F452 EMBEDDED TRAINER

Microchip 16F877A / 18F452 Microcontroller CPU, ISP Programming facility, Temperature sensor interface LM35, Temperature sensor interface DS18B20 24 I/O Lines Provided on a 26 pin FRC Connector for external interface, On board supply +/- 12V, 5V is provided.

43504



ATMEGA32 AVR EMBEDDED TRAINER

ATMEL Atmega32 Microcontroller CPU, ISP Programming facility, 24C512 EEPROM (64KB), DS1307 RTC with suitable battery, 4 Channel 8bit ADC & 8 bit DAC using PCF8591.

43505



PIC EMBEDDED TRAINER KIT

Microchip 18F4550 CPU operating on crystal frequency @ 20MHz, On-chip 32KB Flash memory and 2048 byte SRAM, On-chip 256byte EEPROM, On-chip UART, SPI, I2C, PWM, On-chip 8 Channel 10 bit ADC, On-chip 32 I/O Lines are provided in four 16 pin Connector, CPU provided on ZIF Socket.

43506



PIC DEVELOPMENT KIT

16F877A / 18F452 Microcontroller Microchip, 5ISP Programming facility All I/O Lines should be provided in 2mm connector for Bread board connectivity through 2 mm to 0.8 mm Patch Cord, On board Reset key, On board 10 pin connector for ISP Programming facility with separate USB based ISP Programmer module for burning the controller.

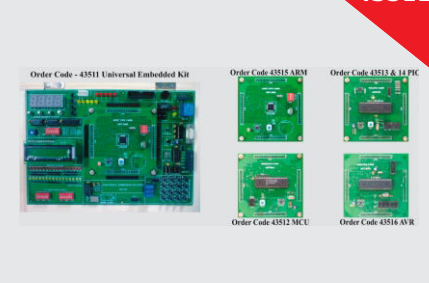
43507



MICROCONTROLLER TRAINER KIT

Atmel 89s52 Microcontroller operating @ 11.0592 MHZ crystal, 40 Pin ZIF socket for Microcontroller, All I/O Lines should be provided in 4 separate 16 pin female connector for Bread board connectivity through single stand wires & 50 PIN FRC connector for external interface, 8K flash memory.

43511



UNIVERSAL EMBEDDED TRAINER

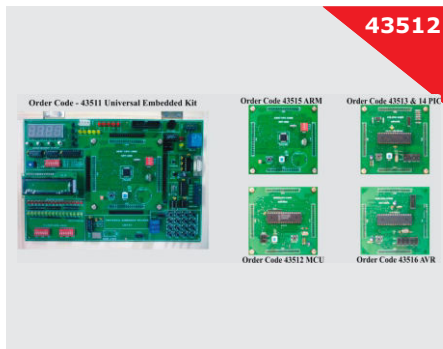
16 LED's to display Digital Output, 16 Switches to give Digital Input indicated by LED's, 16x2 Alphanumeric LCD backlit display, 4x4 Matrix Keyboard, Miniature Buzzer.



43511A

UNIVERSAL EMBEDDED TRAINER

Piggy Bag Daughter Board, On board USB JTAG Programmer for configuring XILINX Device, Display Indicator, 16 LED's indicator for input/output ports of the FPGA, Six digit seven segment display.



43512

PIGGY BACK MODULE FOR 89C51/89C61X2

Philips 89C61x2 CPU operating @ 11.0592MHz, On-chip 64KB Flash memory and 1KB RAM, On-chip UART, PWM, On-chip 32 I/O Lines are provided in 40 pin, On-board Reset Key, On-board ISP Programming.



43513

PIGGY BACK MODULE FOR PIC16F877A

Microchip 18F452 operating @ 4MHz, On-chip 32KB Flash memory and 1536 byte RAM, On-chip 256byte EEPROM, On-chip UART, SPI, I2C, PWM, On-chip 8 Channel 10 bit ADC, On-chip 32 I/O Lines are provided in 40 pin, On-board Reset Key.



43545

FPGA XC3S50 TRAINER

Clock generator, On-board 50MHz, 10MHz, 5MHz, 1MHz, 100KHz & 100Hz, 5Power on Reset and configuration reset key, 5Power selection : On-board of 5V, 3.3V, 2.5V, 1.5V & 1.2V, I/O expansions are provided through 26 pin FRC Connector for other application interface.



43555

MICRO CONTROLLER DEVELOPMENT BOARD WITH PROGRAMMER AT89S51/52

To Study the USB Port Programmer Procedure to Program Atmel AT89S51/52MCU, To Study Procedure PC Serial Communication with 43555 Board.



43556

PIC MICRO CONTROLLER DEVELOPMENT BOARD WITH PROGRAMMER

Study of PIC Microcontroller architecture, Pin to pin study of MCU, To study serial protocol(I2C/SPI), To study internal PWM, To study internal ADC, To study RTC, To study Interface various external MCM series modules.



43557

AVR MICRO CONTROLLER DEVELOPMENT WITH PROGRAMMER AT90S8515

To Study the Procedure of Flash programming of AVR MCU from USB Port Programmer, To Study Procedure PC Serial Communication, ATMEL ATMEGA8515 MCU clocked at 4MHz, Expansion connectors for plug in modules and Prototyping area, Serial Port Interface to PC for Communication.



43558

ARM-7 DEVELOPMENT BOARD WITH PROGRAMMER LPC-2294

Study and analysis of interfacing of LEDs, Study and analysis of interfacing of Switches, Study and analysis of interfacing of 16 x 2 Alphanumeric LCD, Study and analysis of interfacing of 12 bit Internal ADC.



43558A

ARM 7 DEVELOPMENT BOARD

Study of ARM 7(LPC2148) Microcontroller architecture, Study of Pin to pin study of MCU, Study of serial protocol (I2C/SPI), Study of internal PWM, Study of Timer/Interrupt, Study of RTC, Study of internal ADC and DAC.



FIBRE-OPTIC SIMPLEX ANALOGUE TRANSCEIVER TRAINER

To study Gain characteristics of a fibre optic Linear Intensity Modulation System $V_{in}(ac)$ Vs $V_o(ac)$ for fixed carrier power P_o and signal frequency, Frequency Response of ac fibre-Optic Linear Intensity Modulation System. $V_{out}(ac)$ Vs f_o at fixed carrier power P_o and $V_{in}(ac)$.



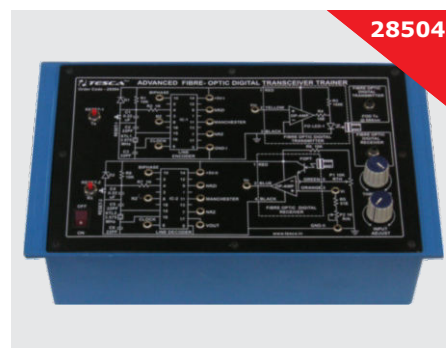
FIBRE-OPTIC SIMPLEX DIGITAL TRANSCEIVER TRAINER

Microchip 16F877A / 18F452 Microcontroller CPU, ISP Programming facility, Temperature sensor interface LM35, Temperature sensor interface DS18B20 24 I/O Lines Provided on a 26 pin FRC Connector for external interface, On board supply +/- 12V, 5V is provided.



ADVANCED FIBRE-OPTIC ANALOGUE TRANSCEIVER TRAINER

To determine the Numerical Aperture of optical fibre, Losses in Optical Fibres at 660nm and 850nm and other cables, Study of E/O Characteristic of Fibre Optic 660nm and 850nm, Study of O/E Characteristic of Fibre Optic photo transistor.



ADVANCED FIBRE-OPTIC DIGITAL TRANSCEIVER TRAINER

Design and study of a Fibre-optic digital link, Study of rise-time and fall-time distortions, Study of propagation delay, Encoding methods for fibre-optic digital transmission.



FIBRE-OPTIC TRAINER FOR NUMERICAL APERTURE AND FIBRE LOSS MEASUREMENT

Study of Fibre Optic Transmitter and Receiver, Study of Numerical Aperture of PMMA Fibre, Study of Loss in 1 Mtr / 5 Mtr. PMMA Patch Cords, Study of Electrical - Optical Converter Characteristics.



FIBRE OPTIC VOICE TRANSMITTER AND RECEIVER TRAINER

Study of fibre - optic transmitter and receiver for audio signal transmission, Study of fibre - optic transmitter and receiver for voice signal transmission, Fibre-Optic transmitter @ 660nm.



LASER FIBRE OPTIC TRAINER

Laser Diode transmitter module, 6V DC at 100mA, IC Regulated Power Supply internally connected, SPDT switch to select Automatic Current Control (ACC) or Automatic Power Control (APC), Potentiometer to set power output, Adequate no of other electronic components.



28508

PHYSICS OF FIBRE OPTICS TRAINER

On-board Function Generator, Transmitter, Receiver, Fibre Optic Analog Link, Fibre Optic Digital Link, Signal strength indicator.



28509

DIGITAL FIBRE-OPTIC POWER METER

Measures -10dBm to -30dBm , Digital Display, Measures Power at 660nm and 850nm wavelength, Portable with compact size and light weight.



28510

ELEMENTARY FIBRE OPTICS TRAINER

Characteristics of Photo Detector, Setting of Fibre Optic Voice Link using Amplitude, Frequency & PWM Modulation, Measurement of Numerical Aperture, Propagation loss using Optical Power Meter, Frequency Modulation System, Study of Propagation Loss in Optical Fiber, Study of Bending Loss.



28510A

OPTICAL FIBRE COMMUNICATION (BIT ERROR RATE, EYE PATTERN)

Study of Propagation Loss in Optical Fiber, AM system using Analog & Digital Input Signals, Study of Bending Loss, Characteristics of Fibre Optic Communication Link, Frequency Modulation System, Measurement of Numerical Aperture.



28511

ADVANCED FIBRE OPTIC TRAINER-DUAL CHANNEL & PC-PC COMMUNICATION FACILITY

Study of Characteristics of Fibre Optic Communication Link, Study of Setting of Fibre Optic Voice Link using Amplitude, Frequency & PWM Modulation, Study of V-I Characteristics of LED (E - O converter), Frequency Modulation System and Pulse Width Modulation System.



28512

MULTIPLEXER / DEMULTIPLEXER - CODER / DECODER TRAINER

Study of 4-channel Analog Time Division, Multiplexing / Demultiplexing, Study of 16-channel Time Division Mux / Demux, Multiplexing/Demultiplexing. Study of Pulse Position Modulation/Demodulation, Study of Manchester Coding and Decoding.



28513

OPTICAL VIDEO LINK TRAINER

To compare video input signal and video output signal via optical video link, To observe LASER modulator input signal and optical detector output signal, To observe triangular, square, sine etc. Signal transmission via optical video link.





28514A

WDM TRAINER WITH CHROMATIC DISPERSION

Study of Wavelength-Division Multiplexing and De-multiplexing, Study of Data Communication using WDM, Study of PC to PC communication using WDM, Study and measurement of Chromatic Dispersion.



28516

FIBRE OPTICS - DIGITAL LINK

Setting up Fibre Optic Digital Link, Study of Intensity Modulation Technique using Digital Input Signal, Characteristics of E-O Converter, Measurement of Numerical Aperture.



28517

FIBRE OPTICS - ANALOG LINK

Setting up Fibre Optic Analog Link, Study of Intensity Modulation Technique using Analog Input Signal, Measuring Losses in the fiber, Measurement of propagation loss in the Fiber, Fibre Bending Loss.



28518

OPTICAL POWER METER

Input : 180 V Fixed DC, Detector : Silicon detector, Range : 0 dBm to -60 dBm, Display : 12 mm LCD, Wavelength : 660 & 950 nm, Connector : SMA.



28519

ATMEGA32 AVR EMBEDDED TRAINER

Self contained and easy to operate, Sensitive, linear & accurate, On board transmitter and receiver, Built in DC power supply, Functional blocks indicated on board mimic, 2 mm sockets for measurement, Null adjustment for atmospheric light.



28520

CONNECTORIZATION KIT CONNECTORIZATION & SPLICE KIT

Crimp Tool, Red No Nik tool, Jacket Stripper, Diamond Scribe, Polish Films 2 Part Epoxy, Syringe & Needle, polishing Disc, Polishing Pad, Work Mat Glass Plate, Measuring Scale.



28521

FIBRE OPTIC CONNECTORIZATION KIT WITH MECHANICAL SPLICE

Crimp Tool, Red No Nik tool, Jacket Stripper, Diamond Scribe, Polish Films 2 Part Epoxy, Syringe & Needle, polishing Disc, Polishing Pad, Work Mat Glass Plate, Measuring Scale.



28522

FIBRE OPTIC CONNECTOR TRAINER

Simple, rugged and low cost, SC connectors use a ceramic ferrule to deliver accurate alignment of the SMF. The SC connector comes with a locking tab that enables push on / pull off operation.



28523

FIBRE OPTIC CABLES KIT

Fibre Optic Connectors Kit and Fibre Optic Cables Kit are displays for Fibre Optic Connectors & Cables firmly mounted on a colorful sheets, Only popular type of connectors & cables are selected which are used in Fibre Optic networking.



28524

FIBRE OPTIC POWER METER

Use of Germanium photodiode, Wavelength range : 850nm, 1310nm, 1550nm, Measurement range : +3dbm~50dbm, 0.4dBm, Output: 1mV per 1dB, Low battery indicator, Connector: ST, FC, Multi (option).



28525

FIBRE OPTICS MODULATION/DEMODULATION TRAINER

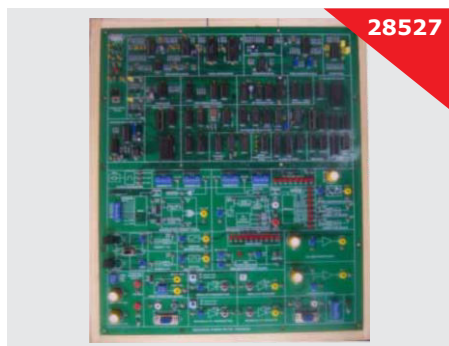
Two Nos. Of Photo Detector, On-board Sine & Square wave generator, On-board 4th Order Low Pass Filter, On-board Fault Switch, In-Built Power Supply.



28526

FIBRE OPTICS COMMUNICATION TRAINER WITHOUT PC COMMUNICATION FACILITY

Setting up Fibre Optic Analog Link, Setting up Fibre Optic Digital Link, Study of Intensity Modulation Technique using Analog Input Signal, Study of Intensity Modulation Technique using Digital Input Signal, Study of Bending Loss.



28527

ADVANCE FIBRE OPTIC TRAINER

660nm and 850/950nm Transmitter, Two Nos. Of Photo Detector, On-board Sine & Square wave generator, On-board Manchester Coding/ Decoding Technique, On-board Noise Generator & PRBS Generator, On-board Bit Error Rate Measurement.



28529A

OPTICAL POWER METER

Input Supply: 9 volt DC/1 A, Display: 4 Digit LCD Display, Switch: Push button switch to 660nm /990nm, Measuring unit: dBm.



28541

FIBRE OPTICS CABLE - PMMA

Optic fiber light is a night lighting ideal light source, by using the theory of total reflection, light transmission through optical fiber to people need light anywhere for lighting, Optical fiber safety, itself is not charged, not afraid of water, can suite many environment, Optical fiber small size, soft and flexible, easy to create and make whatever you want shape.



28551

CONSTRUCTION AND STUDY OF MODE PROPERTIES OF PLANAR WAVEGUIDE CONSTRUCTION

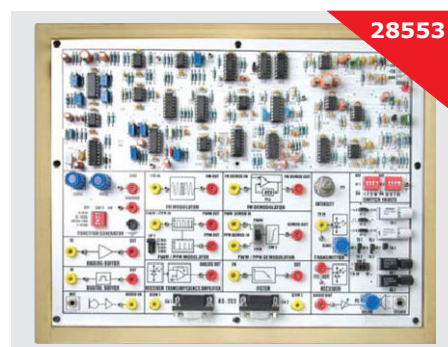
Determination of the mode structure of a step index planar waveguide, Determination of the mode structure of waveguide for TM polarization state, Establishing the design of a single mode step index waveguide, Calculation of Brewster's angle.



28552

PHYSICS OF FIBRE OPTIC LAB

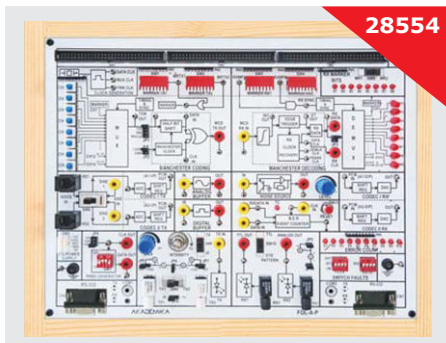
Demonstration of laws of reflection and refraction with measurement, Measurement of attenuation of an optical fiber by cutback method, Measurement of coupling loss of an optical fiber.



28553

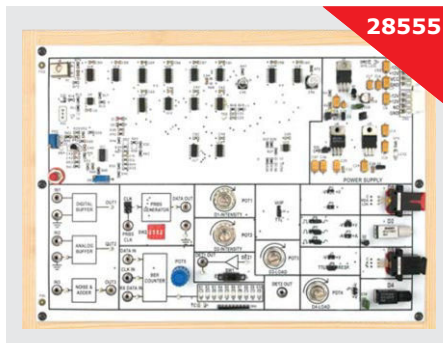
FIBRE OPTIC COMMUNICATION TRAINER

Measurement of numerical aperture, Study of frequency modulation and demodulation using fiber optic link, Setting up a fiber optic digital link, Study of modulation and demodulation of light source by pulse position modulation (PPM) techniques, Study of characteristics of fiber optical LED and detector.



ADVANCED FIBRE OPTIC COMMUNICATION TRAINER

Setting up a fiber optic analog link and digital link, Characteristics study of LED's and Photo detectors, Study of losses in optical fiber, Study of framing in synchronous time division multiplexing, Measurement of bit error rate, Measurement of numerical aperture.



FIBRE OPTIC TRAINER KIT FOR GLASS AND PLASTIC FIBRE WITH OPTICAL POWER METER FIBRE

To plot the electrical and optical characteristics of different light sources.

To Study Numerical aperture of fiber.

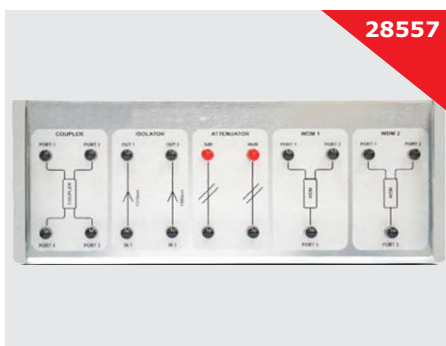
To estimate the numerical aperture of given fiber.

To measure the attenuation of given MM / SI fiber.



DUAL WAVELENGTH FIBRE OPTIC LASER SOURCE AND DETECTOR MODULE

All Connectors are suitable for ST type of connector interface, Display to indicate forward voltage across and forward current flowing through LASER source, Voltage and current is varies using intensity control potentiometer, Built in pulse generator with pulse widths of 30ns and 100ns.



FIBRE OPTIC PASSIVE COMPONENT MODULE

To measure the insertion losses and coupling coefficient in fiber optic multiplexer, To measure insertion loss of fiber optic isolator, To measure isolation rate of fiber optic isolator, To measure insertion losses of fiber optic coupler, To measure coupling coefficient in fiber optic coupler.



SINGLE MODE FIBRE OPTIC CABLE MODULE

Uniform length of fibers is provided inside the cabinet and end points are provided on the front, panel making it easy for the students to handle long lengths of fiber, Length of fiber 100m, 500m, 1000m, Type of fiber : 9/125 m single mode buffer 0.9mm PVC SRPC-STPC.



CHROMATIC DISPERSION MODULE

Specially designed to perform chromatic dispersion experiment, Type of fiber : Single mode, Chromatic dispersion : 3.5ps/(nm.km) @ 1285 nm ~ 1330nm), Length of fiber : 25Kilometer, Cable cutoff wavelength : 1260nm.



COARSE WDM AND BRAGG GRATING MODULE

To Study Optical circulator characterization, To Study Optical communication system, To Study Bragg Grating characterization, To Study Diode laser characterization, To Study 4 Channel CWDM by internal & external modulation, To Study Component characteristics.



ERBIUM DOPED FIBRE AMPLIFIER MODULE

Demonstrates amplification of 1550 nm wavelength along with the detection and measurement of amplified signal, EDFA System enables student to experimentally investigate the principles and characteristics of EDFA in C Band (1530nm – 1565 nm), Facility to implement Forward and Backward Pumping and Study Gain Characteristics.



OPTICAL TIME DOMAIN REFLECTOMETER

Automatic Measurement Mode, 0.3 to 180 km Distance scope, Multi Wavelength Analysis, Different Waveform Comparison, 1310 / 1550 nm Wavelength, 32 / 30 dB Dynamic range, Trace Fixing Function.



OPTICAL SPECTRUM ANALYSER

Channel Power Measurement, Channel Threshold Detection, Multiple traces viewed simultaneously, User-friendly GUI for Measurement and Analysis.



FIBRE OPTICS MODULATION/DEMODULATION TRAINER

Two Nos. Of Photo Detector, On-board Sine & Square wave generator, On-board 4th Order Low Pass Filter, On-board Fault Switch, In-Built Power Supply.



Instrumentation Trainers



LINEAR VARIABLE DIFFERENTIAL TRANSDUCER (LVDT) TRAINER

Study of Linear Variable Differential Transducer (L.V.D.T.), Adequate no. of patch cords stackable 4mm spring loaded plug length ½ metre, Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections /observation of waveforms.



MEASUREMENT AND CONTROL OF TEMPERATURE USING RTD TRANSDUCER

Measurement and control of temperature using RTD transducer, $\pm 12V$ DC at 100 mA, IC Regulated Power Supply, 6 V DC at 100 mA, IC Regulated Power Supply, Implementation of Wheatstone Bridge in Temperature Control System, Four Op-Amp. Ics.



LOAD CELL DEMONSTRATOR

To study Load Cell Demonstrator, Load Cell of 3kg with 200mV output, DPM of 3½ digit display for 3kg, Adequate no. of other electronic components, Mains ON/OFF switch and fuse.



STRAIN GAUGE TRAINER

To study strain measurement using strain gauges and cantilever assembly, To determine the linear range of operation of strain measurement, To determine sensitivity of the trainer.



OPTICAL TRANSDUCER TRAINER

To Study Characteristics of filament Lamp, To Study Characteristics of Photovoltaic Cell, To Study Characteristics of Photoconductive Cell, To Study Characteristics of Photo transistor, To Study Characteristics of PIN Photo diode, To Study Light Controlled Switch System.



ULTRASONIC DIGITAL DISTANCE METER

To measure unknown distance between 0.3 metre to 3 metres, The unit is operative on 9V DC Battery cell, Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections/ observation of waveforms.



52006

TEMPERATURE MEASUREMENT TUTOR USING AD - 590

To study the Characteristic of AD - 590, Oven for heating AD-590, Two AD-590, One for study of characteristic and one for maintaining the set temperature, 3 1/2 digits digital panel meter for temperature display, 3 1/2 digits digital panel meter with switch selection to read voltage range 0 - 200V and to read current 0 - 1999uA.



52007

D.C. MOTOR SPEED CONTROL TRAINER

Effect of loading on the speed of the motor in the open loop, Steady state error variation with forward gain, System time constant variation with forward gain, Effect of forward gain on disturbance rejection, Determination of the motor transfer function and tachometer characteristics.



52008

CONTROL SYSTEM LAB

To study and observe Voltage to Frequency converter, To study and observe Frequency to Voltage converter, To study and implement Light intensity control using PWM method, To study and observe Characteristics of Photoconductive Cell (LDR).



52009

FIBRE OPTIC PASSIVE COMPONENT MODULE

Study of thermal Process Control, Study of Temperature Controller, Study of Use of Industrial Process Control Elements, Study of Signal Conditioning, Study of Control Quality and Optimum Control.



52009A

TEMPERATURE PROCESS CONTROL TRAINER

Study of open loop (Manual control), Study of on/off controller, Study of proportional controller, Study of integral controller, Study of derivative controller, Study of PID controller.



52009B

FLOW PROCESS CONTROL TRAINER

Study of open loop (Manual control), Study of on/off controller, Study of proportional controller, Study of integral controller, Study of derivative controller, Study of PID controller.



52009C

TEMPERATURE PROCESS CONTROL TRAINER (AIR)

Study of open loop (Manual control), Study of on/off controller, Study of proportional controller, Study of integral controller, Study of derivative controller, Study of PID controller.



52009D

LEVEL PROCESS CONTROL TRAINER

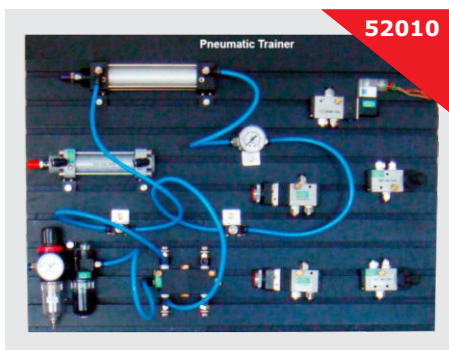
Trainer having control panel should be provided in 40X40mm Aluminum profile rack with sturdy table top flat panel, Should have ABS plastic panel mounted on the aluminum rack with mimic diagram., All input & output are terminated in 4mm shrouded connector, Should provide 4mm banana cable for experiments.



52009E

PRESSURE PROCESS CONTROL TRAINER

Study of open loop (Manual control), Study of on/off controller, Study of proportional controller, Study of integral controller, Study of derivative controller, Study of PID controller.



PNEUMATIC TRAINER

Study of the operation of a Single Acting cylinder, Study of the operation of a Double Acting cylinder, Observation of the piston movement of a Single Acting cylinder manually by using Push button, To study manual control of piston movement of double acting cylinder.



TEMPERATURE TRANSDUCER TRAINER

Characteristics of IC temperature Sensor, Characteristics of NTC Thermistor, Characteristics of NTC Bridge Circuit, Characteristics of Platinum RTD, Characteristics of K type Thermocouple, Temperature Controlled Alarm System.



RELAY CONTROL TRAINER

Eight identical switched relays (DC 12V) O/E/N-58-06-1C, Power input positions to the relays using 3 pole terminal blocks, DB25 connector to the parallel port of a PC, Protection of Parallel port on PC in case of accidental disconnection, Diode protection for transistors.



PRESSURE TRANSDUCER TRAINER

Differential Input Pressure Transducer, Precise Signal conditioning, Self-contained and easy to operate, Sensitive, Linear, Stable & Accurate, Functional blocks indicated on board mimic, On board Digital Voltmeter, On board Indicators Buzzer & LED.



PLC TRAINER

To Study Drink Machine (For cola, lime and lemon), To Study Car Parking (For three cars), To Study Tank Level Control (High level, low level and empty), To Study Step Sequence (Use of timer at different time interval), To Study How to create delays (Off delay, pulse, extended pulse), To Study Light Intensity variation.



UNIVERSAL PLC PLATFORM

Study the difference between digital and analog signals and how to bring them into a PLC, process them and send them back out, Exposure to technology of Programmable Logic Controller (PLC) and understanding the importance of automation in industries, To study variety of ladder logic instruction to create complete PLC program from scratch.



UNIVERSAL PLC (SIEMENS) TRAINER WITH HMI

Study the difference between digital and analog signals and how to bring them into a PLC, process them and send them back out, Exposure to technology of Programmable Logic Controller (PLC) and understanding the importance of automation in industries.



PLC TRAINER

Micro PLC from Delta, On board NO/NC switches, Sample of Annunciator given on board, Most user friendly, most powerful instruction sets, High execution speed, PC Based Programming, Soft copy of PLC introduction and Tutorials.



PLC (DELTA) TRAINER 24 INPUT - 22 OUTPUT, 4 ANALOG IP 2 ANALOG OP

Study of NO, NC & Coil Operation, Study of Interlock Operation, Study of Latch Operation, Study of Set & Reset Operation, Study of Rising & Falling Edge Operation, Study of Addition, Subtraction, Multiplication & Division Operation.



52017C

PLC (DELTA) TRAINER 8 INPUT - 6 OUTPUT WITH ON BOARD APPLICATIONS

Study of Set & Reset Operation, Study of Rising & Falling Edge Operation, Study of Timer & Counter Operation, Study of Right & Left Shift Operation, Study of Data Move Operation.

52017
GNH

UNIVERSAL PLC (DELTA) TRAINER WITH HMI

To study variety of ladder logic instruction to create complete PLC program from scratch, Exposure to technology of Programmable Logic Controller (PLC) and understanding the importance of automation in industries.



52018

PLC TRAINER

Micro PLC from Fatek, On board NO/NC switches, On board IR switches, Sample of Annunciator given on board, Most user friendly, most powerful instruction sets, PC Based Programming, Soft copy of PLC introduction and Tutorials, Choice of PLC and expansion module.



52018A

PLC (FATEK) TRAINER 14 INPUT / 10 OUTPUT

Installation of output relay helps to increase load current, Easy-to-use, windows-based development software, Input-simulation switches function as level and pulse input for different input signal, Installation of output relay helps to increase load current.

52019
GNH

TEMPERATURE PROCESS CONTROL TRAINER

7" Human Machine Interface (HMI) display, Fatek PLC with 12 digital inputs, 8 digital outputs, 4 analog inputs and 2 analog outputs, Toggle switches, push to ON switch, proximity sensor, selector switch, visual indicator, audio indicator, DC motor, relay card, contactor and voltage display.

52020
EH

UNIVERSAL PLC (ALLEN BRADLEY) TRAINER WITH HMI

Bradley PLC with 20 digital inputs, 12 digital outputs, 4 analog inputs and 2 analog outputs, PC based ladder and HMI programming, Extremely easy and student friendly software to develop different programs, Practice troubleshooting skills.



52021

WATER LEVEL CONTROL TRAINER

Study of water level, Study and use of timers and memory bit, Water level control by PLC through ladder program, Ready to use application board, Exhaustive learning material.



52022

ELEVATOR CONTROL BY PLC

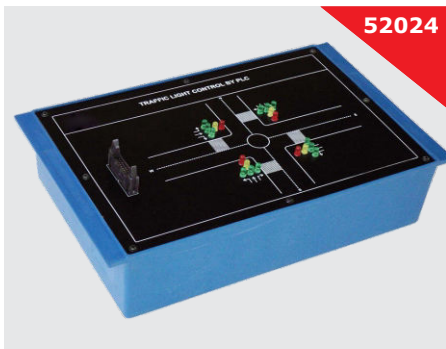
Study of elevator, Study and use of latch switches and timers, Elevator control by PLC through ladder program, Ready to use application board, Exhaustive learning material.



52023

TRAFFIC LIGHT CONTROL BY PLC

Study of traffic light, Study and use of memory bit and timers, Traffic light control by PLC through ladder program, Study of signal indications for two direction, User friendly and powerful instruction sets, Ready to use application board, Exhaustive learning material.



TRAFFIC LIGHT CONTROL BY PLC

Study of traffic light, Study and use of timers, Traffic light control by PLC through ladder program, Study of all three signals Red, Green and Orange i.e. Ready, go and stop, Having signal indications for all direction at any square.



CONVEYOR BELT TRAINER

Real time conveyor control by PLC, Product sorting, Works on both Auto/Manual mode, Provision for user to expand the number of sensors.



PID CONTROLLER TRAINER

Real time conveyor control by PLC, Product sorting, Works on both Auto/Manual mode, Provision for user to expand the number of sensors, Exhaustive course material & references.



DIGITAL CONTROL SYSTEM TRAINER

Identification of the controlled process, Study of sampling period variation, Designing P, PI, PD and PID controllers, Advanced algorithms implementation.



AC SERVOMOTOR STUDY

Study of Inertia and friction parameters, Study of Time constant, Study of Transfer function, 2-phase a.c. servomotor - 12V/ 50Hz per phase, Small generator for loading, 4-digit speed display, 3-digit time constant display.



DC MOTOR STUDY

To Study Torque-speed characteristics, To Study Inertia and friction parameters, To Study Back e.m.f. constant, To Study Time constant, To Study Transfer function.



DC POSITION CONTROL SYSTEM

Operation of the position control system for different values of the forward gain to angular position commands, Step response studies for various values of forward gain, Study of the effect of velocity feedback on the transient and steady state performance of the system as well as its stability.



A.C. POSITION CONTROL SYSTEM

To Study Error detector characteristics, phase reversal, To Study Amplifier gain measurement, To Study Phase difference between control and reference windings, Step response study.



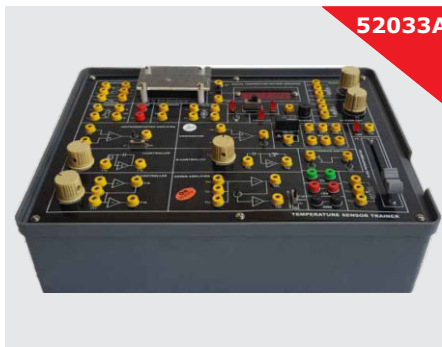
DC MOTOR SPEED CONTROL SYSTEM (PWM, SCR)

Open loop speed control for PWM Controller, with and without load, Open loop speed control for SCR Controller, with and without load, Closed loop speed control for SCR Controller with and without load, Observation and measurements on the voltage waveforms.



TEMPERATURE CONTROL SYSTEM

Study of Proportional Controller (P Control) having adjustable coefficients, Study of Proportional-Integral Controller (PI Control) having adjustable coefficients, Study of Proportional-Integral-Derivative Controller (PID Control) having adjustable coefficients.



TEMPERATURE SENSOR TRAINER

Study the NTC Thermistor sensor, Study the Platinum RTD sensor, Study the K-type Thermocouple Temperature sensor, Study the IC LM335 type Temperature sensor.



PID CONTROLLER TRAINER

Open loop response of various process configurations, P, PI, PD and PID design and performance evaluation (10 in all) in each case, Simulated blocks – dead time (transportation lag), integrator, time constants, error detector and gain.



Study of Synchro Devices

Operation and error study of the transmitter-receiver pair as a simple open loop position control at a very low torque. This is a rarely used application but is used to demonstrate the direction of the resultant magnetic field in the receiver.



MAGNETIC LEVIATION SYSTEM

Object suspended in air by magnetic force, Controller design to maintain stability, Position changing by reference, Built-in power supplies, meters etc, 220V/50Hz operation.



STUDY OF STEPPER MOTOR

Study of speed and direction control logic by recording the pulse sequence for both clockwise and counter clockwise motions, Study of resonance effect at various speeds - it provides an idea of the dynamic behaviour of the motors.



RELAY CONTROL SYSTEM

Simulated electronic relay using high speed IC's, Simulated 2nd order linear plant. Facility for displaying x and x signals, Dead zone variable from 0-600mV, Hysteresis variable from 0-500mV.



COMPENSATION DESIGN TRAINER

Simulated 'uncompensated' system having adjustable damping, Peak percent overshoot MP, variable from 20% to 50%, and steady state error variables from 50% to 0.5%, Compensation network implementation through built-in variable gain amplifier, Gain is adjustable from 1 to 11.



STUDY OF SECOND ORDER NETWORKS

Active second order network, Damping control – over-, critical, and under-damping, Built-in square wave signal, Built-in sine wave signal, Needs an external CRO for response study, Operates with 220V/50 Hazard, Exhaustive learning material.



LINEAR SYSTEM SIMULATOR

Study of Open loop step response of First Order system, Study of Closed loop step response of First Order system, Study of Closed loop step response of Second Order systems, Study of Closed loop step response of Third Order systems, Study of Disturbance rejection, Study of Additional experiments may be perform.



POTENTIOMETRIC ERROR DETECTOR

High quality servo-potentiometers of 360° shaft rotation, Built-in signal and power sources, 3½ digit DVM for measurements, 220V±10%, 50Hz mains operation, Requires an external CRO for a.c. Studies.



LIGHT INTENSITY CONTROL SYSTEM

Study of Characterization of light panel and light sensor blocks, Study of a practical single loop feedback control system, Study of Performance improvement through P-I control, Study of Evaluation of dynamic behaviour, Study of Seven lamps 6V/300mA, Study of 5Hz square wave and triangular wave for dynamic response study.



MICROPROCESSOR DEVICE CONTROLLER

Study of Light the 8 LEDs in a cycle, in binary sequence, as a bar graph display etc, Study of Operate the 2 relays with software controlled timing, Study of Operate the 7-segment display through segment control, Study of Sense the state of the 4-switches as input and send out suitable signals to various output devices.



STUDY OF TEMPERATURE TRANSDUCERS

Study of Gain and CMRR of the Instrumentation Amplifier, Study of Characteristics of a Negative Temperature Coefficient Thermistor (NTC), Study of Characteristics of a Positive Temperature Coefficient Thermistor (PTC), Study of Characteristics of semiconductor Sensor, AD590 up-to 90 °C only.



STROBOSCOPE

Non-Contact-type - no error due to friction drive, suitable for small motors and also motors in inaccessible locations, High intensity XENON flashes - operation possible from a reasonable distance (0.5m) in usual ambient light in a room. Detachable lamp unit with 1.5m cable, 4-digit speed display in rpm - operating range of 500- 9900 rpm, resolution 1 rpm. High accuracy crystal controlled LED display.



TRANSDUCER & INSTRUMENTATION TRAINER

An introduction to basic control systems, An evaluation of the various Input devices, Practical investigation of the various output devices, Practical investigation of the Display devices, Applications in practical systems, evaluation of input requirements, In depth investigation/analysis of the numerous signal conditioning circuits.



PLC TRAINER & APPLICATIONS - ALLEN-BRADLEY

An introduction to relay ladder logic, Programming the controller, Input, Output and Auxiliary relays, Latched relays, Master and Zone control relays, Counters and timers, Sequencers, Using the remote programming software.



PC BASED ANALOG & DIGITAL MOTOR CONTROL TRAINER

To study Time and frequency response, To study Principles of feedback, To study Proportional position control, To study Behaviour of second order systems, To study Position control with velocity feedback, To study 3-Term or PID control.



52054

DC POSITION SERVO TRAINER (ANALOG & DIGITAL)

To Study DC Motor Angular Position Servo System, Measurement of Dead Zone, To Study the different Characteristics of Servo System, To Study Hunting, To Study Repeatability, To Study Noise Free.



52054A

DC SERVO MOTOR

Speed control of a 30V/2A, permanent magnet d.c. motor, Speed range: 0 to 2000 rpm (typical), Opto-interrupter based speed sensing, 4-digit speed display in rpm, Electronic tachogenerator for feedback.



52057

MOTION, SOUND & FORCE TRAINER

Linear variable differential transformer, Linear variable capacitor, Strain gauge Humidity Sensor, Dynamic microphone, Ultrasonic receiver.



52058

ROTATIONAL & AIR SENSOR TRAINER

Positional Resistance Transducers, Wheatstone Bridge Measurements, Rotational speed or position Measurement, Linear or Rotational Motion, Display Devices, Control Systems Characteristics.



52059

SIGNAL CONDITIONING TRAINER

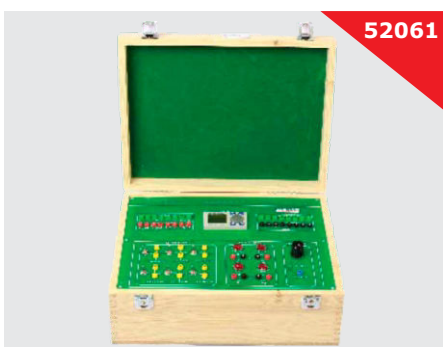
Buffer, Low pass filter with switchable time constant, Inverters, Precision full-wave rectifier, Comparator with switchable hysteresis, Sample and hold circuit, Amplifiers with gain and offset control, Integrator with switchable time constant, Current amplifier.



52060

MOTOR CONTROL TRAINER

To Study Stepper motor's forward/reverse control, To Study Stepper motor's positioning control, To Study Stepper motor's speed and position control in the self-starting zone, To Study Stepper motor's speed and position control in the accelerating/decelerating zone, To Study Encoder in the stepper motor closed-loop control.



52061

PROGRAMMABLE LOGIC CONTROLLER DEMONSTRATOR

The Pico family of Nano PLCs from Allen Bradley, are smallest & most Economical Controller, They offer Performing Simple Logic, Timing, Counting & Real Time Clock Operations, DT-4001, is built around Allen Bradley's PICOLOGIX, Built in power supply (24V DC), Input voltage Category (24V DC).



52062

CNC ENGRAVING & MILLING CONSOLE TRAINER

Spindle Speed Range : 6000-24000RPM, Spindle Power: 1.5KW (2HP) Air cooled (VFD Control), Feed Rate Range: 600mm/min for X, Y & Z axis, Suitable for engraving on Steel, Soft metals and plastic, Suitable for Milling on all soft metals and plastics / acrylic.



52063

PID CONTROLLED OVEN

An external protection device must be installed if failure of this instrument could result in damage to the instrument, equipment or injury to personnel, All wiring must be completed before power is turned on to prevent electric shock, fire or damage to instrument and equipment.



SIEMENS LOGO PLC TRAINER

Siemens Logo PLC Trainer To Study NO (Normally Open) And NC (Normally Close) Switch Function, To Study Latching (Set) And Unlatching (Reset) Bit Function, To Study AND Gate, To Study OR Gate, To Study NOT Gate, To Study And Use Timer Instruction.



SELEC PLC TRAINER

7 segment LED display, Stepper motor, 16SPDT slider switches, 13DPDT slider switches, 29 Tact switches, 174 LEDs available onboard.



LIGHT & TEMPERATURE TRAINER

Describe the characteristics of an IC temperature sensor, Describe the construction and characteristics of a platinum RTD resistance, Describe the construction and characteristics of an n.t.c. Thermistor, Discuss the characteristics of n.t.c. thermistor bridge circuits.



HYDRAULIC TRAINER

Choice of 2 top models Hydraulic/Electro Hydraulic trainer (Optionally PLC may be supplied.) / Use of aluminium profile grooved plate (CD=25mm) experiment board. Optionally table with drawers (3 nos.) To store components when not in use & 4 Nos. of caster wheels.



MINI HYDRAULIC TRAINER

Light weight, easy to carry, lockable, rigid enclosure with caster wheels and trolley puller, Low cost, Water compatible hydraulic components and accessories, MS fabricated black powder painted mounting frame, Water pressure pump with self illuminated ON/OFF switch.



ELECTRO HYDRAULIC TRAINER

Quick release socket plug arrangement for building circuits, Lighter pneumatic components are mounted using lever operated mounted adapters for quick release & placement, List of components may be modified as per your requirement.



ELECTRO HYDRAULIC TRAINER

Motor : 1/2 HP, 3 foot /flange motor, Oil Tank : 20 litre capacity (oil to be provided by the purchaser, Suction Filter Pressure Gauge, Oil Level Indicator, Pressure Relief Valve.



ELECTRO HYDRAULIC TRAINER

Study and implementation of NOT gate using PLC, Mounting panel for Hydraulic components, Study and implementation of AND gate PLC, Study and implementation of NAND gate PLC.



PNEUMATIC TRAINER

Flow & pressure Regulator (FRL) unit with Pressure gauge *(10bar) 1/4" BSP (F), Manifold 4 way, 1/4" BSP (F) with ON/OFF 4 nos, ball valve, One way flow control adjustable valve 1/4" BSP (F), Bal Valve 1/4" BSP for ON-OFF (M-F) Silencer, 3/2 way directly actuated valve [with push button 1/4" BSP (F)].



ELECTRO PNEUMATIC TRAINER

Flow & pressure Regulator (FRL) unit with pressure gauge (10bar), 1/4" BSP (F), Manifold 4 way 1/4" BSP (F) with 4 BALL on / off valve, One way flow control adjustable valve 1/4" BSP (F), Silencer.



ELECTRO PNEUMATIC TRAINER

Air Filter, Regulator & Lubricator Unit (FRL Unit), Pressure Manifold with Four ON / OFF Valves for multiple connections, Manifold with 3/2 Way Hand Slide Valve, Single Acting Cylinder, Double Acting Cylinder.



PNEUMATIC TRAINER SYSTEM

2/2 Way Direct Acting Solenoid Valve, Pressure Manifold with Four ON / OFF Valves for multiple connections, 5/2 Way Roller Valve, Single Acting Cylinder, Electro Magnetic Relay.



IDCS

Intelligent Industrial controller mounted on ESD protective Workbench, On-board 24V 6A Power-Supply, I/O Signals brought out on breakout panels for interfacing, PLC Programming IEC-61131-3 standards with KW-Multiprog, Provision for Industry standard DIN-rail mounted units.



IOT - TRAINER

To Study Gyroscope sensor Module, To Study IR sensor Module, To Study PIR sensor Module, To Study Remote sensors, To Study Natural Gas Sensor, To Study Humidity Sensor, To Study Temperature Sensor.



MOTOR CONTROL TRAINER

To Study Interfacing 4x4 keypad matrix, To Study Controlling LED using Push button, To Study Generating tone using buzzer, To Study Sensing environment humidity by interfacing humidity sensor DHT11.



RASPBERRY APPLICATION BOARD

Starting Raspbian OS, Familiarising with Raspberry Pi Components and interface, Connecting to ethernet, Monitor, USB, Displaying different LED patterns with Raspberry Pi, Displaying Time over 4-Digit 7-segment Display, Setting up Wireless Access Point using Raspberry Pi.



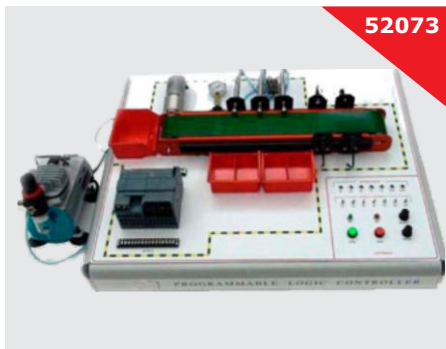
ARDUINO APPLICATION BOARD

To Study Starting and connecting Arduino board with Computer, To Study Displaying different LED patterns with Arduino, To Study LCD interfacing with Arduino, To Study DC Motor Interfacing with Arduino.



IOT DEVELOPMENT BOARD

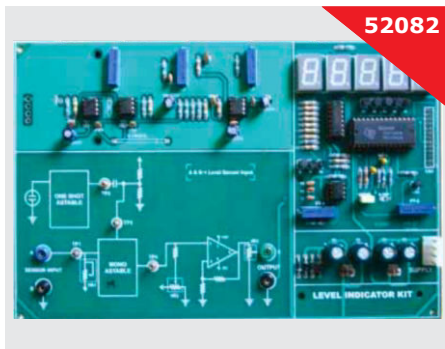
To Develop Program For Interfacing 7 Segment Display, To Develop Program For Measuring Distance By Interfacing Ultrasonic Sensor HC-SR04 With ESP32, To Develop Program to Control DC Motor with ESP32, To Develop Program For Generating Tone Using Buzzer.



52073

PLC - TRAINER

Recognize the Bit Shift Left and Bit Shift Right instructions and how they are programmed, Recognize the operation of the Sequencer Output instruction and how it is programmed, Write a program to Sort components by Height.



52082

LEVEL MEASUREMENT TRAINER

Onboard Instrumentation Amplifier provided, Block Description Screen printed on glassy epoxy PCB, 1feet Scale is provided for level measurement, Plastic container with outlet Tap is provided for Water Storage, Facility to Interface with PC.



52083

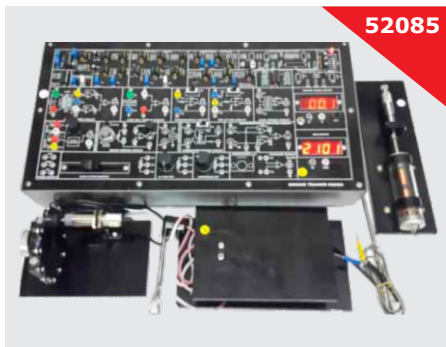
SPEED MEASUREMENT TRAINER

Onboard Instrumentation Amplifier provided, Block Description Screen printed on glassy epoxy PCB, 6V DC Motor with necessary attachment for measurement is provided, Test points are provided to analyze signals at various points, All ICS are mounted on IC Sockets, Bare board Tested Glass Epoxy SMOBC PCB is used.

ELECTRONICS

AVAILABLE BRANDS





52085

SENSOR TRAINER BOARD (ITI)

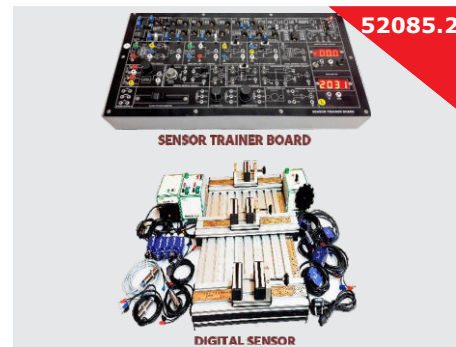
Instrumentation amplifier, All interconnections are made using 2mm socket, Test points are provided to analyze signals at various points, All ICS are mounted on IC Sockets, Bare board Tested Glass Epoxy SMOBC PCB is used, In-Built Power Supply of $\pm 5V$, $\pm 12V$.



52085.1

DIGITAL SENSOR TRAINING KIT

To study the basic of digital input & Output, To study the industrial application of digital Sensors, To study and calibrate the digital sensor output, To display & understand the variation in response time of various digital sensor, To study electrical connections of various types of digital sensors.



52085.2

SENSOR TRAINER BOARD WITH DIGITAL SENSORS

To study the basic of digital input & Output, To study the basic function of digital Sensors, To display & understand the variation in response time of various digital sensor, To study electrical connections of various types of digital sensors.



52086

FLOW RATE MEASUREMENT TRAINER

Study of flow rate, Study of Rotameter, Study and use of flow rate measurement of water using a Rotameter.



52087

PROGRAMMABLE LOGIC CONTROLLER TRAINER

To Study Day light tower, To Study Vending machine control, To Study Logic gate (AND, OR, NOT, NOR, NAND, EX-OR, EX-NOR), To Study Manipulator control, To Study Traffic light control.



52088

CONTROL SYSTEM SIMULATOR

To observe the First Order control system for different values of the Damping Ratio at different values of resistance, To observe the Third Order control system for different values of the Damping Ratio at different values of resistance, To observe the Type 0 control system Steady, State Error (Ess) for Unit Step or Square wave input.



52089

MEASUREMENT OF STRAIN USING STRAIN GAUGE

To study strain measurement using strain gauges and cantilever assembly, To determine the linear range of operation of strain measurement, To determine sensitivity of the trainer.



52090

MEASUREMENT OF TORQUE USING STRAIN GAUGE

To study Torque measurement using strain gauges and cantilever assembly, To determine the linear range of operation of Torque measurement, To determine sensitivity of the trainer.



52091

WATER LEVEL MEASUREMENT TRAINER (USING INDUCTIVE & CAPACITIVE TRANSDUCER)

To study Water level Indicator using Inductive Transducer, 5V D.C. at 100mA, I.C. regulated Power Supply, Inductive Water Level Sensor capable of measuring level from 0 to 9 (nine interval).



52092

MEASUREMENT OF ANGULAR DISPLACEMENT USING POTENTIOMETRIC (RESISTIVE) AND CAPACITIVE TRANSDUCER & STUDY THEIR CHARACTERISTICS

To measure angular displacement using Capacitive Transducer, To study the characteristics of Potentiometric (Resistive) Transducer, To study the characteristics of Capacitive Transducer.



52093

DISPLACEMENT MEASUREMENT TRAINER USING LDR, PHOTO TRANSISTOR AND PHOTO DIODE SETUP

To study LDR characteristics as displacement vs resistance at constant voltage, To study Phototransistor characteristics as voltage vs displacement, To study LDR characteristics as voltage vs resistance at constant displacement.



52094

DISPLACEMENT MEASUREMENT USING INDUCTIVE & CAPACITIVE PICK-UP SYSTEM

To Study Displacement measurement using inductive pick-up system, To Study Displacement measurement using capacitive pick-up system.



52095

MEASUREMENT OF SPEED USING PHOTOELECTRIC TRANSDUCER

To Study Measurement of Speed using photoelectric transducer, 4 digit 7 segment display for displaying speed in RPM, 12 Volt DC Motor with blade that has 12 hollow points at the edges whose rotating speed is to be calculated, Opto coupler MOC7811 as a photoelectric transducer.



52101

BASIC PNEUMATIC TRAINER KIT (TRANSPARENT) WITH INCLINED PROFILE

Air preparation unit Junction box with slide valve, Double acting cylinder Tie rod model, Single acting cylinder Tie rod model, Roller Lever valve, Inline flow control valve.



52102

BASIC PNEUMATIC TRAINER KIT WITH INCLINED PROFILE

Operation of single acting and double acting cylinder, Speed control techniques of pneumatic actuator, AND, OR logic operation Position control using Roller lever valve, Operation of manual operated valves.



52104B

ELECTRO PNEUMATIC WORKSTATION

PLC operated Electro Pneumatic platform, MCB for ON/OFF control and over load protection, 4 mm patch cord connections, Powerful instruction sets, Extremely easy and student friendly software.



52105

BASIC PNEUMATIC TRAINER KIT WITH FIXED COMPONENT

5/2 way double external pilot operated valve, 5/2 way Single External pilot operated valve with spring return, 5/2 Hand lever valve with Sp. return, 5/2 Hand lever valve with detent.



52105A

BASIC PNEUMATIC COMPACT TRAINER

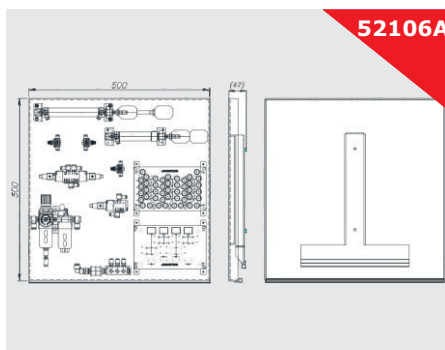
5/2 way Single External pilot operated valve with spring return, Miniature double acting cylinder(Ø25 x 100), 3/2 NC Valve with switch(Flush head - Green)-1/8", Inline slide valve, Junction box.



52106

ELECTRO PNEUMATIC TRAINER KIT WITH FIXED COMPONENT

Air preparation unit, Junction box with slide valve, Double acting cylinder – Tie rod model, Double acting cylinder – Crimping model, Single acting cylinder – Crimping model, Inline flow control valve, 5/2 way Double solenoid operated valve.



52106A

ELECTRO PNEUMATIC COMPACT TRAINER KIT

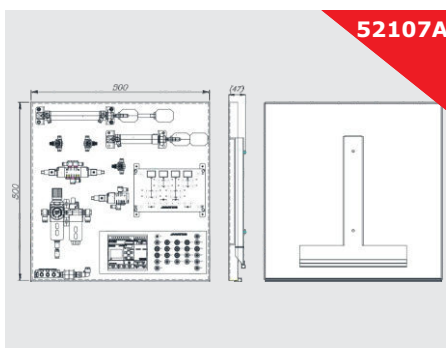
Magnetic Sensor with clamp for Miniature DAC Cylinder, Electrical connection set-banana plugs and cables, 5/2 Way Double solenoid pilot operated valve, Junction box with slide valve, Miniature Single acting cylinder - Magnetic(Ø25x50).



52107

ELECTRO PNEUMATIC TRAINER KIT PLC WITH FIXED COMPONENT

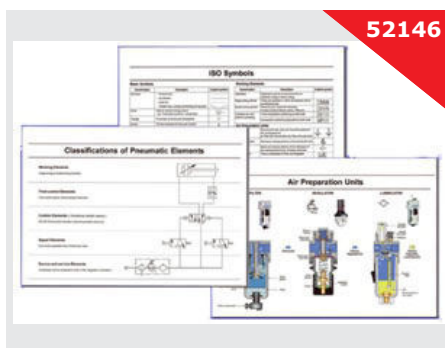
Electro pneumatic kit with PLC consists of all the capabilities mentioned under the electro pneumatic training kit, It surpasses their capabilities by its flexibility in designing circuits & possibilities of achieving numerous logical circuits using the software interface.



52107A

ELECTRO PNEUMATIC COMPACT TRAINER WITH PLC

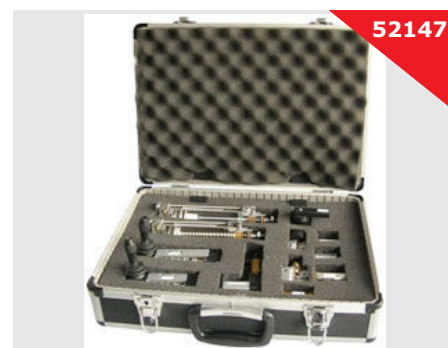
Input Voltage : 85 264 V AC, 47 63 Hz, Output Voltage : 24V DC, 4A, Material : ABS, Protection : AC - 2A glass type fast blown fuse.



52146

PNEUMATICS - WALL POSTERS

Classification of Pneumatic Elements, Working Elements, Final Control Elements, Signal Elements, Directional Control Valves.



52147

PNEUMATICS - CUT SECTIONS

Single acting cylinder, Double acting cylinder, Filter regulator, Hand lever valve, Flow control valve, AND valve, 3/2 NC flush head valve with actuator - Green, Quick exhaust valve, Non return valve.



52148

PNEUMATICS - MAGNETIC SYMBOLS

Air Preparation Units, Signal Elements, Directional Control Valves, Working Elements, Final Control Elements.



52149

PNEUMATICS - AUTOMATION SOFTWARE

Functional features of products & components can be understood, The virtual cut sectional animations of individual components and as a circuit lets the students to know the internal details of the product and to understand the functions better.



52200

MODULAR PRODUCTION / MANUFACTURING SYSTEM

Dispensing Station Stack magazine and vacuum switch module for distribution of work piece for inspection, Inspection Station Pneumatic linear drive fitted with linear transducer measures the height of work piece and segregates the approved / rejected ones.



52203

AIR COMPRESSOR

Power : 1HP, input Voltage : 230VAC,
Tank Capacity : 25 Litre.



52220

PROCESS INSTRUMENTATION TRAINER

Study of Flow transmitter and measurement, Study of Level transmitter and measurement, Study of Temperature transmitter and measurement, Study of Control valve & its characteristics, Study of frequency transmitter & its operation.



52221

FLOW CONTROL TRAINER (WITH TURBINE FLOW METER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52222

FLOW CONTROL TRAINER (WITH DPT TYPE FLOW METER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52223

FLOW CONTROL TRAINER (WITH MAGNETIC FLOW METER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52224

FLOW CONTROL TRAINER (WITH ULTRASONIC FLOW METER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52225

LEVEL CONTROL TRAINER (WITH CAPACITANCE TYPE LEVEL TRANSMITTER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52226

LEVEL CONTROL TRAINER (WITH DPT AS LEVEL TRANSMITTER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



52227

LEVEL CONTROL TRAINER (WITH ULTRASONIC LEVEL TRANSMITTER)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



PRESSURE CONTROL TRAINER (WATER)

Study of operation and calibration of transmitters, I/P converter and Control Valve, Study of open loop/close loop tuning & auto tuning of controller, Study of step response & Transient response of controller (process curve), Study of tuning and operation of PID controller.



PRESSURE CONTROL TRAINER (AIR)

Study of single loop Proportional (P), Integral (I) and Derivative control (D), Study of programming and operation of PID controller, Study of stability of single loop Flow Control System, Study of operation and calibration of transmitters, I/P converter and Control Valve.



TEMPERATURE CONTROL TRAINER (AIR)

Study of single loop proportional, integral and derivative control, Study of stability of single loop Temperature control, Configure micro controller based PID to give manual output, change controller modes (Manual or Auto), give ON OFF, proportional, integral, derivative PI and PID Control, change local set point, configure and run a set point.



TEMPERATURE CONTROL TRAINER (WATER)

Study of single loop proportional, integral and derivative control, Study of stability of single loop Temperature control, Configure micro controller based PID to give manual output, change controller modes (Manual or Auto), give ON OFF, proportional, integral, derivative PI and PID Control, change local set point, configure and run a set point.



VERIFICATION OF P, P+I, P+D, P+I+D CONTROL

Study of single loop proportional, integral and derivative control, Study of operation and calibration of transmitters, Study of stability of Temperature control loop, Demonstrate the use of RTD (or a transmitter) for the measurement of temperature of flowing air and a heater.



PC-PID BASED MULTI PROCESS CONTROL TRAINER

Feedback control Flow, Level, Temperature and Pressure, Split Range control Level/Pressure, Feed forward control flow/level, A control system for liquid flow across the two tanks, Study of SCADA Application Software/ Computerized Control of Multi-Process Control System.



PNEUMATICS - MAGNETIC SYMBOLS

Feedback control Flow, Level, Temperature and Pressure, Split Range control Level/Pressure, Feed forward control flow/level, A control system for liquid flow across the two tanks, Study of SCADA Application Software/ Computerized Control of Multi-Process Control System.



PNEUMATICS - AUTOMATION SOFTWARE

Feedback control Flow, Level, Temperature and Pressure, Split Range control Level/Pressure, Feed forward control flow/level, A control system for liquid flow across the two tanks, Study of SCADA Application Software/ Computerized Control of Multi-Process Control System.



MODULAR PRODUCTION / MANUFACTURING SYSTEM

Feedback control Flow, Level, Temperature and Pressure, Split Range control Level/Pressure, Feed forward control flow/level, A control system for liquid flow across the two tanks, Study of SCADA Application Software/ Computerized Control of Multi-Process Control System.



52238

PC-PLC HMI BASED MULTI PROCESS CONTROL TRAINER

Study of PLC & HMI, Study of feedback, cascade, Ratio and on-off, split Range, control schemes, Feedback control Flow, Level, Pressure, Temperature, Cascade Control Flow-Level, Flow-Pressure.



52239

HEAT EXCHANGER TEMPERATURE CONTROL TRAINER

Study of Feed Back Temperature Control Loop, Study of Shell & Tube type/Plate type Heat Exchanger, Study of SCADA Application Software/ Computerized Control of Heat Exchanger Temperature Control System.



52240

CASCADE CONTROL (FLOW - LEVEL) TRAINER

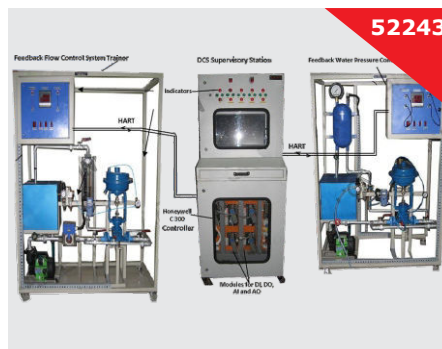
Study of multivariable loop, Cascade Control, Study of single loop proportional (P), integral (I), and derivative (D) control, IStudy of operation and calibration of transmitters, I/P converter and pneumatic control valve, Study of programming and operation of PID controller, Study of stability of dual loop cascade control system (Flow - Level Control).



52241

FEEDBACK FLOW AND LEVEL CONTROL TRAINER

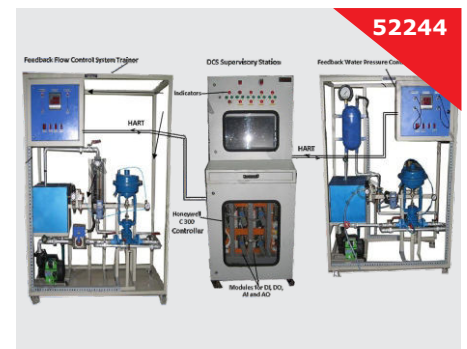
Study of Feedback Control, Study of STEP response & Transient response of controller (process curve), Study of open loop/close loop tuning & auto tuning of controller, Study of single loop proportional (P), integral (I), and derivative (D) control.



52243

BASIC DISTRIBUTED CONTROL SYSTEM TRAINER

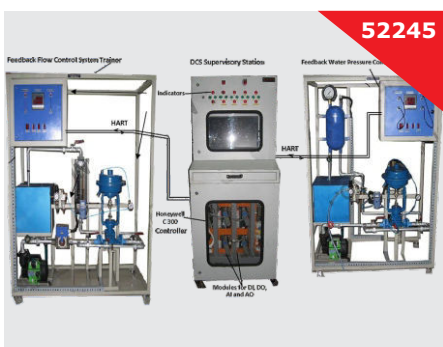
Study of Distributed Control Systems, Study of Communication Protocols such as USB/RS 485/ Ethernet/ Modbus/ TCP-IP/HART, Study of Individual Process Plants hooked up with the DCS, Study of SCADA Application Software/ Computerized Control of Process Plants.



52244

HYBRID DISTRIBUTED CONTROL SYSTEM TRAINER

Study of Distributed Control Systems, Study of Communication Protocols such as USB/RS 485/ Ethernet/ Modbus/ TCP-IP/HART, Study of Individual Process Plants hooked up with the DCS, Study of SCADA Application Software/ Computerized Control of Process Plants.



52245

ADVANCED DISTRIBUTED CONTROL SYSTEM TRAINER (TRUE DCS)

Study of Distributed Control Systems, Study of Communication Protocols such as USB/RS 485/ Ethernet/ Modbus/ TCP-IP/HART, Study of Individual Process Plants hooked up with the DCS, Study of SCADA Application Software/ Computerized Control of Process Plants.



52260

PRESSURE TRANSDUCER/ TRANSMITTER MODULE

Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, MS Powder coated frame, Enhanced Electrical Safety Considerations, Training Manuals for Operation Ease.



52261

ELECTRO-PNEUMATIC (E/P) OR I/P CONVERTER TRAINER

Study Of Electro - Pneumatic (I/P) Converter, Compact Ergonomic Design User Friendly, Self Explanatory System, Robust Construction, MS Powder Coated Frame, Training Manual for Operation ease.



52262

PNEUMATIC-ELECTRO (P/E) OR P/I CONVERTER TRAINER

Study of P to I Converter Setup, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, MS Powder coated frame, Training Manual for Operation Ease.



52263

BASIC PNEUMATIC TRAINER

Study of Pneumatic Cylinders: Single Acting, Double Acting, Study of Different Pneumatic circuits such as AND – OR-Logical circuits etc, Study of pneumatic control system, Study of construction & operation of pneumatic equipments such as 5/2 Way valve, 3/2 Way valve, pneumatic motor.



52264

ADVANCE PNEUMATIC TRAINER

Study of Pneumatic Cylinders: Single Acting, Double Acting, Study of Different Pneumatic circuits such as AND – OR-Logical circuits etc, Study of pneumatic control system, Study of construction & operation of pneumatic equipments such as 5/2 Way valve, 3/2 Way valve, pneumatic motor.



52265

ELECTRO-PNEUMATIC TRAINER

Study of pneumatic actuator & reciprocating cylinder trainer kit with different logical Circuits such as OR, AND etc. operation, Study of pneumatic cylinders, single acting, double acting, Study of construction & operation of pneumatic equipments such as 5/2-way Solenoid valve, 3/2-way valve, limits switches, pneumatic motor etc, Study of pneumatic control systems.



52266

CUSTOMIZED BASIC ELECTRO-PNEUMATIC TRAINER

Study of pneumatic actuator & reciprocating cylinder trainer kit with different Logical Circuits such as OR, AND etc. operations, Study of pneumatic cylinders single acting, double acting, Study of construction & operation of pneumatic equipments such as 5/2 Solenoid valve, 3/2-way valve, limits switches, pneumatic motor.



52267

ADVANCED CUSTOMIZED ELECTRO-PNEUMATIC TRAINER

Study of Advanced Electro – Pneumatic Trainer, Study of Self Reciprocation of Single Acting Cylinder by Using Electric Limit Switch & 3/2 Solenoid Valve, Study of Self Reciprocation of Double Acting Cylinder by Using Proximity Switch & 5/2 Double Sided S.V.



52268

CUSTOMIZED BASIC ELECTRO-PNEUMATIC TRAINER

Study of AND Valve (Dual Pressure Valve), Study of Shuttle Valve (OR Valve), Study of operation of Hand Lever Valve (3/2 & 5/2 DCV), Study of operation of 5/2 Single & Double Pilot Operated Valve, Study of operation of 3/2 Single Pilot Operated Valve, Study of Pressure Sequence Valve.



52270

FLAPPER NOZZLE ASSEMBLY

To plot the characteristics of Displacement (micron) Vs Pressure (Psi), Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, MS powder coated frame, Training Manuals for Operation Ease.



52271

CUT SECTION OF VALVES

Study of different types of valves, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Training Manual for Operation Ease.



52273

DISPLACEMENT, VELOCITY, ACCELERATION MEASUREMENT SETUP

Study of Vibration Measurement Using Accelerometer, Study of measurement of displacement, Velocity & Acceleration, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, robust construction, Enhanced Electrical Safety Considerations.



52274

OPTICAL ANGLE ENCODER SETUP FOR ANGULAR POSITION/DISPLACEMENT MEASUREMENT

Study of Optical Rotary Encoder, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations.



52275

OPTICAL ROTARY ENCODER SETUP FOR SPEED MEASUREMENT. I.E. CONTACT TYPE SPEED MEASUREMENT SETUP

Study of Optical Rotary Encoder, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations.



52277

CALIBRATION OF THERMOCOUPLE, RTD, THERMISTOR SETUP

Study of Calibration of RTD, Thermistors and Thermocouple, Temperature range: 0-100°C, Calibration facility for thermocouple & RTD, 7-segment LED display for temperature Indicator controller.



52278

CALIBRATION OF THERMOCOUPLE, RTD, THERMISTOR SETUP

Study of Calibration of RTD, Thermistors and Thermocouple, Temperature range: 0-200°C, Calibration facility for thermocouple & RTD, 7-segment LED display for temperature Indicator controller.



52279

CALIBRATION OF THERMOCOUPLE, RTD, THERMISTOR SETUP

Study of Calibration of RTD, Thermistors and Thermocouple, Temperature range: 0-300°C, Calibration facility for thermocouple & RTD, 7-segment LED display for temperature Indicator controller.



52280

CALIBRATION OF THERMOCOUPLE, RTD, THERMISTOR SETUP

Study of Calibration of RTD, Thermistors and Thermocouple, Temperature range: 0-400°C, Calibration facility for thermocouple & RTD, 7-segment LED display for temperature Indicator controller.



52281

TEMPERATURE MEASUREMENT TRAINER

Study of Measurement Temperature using Thermometer, Study of Measurement Temperature using Bimetal Thermometer, Study of Measurement Temperature using RTD PT-100, Study of Measurement Temperature using Thermistor, Study of Measurement Temperature using K-Type Thermocouple.



52282

SETUP FOR AUTOMATIC DOOR CLOSING AND OPENING USING PROXIMITY DETECTOR

Study of Automatic Door Closing & Opening System, Inductive/Capacitive Proximity Switches for end positions, Relay & motor operated door system with time out operation, Door opening/closing on presence/absence of object.



SETUP FOR STUDY OF DIFFERENT SWITCHES & RELAYS

Study of different Switches & Relays, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations.



HYDRAULIC TRAINER (BASIC)

Study of fundamental principles of Hydraulics & its applications, Study of Meter-in Circuit & Meter-out circuit, Study of Bleed-off Circuit, Study of Transverse & Feed Circuit, Study of Speed Control, Pressure Control & Flow Control.



HYDRAULIC TRAINER (ADVANCED)

Study of fundamental principles of Hydraulics & its applications, Study of Meter-in Circuit & Meter-out circuit, Study of Bleed-off Circuit, Study of Transverse & Feed Circuit, Study of sequencing operation using Pressure Sequence Valve, Study of Speed Control, Pressure Control & Flow Control.



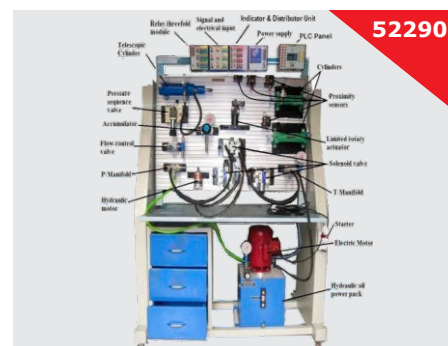
TRANSPARENT HYDRAULIC TRAINER

Study of fundamental principles of Hydraulics & its applications, Study of source of hydraulic power, its transmission methods and conditioning of oil used in hydraulic system, Study of single acting & double acting cylinders, Study of Transverse & Feed Circuit, Study of sequencing operation using Pressure Sequence Valve.



PLC BASED ELECTRO-HYDRAULIC TRAINER

Study of fundamental principles of Hydraulics & its applications, Study of sequencing operation of two cylinders using PLC and electro-hydraulic components, Study of Pressure control, Speed Control & Flow Control, Study of direction control, Study of hydraulic valves.



ADVANCED CUSTOMIZED ELECTRO-HYDRAULIC TRAINER

Function & identification of Electro-Hydraulic components & their symbols, Direct and indirect manual controls, stroke dependant controls and pressure dependant controls with pressure sequence valves, Design & function of electro-hydraulic System.



ADVANCED CUSTOMIZED HYDRAULIC TRAINER (FOR ITI)

Function & identification of Electro-Hydraulic components & their symbols, Direct and indirect manual controls, stroke dependant controls and pressure dependant controls with pressure sequence valves, Design & function of electro-hydraulic System.



52292

ECONOMY MODEL OF HYDRAULIC TRAINER KIT FOR ITI

Function & identification of Electro-Hydraulic components & their symbols, Direct and indirect manual controls, stroke dependant controls and pressure dependant controls with pressure sequence valves, Design & function of electro-hydraulic System.



52293

ADVANCED CUSTOMIZED ELECTRO-HYDRAULIC TRAINER

Study of pressure control, Study of direction control, Study of fundamental principles of Hydraulics & its applications, Study of Meter-in circuit, Meter-out circuit and Bleed-off circuit, Study of flow control.



52306

HUMIDITY MEASUREMENT KIT

Study of Humidity Measurement, Digital Hand Held Battery Operated Device, 20 to 90% Humidity Measurement, Memory For Highest & Lowest Humidity.



52307

I/P & P/I CONVERTER KIT (COMBINED SETUP)

Study of I/P & P/I Converter Setup, Digital Current Indicator with 3 1/2 Digital Display, Current source with 3 1/2 Digital Display, I/P Converter Input : 4-20 mA Output is 3-15 PSI, P/I Converter Input is 3-15 PSI Output is 4-20mA.



52309

LEVEL MEASUREMENT USING CAPACITIVE TRANSDUCER - SETUP WITH SUMP TANK, PUMP & CUBICLE FRAME

Study of Level Measurement Using Capacitive Level Transducer, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, Enhanced Electrical Safety Considerations.



52311

LEVEL MEASUREMENT USING ULTRASONIC TRANSDUCER

Study of Level Measurement Using Ultrasonic Level Transducer, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, Enhanced Electrical Safety Considerations, Training Manuals for Operation Ease.



52313

SPLIT RANGE CONTROL SYSTEM TRAINER

Study of Calibration of RTD, Thermistors and Thermocouple, Temperature range: 0-400°C, Calibration facility for thermocouple & RTD, 7-segment LED display for temperature Indicator controller.



52314

X-Y POSITION CONTROL SYSTEM (PLC BASED) USING STEPPER MOTORS & ITS CONTROLLER CARDS

To draw straight line, inclined line, Square, Rectangle, Triangle, Hexagon, Pentagon with the help of PLC ladder program & XY position control module, Controlled by PLC, Capable to draw shape such as straight line, inclined line, rectangle, square, pentagon.



52316

RATIO & CASCADE CONTROL SYSTEM TRAINER

Study of Feedback Flow, Feedback Level Loop, Study of single loop Proportional (P), Integral (I), and Derivative (D) control, Study of operation and calibration of transmitters, I/P converter and pneumatic control valve, Study of programming and operation of PID controller.



52317

AIR PURGE BUBBLER SYSTEM FOR LEVEL MEASUREMENT

Study of level measurement using the concept of back pressure regulation, Demonstrate the implicative use of pressure gauge as a level measurement (indirect measurement technique), Training Manuals mimic Charts for Operation Ease.



52318

PICK & PLACE ROBOTIC APPLICATION MODULE (PLC BASED) USING STEPPER MOTORS & ITS CONTROLLER CARDS

PLC Micrologix 1400 with PWM output, Controlled by PLC, Displacement in 3 axes : X-Y-Z axis, Capable to pick and place an object from one position to another, Variable Jaw area to Pick objects of different shapes.



52319

PICK & PLACE ROBOTIC APPLICATION MODULE (PLC BASED) USING SERVO MOTOR & SERVO AMPLIFIER

PLC Micrologix 1400 with PWM output, Controlled by PLC, Displacement in 3 axes : X-Y-Z axis, Capable to pick and place an object from one position to another, Variable Jaw area to Pick objects of different shapes.



52320

ROBOT MODEL (4-AXIS)

Study of level measurement using the concept of back pressure regulation, Demonstrate the implicative use of pressure gauge as a level measurement (indirect measurement technique), Variable Jaw area to Pick objects of different shapes, Object Lift movement height Selectable.



52322

NON CONTACT TYPE SPEED MEASUREMENT SET UP

Speed measurement by using Tachometer, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations, Training Manuals for Operation Ease, Inbuilt Safety Measures to avoid improper usage.



52323

ROTARY TABLE POSITIONING SYSTEM - MANUAL

To rotate the table in various angular positions with the help of stepper motor, Stepper motor electrical with actuator driven mechanism, with circular transparent table, Circular platform Diameter- 200mm, Thick- 5mm.



52324

ROTARY TABLE POSITIONING SYSTEM - PLC BASED

To rotate the table in various angular positions with the help of stepper motor, Stepper motor electrical with actuator driven mechanism, with circular transparent table, Circular platform Diameter- 200mm, Thick- 5mm, Bidirectional stepper motor Torque 10Kg / cm².



52325

DEAD WEIGHT PRESSURE GAUGE TESTER

Study of dead weight pressure gauge tester, Screw pump to generate pressure in the circuit easily and accurately, Hydraulic fluid is generally a mineral oil, but glycerin is used for testing oxygen gauges.



52330

PLC BASED COIN COUNTER APPLICATION MODULE

Study PLC based coin counter application, Proximity/optical sensor to sense the coin, 3 1/2 digit display to show the count display, electric actuator.



52331

AC MOTOR SPEED CONTROL TRAINER I.E. AC DRIVE (VFD) TRAINER

Study of operation and construction of A.C. motor, Study of characteristics of A.C. motor, Study of tachometer, Study of AC drives, Characteristics plot of Speed VS Current, and Frequency VS Speed, Study of closed loop control system (speed control).



52332

DC MOTOR SPEED CONTROL TRAINER. I.E. DC DRIVE TRAINER

Study of operation, construction of DC motor, Study of characteristics of DC motor, Study of tachometer, Study of DC drive, Characteristics plot of Voltage VS Speed, Speed VS Current, Study of closed loop control system (speed control).



52333

CENTRIFUGAL PUMP TEST RIG

Study of characteristics of centrifugal pump, Study of testing efficiency of Centrifugal Pump, Self-contained unit, Modern industrial components are used for operating, Comprehensive training manual supplied.



52334

RECIPROCATING PUMP TEST RIG

Study of characteristics of reciprocating pump, Study of testing efficiency of various positive displacement pumps, The self-contained unit, Modern industrial components are used for operating, Comprehensive training manual supplied.



52336

GEAR PUMP TEST RIG

Study of working of Two Stage Air compressor, Study of calculation of efficiency of compressor, Leak proof Safety Measures, & Robust Construction, Enhanced Electrical Safety Considerations, Training Manuals & mimic Charts for Operation Ease, M.S. powder coated panel with standard Instrument Mountings.



52337

VANE PUMP TEST RIG

Study of characteristics of Vane pump, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, sturdy piping & Robust Construction, Training Manuals mimic Charts for Operation Ease, System Frame with Caster Wheel Arrangement for ease in movement.



52339

MCLEOD GAUGE

Measurement of Vacuum using McLeod Gauge, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations.



52341

TEMPERATURE MEASUREMENT TRAINER

Study of Measurement Temperature using Thermometer, Study of Measurement Temperature using Bimetal Thermometer, Study of Measurement Temperature using RTD PT-100, Study of Measurement Temperature using Thermistor, Study of Measurement Temperature using K-Type Thermocouple.



52342

SETUP FOR AUTOMATIC DOOR CLOSING AND OPENING USING PROXIMITY DETECTOR

Study of Automatic Door Closing & Opening System, Inductive/Capacitive Proximity Switches for end positions, Relay & motor operated door system with time out operation, Door opening/closing on presence/absence of object.



FLOW MEASUREMENT SETUP USING ROTAMETER

Study of Rotameter, Flow control valve (ball valve), Sump tank and pump for water circulation, Measurement tank for Rotameter calibration, Caster wheel mounted movable frame, Inbuilt Safety Measures to avoid improper usage,



FLOW MEASUREMENT SETUP USING VENTURI TUBE

Study of Flow Sensors such as Rotameter, Venturi with the help of Manometer, Flow control valve (ball valve), Sump tank and pump for water circulation, Caster wheel mounted movable frame.



PLC BASED OIL AND WATER SEPARATOR

Study of characteristics of Vane pump, Two line display on PLC unit for programming, Transparent acrylic tanks, Ms Powder coated frame containing water tanks.



ROTARY ENCODER SETUP FOR SPEED AND ANGLE (POSITION) MEASUREMENT

Study of Optical Rotary Encoder, Compact Ergonomic Design, Provision to give angular displacement to the encoder shaft, User Friendly, Self Explanatory Systems, Enhanced Electrical Safety Considerations, Robust Construction.



SERVOMOTOR POSITION AND SPEED CONTROL TRAINER

To study Position Control of Servomotor, To study Graphic Operation Controller, Inbuilt Safety Measures to avoid improper usage, To study Speed Control of Servomotor using photoelectric pick up.



SPEED MEASUREMENT USING DIGITAL STROBOSCOPE & PROXIMITY SENSOR

Study of Digital Stroboscope, Study of Proximity sensor for speed measurement, Compact Ergonomic Design, Enhanced Electrical Safety Considerations, Inbuilt Safety Measures to avoid improper usage, Test points provided on front panel to measure pulses.



PC BASED FEEDBACK FLOW, LEVEL, PRESSURE, TEMPERATURE, CONTROL

Study of SCADA Application Software/ Computerized Control of Feedback Control System, Study of Feedback control, Flow, Level, Temperature and Pressure.



ALARM ANNUNCIATOR TRAINER

Study of Alarm Annunciator Trainer, Compact Ergonomic Design, Inbuilt hooter, Fast response time, User Friendly, Self Explanatory Systems.



ANNUNCIATOR

Multiple sequence option with site selection facility, On board Test, Silence, Accept, Reset button, 12 Window with Super bright 4 LED's in Parallel, Terminal Block connector for input command.



52365

AIR COMPRESSOR TEST RIG (TWO STAGE RECIPROCATING TYPE)

Study of working of Two Stage Air compressor, Study of calculation of efficiency of compressor, Leak proof Safety Measures, & Robust Construction, Enhanced Electrical Safety Considerations, Training Manuals & mimic Charts for Operation Ease, M.S. powder coated panel with standard Instrument Mountings.



52366

PRESSURE MEASUREMENT USING BOURDON GAUGE AND FOOT PUMP

Study of Bourdon Gauge Pressure Sensor, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Training Manuals for Operation Ease.



52367

INTERACTING & NON INTERACTING TANK SYSTEM

Study Of dynamic response of interacting & non interacting system, Study Of step response of first order systems arranged in non interacting & interacting mode, Study of step response of single capacity system.



52369

FLUID MECHANICS LABORATORY SETUP - TEST RIG FOR MINOR LOSSES IN PIPES

Study of Minor Losses in pipe, Robust Construction, Enhanced Electrical Safety Considerations, Training Manuals mimic Charts for Operation Ease, Caster wheel mounted movable frame.



52370

FLUID MECHANICS LABORATORY SETUP - TEST RIG FOR MAJOR LOSSES IN PIPE

Study of Major Losses in pipe, Robust Construction, Enhanced Electrical Safety Considerations, Training Manuals mimic Charts for Operation Ease, Caster wheel mounted movable frame.



52371

FLUID MECHANICS LABORATORY SETUP - TEST RIG FOR BERNOULLI'S THEOREM

Study of Bernoulli's Theorem, Compact Ergonomic Design, Caster wheel mounted movable frame, Training Manuals mimic Charts for Operation Ease, Modern industrial components are used for operating.



52375

DATA ACQUISITION SYSTEM

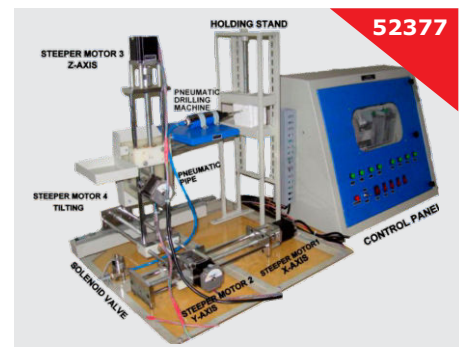
Study of Data Acquisition System, Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Robust Construction, Enhanced Electrical Safety Considerations.



52376

UNIVERSAL TABLE (PLC BASED) USING STEPPER MOTORS & ITS CONTROLLER CARDS

To move MS table in Horizontal, Vertical direction and also Tilt with the help of PLC ladder program & Stepper motor driven mechanism, To Study Equipment Required, To Study PLC Micrologix 1200 with PWM output.



52377

UNIVERSAL TABLE (PLC BASED) USING SERVO MOTORS & SERVO AMPLIFIER

To move MS table in Horizontal, Vertical direction and also Tilt with the help of PLC ladder program & Stepper motor driven mechanism, To Study Equipment Required, To Study PLC Micrologix 1200 with PWM output.



52378

UNIVERSAL PROCESS CONTROL TRAINER

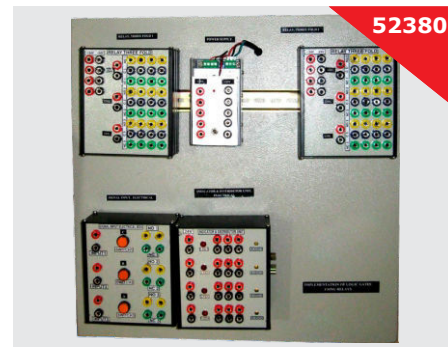
Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, sturdy piping, Enhanced Electrical Safety Considerations, Training Manuals and mimic Charts for Operation Ease, System Frame with Caster Wheel Arrangement for ease in movement.



52379

PROCESS SIMULATOR TRAINER

Study of characteristics of Temperature Sensors, Study of Various types of Pressure Sensors & Pressure Transmitter, Data analysis using SCADA Application Software, Study of Process Simulator Setup.



52380

IMPLEMENTATION OF LOGIC GATES USING RELAYS

Study of Digital Logic, Study of AND Gate, Study of OR Gate, Study of NOT Gate, Study of NAND Gate, Study of NOR Gate, Study of EX-OR Gate.



52381

BRAKE LINER / FRICTION / WEAR MEASURING SETUP

Study of Friction / Wear Measurement Setup, Study of Data Acquisition System, Study of Brake Liner & Brake Applying Mechanism, Study of Pressure Transmitter, Temperature Transmitter, LVDT, RPM Sensor.



52382

TEST RIG FOR SPRING BACK ACTION

Compact Ergonomic Design, Inbuilt Safety Measures to avoid improper usage, User Friendly, Self Explanatory Systems, Robust Construction, M.S. powder coated plant with standard Instrument Mountings.



52383

PLC BASED ELECTRO HYDRAULIC SORTING MECHANISM

System Frame with Caster Wheel Arrangement for ease in movement, M.S. fabricated powder coated with necessary fittings, couplings and hydraulic mountings, Inbuilt Safety Measures to avoid improper usage, Integration of Electronic, Instrumentation and Hydraulics in single unit.



52384

PLC BASED ELECTRO PNEUMATIC SORTING MECHANISM

All Pneumatic components identical to those used in industry, User Friendly, Self Explanatory Systems, Leak proof Safety Measures, sturdy piping & Robust Construction, Training Manual, mimic Charts for Operation Ease, System Frame with Caster Wheel Arrangement for ease in movement.



52386

STUDY OF VARIOUS TYPES OF ACTUATORS

System Frame with Caster Wheel Arrangement for ease in movement, M.S. fabricated powder coated with necessary fittings, couplings and mountings, Inbuilt Safety Measures to avoid improper usage.



52387

MECHATRONICS TRAINER KIT - IOT BASED INDUSTRIAL PROCESS DEMONSTRATION PLANT

Leak proof Safety Measures, sturdy piping & Robust Construction, M.S. fabricated powder coated with necessary fittings & Pneumatic Connections, Integration of Electronic, Instrumentation and Pneumatic in single unit.



CALIBRATION TRAINER

To study the Calibration of Differential Pressure Transmitter, To study the Calibration of Manometer, To study the Calibration of Pressure Transmitter, To study the Operation & inherent characteristics of Pneumatic Control Valve, To study the Operation of Electro Pneumatic Positioner, To study the Operation of Universal Calibrator.



AUTOMATION EQUIPMENTS FOR MOBILE SKILL DEVELOPMENT VEHICLE

Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Training Manuals for operation ease, Robust Construction, Enhanced Electrical Safety Considerations, Self-explanatory instruction manuals, copy of S/W are provided, Inbuilt Safety Measures to avoid improper usage.



MULTIVARIABLE CONTROL TRAINER

Study of level control Open loop, On-Off, P, PI, PD, PID Tuning by open & closed loop Stability analysis, Study of second order interacting, Study of second order Non interacting, Study of cascade control, Study of quadruple tank control.



AIR VELOCITY MEASUREMENT TRAINER USING HOT WIRE ANEMOMETER

Understand the concept of Anemometer, User Friendly, Self Explanatory Systems, Enhanced Electrical Safety Considerations, Training Manual for Operation Ease, M.S. powder coated frame with standard Instrument Mountings.



TORQUE METER

Understand the concept of torque measurement, User Friendly, Self Explanatory Systems, Enhanced Electrical Safety Considerations, Training Manual for Operation Ease, M.S. powder coated cubical plant with standard Instrument Mountings.



OPTICAL PYROMETER WITH TEMPERATURE SOURCE TEST RIG

Compact Ergonomic Design, User Friendly, Self Explanatory Systems, Enhanced Electrical Safety Considerations, Inbuilt safety Measures to avoid improper usage.



Our Business Partner in South Africa



DISPLACEMENT MEASUREMENT OF MOTORIZED BED USING LVDT

Study of Displacement Measurement using LVDT setup, Compact Ergonomic Design, User Friendly, Self Explanatory System, Robust Construction, Enhanced electrical Safety considerations, Training Manual for Operation Ease.



FUZZY LOGIC TRAINER

Facility to monitor behavior of the controller output (Un) & process variable (MV) either on PC screen or on CRO. Graph printing facility for laboratory journal entries, Can learn about different processes using simulated building blocks as well as real life processes using replaceable experiment panels/processes.

Electrical Machine Lab

For practical learning of | Working | Construction | Characteristics | Methods of Operation and Application of Electrical Machines | Motors | Alternators | Generators | we have a broadly varied range of Electrical Machine Lab equipments comprising | Electrical Machine Trainer | Three Phase Induction Motor Trainer | DC Machine Lab | Ward Leonard Method of DC Machine Trainer | Three Phase Synchronous Motor Lab | Induction Motor Compound Generator Lab | Slip Ring Induction Motor Lab | Single and Three Phase Resistive | Inductive | Capacitive Load | Earth Fault Relay Testing System | Synchronization Panel Trainer | Brush Less DC Motor Trainer | Fire Alarm Trainer | Solar Technology Trainer and many more.



ELECTRICAL



DC SUPPLY

Exclusive and rugged designed panel, Stand alone operation, Designed by considering all the safety precautions, High quality meters.



AC/DC LOAD

Mains Supply : AC / DC, 230V $\pm 10\%$, Load Range : 0 - 1.2 kW, in steps of 100W, Load Type : Resistive (Lamp Load), Ammeter (MI) : 10A.



ELECTRICAL SAFETY TRAINER

Designed, considering all safety standards, Exclusive design and attractive presentation of each block, This trainer represents many essential safety precautions, Unique demonstration & importance of Earthing, Real time appearance of MCB to help the students to understand its mechanical arrangement.



46504

THREE PHASE LAB

Three Phase Low Voltage Power Supply (01), Input : Three Phase Mains (230 V Phase, voltage, 415 Line voltage 50 Hz) $\pm 10\%$, Outputs : 18V Phase voltage, 28V line voltage 50 Hz $\pm 10\%$, MCB (Power Switch) : Four Phase.



46505

SINGLE PHASE TRANSFORMER LAB

Study of Open Circuit Test in a Single Phase Transformer, Study of Short Circuit Test in a Single Phase Transformer, Study of Load Test and correspondingly determine the Efficiency and Voltage Regulation in a Single Phase Transformer.



46505A

TRANSFORMER TRAINER (SINGLE PHASE & THREE PHASE)

Digital Watt meter single phase Potential coil 250 Volt Current coil 2Amp. Total Watt 500W, Temperature Meter, Single Phase Auto Transformer: Primary Voltage : 230, Current Transformer Ratio 1:10, MCB for short circuit and over current 2Amp.



46505B

TRANSFORMER TRAINER

Finding Transformer equivalent circuit, Study of transformer regulation, Measurement of winding temperature, Effect of type of load on transformer output waveform, Three phase transformer connections.



46505C

TRANSFORMER TRAINER

To Study Voltage regulation & rectifier, To Study Temperature Rising Experiments of the Single Phase Transformer, To Study the working of single phase transformer in combination, To Study and measure 30 power of LAMP LOAD in STAR Connection, To Study the Open Circuit Test of Three Phase Transformer.



46506

TWO WATTMETER METHOD TRAINER

Measurement of Power Factor in a Three Phase Circuit, Measurement of Active, Reactive and Apparent Power in a Three Phase Circuit, Measurement of Three Phase Parameters.



46507

THREE PHASE INDUCTION MOTOR TRAINER

Machine with Mechanical Loading Arrangement, Provided with Digital Tachometer, Machine with Class "B" Insulation, Heavy Duty Base/Channel, Brake-Drum/Pulley with heat suppression facility.



46508

DC MACHINE LAB 1

Study of No Load Characteristics (OCC) of DC Shunt Generator, Study of self excited DC Shunt Motor, Speed Control of DC Shunt Motor by Field and Armature current variation, Study of Load Characteristics of DC Shunt Generator.



46509

DC MACHINE LAB 2

TDC Shunt Motor, Mechanical Loading arrangement, Exclusive and rugged designed panel, Stand alone operation, Designed by considering all the safety precautions, High quality meters.



SCOTT CONNECTION TRAINER

Stand alone operation, Exclusive and attractive designed panel, Designed by considering all the safety precautions, Main and Teaser Transformers are shown separately, On board high quality meters.



SUMPNER'S TEST OF TWO SINGLE PHASE TRAINER

Study of Polarity Test with Two Single Phase Transformers, Study of Sumpner's Test Open Circuit Test Short Circuit Test, Determination of the Efficiency and Voltage Regulation of Two Single Phase Transformers.



PARALLEL OPERATION OF TWO SINGLE PHASE TRAINER

Exclusive and attractive designed panel Stand alone operation, Designed by considering all the safety precautions, Diagrammatic representation for the ease of connections.



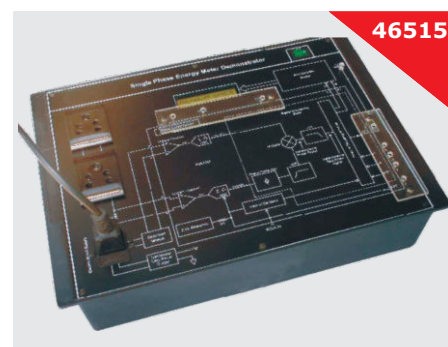
DC SERIES MOTOR

Stand alone operation, Exclusive and attractive designed panel, High quality meters, Designed by considering all the safety precautions, Safety terminals and patch chord package.



SINGLE PHASE INDUCTION MOTOR LAB

Study of Single Phase Induction Motor, Study of Running and Reversing of Single Phase Induction Motor, Study of the No-Load Test in a Single Phase Induction Motor, Study of the Blocked Rotor Test in a Single Phase Induction Motor.



SINGLE PHASE ENERGY METER TRAINER

Study the application of Single Phase Energy Meter for measurement of Power Consumed, Study of Single Phase Energy Meter using different test points and to understand its working, Complete training system for in depth study of Single Phase Energy Meter.



VALUES

- ☑ Innovation
- ☑ Trust
- ☑ Discovery
- ☑ Environment Friendly
- ☑ People First
- ☑ Gratitude



46518

STUDY OF UJT AND UJT RELAXATION OSCILLATOR

Study of Zener Diode as Voltage Regulator, Study of Static Emitter Characteristics of UJT- Unijunction Transistor on oscilloscope, Study of effect of V on peak point and valley point voltage and valley point current. BB, Operation of UJT Relaxation Oscillator and its use as SCR trigger circuit.



46519

STUDY OF SCR AND A.C. PHASE CONTROL

An isolation transformer 230VA.C. 250mA. This protects external instruments from damage if they are not isolated, Bridge rectifier for full-wave phase control with zener regulator, Two potentiometers for resistance controlled ramps, Two potentiometers for resistance controlled pedestals.



46520

DV/DT LIMITATION OF SCR'S

Test dv/dt estimation of the SCR, Compare Dv/Dt capability by Gate-Cathode terminations, Compare Dv/Dt capability by Gate-Cathode biasing (Voltage biasing), Compare Dv/Dt capability by Gate-Cathode biasing (Current biasing), To improve Dv/Dt capability by transistor snubber circuit.



46521

STUDY OF TRIAC AND A.C. PHASE CONTROL

Study of TRIAC characteristics and its operation in all the four modes i.e. I-, I-, III and III, Gate control of TRIAC with NPN transistor, Gate control of TRIAC with PNP transistor, Phase control with TRIAC and DIAC as pulse generator for gate trigger.



46522

SCR CONVERTERS AND REACTIVE LOADS

Study of SCRs triggering in half controlled bridge under reactive loads- limitations of simple UJT triggering circuits, Study of SCR triggering in half controlled bridge under reactive loads using auxiliary SCR triggering circuit with extended pulse technique, Study of half controlled bridge and action of free wheeling diode.



46523

SCR REGULATED D.C. POWER SUPPLY

Study of output voltage variation, regulation and ripple in open loop (without feed back) by varying the load using inductance input filter, Same as above experiment by using capacitor input filter.



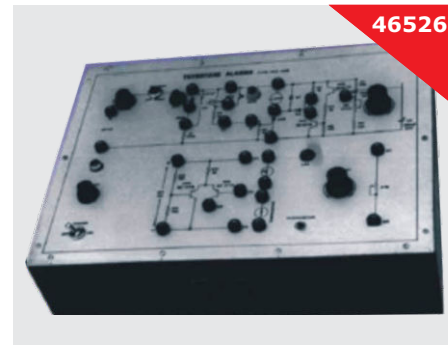
TRIAC A.C. LINE SWITCHING

Study of TRIAC as line triggered A.C. power switch, Study of TRIAC as D.C. triggered A.C. power switch, Study of TRIAC as self latching line switch, Study of TRIAC as UJT triggered A.C. power switch, Study of TRIAC as UJT triggered A.C. power switch with external transistor control from transducer.



THYRISTOR TIME DELAY RELAY

Study of delayed Turn-ON of D.C. load, Study of auto Turn-OFF of D.C. load, Study of delayed Turn-ON of TRIAC as line switch, Study of auto Turn-OFF of TRIAC as line switch.



THYRISTOR ALARMS

Study of Make-to-operate alarms, Study of Break-to-operate alarms, Demonstration of temper-proof burglar alarm, Demonstration of alarm with delayed self latching, Demonstration of alarm operated with water level, Demonstration of alarm sensitive to light beam using L.D.R.



SCR RING COUNTER

To study operation of Ring Counter with internal load, To study operation of Ring Counter with external load, D.C. Zener Regulated Power Supply for control pulse generator, UJT 2N 2646 in relaxation oscillator configuration which provides triggering pulses to SCRs, Potentiometer for variable time delay.



SCR TRIGGERING CIRCUIT USING IC TCA-785

SCR triggering with controlled gate pulses, Change of firing angle in response to the change in reference voltage, Functioning of Signal Conditioner and Pulse Generator IC TCA-785.



UNIVERSAL MOTOR SPEED CONTROL

Half wave controller without feed back, Half wave controller with feed back, Half wave controller high torque at low speed version - skip cycling operation, Full wave controller using triac and demonstrating hysteresis effects improved by gate slaving techniques.

Products Display / Conference Hall





TO TRIGGER A SCR BY USING A LDR

To trigger a SCR by using a LDR, LDR mounted on Panel, Two potentiometers for intensity and sensitivity control, Adequate no. of other electronic components, Mains ON/OFF switch, Fuse and Jewel light.



SINGLE PHASE FULLY-CONTROLLED BRIDGE CONVERTER

To study and obtain the single phase fully controlled bridge converter, 230VA.C. Isolated Transformer, Power 50 watt, 9V D.C. at 100mA Zener Regulated Power Supply, Two UJT, Four SCR's, Two Pulse transformer 1:1:1.



S.C.R. DC CIRCUIT BREAKER

To study SCR turn OFF action under varying loads, To study D.C. over voltage trip action, To study over current trip action, Two UJTs connected in relaxation oscillator mode, Two potentiometers to adjust the over voltage and over current limit.



S.C.R. LAMP FLASHER

To perform the Symmetrical D.C. flasher, To perform the High power A.C. flasher, 12V D.C. at 100mA, IC Regulated Power Supply, Two SCRs, TRIAC 4 Amp./400PIV, 230V/40 Watt lamp for load, UJT 2N 2646 in relaxation oscillator mode.



TRIGGERING CIRCUITS FOR SCR

To study Resistor (R) Triggering circuit, To study Resistor - capacitor (R-C) Triggering circuit, To study Uni-junction Transistor (UJT) Triggering circuit (UJT relaxation Oscillator).



SINGLE PHASE HALF WAVE CONTROLLED CONVERTER

Study and obtain the waveforms for single-phase half wave controlled converter, Adequate no. of other Electronic Components, Mains ON/OFF switch, Fuse and Jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



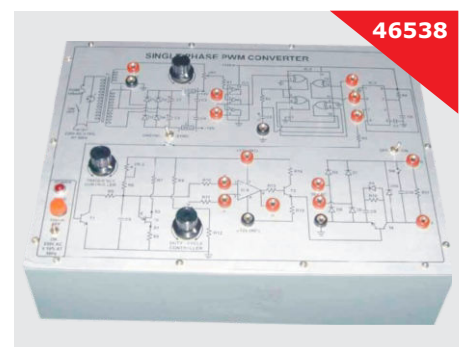
SINGLE PHASE HALF CONTROLLED SYMMETRICAL & ASYMMETRICAL BRIDGE CONVERTER

An isolation transformer 230VA.C. at 200mA. This protects external instruments for damage if they are not isolated, 6VAC at 100mAAC Power Supply, $\pm 12V$ DC at 100mA fixed regulated Power Supply.



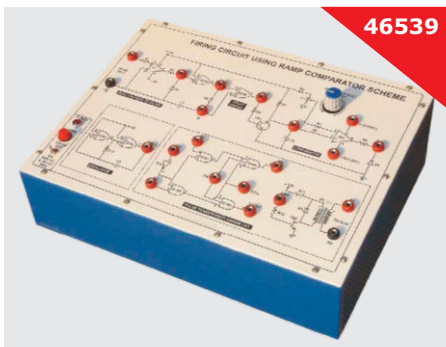
AC REGULATORS USING TRIAC, ANTI PARALLEL THYRISTOR AND TRIAC & DIAC

To Study A.C. Regulator using a Triac, To Study A.C. Regulator using Thyristor connected in antiparallel, To Study A.C. Regulator using a triac & a diac (with R.C. triggering circuit).



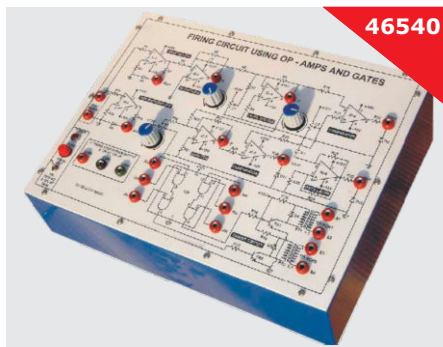
DC MACHINE LAB 2

TDC Shunt Motor, Mechanical Loading arrangement, Exclusive and rugged designed panel, Stand alone operation, Designed by considering all the safety precautions, High quality meters.



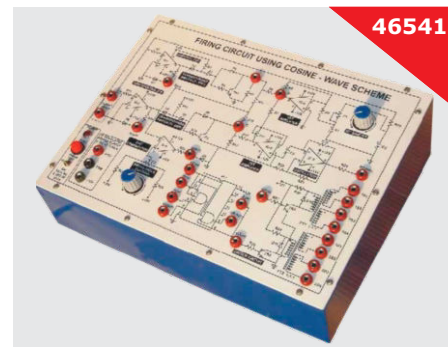
FIRING CIRCUIT USING RAMP COMPARATOR SCHEME

To study the firing circuit for single-phase converter using Ramp Comparator Scheme, Two Op-Amp's IC, Quad, Ex-OR gate IC, Triple, 3 input AND gate IC, Hex inverter gate IC.



FIRING CIRCUIT USING OP-AMPS AND GATES

To study firing circuit for single-phase converter using Op-Amps and Gates, Eight Op-Amp's IC, Quad 2 input AND gate IC, Two NPN Transistors, Two Pulse Transformers 1:1.



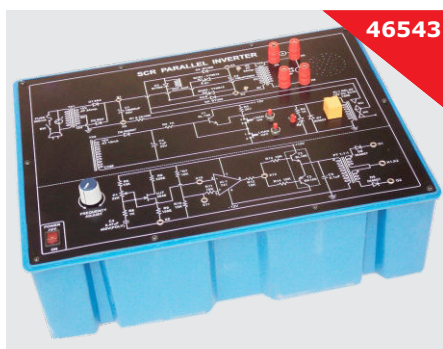
FIRING CIRCUIT USING COSINE-WAVE SCHEME

To Study firing circuit for single-phase converter using Cosine-Wave Comparator Scheme, Six Op-Amps IC, Triple, 3 input AND gate IC, Four NPN Transistor, Two Potentiometer.



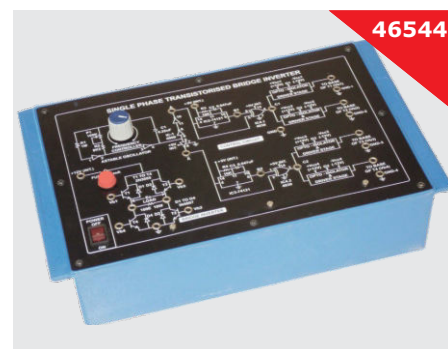
SINGLE PHASE SERIES INVERTER

To study the Single Phase Series Inverter, Bridge rectifier for making DC voltage, Hex Inverter IC, Quad, 2-input AND gate IC, Two Silicon Controlled Rectifiers (SCR's).



SCR PARALLEL INVERTER

To study the SCR Parallel Inverter, UJT to generate ramp, IC-1 to drive Tr. 4 and Tr. 5, Tr. 4 and Tr. 5 for generation of pulses, Pulse transformer 1:1:1, Tr. 1, 2 and 3 for relay operation.



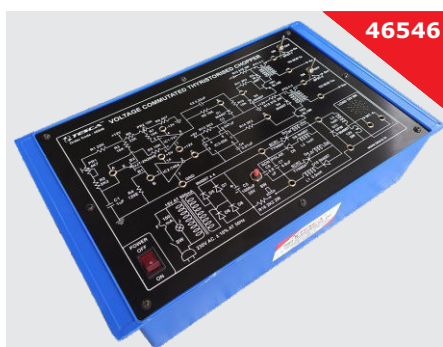
UNIVERSAL MOTOR SPEED CONTROL WITH POWER SUPPLY & MOTOR

Half wave controller without feed back, Half wave controller with feed back, Half wave controller high torque at low speed version - skip cycling operation, Full wave controller using triac and demonstrating hysteresis effects improved by gate slaving techniques.



FORCED COMMUTATED CIRCUITS

To study Class - A or self commutation by resonating the load, To study Class - B or self commutation by an LC circuit, To study Class - C or commutation through charged capacitor switched by another load carrying SCR, To study Class - D or commutation through charged capacitor switched by an auxiliary SCR.



VOLTAGE COMMUTATED THYRISTORISED CHOPPER

To study the step down voltage commutated thyristorised chopper, Bridge Rectifier for making D.C. voltage, UJT as relaxation oscillator, Op-Amp. IC, Timer IC, Hex Inverter Gate IC.



CURRENT COMMUTATED THYRISTORISED CHOPPER

To study the step down current commutated thyristorised chopper, $\pm 12V$ D.C. at 100mA IC regulated power supply internally connected, 5V D.C. at 100mA IC regulated power supply internally connected, Bridge Rectifier for making D.C. voltage.



EFFECT OF FREE WHEELING DIODE IN SINGLE PHASE FULLY-CONTROLLED BRIDGE CONVERTER

To study and obtain the single phase fully controlled bridge converter using R-load, To study and obtain the single phase fully controlled bridge converter using R-L load & effect of free wheeling diode.



CHARACTERISTICS OF POWER MOSFET

To study and Plot VI Characteristic of a Power MosFet, To study Switching Characteristic of a Power MosFet, IC regulated power supply 0-10V at 30mA, IC regulated power supply 0-60V at 200mA, Digital DC voltmeter ranges 0-20V.



UJT FIRING CIRCUIT OF SCR

To study UJT Firing Circuit of SCR, An isolation transformer 230VA.C. 200mA, This protects external instruments for damage if they are not isolated, Bridge rectifier for making D.C. voltage, Uni Junction Transistor.



LAMP DIMMER USING DIAC AND TRIAC

To study Lamp Dimmer Using Diac and Triac, Potentiometer to control intensity of Lamp, Adequate no. of other Electronic Components, Mains ON/OFF switch, Fuse and Jewel light, The unit is operative on 230V $\pm 10\%$ at 50Hz A.C. Mains.



ILLUMINATION CONTROL USING SCR

To study the Illumination control using SCR, An Isolation Transformer having output 230V AC at 100mA, Uni Junction Transistor, Silicon Control Rectifier (SCR).



FAN REGULATOR USING DIAC AND TRIAC

To study Fan Regulator Using Diac and Triac, Isolation Transformer 230VA.C., Power 70 watt, Diac, Triac, Potentiometer to control the speed of Motor / Fan.



SCR CONTROLLED EMERGENCY LIGHT

To study SCR Controlled Emergency Light, Astep down transformer 6V at 2Amp, Silicon Control Rectifier (SCR), Lamp load, Four diodes, 6V 4AH Battery, Adequate no. of other Electronic Components.



ELECTRONIC TIMER USING IC-555

To study Electronic Timer Using IC-555, 12V D.C. at 100mA, IC regulated Power Supply, IC-555 as timer, Push button as start switch, 12 Volt relay, Potentiometer to control time delay.



THREE PHASE HALF WAVE RECTIFIER

To observe the phase relation between the voltage waveforms in a three phase supply, To observe the load waveforms & their phase in a three phase half wave rectifier with resistive load, Three phase transformer, Digital Panel meter 3½ digits range 200V to measure the d.c. output voltage.



46557

THREE PHASE FULL WAVE RECTIFIER

To study three phase full wave rectifier, Three phase transformer, Digital Panel meter $3\frac{1}{2}$ digits range 200V to measure the DC output voltage, Digital Panel meter $3\frac{1}{2}$ digits range 200mA to measure the d.c. load current.



46558

THREE PHASE HALF CONTROLLED THYRISTORIZED BRIDGE CONVERTER WITH TRIGGERING CIRCUIT

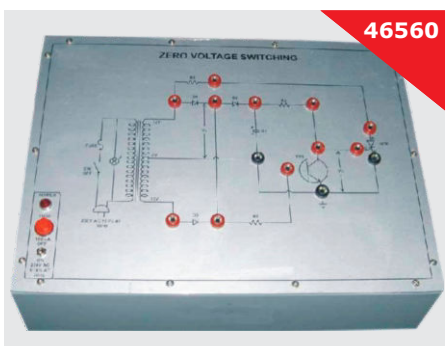
To study the nature and generation of Control Signal for 3 phase Half wave Controlled Rectifier, To study the operation of a 3 ϕ Half Wave controlled bridge rectifier with R load.



46559

THREE PHASE FULLY CONTROLLED THYRISTORIZED BRIDGE CONVERTER WITH TRIGGERING CIRCUIT

To study the nature and generation of Control Signal for 3 phase Full-wave Controlled Rectifier, To study the operation of a 3 phase Full-wave Controlled Bridge Rectifier with R load.



46560

ZERO VOLTAGE SWITCHING

To study operation of zero voltage switching of thyristor, A transformer to give low AC voltage to Thyristor and DC voltage to transistor, Two diode used as fullwave rectifier, One diode to avoid -ve voltage to collector of NPN transistor.



46561

CHARACTERISTICS OF POWER TRANSISTOR

To study & plot the Input Characteristics of Power Transistor in Common Emitter Configuration, To study & plot the Output Characteristics of Power Transistor in Common Emitter Configuration, To study the Switching Characteristics of Power Transistor.



46562

D.C. STEP DOWN MOSFET CHOPPER

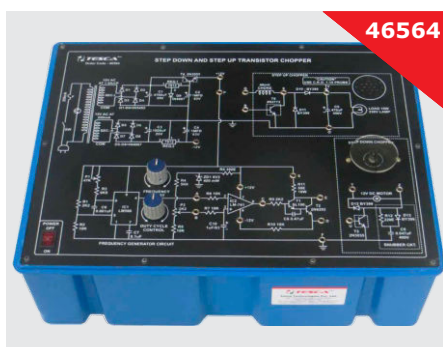
To study D.C. Step down Mosfet Chopper, ± 12 Volt D.C. at 100mA, regulated Power Supply, 20 Volt DC at 1A, regulated Power Supply, IC for triangular pulse generation, IC to drive MOSFET.



46563

D.C. TO A.C. INVERTER

To study the multivibrator circuit to convert DC to AC, IC-1 & IC-2 to generate AC signals to drive, 12-0-12VAC at 4 Amp. Transformer, Four NPN low Power Transistors.



46564

STEP DOWN & STEP UP TRANSISTOR CHOPPER

To study Step Up & Step Down Transistor Chopper, IC for Triangular wave pulse generation, Choke 40mH, Lamp 230V 15watt, DC Motor 12 V, Adequate no. of other Electronic Components.



46565

CHARACTERISTICS OF IGBT

To study and Plot V/I Characteristic of a Power IGBT, To study Switching characteristic of a power IGBT, IC regulated power supply 0-10V DC at 30mA, IC regulated power supply 0-60V at 200mA.



STEPPER MOTOR CONTROLLER USING IC SAA-1027

To study various functions of Stepper Motor, DC Stepper Motor 4 winding torque 1.0 Kg-cm, step angle 1.8°, power 12V 0.2 Amp/ phase, Fast & slow selection switch, Forward & reverse selection switch.



STUDY OF BUCK BOOST PRINCIPLE

To demonstrate the Buck Boost principle, To demonstrate the lower voltage setting, To demonstrate the upper voltage setting, To demonstrate automatic voltage stabilization of A.C. Voltage.



STUDY OF CURRENT TRANSFORMER (C.T.)

To study Current Transformer (C.T.), Current Transformer INPUT current is 2 Amp & OUTPUT current 200 mA i.e. Ratio 10 : 1, Digital AC Ammeter 31/2 digits seven segment display having range 0-2A, Digital AC Ammeter 31/2 digits seven segment display having range 0-200mA.



STUDY OF POTENTIAL TRANSFORMER (P.T.)

To study Potential Transformer (P.T.), Potential Transformer is designed for 300 VAC INPUT & OUTPUT 30 VAC i.e. ratio 10 : 1, Mains ON/OFF Switch and Fuse 100 mA.



STUDY OF INSTRUMENT TRANSFORMERS (C.T. & P.T.)

To study Current Transformer (C.T.), To study Potential Transformer (P.T.), To connect instrument transformers (C.T. & P.T.) in electrical circuits for measurement of current, voltage and power.



R.M.S. & AVERAGE VALUES OF RECTIFIED VOLTAGE

To connect a Bridge Rectifier for full wave rectification, To measure amplitude of the input and output voltage of Bridge Rectifier with help of CRO, To verify the relation between r.m.s. and average values of rectified O/P voltage.



DETERMINATION OF FUSING CHARACTERISTICS AND FUSING FACTOR OF GIVEN FUSE

To draw a graph between fusing time and fusing current of a given fuse, To determine the fusing factor, To verify that fuses have inverse time characteristics.



SINGLE PHASE HALF WAVE AND BRIDGE CONTROLLED RECTIFIER

To study the single phase half wave controlled rectifier & observe the effect of firing angle of wave form, To study the bridge controlled rectifier & observe the effect of firing angle of wave form.



HOME ELECTRICAL WIRING TRAINING SYSTEM

Easy diagrammatic representation of circuits, Energy Meter, Voltage and Current display on Graphical LCD (128x64), Test points are provided to measure the voltages at different points, Designed after considering all safety standards.



46579

SCR APPLICATION TRAINER

To Study SCR Turn Off Action Under Varying Loads, To Study DC Over Voltage Current Trip Action, Study of Make-to-operate Alarms, Study of Break- To-operate Alarms, Demonstration of Temper-proof Burglar Alarm.



46580

SYNCHRONOUS MACHINE TRAINING SYSTEM

Two Identical Motor Generator Set, Electrical Loading Arrangement, 240 X 128 Graphical LCD Display, RISC Microcontroller based design for measurement.



46581

DC COMPOUND MOTOR LAB

Machine with mechanical loading arrangement, Provided with Digital Tachometer, Machine with Class "B" Insulation, Heavy Duty Base/Channel, Terminals provided to use the optional externally.



46582

POWER MEASUREMENT BY 3 VOLTMETER, 3 AMMETER METHOD

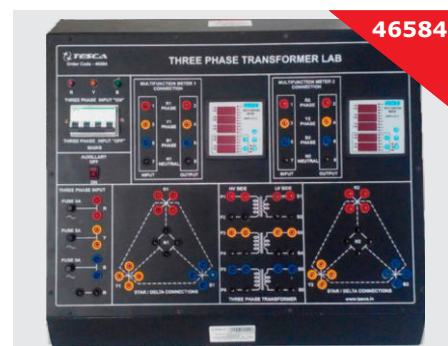
Digital panel meters, Designed by considering all the safety precautions, Stand alone operation, Exclusive and rugged designed panel, Diagrammatic representation for ease of connections.



46583

THREE PHASE THYRISTORISED AC REGULAR WITH TRIGGERING CIRCUIT

Three Phase thyristorized AC Regulator, Three pole power contractor with /AC coil complete with Push-to-ON switch, Four pole Miniature Circuit Breaker (MCB).



46584

THREE PHASE TRANSFORMER TRAINER

Stand alone operation, Graphical LCD display for high resolution, Exclusive and rugged designed set-up, Electrical loading arrangement, Three Phase Supply indication lamps.



46585

ELECTRICAL TRANSMISSION LINE TRAINER

Voltage, Current, Power, Power Factor Measurement, Simultaneous display of sending & receiving end, Inbuilt Variable AC Supply, Big Graphical LCD, Exclusive and attractive designed panel.



46585A

TRANSMISSION LINE TRAINER

Trainer having control panel should provided in 40X40mm Aluminum profile rack with sturdy table top flat panel, Should have 8 no's of ABS plastic panel mounted on the aluminum rack with mimic diagram All input & output are terminated in 4mm shrouded connector, Should provide 4mm banana cable for experiments.



46585B

THREE PHASE TRANSMISSION LINE SYMMETRICAL & UNSYMMETRICAL FAULT TRAINER

To Study Line to Ground (L-G) Fault analysis of a Single Phase Transmission Line, To Study Single Line to Ground Fault (L-G) analysis of a Three Phase Transmission Line, To Study Line to Line Fault (L-L) analysis of Three Phase Transmission Line.



HOME AUTOMATION ELECTRICAL WIRING TRAINER

Shock proof safety Banana Terminals & patch cords for inter connections & operations, MS fabricated powder painted control panel, Poly carbonate/Venyl front facial with precision machined back support.



ELECTRICAL HOME INSTALLATION TRAINER

To study and measure Line & Phase Voltages, To study and measure Current in Three Phase Circuits, To study working of Control Transformer, To study working of Electric Door Opener System.



ELECTRICAL WIRING LEARNING SYSTEM

Pre-attached power cord (4 pole, 5 wire), Lockout/Tagout mechanism, Nema 1 Control Cabinet, hinged, LxWxD - 42"x 32"x 8", 3-Phase Fuse Block with 3 fuses, Timer Relay, 4PST instantaneous, DPST timed (convertible N.O. or N.C.).



HOME AUTOMATION TRAINING KIT - BLUETOOTH

Power indication, Device On/Off indication, Total shock proof (we need not to touch the switch board as it operates with remote control).



HOME AUTOMATION TRAINING KIT - WI-FI

Total shock proof (we need not to touch the switch board as it operates with remote control), Based on Bluetooth Technologies User Can Control devices using Smart mobile phone using android Apps (without Remote).



HOME AUTOMATION TRAINING KIT - IR

Power indication, Device On/Off indication, Total shock proof (we need not to touch the switch board as it operates with remote control).



WARD LEONARD METHOD OF DC MACHINE TRAINER

To study the speed control of Separately Excited DC Shunt Motor in either direction by Ward Leonard Method, Stand alone operation, Mechanical Coupling Arrangement.



DC SUPPLY

Over Current protection, Field failure protection, Suitable to run in series and shunt mode of machine, Low cost thyristor based design, Separate section for Fixed and Variable Supply.



RLC RESONANCE TRAINER

LCD Voltmeter and Frequency Counter, Inbuilt Signal Generator, Low cost trainer demonstrating both Series and Parallel Resonance, Experiments can be performed with or without Oscilloscope.



46590

THREE PHASE SYNCHRONOUS MOTOR LAB

To study the V curve of Three Phase Synchronous Motor, To study the Inverse V curve of the Three Phase Synchronous Motor, Flexible Shaft Coupling Arrangement, Wattmeter being used for better precision.



46591

MEASUREMENT OF XD AND XQ OF THREE PHASE SYNCHRONOUS MACHINE

Electrical Loading Arrangement, Flexible Shaft Coupling Arrangement, Provided with Digital Tachometer, Machine with Class "B" Insulation, Heavy Duty Base/Channel, Equipped with supply indication lamps.



46592

THREE PHASE SYNCHRONOUS GENERATOR LAB

Equipped with supply indication lamps, Designed by considering all the safety standards, Diagrammatic representation for the ease of connections, Exclusive and Compact Design.



46593

INDUCTION MOTOR COMPOUND GENERATOR LAB

Equipped with supply indication lamps, Designed by considering all the safety standards, Diagrammatic representation for the ease of connections, Exclusive and Compact Design.



46594

THREE TO SIX PHASE CONVERSION TRAINER

Study of Polarity Test under Single Phase Transformer, Study of Three to Six Phase Conversion using 3 Single Phase Transformers, Study and verification of Three Phase Star Connection Parameters.



46595

SHUNT MOTOR SERIES GENERATOR LAB

Specially designed BS-10 safety terminals, Electrical loading arrangement, Designed by considering all safety precautions, Diagrammatic representation, Learning material CD.



46596

FIELD TEST OF DC SERIES MACHINE

Stand alone operation, High Quality meters, Mechanical coupling arrangement, Standard BS-10 safety terminals, Electrical loading arrangement.



46597

DC SERIES MOTOR SHUNT GENERATOR LAB

Study and Measurement of External characteristic of DC Shunt Generator, Study and Measurement of Internal characteristic of DC Shunt Generator, Study and Measurement of Open Circuit Characteristic of DC Shunt Generator.



46598

UNDERSTANDING CALIBRATION OF ENERGY METER

Single phase kWh Energy meter, Inbuilt Voltmeter, Ammeter, Watt meter as Standard meter for calibration of Energy meter, Big font LCD (16 x 2) for use as Standard meter/Energy meter calibration, Separate Seven Segment Display as Energy meter.



46599

INDUCTION MOTOR SERIES GENERATOR LAB

Study & verify No-Load Characteristics of DC Series Generator, Study & verify Load Characteristics of DC Series Generator, Designed by considering all the safety standards, Diagrammatic representation for the ease of connections.



46600

ELECTRICAL HOME INSTALLATION TRAINER

Study and verify the Load Characteristics of Long Shunt Cumulatively Compound Generator, Study and verify the Load Characteristics of Short Shunt Cumulatively Compound Generator, Study and verify the Load Characteristics of Long Shunt Differentially Compound Generator.



46601

SLIP RING INDUCTION MOTOR LAB

Study of Running Three Phase Slip ring Induction Motor, Study of Reversing Three Phase Slip ring Induction Motor, Study of No Load Test in a Three Phase Slip ring Induction Motor, Study of Block Rotor Test in a Three Phase Slip ring Induction Motor.



46602

SWINBURN'S TEST OF DC MACHINE

Study and Determine the losses of DC Machine and correspondingly calculate the efficiency of DC Machine by Swinburn's Test Method, Machine with Mechanical Loading Arrangement, Provided with Digital Tachometer, Machine with Class "B" Insulation.



46603

HOPKINSON'S TEST OF DC MACHINE

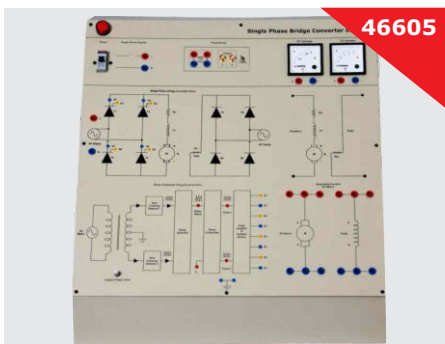
Study and obtain the losses separately and correspondingly. Determine the efficiency of a DC Shunt Machine by Hopkinson's test, Designed by considering all the safety standards, Diagrammatic representation for the ease of connections.



46604

CUT SECTION OF MACHINES

Self-Contained, Easy to operate, Quality designed motor with running condition, Easily distinguish the internal part of machines, Provided with terminal box for ease of connection.



46605

SINGLE PHASE BRIDGE CONVERTER DRIVE

Study of Ramp Comparator Firing Circuit for Drive, Study of Single Phase Bridge Converter Drive, Power Scope for isolation measurement, Provided with DC Shunt Motor, High quality meters.



46606

THREE PHASE AC VOLTAGE CONTROLLER

Study of Three Phase Firing Circuit, Study of Three Phase AC Voltage Controller at Lamp Load, Study of Three Phase AC Voltage Controller at Motor Load.



46607

POWER MEASUREMENT USING CT & PT

To measure high value of AC Current by a low range, AC Ammeter and Current Transformer, To measure high value of AC Voltage by a low range, AC Voltmeter and Potential Transformer, To measure Power using CT & PT.



INSTALLATION AT SENEGAL, AFRICA

ELECTRICAL



RADIAL AND RING MAIN DISTRIBUTION SYSTEM

Digital 3 nos. DC Voltmeter & 3 nos. DC Ammeter for accurate measurement, Separate connection for Radial & Ring Main System, Inbuilt DC Variable Supply, Isolation Transformer is provided for safe operation, Exclusive and attractive designed panel.



POWER DISTRIBUTION TRAINER

To study working of dol starter and measure line and phase voltages, To study connection and working of emergency switch, To study and measure current in three phase circuits. To study working of bus bar.



METER DEMONSTRATOR

Study the operation of moving coil type instruments, Study the operation of moving iron type instruments, Study the operation of Dynamometer type instruments, Demonstration of Analog measuring instruments, CBT software covering all the experiments, Follows all safety standards.



SINGLE AND THREE PHASE RESISTIVE LOAD

Suitable for Single and Three Phase Operation, Star/Delta Switch for easy conversion, Suitable for both static & rotating machines, Five selectable load values on each bank.



SINGLE PHASE RESISTIVE LOAD

Suitable for single phase operation, Suitable for both static & rotating machines of single phase, Five selective load value are provided, Switch are used to switch value & protection MCB are provided.



SINGLE AND THREE PHASE INDUCTIVE LOAD

Suitable for loading Single Phase and Three Phase supply, Suitable for both static & rotating machines, Star/ Delta switch provides easy switching, MCBs are used to switch values and provide protection at the same time.



SINGLE PHASE INDUCTIVE LOAD

Suitable for single phase operation, Suitable for both static & rotating machines of single phase, Five selective load value are provided, Switch are used to switch value & protection MCB are provided.



SINGLE PHASE & THREE PHASE CAPACITIVE LOAD

Suitable for Single and Three Phase Operation, Star/Delta switch for easy conversion, Ten selectable load values on each bank, Suitable for balanced and unbalanced load Conditions, MCBs are used to switch loads and provide protection at the same time.



SINGLE PHASE CAPACITIVE LOAD

Suitable for single phase operation, Suitable for both static & rotating machines of single phase, Five selective load value are provided, Switch are used to switch value & protection MCB are provided, Designed by considering all the safety standards.



3-PHASE PARAMETER MEASUREMENT

Microcontroller based design for accurate measurement, 240 x 128 Graphical LCD Display to view all the parameter, Simultaneous display of Three Phase electrical parameters, Used with Single Phase / Three Phase supply.



TRANSFORMER OIL TESTING SYSTEM

Break down voltage protection, Over current protection, Mains & H.T. "ON" & "OFF" Switches, Incorporates automatic tripping mechanism, Mains and H.T. "ON" indications, Test cup with adjustable gap electrode arrangement.



TRANSFORMER OIL TESTING SYSTEM

Fully motorized high voltage control, Break down voltage protection, Over current protection, Mains & H.T. "ON" & "OFF" Switches, Incorporates automatic tripping mechanism, Mains and H.T. "ON" indications.



MCB AND HRC FUSE TESTING SYSTEM

Alphanumeric 16X2 Big Font LCD for better visibility, Isolated Power Supply using Transformer, Inbuilt variable current injection facility, Transparent MCB's to understand internal architecture and its working, Inbuilt Timer, Current & Temperature on LCD.



OVER CURRENT RELAY TESTING SYSTEM

Alphanumeric 16X2 Big Font LCD for better visibility, Electromechanical relay to understand internal mechanism and its working, Simultaneous display of voltage, current on LCD, Inbuilt automatic timer that starts and stop with relay, Inbuilt Power Source for relay.



Buyers visit at Tesca



46618

UNDER VOLTAGE & OVER VOLTAGE RELAY TESTING SYSTEM

Alphanumeric 16 x 2 Big Font LCD for better visibility, Electromechanical relay to understand internal mechanism and its working, Inbuilt Single Phase Variac with isolation, Tripping function settings.



46619

EARTH FAULT RELAY TESTING SYSTEM

To study and verify the operating characteristics of Earth Fault Relay with different plug setting, To study connection of Earth Fault Relay in transmission line.



46620

DIFFERENTIAL RELAY TESTING SYSTEM

Alphanumeric 16X2 Big Font LCD for better visibility, Electromechanical relay to understand internal mechanism and its working, Inbuilt Single Phase Variac with isolation, Two variable current injection units, Tripping function settings.



46621

THREE PHASE LOW VOLTAGE POWER SUPPLY

Provided with two nos. synchronized three phase output, Easy to Operate, Designed by considering all the safety standards, Equipped with supply indicators, Learning material CD.



46622

SYNCHRONIZATION PANEL TRAINER

Two digital synchronization size 96x96 is provided, 3 Nos multifunction digital meter (VIF) size 96x96mm to display current voltage frequency, Two synchronization switch MCB 3 pole 16Amp. Is provided, Two set of 3 phase synchronization lamp is provided.



46623G

SEQUENCE CONTROL TRAINER

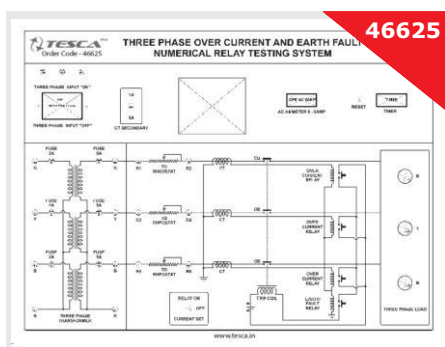
Understating of control components and individual components operation, Sequence circuit connection experiment, Sequence control by proximity sensor, Sequence circuit by PLC Control.



46624A

FIRE ALARM TRAINER

Demonstration of various types of Fire sensors, Real time activation of fire alarm system, Understanding the sensing techniques of fire sensors, Study of Fire alarm system and its accessories, To learn how to operate the fire control system.



46625

THREE PHASE OVER CURRENT & EARTH FAULT NUMERIC RELAY TESTING SYSTEM

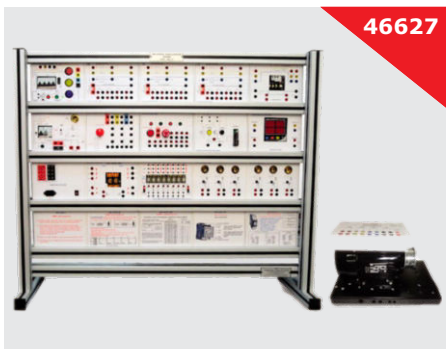
Study and verify Operating Characteristics of Three Phase Over Current and Earth Fault Numeric Relay with different Time Multiplier Settings (TMS) and Current Setting, Study and use of Time Setting Multiplier (TMS) in Numeric Relay.



46626

BRUSH LESS DC MOTOR TRAINER

To study of speed vs Load characteristics with loading arrangement, To study Speed vs load vs current vs voltage measurements with loading arrangements.



46627

INDUSTRIAL INSTALLATION TRAINER

Study of components in electrical systems and contact their Operations, Study of Hold ON Contact Logic, Study of interlocking contact logics with trip indication, Study of DOL starter logic, Study of Star-Delta Logic, Study of phase reversal logic.



46627A

INDUSTRIAL INSTALLATION TRAINER

To study the working of meters, To study the working of DOL Starter, To study the working of Contactor, To study the working of Over Load Relay, To study the working of CAM Switch, To study the working of Proximity Switch.



46628

SMART POWER SYSTEM TRAINER MODEL

Study of voltage variation & control, Study of voltage regulation for constant $\cos \phi$, Study of 3 bus load flow study, Study of No load test ferranti effects on transmission line.



46629

HOME/COMMERCIAL WIRING INSTALLATION TRAINER

Electrical Safety Rules for working in laboratories, Variety of wiring experiments based on above operational panels, Study of protective devices panel, Study and use of Measurement devices.



46630

ANTI-THEFT TRAINER

To work with PIR (Passive infrared) motion sensor, To work with Ultrasonic motion sensor, To work with diffuse photo sensor, To work with through beam photo sensor, To work with magnetic reed switch.



46631

FIRE ALARM TRAINER

To Work with smoke detector/sensor, To Work with heat detector/sensor, To Work with Gas (LPG) leak detector/sensor, To Work with manual Call point (MCP), To Work with siren with flasher.



46632

SOLAR TECHNOLOGY TRAINER

Study of I-V characteristic of Solar cell, Study of I-V characteristic of Solar PV module, Study of series parallel combination of solar cells, Study of series parallel combination of solar PV modules.



46638

OVER UNDER VOLTAGE PROTECTION RELAY KIT

To study the working of DOL starter, To study the working of variac, To study the working of under voltage protection relay in definite time mode, To study the working of under voltage protection relay in inverse definite minimum time (IDMT) mode.



46639

IDMT OVER CURRENT RELAY KIT

To measure high value of AC Current by a low range, AC Ammeter and Current Transformer, To measure high value of AC Voltage by a low range, AC Voltmeter and Potential Transformer, To measure Power using CT & PT.



46640

COMBINED EARTH FAULT AND OVER CURRENT NUMERICAL RELAY KIT

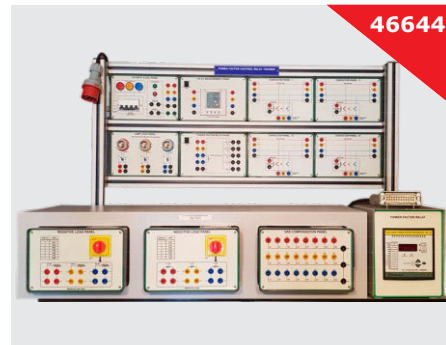
To perform experiment on IDMT over current protection, To perform experiment on earth fault protection, 1 phase AC Input supply panel, Variable voltage & current injector panel.



46641

DISTANCE PROTECTION RELAY KIT

Study of No Load Test, Study of Ferranti Effect, Study Determination of transmission line ABCD parameter, To perform experiment for distance protection of transmission line LG, LL, LLG, LLL, LLLG.



46644

POWER FACTOR CONTROL RELAY KIT

To study the working of contactor, To study and measure voltage, current & power factor of lamp load, To study and measure voltage, current & power factor of inductive load, To study the working of power factor correction relay with inductive and resistive load.



46646

FEEDER PROTECTION RELAY KIT

Study the working of IDMT over current protection, Study the working of under/over voltage protection, Study the working of under/over frequency protection, Study the working of earth fault protection.



46650

SINGLE AND THREE PHASE LOAD (R. C. L.)

Suitable for Single and Three Phase Operation, Star/Delta Switch for easy conversion, Suitable for both static & rotating machines, Five selectable load values on each bank, Suitable for balanced and unbalanced load Conditions.



46651

ELECTRONIC CONTROL TRAINER

Facilitates easy and safe wiring by students due to use of 4mm sturdy Shrouded banana patch cords and shrouded socket arrangements for high voltage circuits, Each panel is made of non-breakable tough acrylic plate and colorful screw-less overlays showing circuits diagrams & its connection tag numbers for easy understanding and connection.



46652

SWITCH GEAR ASSEMBLY AREA

To Study Basic logic circuit AND, OR, NOT, NO, NC connection using push buttons and relays, To Study Forward - Reverse of motor circuit design wiring, testing & analyzing, Implementing switch gears for different wiring and operation for industrial purpose.



46701

FLYBACK CONVERTER

To study PWM generation, To study Flyback Converter with different filter components and loads, Optically isolated PWM generation with Gate driver, Easy to operate & understand, Inbuilt isolation section for measurement of the signal.



46702

BRUSH LESS DC MOTOR TRAINER

To study of speed vs Load characteristics with loading arrangement, To study Speed vs load vs current vs voltage measurements with loading arrangements.



46703

SINGLE PHASE SEMI CONVERTER DRIVE

To Study Single Phase Semi-converter using ramp comparator firing circuit, 6V AC at 100mA AC Power Supply, $\pm 12V$ DC at 100mA fixed regulated Power Supply, Two SCR and Six Diode.



46704

INDUSTRIAL INSTALLATION TRAINER

To Study Single Phase full wave converter Drive using ramp comparator firing circuit, Two $3\frac{1}{2}$ digital panel meter (DPM) for measurement of voltage, Adequate no. of other Electronic Components, Mains ON/OFF switch (MCB), Fuse and Jewel light.



46705

SINGLE PHASE PWM INVERTER

Study of the single phase PWM firing circuit, Study the operation of single phase PWM bridge inverter using MOSFET, Study the operation of single phase PWM bridge inverter using IGBT.



46706

THREE PHASE HALF WAVE CONVERTER DRIVE

To study of Three Phase Half wave converter drive, Three separate identical cards consisting of Zero Crossing Detector, Integrator, Comparator and Pulse Generator one for each phase, for controlling the triggering angles of the positive group of three thyristors, Angles of the negative group of three diodes.



46707

THREE PHASE HALF WAVE AC VOLTAGE CONTROLLER

To study of Three phase half wave AC voltage controller, Three 230:50V at 0.5Amp transformer for rectifications & 6V AC supply for Triggering, $\pm 12V$ at 100mA, IC regulated Power Supply for Triggering Circuits, Three nos. Driver Circuits with Pulse Transformers.



46708

THREE PHASE FULL WAVE AC VOLTAGE CONTROLLER

To study of Three phase Full wave AC voltage controller, Three Phase line commuted Full wave bridge converter, Four pole Miniature Circuit Breaker (MCB) 0.5Amp.



46709A

SINGLE PHASE CYCLOCONVERTER

Works directly on 230V AC mains, Gate drive current of 200mA to trigger wide range of devices, Firing variation from 1800 to 00 on a graduated scale, Frequency division – 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.



46710

THREE PHASE FIRING CIRCUIT FOR 3 PHASE AC VOLTAGE CONTROLLER

To study of Three phase firing circuit, To Study of Three Phase AC Voltage Controller with Resistance Load, Three Phase line commuted Full wave bridge converter, Three pole Miniature Circuit Breaker (MCB).



46711

MOSFET, IGBT, TRANSISTOR AND SCR BASED STEP DOWN CHOPPER

Study PWM circuit, Study MOSFET based Step Down Chopper with R load, Study MOSFET based Step Down Chopper with RL load, Study MOSFET based Step down Chopper with Motor load.



ELECTRICAL MACHINE TRAINER

To Study speed torque curve of DC shunt motor with 3 phase AC integrated motor, To Study v-i efficiency curve of DC shunt generator with 3 phase AC integrated motor, To Study DOL starter. To Study Star delta starter, To Study Rotor resistance starter.



DC MOTOR COUPLED 3PH. AC MOTOR TRAINER

To Study speed torque curve of DC shunt motor with 3 phase AC integrated motor, To Study v-i efficiency curve of DC shunt generator with 3 phase AC integrated motor, To Study DOL starter. To Study Star delta starter, To Study Rotor resistance starter.



DC MOTOR COUPLED 3PH. SALIENT MOTOR TRAINER

To Study speed torque curve of DC shunt motor with 3 phase salient motor, To Study speed torque curve of DC series motor with 3 phase salient motor, To Study Speed torque curve of separately excited DC motor with 3 phase salient motor.



DC MOTOR COUPLED 1PH. AC MOTOR TRAINER

To Study speed torque curve of DC shunt motor with 1 phase AC integrated motor, To Study speed torque curve of DC series motor with 1 phase AC integrated motor, To Study Speed torque curve of separately excited DC motor with 1 phase AC integrated motor, To Study Speed torque of DC compound motor with 1 phase AC integrated motor.



DC MOTOR COUPLED 1PH. SYNCHRONOUS MOTOR TRAINER

To Study speed torque curve of DC shunt motor with 1 phase synchronous motor, To Study speed torque curve of DC series motor with 1 phase synchronous motor, To Study Speed torque curve of separately excited DC motor with 1 phase synchronous motor.



DC MOTOR COUPLED UNIVERSAL MOTOR TRAINER

To Study Speed torque curve of DC shunt motor with universal motor, To Study Speed torque curve of DC series motor with universal motor, To Study Speed torque curve of separately excited DC motor with universal motor, To Study Speed torque of DC compound motor with universal motor.



DC MOTOR COUPLED TO DC MOTOR TRAINER

To Study Speed torque curve and efficiency of DC shunt motor with DC motor, To Study Speed torque curve and efficiency of DC series motor with DC motor, To Study Speed torque curve and efficiency of separately excited DC motor with DC motor, To Study Speed torque curve and efficiency of DC compound motor with DC motor.



SYNCHRONIZATION PARALLELING OF 2 THREE PHASE ALTERNATOR TRAINER

To Study speed torque curve of DC shunt motor with 3 phase AC integrated motor, To Study speed torque curve of DC series motor with 3 phase AC integrated motor, To Study Speed torque curve of separately excited DC motor with 3 phase AC integrated motor.



SINGLE PHASE AC INDUCTION MOTOR TRAINER

Study of speed-torque characteristics of single phase induction motor (split phase type), Study of efficiency and input power factor of 1phase induction motor (split phase type) for various loading conditions, Study of speed-torque characteristics of single phase induction motor (capacitor start type).



46809

3 PHASE AC SLIP RING INDUCTION MOTOR TRAINER

To Study Speed torque characteristics of 3 ph. wound rotor induction motor with variable rotor Resistance, To Study Efficiency of input power factor measurement of 3 ph. wound rotor induction motor, To Study Speed torque characteristics of 3 ph. short-circuited rotor induction motor.



46810

3 PHASE SQUIRREL CAGE INDUCTION MOTOR TRAINER

To Study Speed torque characteristics of 3 phase squirrel cage induction motor, To Study Efficiency, % slip and input power factor measurement of 3 phase squirrel cage induction motor, To Study Speed control of squirrel cage induction motor by pole changing method.



46811

REPULSION MOTOR TRAINER

Study of speed torque characteristics of Repulsion motor, To Study efficiency and input power factor measurement of single phase Repulsion motor, To Study Speed control and reversal of direction of rotation of repulsion motor.



46851

LIGHTING INSTALLATION

To Study Single-point controlled lighting plant with socket, To Study Switch-controlled two-lamps lighting installation, To Study Two-point controlled lighting installation.



46852

ADVANCE LIGHTING INSTALLATION

To Study Low consumption lamps lighting installation, To Study Emergency light installation, To Study Lighting installation controlled by dimmer, To Study Lighting installation controlled by pushbutton light regulator.



46853

SIGNALING WITH ARDUINO

To develop Arduino program for blinking of LED, To develop Arduino program for controlling LED Arrays, To Develop Arduino Program for Interfacing TM1637 4 Digit 7 Segment Display with Arduino UNO.



46857

VIDEO INTERCOM INSTALLATION

To Study Video Intercom Experiment, Facilitates easy and safe wiring by students due to use of 4mm sturdy Shrouded banana path cords & shrouded socket arrangements, All Panels are mounted on finely painted sturdy base frame with easy Panels interchangeability.



46900

HIGH VOLTAGE POWER ELECTRONICS LAB

Study of Single Phase Supply and Single Phase Low voltage Power Supply, Study of Three Phase Supply and Three Phase Low voltage Power Supply, Study of Single Phase Half Wave Uncontrolled Rectifier with Lamp Load, Study of Single Phase Half Wave Uncontrolled Rectifier with Motor Load.



46900A

POWER ELECTRONICS TRAINING SYSTEM

To Study Single-Phase Half-Wave uncontrolled rectifier, To Study Symmetrical Single-Phase Full-Wave Semi-Controlled rectifier, To Study Single-Phase Full-Controlled AC voltage controller.

MECHANICAL LAB

We are dealing with complete Mechanical Engineering Lab solutions. In this segment we are having training set-ups comprising various training units in Aerodynamic Trainers | Automotive Trainers | Automobile Engineering & I.C. Engine Lab | Boiler & Steam Generators | CNC Trainers | Fluid Mechanics Lab | Heat Transfer Lab | Refrigeration & Air Conditioning Lab | Structural Mechanics Lab | Theory of Machine Lab | Thermodynamics Lab | Engineering Apparatus, Models & Charts | Engines & Transmission Trainers | Environmental Trainers | Ignition & Fuel Injection Trainers | Steering Trainer and many more.



MECHANICAL



IMPACT OF A JET APPARATUS

Measurement of jet impact forces on various target deflectors, Demonstration of the principle of linear momentum, Study of jet impact forces at various jet velocities, Comparison of measured jet impact forces with the theory.



FLOW-OVER WEIRS & NOTCHES APPARATUS

Demonstration of the flow over the rectangular notch, Study of discharge Vs head over the notch characteristics, Determination of the coefficient of discharge of weirs, Demonstration of the flow over the V-notch.



BERNOULLI'S THEOREM DEMONSTRATION APPARATUS

Demonstration of continuity equation, Investigation of static pressure, flow velocity and total pressure variation along the venturi, Familiarization with static and total pressure measurements, Demonstration of Bernoulli's theorem.



ORIFICE DISCHARGE APPARATUS

Study of flow through orifice, Investigation of water jet through orifice, Locating vena contract in water jets, Determination of coefficient of velocity for orifice, Determination of contraction coefficient for orifice, Determination of coefficient of discharge for orifice.



PRESSURE LOSSES IN BENDS APPARATUS

Study of Measuring the electrical activity generated by the heart wave Detection, Study of Heart rate Pulse Measurement, Study of PPG Signal & signal processing, Placement of Electrodes, Amplification, Filters, Gain, Self test.



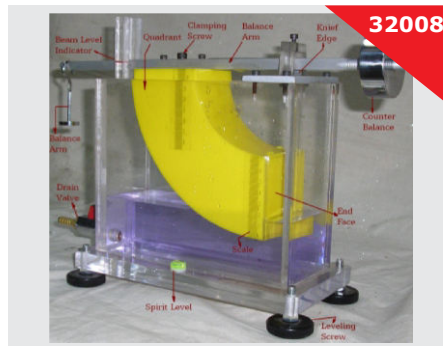
OSBORNE REYNOLD'S APPARATUS

Dye flow visualization of laminar, transitional and turbulent flows, Study of change of flow pattern from laminar to turbulent type as a function of Reynolds number, Calculation of critical velocities and critical Reynolds numbers.



PRESSURE LOSS IN PIPES APPARATUS

Study of loss of head due to friction in a circular pipe at various mean flow velocities, Study of friction factors in laminar and turbulent flow regimes, Demonstration of the law of resistance in laminar to turbulent flow regimes.



HYDROSTATIC FORCE & CENTRE OF PRESSURE

Measurement of hydrostatic force on a fully and partially submerged vertical plane surface, Determination of center of pressure on a fully and partially submerged vertical plane surface, Comparison of experimental results with principles of hydrostatics.



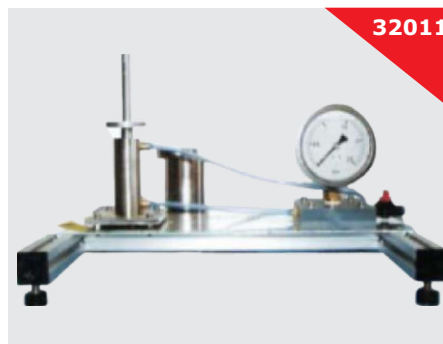
METACENTRIC HEIGHT APPARATUS

Plumb: Made of Stainless Steel, fitted at center of protector for vertical downward line, Horizontal scale graduation: 1mm, Protector: To determine the angle of tilt of ship from its axis, protractor is attached on the ship.



FLOW CHANNEL APPARATUS

Study of basic open channel flows with variable depth of flow, Calculation of Froude number and similarity of flows, Study of uniform flow, gradually varied flow and rapidly varied flow and Froude number correlations.



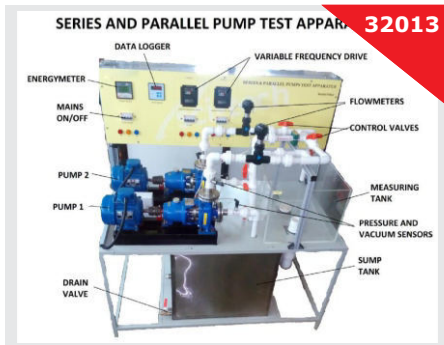
PRESSURE GAUGE CALIBRATOR

Demonstration of the principle of working of Bourdon tube pressure gauge, Understanding of pressure and its measurement, Calibration of Bourdon tube pressure gauge.



STABILITY OF FLOATING BODY APPARATUS

Familiarization with the laws of floatation and principle of working of floating bodies, Determination of center of gravity of a pontoon, Determination of center of buoyancy of a pontoon.



SERIES/PARALLEL PUMP TEST APPARATUS

Study of operation and working of centrifugal pumps connected in series and parallel, 2. Study of matching of pumps, starting and stopping of pumps in series and parallel connection, 3. Determination of power requirement for series and parallel operation, 4. Determination of hydraulic power output in series and parallel operation.



CENTRIFUGAL PUMP TEST APPARATUS

Computer Control Software, PID Computer Control + Data Acquisition + Data Management, Compatible with actual Windows operating systems, Graphic and intuitive simulation of the process on screen, Compatible with the industry standards.



FREE & FORCED VORTICES APPARATUS

Demonstration of free and forced vortices, Determination of surface profile of a free vortex, Determination of total head variation in free vortex, Dye flow visualization of streamlines in free vortex.



HYDRAULIC RAM PUMP DEMO APPARATUS

Demonstration of the water hammer effect, Familiarization with the operation of hydraulic ram pumps, Study of pressure versus flow characteristics of hydraulic ram pump, Determination of efficiency of hydraulic ram pump.



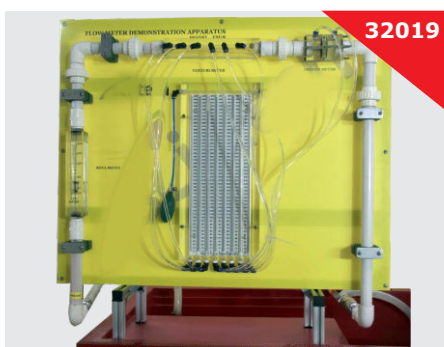
AUDIOMETER

Determination constant head characteristics curve, Determination of constant speed characteristics curves, Study of construction of Pelton turbine, Determination of constant efficiency curves.



ORIFICE & FREE JET FLOW APPARATUS

Determination of coefficient of velocity for an Orifice, Study of coefficient of discharge at various values of head over the Orifice to study the influence of flow Reynolds number, Comparison of the measured trajectory of the jet with the trajectory calculated from simple theory.



FLOW METER DEMO APPARATUS

Familiarization with static pressure measurements, Familiarization with flow measurement techniques, Determination of coefficient of discharge of orifice plate, Determination of coefficient of discharge of venturimeter.



CAVITATION DEMO APPARATUS

Computer based learning software is included to enable students to understand and conduct experiments, tabulate results and plot graphs.



FLOW VISUALIZATION CHANNEL

Study of open channel flows, Study of flow over weirs – over shot and under shot weirs, broad and narrow crested weirs, Familiarization with water flow visualization technique, Demonstration of laminar and turbulent flow.



32022

FRANCIS TURBINE DEMO APPARATUS

Study of construction of Francis Turbine, Determination constant head characteristics curve, Determination of constant speed characteristics curves, Determination of constant efficiency curves.



32023

PUMP IMPELLER DISPLAY PANEL

Pump Impeller Display Panel consisting of impellers of five different pumps, Panel dimensions: 550 x 350 mm, Designed for desktop mounting, Weight: 18 kg (approx.).



32024

PIPE FRICTION APPARATUS

Familiarization with pressure measurements and the working of U-tube manometer, Study of loss of head due to friction in a circular pipe at various mean flow velocities, Study of friction factors in laminar and turbulent flow regimes.



32025

RADIAL FLOW TURBINE

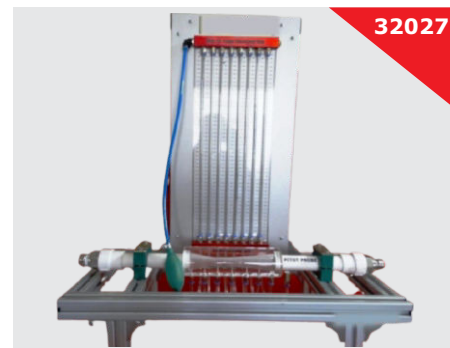
Characteristic behaviour of a reaction turbine, Power output dependent on volumetric flow rate, pressure and speed, Recording of torque characteristic, Determination of the turbine efficiency.



32026

DRAIN PERMEAMETER MODEL

Indigenous Digital Student Physiograph, It is Compact light weight and easy to operate by a beginner. , On screen 6 channels select. By external switching can be set up to Input 9 Signal, Unit having PC Interfacing's USB output.



32027

PRESSURE DISTRIBUTION IN VENTURI & NOZZLE APPARATUS

Patient Monitor ECG/SpO2/BP Patient Monitor, high quality "Multi Parameter Monitor" 12 inch Five Standard parameters like ECG, RESP, NIBP, SPO2, TEMP, PR/HR.



32028

IMPULSE TURBINE

Determination of typical turbine curves, Turbine : Power Output approx. 5.6W (at $V \approx 30.7 \text{ Ltr/min}$, $H = 2\text{m}$, $n = 500\text{rpm}$), Impeller : External Diameter 132mm, Width of vane 33.5mm, 14 vanes, Nozzles : Diameter of stream 10mm.



32029

INFILTRATION APPARATUS

Understand the effects of soil texture and structure on infiltration, Understand the effects of existing soil moisture conditions on infiltration.



32030

PARTICLE DRAG COEFFICIENT APPARATUS

Study of BP Measurement using different technique, Study of Sphygmomanometer, Aneroid (Dial), Digital Bp Apparatus, Compare the pressure sensitivity, Readings, Stability, Accuracy, Effect of applied pressure on Blood Flow.



32031

KAPLAN TURBINE TRAINER

Study of construction of Kaplan turbine, Determination constant head characteristics curve, Determination of constant speed characteristics curves.



32034

MOBILE BED & FLOW VISUALIZATION UNIT

Flow around model engineering structures, Mobile bed experiments, Meandering water courses characteristics, Visualization of the behavior of boundary layers.



32035

AIR FLOW STUDIES APPARATUS

Measurement of pressure using a manometer, Measurement of total pressure using Pitot probe, Measurement of flow velocity using Pitot-static probe, Measurement of flow rate using nozzles, Measurement of flow rate using orifice plate.



32036

IMPULSE TURBINE APPARATUS

Determining the characteristics of the turbine including the relationships of volume flow rate, head, torque produced, power output and efficiency to rotational speed, Comparison of nozzle and throttling control of an Impulse Turbine.



32037

VORTEX FLOW METER

Study and experiments with a vortex flow meter, Study and experiments with a variable area flow meter, Measurement of volumetric volume flow rate, Measurement of gravimetric volume flow rate.



32038

DEPRESSION MEASUREMENT VACUUM PRESSURE GAUGE

To measure the depression caused by fluid aspiration by a hydraulic pump, We can observe the different negative readings due to the different methods of fluid aspiration for its subsequent impulsion.



32039

SOIL SURFACE DEMO APPARATUS

Disassembly, packing, and reassembly of common centrifugal pumps, Pump maintenance procedures, including impeller clearance adjustment.



32040

BASIC HYDROLOGY APPARATUS

Effect of interflow on outflow hydrograph, Simulation of multiple and moving storms, Cone of depression for single well and interaction of cones of depression for two adjacent wells, Dewatering of excavation sites by use of wells, Flow from a well in a confined aquifer.



32041

VENTURI MEASUREMENT APPARATUS

Venturi tube: inlet and outlet diameter 26 mm NB, made of transparent plastic / perspex / plexi - glass base Centrifugal Pump: 1/2 H.P., Sump Tank (50Ltrs), Measuring tank and electronic level measurement system with digital stopwatch.



32043

WATER RESERVOIR & SURGE TOWER APPARATUS

Mass continuity in unsteady systems, Flood routing and reservoir inflow and outflow hydrographs, Surge in a pipe and mass oscillation in a surge tower.



32044

PRESSURE MEASUREMENT APPARATUS

Study of Pressure measuring System, Study of Barometer, Pressure measurement using different Manometers, Pressure measurement using Bourdon type Pressure Gauges.



32045

PERMEABILITY TANK APPARATUS

Confirmation of Darcy's Law and measurement of the Coefficient of Permeability, Draw down in two-dimensional horizontal flow, Two-dimensional drainage test, Flow through a permeable earth dam, with and without toe-filter, Seepage flow under an impermeable embankment or dam, Seepage flow under sheet piling and foundation slabs.



32046

RADIAL FLOW TURBINE

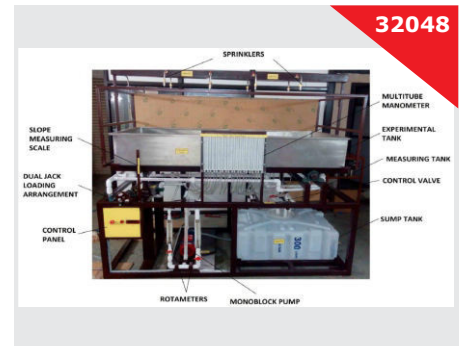
Demonstration of cooling tower cycle, Study of the performance of cooling tower systems under laboratory conditions, Study of Mass & Energy transfer, Plotting of different states of air on the psychrometric charts.



32047

ORIFICE, VENTURI & ROTAMETER APPARATUS

Calibration of Flowmeters, Flow measurement using venturi meter, orifice meter, variable area flowmeter like Rotameter, Demonstration of use of different flow meter & its comparisons, Determination of flow coefficient, Comparison of pressure drops across venturi meter & Orifice meter.



32048

RAINFALL SIMULATOR APPARATUS

The relative protection afforded by different plant densities, Studies of relative Soil Erosion, Studies of soil infiltration characteristics, Erosion and runoff from up and downslope row crops.



32049

CENTRIFUGAL BLOWER APPARATUS

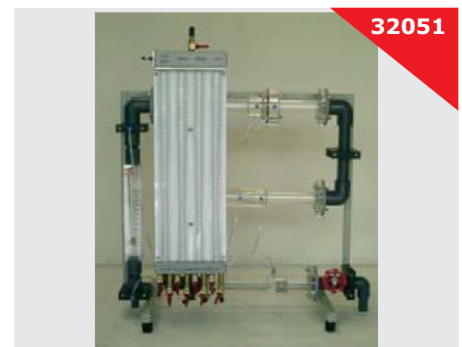
Speed sensor, range: 0 - 3000 r.p.m., Three differential pressure sensors to measure: The differential pressure in the aspiration duct, The differential pressure in the discharge duct, "J" type temperature sensor, Pressure sensor, range: 0 - 1.1 atm.



32050

BASIC PIPES NETWORK TUTOR

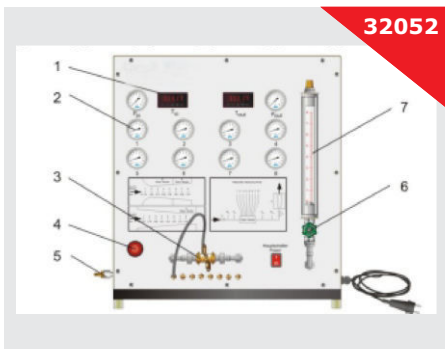
Recording a calibration curve for individual pipe sections: pressure loss over flow rate, Parallel configurations of pipes (open/ closed), Series configurations of pipes, Combined series and parallel configuration.



32051

FLOW METERS TRAINER

Directly comparing flow measurement using 'Quick-change' flow meter adaptors and pressure connections, Minimum four-tube manometer to show flow meter and overall pressure changes, Nozzle flow meter, Downstream flow control valve.



32052

NOZZLE PERFORMANCE STUDY APPARATUS

Nozzle pressure distribution in the actual flow of compressible fluids, Three nozzles with pressure measurement points: 1 convergent nozzle, 1 short and 1 long de Laval nozzle, Compressed air regulator for adjusting the pressure downstream of the nozzle.



32053

PITOT STATIC TUBE APPARATUS

To find the point velocity at the center of a tube for different flow rates of water and calibrate the Pitot tube, To plot velocity profile across the cross-section of the pipe.



32054

APPARATUS FOR POROUS BED IN VENTURI

Demonstration of Bernoulli's theorem and its limitations in divergent - convergent position, Demonstration of Bernoulli's theorem and its limitations in convergent-divergent position, Direct measurement of the static height and of the total distribution of heights.



32055

VENTURI, BERNOULLI & CAVITATION APPARATUS

How to fill the manometric tubes, To Study Flow calculation, To Study Determination of the exact section in Venturi's tube, Bernoulli's theorem study, To Study Cavitation study, To Study Pressure reduction in a tank.



32056

DEAD WEIGHT PRESSURE GAUGE CALIBRATOR

Study concepts of pressure, Force, Area and pressure scales, Calibration and the use of a Dead-weight Pressure Calibrator, Precision machined piston and cylinder with leveling screws.



32057

FLUID STATISTICS & MANOMETRY

Demonstrating the behavior of liquids at rest (Hydrostatics), Showing that the free surface of a liquid is horizontal and independent of a cross-section, Measuring small changes in a liquid level using a micro-manometer, Measuring changes in a liquid level using a Vernier hook and point gauge.



32058

LIQUID SEDIMENTATION STUDIES APPARATUS

Determination and comparison of the settling velocities of solids in suspensions dependent on the solid density and concentration and the liquid density and viscosity, Influence of flocculent on the settling velocity.



32059

OPEN & CLOSED FLOW CHANNEL APPARATUS

Closed conduit flow, Application of the Bernoulli and Continuity equations to converging and diverging flow, Effect of gradual and sudden changes in cross-section (energy losses), Using a contraction as a flow measuring device.



32060

ADVANCED HYDROLOGY TRAINER (2M X 1M)

Study of the storm hydrograph of an impermeable catchment, Study of the effect of a moving storm on a flood hydrograph, Study of the effect of reservoir storage on a flood hydrograph, Study of the effect of drain pipes on a flood hydrograph.



32061

FIXED & FLUIDIZED BED APPARATUS

Pressure drop in fixed or fluidized bed with water or air, Ergun equation, Carman-Kozeny and Burke-plummer equations, Particulate and aggregative fluidization Bed porosity, Experimental data collection of real bed fluidization.



32062

FLOCCULATION TEST DEMO APPARATUS

To determine the optimum coagulant dosage, To determine the optimum pH, To determine the effect of mixing time and intensity on aggregation.



32063

SEDIMENTATION STUDIES APPARATUS

Confirmation of Darcy's Law and measurement of the Coefficient of Permeability, Draw down in two-dimensional horizontal flow, Two-dimensional drainage test, Flow through a permeable earth dam, with and without toe-filter, Seepage flow under an impermeable embankment or dam, Seepage flow under sheet piling and foundation slabs.



32064

PERMEABILITY & FLUIDIZATION STUDIES APPARATUS

Six stirrers with stainless steel paddles, linked to a variable speed motor with electronic feedback speed control, Sample tube I/D: 38mm, Sample tube length: 507mm, Flowmeter range: 50-800ml/min.



32065

FILTERABILITY INDEX UNIT DEMO

Compact bench top unit with non-corrosive components, Transparent components & Tubing for better visualization, Includes precision Flow meter & differential manometer for accurate measurement.



32066

DEEP BED FILTER COLUMN

Demonstration of reversed flow fluidization and backwashing, The column may be readily adapted for absorption and ion Exchange studies, Measuring how fast total head loss increases with filtration run.



32067

SEDIMENTATION TANK MODEL DEMONSTRATOR

Effect of flow rate and baffle position on dispersion, Comparison of real flow regimes with idealized flow models, Electric Supply 230 V AC, Single Phase, Earthed, Measuring sediment removal efficiencies and relating these to the hydraulic characteristics.



32068

DRAINAGE AND SEEPAGE TANK DEMONSTRATOR

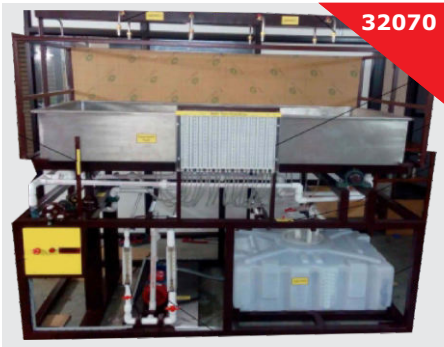
Verification of Darcy's Law, Comparison of experimental results with analytical solutions, Seepage underneath a sheet pile wall, Distribution of uplift pressure on hydraulic structures.



32069

MOBILE BED & FLOW VISUALIZATION BENCH

Flow around model engineering structures, Boundary layer suction demonstration, Characteristics of meandering watercourses, Experimental investigation of erosion and deposition, Two-dimensional flow visualization by the Ahlborn technique.



32070

RAINFALL HYDROGRAPHS DEMONSTRATOR

Storm hydrographs from single or multiple storms, Storm hydrograph from a previously saturated catchment, Storm runoff from an impermeable catchment, Effect of a moving storm on the flood hydrograph.



32071

GROUND WATER FLOW UNIT

Hydraulic gradients in groundwater flow, including the effect of permeability, Abstraction from a single well in a confined aquifer, Cone of depression for two wells.



32072

HYDRAULIC FLOW DEMO UNIT WITH HYDRAULIC BENCH

Closed conduit flow, Application of the Bernoulli and Continuity equations to converging and diverging flow, Effect of gradual and sudden changes in cross-section (energy losses), Using a contraction as a flow measuring device.



32073

PISTON DEMO PUMP

The characteristic curve of a reciprocating pump, Influence of pulsation attenuation, Pressure characteristic of delivery pressure and cylinder pressure, Preparation of p-V diagram.



32074

MICRO RIVER SIMULATOR TRAINER

Basic principles of river behavior such as stage discharge relationship, runoff hydrographs and river routing, Subtle River Morphology, Sediment transport and pollutant transport, Study of Flood and flood plains.



32075

SEDIMENT TRANSPORT DEMONSTRATION CHANNEL

A sequence of bedforms associated with increasing flow intensity and sediment transport rate, The following bedforms are exhibited (as discharge and/or slope are increased).



32076

COMPRESSIBLE FLOW OF FLUIDS APPARATUS

Pressure losses in pipes and pipe elbows, Flow in convergent/divergent nozzles, Supersonic flow in the de Laval nozzle, Determine the speed of sound in the air, Compare calculation methods for incompressible and compressible flow.



32077

FLOW VISUALIZATION BENCH 2.5M

Visualization of Flow patterns in a water channel, Drive Motor: Variable Speed DC Motor to drive the vanes, Light Source, Definition Image Capturing Camera.



32078

VERTICAL FLOW FROM TANK APPARATUS

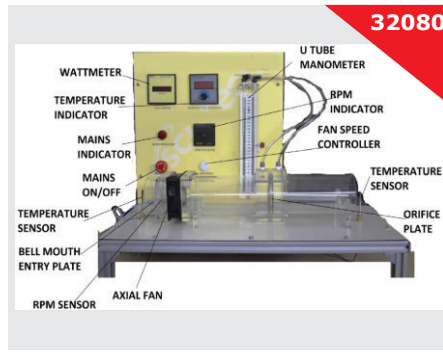
Study of the outlet jet (diameter, velocity), Determination of pressure losses and contraction coefficient for different outlet contours, Determination of flow rate at different discharge heads.



32079

RADIAL FAN TEST APPARATUS

Operating behavior and characteristic variables of a radial fan, Recording the fan characteristic (differential pressure as a function of the flow rate), Effect of the rotor speed on the pressure, Effect of the rotor speed on the flow rate.



32080

AXIAL FAN TEST APPARATUS

Operating behavior and characteristic variables of an axial fan, Recording the fan characteristic (differential pressure as a function of the flow rate), Effect of the rotor speed on the pressure, Determination of hydraulic power output and efficiencies.



32081

PISTON PUMP TEST APPARATUS

Principle of operation of a piston pump, Recording of pump characteristics, Pressure curves of delivery pressure and cylinder pressure, Influence of pulsation damping.



32082

GEAR PUMP TEST APPARATUS

Principle of operation of a gear pump, Recording of pump characteristics, Relationship between head and speed, Effect of pressure limitation, Determination of efficiencies.



32083

REACTION TURBINE (150W)

Power output dependent on volumetric flow rate, pressure, and speed, Recording of torque characteristic, Determination of the turbine efficiency, Investigation of partial load operation due to throttling.



32084

AXIAL FLOW TURBO MACHINES

Recording characteristic curves, Determining dimension-less characteristics, Velocity triangles and pressure curves, Investigation of energy conversion within the turbo machine.



32085

PLUNGER PUMP DEMO APPARATUS

To Study Plunger displacement, To Study Cylinder pressure, To Study Pump outlet pressure, To Study Line P-V diagram displays, To Study Sprung loading valve or needle valve.



32086

DEMONSTRATION FRANCIS TURBINE

Francis runner surrounded by 6 guide vanes inside PVC volute with clear acrylic front panel for visualization, Francis runner 60 mm diameter with 12 blades, Inlet pressure gauge with range 0 to 2 bar, Brake force determined using Prony type brake dynamometer.



32087

RECIPROCATING PUMP APPARATUS

Recording of pump curves, Determination of the power requirement of the pump, Determination of the hydraulic power output of the pump, Determination of the pump efficiency.



32088

PRESSURE DISTRIBUTION NOZZLES APPARATUS

Connection between inlet pressure and mass flow rate or exit pressure and mass flow rate, How pressure drop in the nozzle affects the temperature, Determining the critical pressure ratio (Laval pressure ratio), Demonstration of the "choking effect".



32089

AIR FLOW BENCH - MODULAR

To Study Bernoulli's Equation, To Study Drag Force, To Study Flow Visualization, To Study Boundary Layer, To Study Round Turbulent Jet, To Study Flow Around a Bend, To Study Jet Attachment, To Study Tapped Aerofoil.



32090

MULTI HEAD DIAPHRAGM PUMP

Examination of a multi-head diaphragm pump, Diaphragm pump with 3 heads, Common stroke rate adjustable for all 3 heads, Stroke individually adjustable for each head, 3 overflow valves to set the counter pressure.



32091

ROTARY VANE VACUUM PUMP

Familiarization with the basic principle of a rotary vane pump, Simulation of leaks, Generation of negative pressure over time, Determination of the flow rate as a function of the counter pressure.



32092

PUMPS COMPARISON APPARATUS

Experiments relating to key issues in pump engineering, Comparison of various pump types such as centrifugal pump, piston pump, side-channel pump, Operation of centrifugal pumps in parallel or series, Free position for additional pump.



32093

FRANCIS TURBINE OPERATING PRINCIPLES APPARATUS

Design and function of a Francis turbine, Determination of torque, power, and efficiency, Graphical representation of characteristic curves for torque, power, and efficiency.



32094

FLUID MECHANICS EXPERIMENT PLANT

Experiments With Pumps Valves and Fittings, And Pipe Sections, Operating Behavior Of Centrifugal Pumps In Individual Or Parallel Operation, A Measurement Of The Npsh Value Of Pumps, Pressure Losses In Pipe Sections With Different Surface Roughness, Pressure Losses In Pipe Fittings.



32095

CENTRIFUGAL COMPRESSOR DEMO UNIT

Operating behavior and characteristic variables of centrifugal compressor, Recording of the compressor curve for both stages, Effect of the rotor speed on the pressure, Effect of the rotor speed on the flow rate, Distribution of stage pressure ratios.



32096

HYDRAULIC BENCH

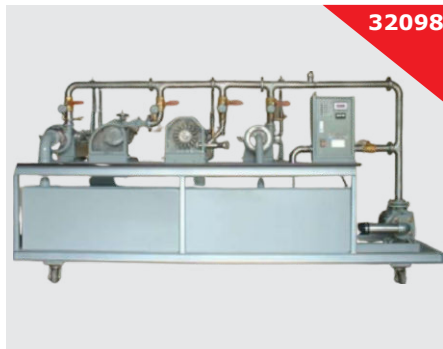
Stilling baffles are provided to reduce turbulence, Sight tube with scale provided to indicate instantaneous water level, Bull's eye level is provided to ensure proper position of the Bench and accurate reading of levels, Remote Actuator provided to operate the Dump Valve at the base of Measuring Tank.



32097

BASE HYDRAULIC BENCH MODULE (DIGITAL)

Operating behavior and characteristic variables of a radial fan, Recording the fan characteristic (differential pressure as a function of the flow rate), Effect of the rotor speed on the pressure, Effect of the rotor speed on the flow rate.



32098

TURBINE SET: PELTON, FRANCIS, KAPLAN

Determination of mechanical output, Determination of efficiency, Recording of characteristic curves, Investigation of the influence of the nozzle cross-section on the power output, Determination of power output curves at different speeds.



32099

DEEP FILTRATION APPARATUS

Learning the fundamental principle of depth filtration by sand filters, Observation of the pressure conditions in a filter bed, Determination of pressure losses, Plotting of Micheau diagrams, Principle of backwash.



32100

FLUIDS SPECIFIC GRAVITY & DENSITY APPARATUS

Triple scale reading uses all three reading scales for the measurement for experiment exercise, Accurate measurements and the proposed hydrometer is colored in 3 different colors for easier measurement.



32101

METHODS OF FLOW MEASUREMENT APPARATUS

Flow measurement with Orifice plate flow meter and measuring nozzle, Venturi nozzle, Rotameter, Pressure measurement with Pitot tube, Comparison of different instruments for flow measurement, Determining the corresponding flow coefficients.



32102

PRINCIPLES OF AIR FLOW STUDIES APPARATUS

Recording a fan characteristic, In conjunction with the power meter HM 240.02, Determining the fan efficiency, In conjunction with corresponding accessories, Velocity distribution in the pipe.



32103

OPEN CHANNEL SEDIMENT TRANSPORT DEMONSTRATOR

Recording a fan characteristic, In conjunction with the power meter, Determining the fan efficiency, In conjunction with corresponding accessories, Velocity distribution in the pipe, Velocity distribution behind a cylinder subject to transverse incident flow.



32105

AIR OPERATED IMPULSE TURBINE

Design and function of an impulse turbine, Determination of torque, power and efficiency, Graphical representation of characteristic curves for torque, power and efficiency, Investigation of the effect of nozzle pressure and number of nozzles Requirements.



32106

CAVITATION IN PUMPS

Visualization of cavitation in centrifugal pumps, Open impeller to observe the blades during operation, Continuously adjustable pump speed via frequency converter, Temperature control via heater and external cooling via the water supply.



32107

FLOW THROUGH PARTICLE LAYERS

Investigation of the properties of fixed and fluidized beds subjected to liquid flow, Glass test tank with sintered filter medium on its base, Test tank removable for filling, Downward flow to investigate fixed beds, Upward flow to investigate fluidized beds.



32108

NUTSCHE PRESSURE FILTER

Nutsche vacuum filter for discontinuous cake filtration, Open 2-part vessel with flange and recessed sieve base, Bottom section to draw in and collect filtrate, Top section with an inserted filter bag to form a filter cake, Polyester filter bag.



32109

DRUM CELL FILTER

Learning the basic principle and method of operation of a drum cell filter, Fundamentals of cake filtration: Darcy's equation, Variation in time of filtrate quantity, filter cake mass, and thickness, Filter cake mass and thickness dependent on filtrate quantity, negative pressure, and drum speed.



32110

SUSPENSION PRODUCTION UNIT

Supply unit to produce and deliver suspensions for experimental filtration units, Stirred tank with lid and stirring machine to prepare a suspension, Eccentric screw pump, with pressure cut-out switch, dry-running protection and adjustable speed, to deliver the suspension.



32111

FLOW OF BULK SOLIDS FROM SILOS

Investigation of the outflow of bulk solids from silos with wedge-shaped discharge hoppers, Demonstration of arching, mass flow, and funnel flow with different bulk solids, Two silos with different hopper wall materials, Front walls of the silo made of transparent material.



32112

FLOW PROPERTIES OF BULK SOLIDS

Design of bulk solids silos using a ring shear tester, 1 ring-shaped shear cell to determine yield loci, 1 ring-shaped shear cell with a sample of wall material to determine wall yield loci, Shearing of the bulk solid sample by motor rotation of the shear cell.



32113

MIXING PROCESS BY STIRRING

Observation of the suspension state of suspended solids when using different stirrers and at different speeds, Observation of the droplet size of emulsions when using different stirrers and at different speeds, Influence of mixing processes on heat transfer.



32114

PNEUMATIC TRANSPORT APPARATUS

Learning the fundamental principle and method of operation of a pneumatic conveyor system, Observation of different transport states dependent on solid content and air velocity, Determination of the suspension velocity of the solid, Determination of the solid content of the flow.



32115

FLUIDIZED BED FORMATION

Fundamentals of the fluidization of bulk solids, Observation and comparison of the fluidization process in water and air, Pressure loss depends on the flow velocity, Pressure loss depends on the type and particle size of the bulk solid.



32116

CHARACTERISTIC VARIABLES OF HYDRAULIC TURBO-MACHINES

Study of Centrifugal pump, Measuring inlet and outlet pressures of the pump, Determining the delivery height, Determining the hydraulic output, Determining the mechanical output.



32117

PRECIPITATION AND FLOCCULATION APPARATUS

Familiarization with precipitation and flocculation, Effect of the pH value on precipitation, Creation of a stable operating state, Determination of the required metering quantities (precipitant, coagulant, flocculant), Functional principle of a lamella separator.



32118

ACTIVATED SLUDGE PROCESS APPARATUS

Learning the fundamental principle of the activated sludge process, Functional principle of nitrification and pre-de-nitrification, Creation of a stable operating state, Identification of the following influencing factors, Return sludge ratio, Return ratio of the internal re-circulation.



32119

FLUIDS SPECIFIC GRAVITY & DENSITY APPARATUS

The basic principle for the separation of solids from suspensions in a sedimentation tank, Determine the hydraulic loading rate, Influence of the following parameters on the separation process like Concentration of solids, Flow rate, Flow velocity in the inlet.



32120

CAKE & DEPTH FILTRATION APPARATUS

Fundamentals of filtration - Darcy's equation, Depth filtration with different bulk solids and suspensions, Cake filtration with different suspensions, Identification of characteristic filtration values.



32121

VISUALIZATION OF STREAMLINES

Visualization of streamlines in, Flow around drag bodies, Flow-through changes in cross-section, Influence of sources and sinks.



32122

WATER HAMMER IN PIPES APPARATUS

To Study Water hammer as a function of flow rate, To Study Water hammer as a function of valve closing time, To Study Display pressure curve, Determine reflection time, Calculation of the velocity of sound in water.



32123

PLATE & FRAME FILTER PRESS APPARATUS

Learning the fundamental principle and method of operation of a plate and frame filter press, To Study Production of a suspension, To Study Removal of the filter cake, To Study Insertion of the filter cloth, To Study Fundamentals of cake filtration.



32124

AERATION APPARATUS

Visualization of cavitation in centrifugal pumps, Open impeller to observe the blades during operation, Continuously adjustable pump speed via frequency converter, Temperature control via heater and external cooling via the water supply.



BEARING SAMPLES PANEL

Familiarization with real bearings and their function, Identification of different bearings and seal/shield types, Bearing Fault Identification, Bearing Maintenance and Installation, Powder-coated, silk screened, 16-gauge, steel mounting panel with provision for mounting 12 bearings.



COUPLING SHAFT ALIGNMENT TRAINER

Heavy-duty, aluminum construction throughout, The overall weight of 20Kgs excluding packaging, Allows for alignment using all common alignment methods, Multiple "motor" positions allow for use of all common couplings including "spacer-type" couplings.



CAM ANALYSIS MACHINE

Follower bounce can be observed by using a stroboscope, To study the effect of follower weights (W) on the speed of bounce, To study the effect of initial spring compression on the speed of bounce, A test can be repeated by changing parameters like various compression springs, follower weights, and Cam speeds.



PUMP MAINTENANCE TRAINER

The actual working centrifugal pump used, To teach maintenance as well as installation, 7-Gauge, formed-steel, powder-coated base plate with provision for bench mounting, Clear acrylic, standard bore, replacement back-head/stuffing box.



RECIPROCATING COMPRESSOR DEMO TRAINER

A detailed scaled-down model of a common XLE compressor, Inlet unloaders and channel valves, full-size replicas, Oil Wiper and stuffing box assemblies, fully detailed and removable, Working parts made of corrosion-resistant metal.



PUMP PACKAGING MECHANICAL SEALING DEMO

Formed, 7-gauge, steel baseplate with provision for bench-top mounting, Clear acrylic "backhead" and stuffing box, allowing for complete visibility of the seal area, and allowing for installation of many commercially available mechanical seals.



BEARING MAINTENANCE TRAINER

Steel base plate, 30" long, allowing for convenient mounting across the width of a standard shop bench, 4 Steel shaft mounting brackets which, when used in combination, allow for mounting of shafts in different orientations, 4 High-grade alloy steel CNC-machined stub shafts allowing for installation of all bearings.



32132

BEARING FRICTION APPARATUS

Determination of friction torque on sliding bearings various material pairings by means of interchangeable bearing shells, Determination of the friction torque on a rolling bearing, Comparison between sliding and rolling bearing.



32133

DEFORMATION OF BARS UNDER BENDING TORSION

Determination of the modulus of elasticity, Statically determinate systems, Statically indeterminate systems, Deformation of a beam dependent on Material, Formulation of proportional relationships for the deformation Torsion experiments, Determination of the shear modulus of various materials.



32134

DEFORMATION OF STRAIGHT BEAM

Deflection of a dual-span beam on three supports, Measurement of the support reactions, Measurement of the deformations, Influence of the material (modulus of elasticity) and the beam cross-section (geometry) on the elastic line, Maxwell-Betti coefficients and law.



32135

CRANK & CONNECTING ROD APPARATUS

To Study Crank drive with fixed cylinder, To Study Crank drive with swiveling cylinder, Experimental units on crank drives, with either fixed or swiveling cylinder Ball bearing mounted crank disc, anodized aluminum, 3 different crank radio Connecting rod black anodized aluminum.



32136

CAM ANALYSIS APPARATUS

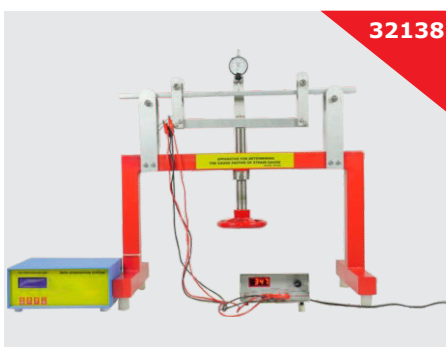
Cam -Eccentric, tangent and circular ARC type, Follower mushroom, flat faced and roller type, Cams and followers are hardened to reduce wear of the surfaces, Variable speed motor coupled to camshaft of suitable range and Variac.



32137

FORCES IN CRANE JIB

Graphical breakdown of forces by force parallelogram, Determination of the bar forces on various jib forms, Comparison of measurement result, calculation, Graphical method.



32138

STRAIN GAUGE TRAINING SYSTEM

Experimental unit investigating the fundamentals of strain gauge measurement, Tension, bending and torsion tests each with strain gauge measuring points in full bridge circuit, Strain gauge application areas protected by Plexiglas cover, Steel test bodies.

Industrial Visit of
Golbal Institute
of Technology
Jaipur





32139

EQUILIBRIUM MOMENTS ON TWO ARM LEVER

Fundamentals of the equilibrium of moments applied forces, generated moments and equilibrium, Action of forces dependent on the lever arm.



32140

FORCES IN A SINGLE BAR STRUCTURE

Resolution of forces in a single plane, statically determinate system, 3 node discs, 2 of which serving as supports, 3 bars, each fitted with a leaf spring element and dial gauge, 2 fixed bar lengths, 1 variable bar length.



32141

SLOTTED ANGLE APPARATUS

Conversion of smooth rotary motion into a purely harmonic reciprocating motion, Influence of crank length and input angle on the output stroke.



32142

FOUR BAR CHAIN

Investigation of the mechanical relationships on four-bar chain mechanisms, Checking the Grashof of set by varying the crank radius, the radius of oscillation, and connecting rod length, Demonstration of the operation of axle pivot steering.



32143

WHITWORTH QUICK RETURN APPARATUS

Output stroke of Whitworth's quick return as a function of the input angle of the drive crank, Benchtop experiment on the uneven reciprocating motion of Whitworth's quick return, Crank radius 46mm, slider radius 55mm, connecting rod length 145mm.



32144

CRITICAL SPEED INVESTIGATION APPARATUS

Investigation of bending vibrations and resonance of a rotating shaft, Determination of critical speeds with different arrangements of the bearing and masses on the rotor shaft, Investigation of the rotor shaft's self-centering effect.



32145

DEFORMATION OF A CURVED AXIS BEAM

Bending behavior of a curved-axis beam, Circular beam, Semi-circular beam, Quadrant beam, Application of the principle of virtual forces (the force method) to calculate the deformation, 2nd moment of area.



32146

BUCKLING BEHAVIOUR OF BARS

Verification of the Euler Theory, buckling on elastic bars, Determination of the modulus of elasticity for an unknown material (GRP), Measurement of force and deflection, Calculation of the expected buckling force by the Euler formula, Graphical evaluation of deflection and force With supplementary set.



32147

DYNAMIC BEHAVIOR MULTISTAGE SPUR GEARS

Determining the angular acceleration on gears, Determining the mass moment of inertia of the gear, Determining the friction, Determining the gear efficiency.



FORCES IN VARIOUS SINGLE PLANE TRUSSES

Investigation of bar forces in a statically determinate truss, Construction of various trusses possible, 2 supports with node discs, Load application device with force gauge mountable on different node discs.



PUMP VALVES FITTING TEST SET UP

Determining the Kvs value of the control valve, Pressure losses at the dirt trap depending on the filter and its load. Planning, execution and assessment of maintenance and repair operations, Reading and understanding engineering drawings and operating instructions.



MOUNTING FRAME

Frame for mounting of experiments in statics, the strength of materials and dynamics, Sturdy sectional aluminum double frame, Easy, exact mounting of all components by precision clamp fixings, Stable on laboratory desktops or workbenches.



DEFLECTION OF BEAM APPARATUS

Study the variation of length in deflection, Cantilever beam with a load on one of its ends, The effect the beam's length has on a cantilever with a load on one of its ends, The effect the beam's section has on a centrally loaded beam supported on its two ends.



BEAM SHEAR FORCE & BENDING MOMENT APPARATUS

Calculation of the reactions arising from the static conditions of equilibrium, Application of the method of sections to calculate the internal forces and moments, Calculation of the shear force diagram, Calculation of the bending moment diagram.



SUSPENDED BEAM APPARATUS

Demonstration of the characteristics of a simple suspension bridge, Determination of the experimental tension in the supporting cables, Observation of the stability of the structure, Examination of the relationship between applied loads and the suspension cable tension.



PRESSURE DISTRIBUTION IN JOURNAL BEARING APPARATUS

Pressure distribution in the journal bearing depending on the speed, Pressure distribution in the journal bearing depending on load or bearing gap width, Stability limit as a function of the gap width.



DEFORMATION OF TRUSSES

Elastic deformation of the truss under point load, Calculation of support reaction and bar forces, The principle of work and strain energy, Application of Castigliano's first theorem to calculate the deformation at a defined point, Verification of the calculated deformation possible by the principle of virtual work.



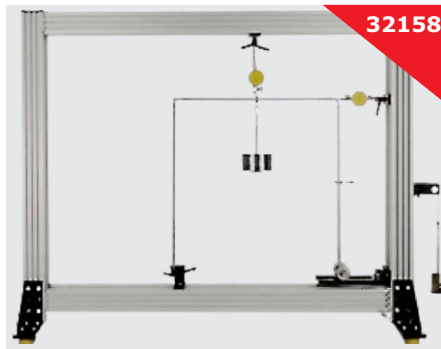
DEMONSTRATION OF EULER BUCKLING

Demonstration of elastic buckling, Representation of all cases of Euler buckling, 4 steel test bars, Loading of test bars with weights, Test bars cannot be overloaded, White backing wall with grid patterning.



DETERMINATION OF ELASTIC LINE

Comparison of different methods to determine the elastic line, Statically determinate or indeterminate beam, 2 supports with clamp fixing, optionally as articulated support with measurement of angle of inclination or clamp fixing, Articulated support with force measurement dial gauge.



DEFORMATION OF FRAMES

Relationship between load application and deformation on the frame, Differences between statically determinate and statically indeterminate frames, Familiarisation with the first-order elasticity theory for statically determinate and indeterminate systems, Application of the principle of superposition.



STABILITY OF BAR BUCKLING UNDER LOAD

Investigation of the buckling load under different conditions (elastic joint, elastic fixed end), Two-part buckling bar with central joint, Loading infinitely variable with lever and set of weights, Determination of loading via scale on load application lever, Various degrees of clamping via leaf spring with variable length on bottom support.



TORSION OF BARS APPARATUS

Torsion of a bar, Shear modulus of elasticity and 2nd polar moment of area, Angle of twist dependent on clamping length, Angle of twist dependent on torque, Influence of rigidity on torsion.



CENTRIFUGAL FORCE APPARATUS

To Study Dependency of centrifugal force, To Study On the rotational speed, To Study On the size of the rotating mass, To Study On the radius of rotation.



MOTORIZED GEAR MODELS

To Study Spur gear train with intermediate gear, To Study Two-stage spur gear train, To Study Planet gear train, Bench top experiment on the relationship between the number of gear teeth and the transmission ratio of gear trains.



CENTRIFUGAL GOVERNOR APPARATUS

To Study kinetics and kinematics of the following centrifugal systems, To Study Porter governor, To Study Proell governor, To Study Hartnell governor, Adjustment of centrifugal governors, Recording the governor characteristic curves and setting curves.



BENDING OF BEAM - UNIAXIAL

Unsymmetrical bending (complex) on a beam with an L-profile, Calculation of the neutral fibres, Combined bending and torsion loading by way of eccentric force application, Determination of the shear centre on a beam with a U-profile.



THREE HINGED ARCH

Familiarization with three-hinged arches (unsymmetrical and symmetrical), Application of the method of sections and the conditions of equilibrium to calculate the bearing forces for Point load, distributed load, moving load, Investigation of the influence of the load on the horizontal thrust in the supports.



32166

FORCES IN OVER DETERMINATE TRUSSES

Measurement of the bar forces in a statically determinate and statically over-determinate, single plane truss, Distribution of forces in the single plane truss dependent on the use of a surplus bar, Dependency of the bar forces on the external force, Magnitude, direction, point of application.



32167

FORCES IN SINGLE PLANE TRUSSES

Measurement of the bar forces in various single plane trusses, Dependency on the external force, Magnitude, Direction, Point of application, Comparison of measurement results with mathematical methods.



32168

PARABOLIC ARCH

Mechanical principles of the parabolic arch, Differences between statically determinate and statically indeterminate arches, Measurement of the deformations of the arch under load, Measurement of the support reactions on the statically indeterminate arch under load.



32169

STRESSES ON GERBER BEAM

Study the variation of length in deflection, Cantilever beam with a load on one of its ends, The effect the beam's length has on a cantilever with a load on one of its ends, The effect the beam's section has on a centrally loaded beam supported on its two ends.



32170

FREE VIBRATIONS OF BAR APPARATUS

Free vibration of a vertical bending bar, Free vibration of a horizontal bending bar, Determination of natural frequencies according to Rayleigh, Influence of free clamping length and weight on natural frequency.



32171

Free & forced vibration apparatus

Basics of mechanical vibration, natural damped and forced vibrations, Bar-type oscillator, Three helical springs, Unbalance exciter with DC motor, 0,77kg, Displacement exciter with DC motor, Electronic control unit with digital display, exciter frequency adjustable.



32172

TORSION VIBRATION APPARATUS

Determination of the torsional stiffness of a torsion bar, Determination of the mass moment of inertia, Decay behavior of torsional vibration, Determination of the damping of torsional vibration.



32173

TWO PINNED ARCH UNIT

Demonstration of the characteristics of a two pinned arch, To examine the relationship between applied loads and horizontal thrust, Determination of the horizontal thrust in a support point of an arch beam subjected to a vertical load, Study of the horizontal force change with the magnitude of the applied load.



32174

PORTAL FRAME UNIT

To determine the experimental value of the deflection at the load point for a rectangular portal frame subjected to a vertical load, To determine the experimental value of the deflection at the load point for a rectangular portal frame subjected to a horizontal load, To compare the theoretical and experimental results.



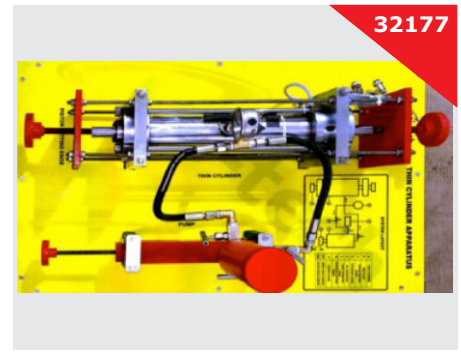
DEFLECTION OF CURVED BAR APPARATUS

Study of deflection of curved bars, Determination of the horizontal and vertical displacements at the free end of various curved bars when subject to single concentrated loads, Study of the different types of bars geometry and for different positions.



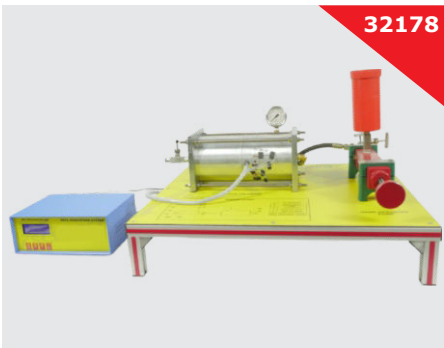
FREE VIBRATION APPARATUS

Investigation of the relationship between the mass of the body, the stiffness of the spring and the period/frequency of oscillation for a simple spring mass system with one degree of freedom, Investigation of the relationship between the applied force, the viscosity of the oil and the velocity for various settings of the adjustable oil damper.



THIN CYLINDER APPARATUS

Determination of theoretical strain, Closed ends condition, Determination of theoretical strain, Open ends condition, Study with Mohr Strain Circle and determination of circumferential, biaxial, radial and longitudinal stresses, Closed ends condition, Study with Mohr Strain Circle and determination of circumferential, biaxial, radial and longitudinal stresses.



THICK CYLINDER APPARATUS

Determination of theoretical strain, Closed ends condition, Determination of theoretical strain, Open ends condition, Study with Mohr Strain Circle and determination of circumferential, biaxial, radial and longitudinal stresses, Closed ends condition, Study with Mohr Strain Circle and determination of circumferential, biaxial, radial and longitudinal stresses.



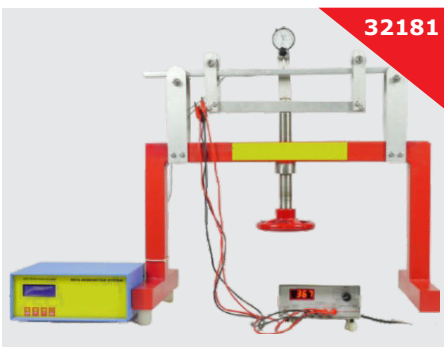
TORSION OSCILLATION APPARATUS

Single rotor connected to the free end of a torsionally flexible member, Single rotor connected to the free end of a series of torsionally flexible members, Two rotors connected to the free ends of a torsionally flexible member, Two rotors connected to the free ends of a series of torsionally flexible members.



SINGLE BALANCING APPARATUS

Demonstrations and experiments in the balancing of coplanar rotating systems, Balance in a single plane of revolution, Observe the effects on oscillations of various conditions of balance.



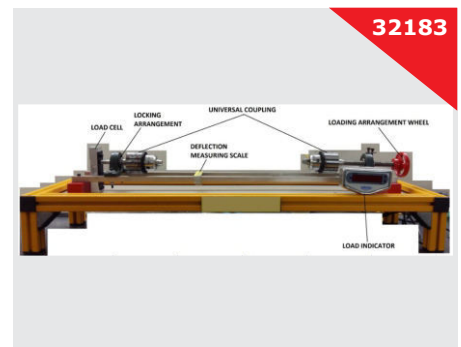
GAUGE FACTOR OF STRAIN GAUGES

To Study kinetics and kinematics of the following centrifugal systems, To Study Porter governor, To Study Proell governor, To Study Hartnell governor, Adjustment of centrifugal governors, Recording the governor characteristic curves and setting curves.



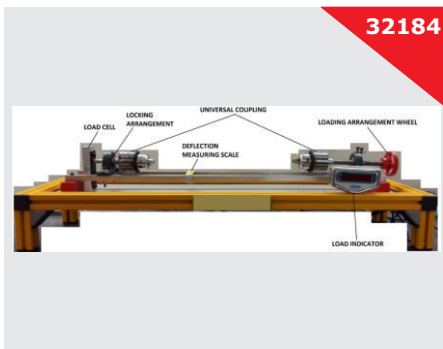
ACCELERATION OF GEARED SYSTEM APPARATUS

To determine the moment of inertia of a single shaft and of this shaft connected to other two shafts, To study the relationship between gears when applying different torques to the system, To determine the acceleration of the system.



STRUT BUCKLING APPARATUS WITH DAQ

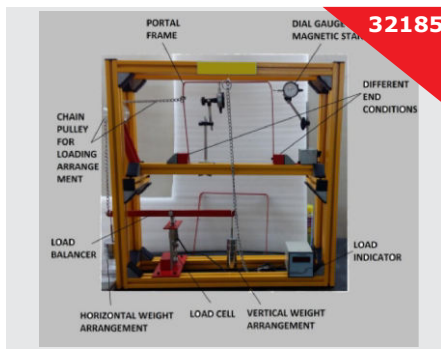
Study of deformation in beams, Demonstration of the Euler theory for beams, Determination of the relationship between buckling load and slenderness modulus for axial loads, Determination of the critical buckling load of a flat test piece, pinned at both ends.



32184

STRUT BUCKLING APPARATUS W/O DAQ

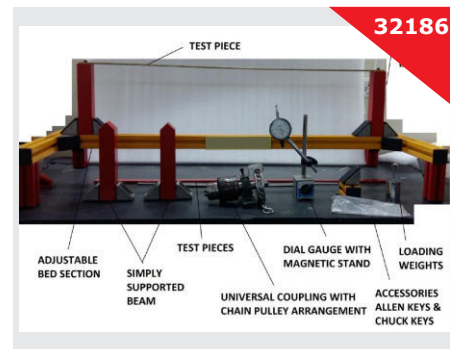
Study of deformation in beams, Demonstration of the Euler theory for beams, Determination of the relationship between buckling load and slenderness modulus for axial loads, Determination of the critical buckling load of a flat test piece, pinned at both ends.



32185

PLASTIC BENDING OF PORTALS APPARATUS

Verifies that hinges occur at positions of greatest bending moment, Studies the change in the collapse mechanism as the ratio of horizontal to vertical load is varied, Determines the increase in collapse load as the degree of redundancy increases.



32186

TORSION & DEFLECTION TEST APPARATUS

Deflection of specimen as a function of loading force, material, Young's Modulus of Elasticity (E), cross section, support span, Comparison of bending stiffness of varying specimen sections for the same cross sectional area, Comparison of cantilever beams.



32187

FATIGUE TESTING APPARATUS

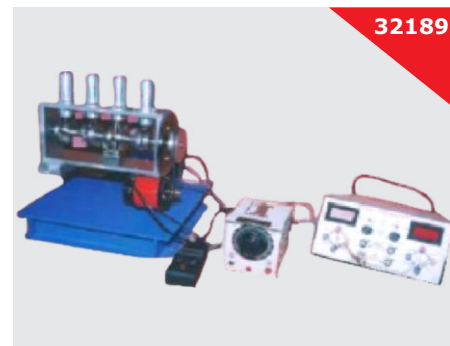
Gripping dia of specimen 12mm, Testing dia of specimen 8mm, Rotating speed 4200 rpm, Accuracy of applied bending $\pm 1\%$ moment, Digital counter 8 Digital, Power required 0.5 HP.



32188

UNSYMMETRICAL CANTILEVER APPARATUS

Investigations into bending of unsymmetrical cantilevers, Vertical and horizontal displacement measurement for varying angles of applied load, Demonstration that maximum and minimum vertical deflection occurs when horizontal deflection is zero, Use of Mohr's circle.



32189

BALANCE OF RECIPROCATING MASSES

Primary and secondary forces and moments in popular engine configurations - one, two and four cylinder, Primary and secondary forces and moments for different crank settings, The effect of adding additional mass to one or more pistons for any chosen crank setting.



32190

CONTINUOUS BEAM APPARATUS

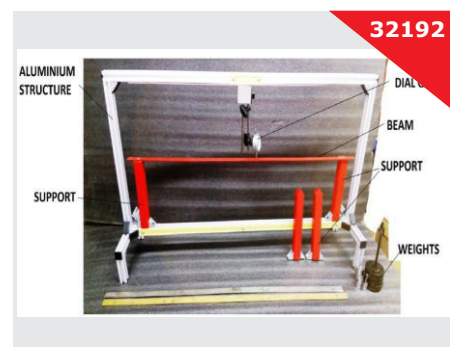
Reactions of a simply supported beam, Reactions of a two-span continuous beam, Reactions and fixing moments of a fixed beam and a propped cantilever, Reaction and fixing moment of a propped cantilever with a sinking support.



32191

ADVANCED BEAM TESTING APPARATUS

To Study All variables in deflection of beams, To Study Slope and curvature of beams, To Study Support reactions of single span and continuous beams, To Study Effect of sinking supports, To Study Area moment theorems.



32192

BENDING MOMENT APPARATUS

To determine the experimental value of the deflection at the load point for a rectangular portal frame subjected to a vertical load, To determine the experimental value of the deflection at the load point for a rectangular portal frame subjected to a horizontal load, To compare the theoretical and experimental results.



32194

GEAR MAINTENANCE TRAINER

Steel baseplate with provision for table-top mounting, Welded aluminum gear box, allowing for installation of all supplied gear sets, Seven custom bearing housings allowing for installation and shimming (internal and external) of tapered roller bearing sets.



32195

SHEAR FORCE APPARATUS

To comprehend the action of shear in a beam, To measure the shearing force at a section of a loaded beam, and to compare with a theoretical estimate, To study the definition of an influence line for shear force.



32196

REACTION OF BEAM APPARATUS

Determination of the reaction forces in the supports of a simple supported beam under various loadings; also measurement of loads and moments on a lever; validation of the principal of equilibrium, The apparatus consists of a beam of @1m long, linear spring balances, three load hangers, and a bench top mounting unit.



32197

DEFLECTION OF BEAM & CANTILEVERS APPARATUS

Study of Beam deflections, Study of General bending formulae, Study of Beam end rotations, Study of Elastic moduli (Young's modulus) for various materials Typical conditions are Cantilever, Propped cantilever.



32198

UNSYMMETRICAL BENDING & SHEAR CENTER APPARATUS

Study of the horizontal and vertical deflection of asymmetrical cantilevers when the plane of loading does not coincide with a principle axis of the section, Study of the horizontal deflection of asymmetrical cantilevers under various loadings.



32199

ROTATING FATIGUE TESTING APPARATUS

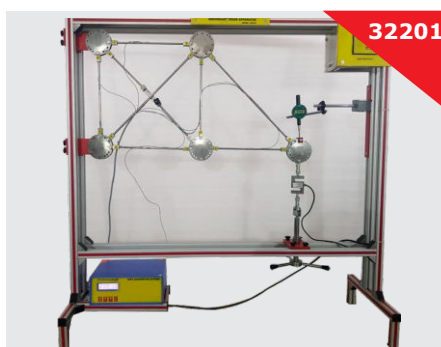
To make an introductory study of fatigue using a Wohler rotating fatigue apparatus, including the time to failure caused by various stress levels and materials, Introducing students to S-N curves, Material specification on fatigue limits.



32200

TENSION COEFFICIENT APPARATUS

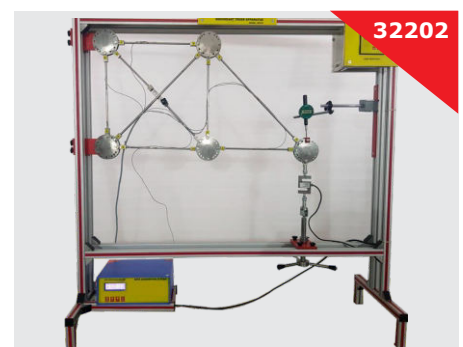
To determine experimentally forces induced in individual frame members, To calculate the theoretical forces induced, using the method of tension coefficients, To compare the experimental and theoretical results, To repeat for other frame configurations.



32201

REDUNDANT TRUSS APPARATUS WITH DAQ

Study of strains, stresses, forces and deflections in, A statically determinate structure, A statically indeterminate structure, Allows safe and practical experiments into determinate and indeterminate structures.



32202

REDUNDANT TRUSS APPARATUS WITHOUT DAQ

Study of strains, stresses, forces and deflections in, A statically determinate structure, A statically indeterminate structure, Allows safe and practical experiments into determinate and indeterminate structures.



RUBBER IN SHEAR APPARATUS

To determine the variation of deflection with applied load, To investigate the relationship between shear stress and shear strain, To find the modulus of rigidity of the rubber block.



CLUTCH PLATE FRICTION APPARATUS

To determine the coefficient of friction of the plate material, To show that the minimum torque to maintain rotation is proportional to the axial load and diameter of the friction disc.



SLIDER CRANK MECHANISM

Demonstration of the action of a simple crank and slotted link mechanism, Graphic determination of the relationship between the linear displacement of the sliding block and the angular displacement of the input crank.



WHEEL & AXLE APPARATUS

Experimental determination of velocity ratio and comparison with calculated value, Determination of variation with load of effort, Determination of variation with load of efficiency.



BEAM TEST APPARATUS

Experimental determination of the reaction forces in the supports of a simply supported beam under various loadings, Measurement of loads and moments on a lever, Comparison with calculated results and validation of the principle of equilibrium.

IndiaSoft Exhibition
India



THREE DIMENSIONAL EQUILIBRIUM

Study of equilibrium of five concurrent and non concurrent forces in a three dimensional system, Made for maximum flexibility and ease of use for extensive range of experiments, Simply supported and tests with up to four supports with any loading.



32209

ECCENTRICALLY LOADED TIE APPARATUS

Loading of a bending bar with different constant moments, Measurement of the deflection that occurs, Table unit for the demonstration of the relationship between load and deformation on a bending bar.



32210

UNIVERSAL BUCKLING APPARATUS

Study of Euler buckling theory, Experimental determination of the relation between the buckling load for different thickness and shapes of the test bars, Experimental determination of the relation between the buckling load and the methods of support of the test bars, Determination of the critical load differences for different lengths and different bar sections.



32211

TWIST & BENDING MACHINE

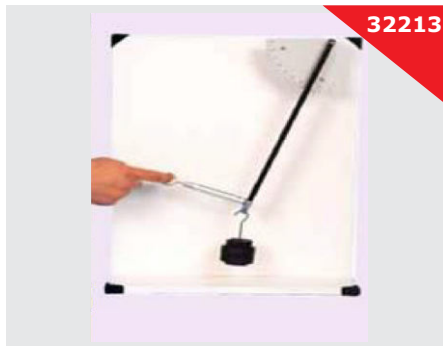
Study of the beams flexion for different sections and lengths, Determination of the Elasticity Modulus for stainless steel, Study of the relation between the torsional moment, beam length and torsion angle of one shaft, Determination of the Rigidity Modulus for steel, bronze and aluminum.



32212

ROOF TRUSS APPARATUS

To compare experimental values of the forces in the struts and tie of a basic roof truss with theoretical predictions, To observe the effect of changing the tie bar length.



32213

VARIABLE FORCES APPARATUS

To determine the work done by a variable effort and to compare with the work done in lifting the load, To show that the work done by the effort is equal to the change in potential energy of the load, To obtain the experimental relationship between effort and distance moved by effort, and to compare with a theoretical prediction.



32214

LINEAR & ANGULAR SPEED APPARATUS

To find the relationship between angular rotation and the peripheral movement of the stepped shaft, Compare actual results with theory, The angular movement of the shaft and the corresponding linear movement of the weights can be compared.



32215

IMPACT TEST APPARATUS

Determine the notched-bar impact work, Determine the notched-bar impact strength, Analyze the fracture surface characteristics, Plot a notched-bar impact work-temperature diagram.



32216

SPRING TEST APPARATUS

Study of Spring rate and Hooke's law, To prove the basic rules of spring design, Study of A simple spring scale, Study of Springs in series, Study of Springs in parallel.



32217

BENDING STRESS IN A BEAM APPARATUS

Study of Second moment of area, Study of Converting strains to stresses, Study of Strain gauges, Study of The neutral axis, Study of The bending equation.



32218

BELT DRIVE STUDY APPARATUS

Learning the fundamental principle of the activated sludge process, Functional principle of nitrification and pre-de-nitrification, Creation of a stable operating state, Identification of the following influencing factors, Return sludge ratio, Return ratio of the internal re-circulation.



32219

PIN JOINTED FRAMEWORKS

Study of Bow's Notation, strains, stresses, forces and deflections in various frameworks, including a Warren girder and roof truss, Comparison of different frameworks, Comparison of different frameworks.



32220

TENSILE TEST MACHINE

To determine experimentally forces induced in individual frame members, To calculate the theoretical forces induced, using the method of tension coefficients, To compare the experimental and theoretical results, To repeat for other frame configurations.



32221

BENCH TOP IMPACT TEST MACHINE MODEL

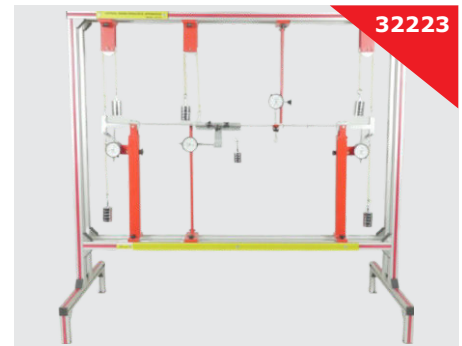
Introduction to the principles of common impact testing methods, such as Izod and Charpy tests, Investigations into the resistance of materials to crack propagation.



32222

ROUND DIAPHRAGM APPARATUS

Measurement of diaphragm disc surface strain using strain gauges, Measurement of diaphragm disc deflection with a dial gauge, Determination of radial strain, Determination of circumferential strain. Diaphragm surface profile, Strain gauge technology and uses.



32223

VIRTUAL WORK PRINCIPLE APPARATUS

Elastic lines for statically determinate or indeterminate beams under load, Determination of the elastic line of a beam by, The principle of virtual work (calculation), Mohr's analogy (area moment method devised by Mohr; graphical representation), Application of the principle of superposition.



32224

TRANSMITTED LIGHT POLARISCOPE

Photoelastic analysis of standard mechanical models, Analysis of Crane hook under tensile load, Tensile loading of beams, perforated beams, plates, overlap element, Variation of stress colourisation.



32225

FUNDAMENTALS OF STATICS

Experimental setup to demonstrate simple, planar force systems, Panel with rails around the edges for easy mounting of various experimental components, Panel with imprinted 50mm line grid and facility to write on using erasable marker, Lever rods with 50mm grid.



32230

EQUILIBRIUM IN A SINGLE PLANE APPARATUS

Experimental development of the core principle of "freeing" in statics, Calculation of the support forces for a given position of the clamp weight and for a known angle of inclination.



32231

FORCES IN A HOWE TRUSS

Measurement of the bar forces in a single plane truss, Howe type, Dependency of bar forces on the external force magnitude, direction, point of application, Comparison of measuring results with mathematical and graphical methods, Method of joints, Ritter's method of sections, Cremona diagram.



32232

PLASTIC BENDING OF BEAMS APPARATUS

Measurement of collapse load for a black mild steel beam, Study of extra load carried as beam is made redundant by end fixing Comprehensive instruction manual provided.



32233

BENDING & TORSION APPARATUS

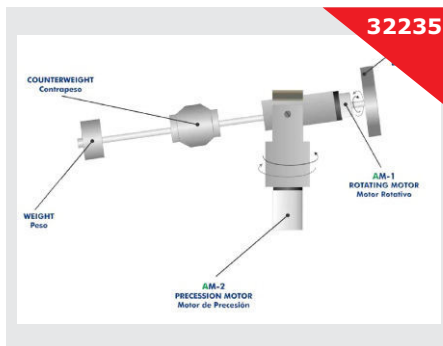
To determine elastic failure of a specimen subjected to several ratios of bending and torsion simultaneously, To compare the results with the established theories of failure.



32234

INVERTED PENDULUM APPARATUS

Design of a fuzzy control for the unstable single-variable system inverted pendulum, Working with the development software, Activating of two independent actuators that are coupled via the system, Mastering of non-linearities in the system inverted pendulum.



32235

GYROSCOPE

Study of the laws of gyroscopes, Demonstration of the precession and stability of a gyroscope system, Investigation of gyroscopic couple direction for each combination of the rotor and the precession directions, Study of the magnitude of gyroscope couple in function of the rotor velocity and the precession velocity.



32236

MOMENTS EXPERIMENTS KIT

Study of Principle of moments, Study of Beam balances, Study of 1st, 2nd and 3rd order levers, Bell crank lever, Study of Beam reactions, Rigid beam with hook points, Bell crank lever with hook points, Spring balances, Pulley.



32237

ECCENTRICALLY LOADED TIE APPARATUS

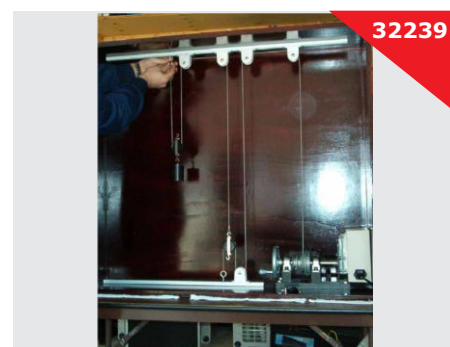
Low cost, effective teaching Self-contained Bench-mounted Combined bending and tension Three eccentricities unit, Range of Experiments to measure the vertical bending deflection of the bar and to compare with theoretical predictions, To assess the effect of eccentricity of loading.



32238

EQUILIBRIUM IN A SINGLE PLANE

Experimental development of the core principle of "freeing" in statics, Calculation of the support forces for a given position of the clamp weight and for a known angle of inclination, Application of the 1st and 2nd equilibrium conditions in statics, And full compensation of the support forces by cable forces, How does the clamp weight position affect the support forces.



32239

DEPENDANT MOTION APPARATUS

This apparatus set up on the lab bench using a stand base, The block and tackle can be expanded to three pairs of pulleys and can support loads of up to 20N, the pulleys are mounted virtually friction free in ball bearings and for inclined plane, two forces are measured for various angles of inclination using precision dynamometers.



32240

LABORATORY BALL MILL

Cascade and cataract motion, critical speed, Degree of comminution dependent on milling time, rotation speed, ball diameter, ball filling, material to be milled, Theoretical and actual power demand.



32241

STATIC & DYNAMIC BALANCING MACHINE

Demonstration of simple static and dynamic balancing of two, three and four rotating masses, Dynamic balancing of rotating mass systems by calculation and vector diagrams (triangle and polygon).



32242

UNIVERSAL VIBRATION APPARATUS

Backboard: Durable Plastic with 50mm centre fixings, 9mm thick, Metal Chains and sprockets, Plastic Gears, Quick release fasteners, Modules supplied in Aluminum Cases.



32243

VIBRATIONS FUNDAMENTALS TRAINING KIT

Free vibrations (oscillations) in simple, compound, filar and Kater's pendulums, Centre of percussion, Free vibrations in cantilevers and a mass-spring system, Free torsional vibrations and free vibrations in a beam and spring, Free and forced vibrations in a simply supported beam and a rigid beam with spring.



32252

HOOK'S COUPLING APPARATUS

Determination of the gimbal error on Hooke's couplings, Bench top experiment on gimbal error and its avoidance on articulated joints, Hooke's coupling, standard industrial parts, Scales made of transparent plastic.



32253

HEAT EXCHANGER - JACKET VESSEL

To study and compare the heat exchanged in shell and tube type and concentric type heat exchanger, Determination of mean temperature difference under parallel and counter flow, Determination of overall heat transfer coefficient, To determine the heat exchanger capacity.



32254

HEAT EXCHANGER - PLATE TYPE

To study and compare the heat exchanged in shell and tube type and concentric type heat exchanger, Determination of mean temperature difference under parallel and counter flow, Determination of overall heat transfer coefficient, To determine the heat exchanger capacity.



32255

HEAT EXCHANGER - SHELL & TUBE TYPE

Computerised data acquisition software for heat transfer, An advanced personal computer based model, This system has facility of data acquisition, plotting on-line and historical trends.



32256

HEAT EXCHANGER - TUBULAR

Computerised data acquisition software for heat transfer, An advanced personal computer based model, This system has facility of data acquisition, plotting on-line and historical trends.



32257

HEAT TRANSFER IN NATURAL CONVECTION

Pipe - Brass, 38 mm dia.(OD), 500 mm long fitted with cartridges type heater, Thermocouples fitted along the length of pipe, Enclosure with Perspex window to house the pipe.



32258

HEAT EXCHANGER – PC BASED MULTIPLE

To study and compare the heat exchanged in shell and tube type and concentric type heat exchanger & other heat exchangers, Determination of mean temperature difference under parallel and counter flow, Determination of overall heat transfer coefficient, To determine the heat exchanger capacity.



32259

THERMAL CONDUCTIVITY OF METAL BAR

Test Bar - 25 mm. dia. of adequate length, material mild steel, Thermocouples are mounted along the length of bar, Band heater is provided at one end and heat sink at other end, Test portion is well insulated to prevent heat loss.



32260

HEAT TRANSFER – FORCED CONVECTION

Test Bar - 25 mm. dia. of adequate length, material mild steel, Thermocouples are mounted along the length of bar, Band heater is provided at one end and heat sink at other end.



32261

HEAT EXCHANGER – PARALLEL & COUNTER- FLOW

Determination of overall heat transfer co-efficient for a tube in tube type heat exchanger, To calculate Rate of heat transfer, To calculate L.M.D.T., To calculate Theoretical overall heat transfer co-efficient.



32262

CHEMICAL REACTORS – TEACHING EQUIPMENT

Determination of reaction rate constant, Investigation of the effect of throughput on conversion, Demonstration of the temperature dependence of the reaction and the rate constant, Determination of the residence time distribution, Study of the effect of flow rate on conversion.



32263

TUBULAR REACTOR

Determination of reaction rate constant, Investigation of the effect of throughput on conversion, Demonstration of the temperature dependence of the reaction and the rate constant, Determination of the residence time distribution, Study of the effect of flow rate on conversion.



32264

CONTINUOUS STIRRED TANK REACTOR

Hot Water Tank with Heater Controller, Two peristaltic feed pumps with individually variable flow rates, 0-140 ml/min, Complete with two thermocouples, an input for a third (user) thermocouple and a dual range conductivity sensor.



32265

CHEMICAL REACTOR TRAINER

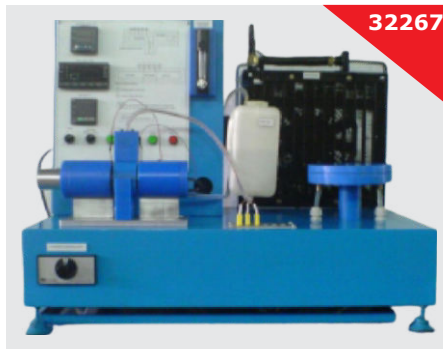
In conjunction with the various types of reactors available as accessories in the 32265, comprehensive experiments on the reaction kinetics and on the conversion of reactants during a saponification reaction can be performed, Variation of contact time of the two chemicals.



32266

MECHANICAL EQUIVALENT OF HEAT APPARATUS

Study of the basic aspects of conversion of mechanical work to heat energy, Familiarization with the working of the apparatus, Measurement of mechanical work dissipated and heat energy dissipated, Determination of mechanical equivalent of heat.



32267

HEAT TRANSFER – CONDUCTION

Study of heat flow rate through solids and comparison with Fourier law of linear heat conduction, Determination of co-efficient of thermal conductivity of conductors and insulators, Measurement of temperature distributions in linear heat conduction, Measurement of contact resistance and its effect on heat transfer.



32268

THERMAL CONDUCTIVITY UNIT FOR LIQUIDS & GASES

Study of steady state one dimensional heat conduction through liquids and gases, Determination of thermal conductivity of different fluids such as air, oil, water etc.



32269

HEAT TRANSFER: FREE & FORCED CONVECTION

Demonstration of the basic mechanisms of free and forced convection, Determination of free and forced convection heat transfer to air from vertical flat plate, Determination of free and forced convection heat transfer to air from circular cylinder in a tube bundle.



32270

HEAT TRANSFER TRAINER & MODULES

Determination of Heat transfer rate through solids, Determination of Thermal conductivity of different materials, Determination of contact resistance in Composite slab.



32284

MIXED HEAT FLOW EXCHANGE

Computer based data acquisition unit, Mixed Heat Flow Heat Exchanger type having any other specific user requirements, Single phase mains electrical supply, 220-240 V, 50 Hz, Water supply.



32285

FINNED TUBE HEAT EXCHANGER

Finned-tube heat exchanger to study convective heat transfer between water and air, Function of the heat exchanger as an air heater or water cooler, Closed hot water circuit with electric heater, thermostat, water tank and pump, Adjustable water and air flow.



32286

STEAM TO WATER HEAT EXCHANGER UNIT

Visual demonstration of filmwise condensation and nucleate boiling, Demonstration of the increase in heat exchanger effectiveness due to increasing the number of tube passes at constant flow rates, Investigation of the effect of increasing flow velocity and the number of tube passes on the overall heat transfer coefficient.



32287

THERMAL CONDUCTIVITY THROUGH COMPOSITE WALLS

Calculation of thermal conductance & different heat distribution in composite wall, Plotting of heat distribution across the width of composite walls, Compact, comprehensive, sturdy design, Fully instrumentation for experimentation of Heat transfer.



32288

THERMAL CONDUCTIVITY THROUGH METAL BARS

To study the heat distribution along the length of the bar, To determine the thermal conductivity of given specimens, To Study the variation of thermal conductivity of the material with temperature.



32289

FORCED AIR GAS BURNER TRAINER

Identification and management of the components required for a real gas line, Study and analysis of the tune-up operations for the forced air gas burner, Study of the ignition procedure and the nominal load adjustment of a gas burner, Study and analysis of the gas flow rate and the operating volume.



32290

THERMAL CONDUCTIVITY OF METAL BAR

Demonstration of indirect heating/cooling by transfer of heat from one fluid stream to another when separated by a solid wall, Energy balance determination (heat balance) and calculation of efficiencies by measuring the flow rates and temperature changes in the hot and cold fluid streams.



32291

HOT AIR BLOWER

Compact, mobile unit designed to generate Hot Air for different applications, PID based temperature controller to meet precise air temperature, Comprehensive Instrumentation Panel with all necessary safety instruments.



32292

LINEAR CONDUCTION HEAT TRANSFER APPARATUS

Understanding the Fourier rate equation in determining the rate of heat flow through solid materials, Measuring the temperature distribution for steady state conduction of energy through a uniform plane solid and a composite plane solid.



32293

TRAY DRIER

Study of Mass and energy balance, Study of Drying processes, Study of Mass and heat transfer, Study of Air speed and temperature effects on drying process.



32294

COOLING TOWER

To study the water flow pattern and distribution, To measure all "end states", and flow rates of water air and make-up water, To plot the end states on a psychrometric chart and to draw up energy balances using the steady flow equation, To study the performance at different range of cooling loads and inlet temperatures.



32295

RADIAL HEAT CONDUCTION

Fourier's equation and determining the rate of heat flow through solid materials, Measuring the temperature distribution during radial heat conduction, Determine the thermal conductivity of the disc or cylinder material.



32296

PILOT PLANT FOR STUDY OF BATCH DISTILLATION

Distillation of several mixtures (water/ethanol, water/methanol, methanol/propanol, etc) according to the variation of different operating parameters, Flooding phenomenon, Energy and mass balances.



SPRAY DRYER

Demonstration of the process of spray drying, Study various parameters affecting Spray drying process, Wheeled AISI 304 stainless steel structure, Atomization system with stainless steel spray nozzle.



SINGLE EFFECT FALLING FILM EVAPORATOR

Study of Evaporation process, Study of Heat transfer determination, Study of Energy and mass balances, Study of Heat transfer coefficient, Designed to demonstrate process of rising film evaporation, Includes Pulsing Unit with capability to vary amplitude & frequency of Pulsation.



LIQUID LIQUID EXTRACTION UNIT

Separation of two components liquid mixture by extraction using a solvent, Determination of the extraction efficiency, Mass balance, Calculation of the number of theoretical stages, Number of transfer units and height of a transfer unit.



SOLID LIQUID EXTRACTION UNIT

Study of the extraction performance according to different variables, Demonstration of the operation of a continuous, Wheeled structure of AISI 304 stainless steel, piping and valves of AISI 304 and AISI 316 stainless steel.



CRYSTALLIZATION UNIT

To Study Fundamental principle of cooling crystallization, Investigation of the factors influencing crystallization process, Calculate Concentration of the solution, Calculate Temperature, Calculate Time.



REVERSE OSMOSIS UNIT

Fundamental principle of reverse osmosis, Van't Hoff's law, Permeate quantity and salt concentration in the permeate and retentate dependent on pressure and salt concentration in feed, Determination of membrane constants and retention.



PLATE & FRAME FILTER PRESS

Bed and cake flow resistance, Determine the dryness of the filtration cake obtained, Implement the filtration process, Choice of filtration pressure, Choice of filtration surface area, Financial and technical validation of process.



COOLING USING PELTIER EFFECT APPARATUS

Function and operation of a Peltier element for cooling & as heat pump, Determination of the cooling and heating capacity, Recording typical characteristics, such as cooling capacity, via temperature differences, Energy balance, Calculating the coefficient of performance.



THERMAL CONDUCTION OF INSULATING POWDER APPARATUS

Determination of thermal conductivity of insulating powder, Comparison of thermal Conductivity of insulating powder at different temperatures, Insulating powder – Asbestos magnesite commercially available powder and packed between the two spheres.



32306

CONCENTRIC HEAT EXCHANGER

Energy balance determination, Temperature profiles in co- and counter-current flows, Log mean temperature difference, Heat transfer coefficient calculation, Effect of flow rate on heat transfer rate.



32307

LIQUID DIFFUSION COEFFICIENT APPARATUS

Measurement of mass transfer rates, Measurement of diffusion coefficients, The effect of concentration upon diffusion coefficient, First order unsteady state process analysis, Familiarisation with laboratory instruments to obtain data for industrial process design.



32308

FLUIDIZED BED HEAT TRANSFER APPARATUS

Observation of the behavior in a fluidized bed of a wide range of granular materials, from onset of fluidization to entrainment, Measurement of air flow and pressure drop through a variety of granular materials, as packed and as fluidized beds, Investigations of the effect of distributor design on bed behavior.



32309

BATCH CRYSTALLIZER

To study the performance of a Batch Crystallizer, To determine the crystal yield and the efficiency of crystallizer, Crystallization is the formation of solid particles within a homogeneous phase of saturated liquid.



32310

WETTED WALL ABSORPTION COLUMN

Calculation of liquid film mass transfer coefficients, Variation of coefficient with mass flow rate, Variation of oxygen flow rate to determine power law relationship, Calculation of liquid film mass transfer coefficients.



32311

CATALYTIC REACTOR

Understanding the principles of packed bed catalytic reactors, Mass balancing, Examination of steady and unsteady state catalysis, Comparison of chemical and biological (enzymic) catalysis, Flow Characterization in a packed bed, Understanding the principles of Flow Injection Analysis (FIA).



32313

VAPOR LIQUID EQUILIBRIUM APPARATUS

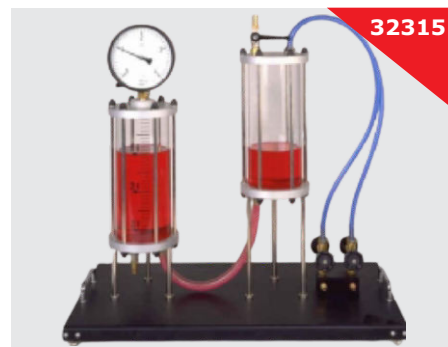
An equilibrium cell in which the vapour and liquid phases of the mixture are in equilibrium, An environment that controls the temperature of the equilibrium cell, e.g. air bath, oil or water bath etc, A procedure for agitating and mixing the cell contents, e.g. stirrer.



32314

STEADY & UNSTEADY STATE HEAT TRANSFER TRAINER WITH DAQ

To Study Steady heat conduction, To Study Transient heat conduction, To Study Temperature/time profiles, To Study and Calculate thermal conductivity λ of different metals.



32315

BOYLE'S LAW DEMONSTRATION APPARATUS

Demonstration of Boyle's law, Ideal gas equation of state, Compressor, can be used as vacuum pump, Electronic sensors to measure temperature, pressure, level of liquid, 1 temperature controller.



**Industrial Visit of
JECRC University
Jaipur**



TEMPERATURE CONTROL TRAINER

Study of open loop (Manual control), Study of on/off controller, Study of proportional controller, Study of prop. integral controller, Study of prop. derivative controller, Study of PID controller.



BOILING PROCESS APPARATUS

Visualization of different forms of evaporation, Heat transfer, Effect of temperature and pressure on the evaporation process, Visualization of boiling and evaporation in a transparent pressure vessel.



RADIATION HEAT TRANSFER APPARATUS

Study of Lambert's cosine law, Study of Inverse-square distance law (Lambert), Study of Stefan-Boltzmann constant, Study of Kirchhoff's laws, Study of Absorptivity, Study of Reflectivity, Study of Emissivity.



EVAPORATION PROCESS

Visualization of evaporation in a tube evaporator, Heating and cooling medium: water, Tube evaporator made of double-wall glass, Heating circuit with heater, pump and expansion vessel, Safety valve protects against over pressure in the system.



THERMAL CONDUCTIVITY OF BUILDING MATERIALS APPARATUS

Observation of typical forms of evaporation, Study of Sub-cooled boiling, Study of Dispersed flow, Study of Slug flow, Study of Film boiling, Study of Wet steam, Study of Single phase vapour flow, Study of Single phase liquid flow.



GAS ADSORPTION COLUMN

Determination of adsorption isotherm equilibrium, Adsorption isotherm profile characteristic, Determination of adsorption bed capacity, To study effect of pressure, flow rate & temperature control on adsorption characteristics, Mass transfer rates & coefficient.



CONDENSATION PROCESS APPARATUS

Visualization of the condensation process of water in a transparent tank, Two water-cooled tubes as condensers with different surfaces to realize film condensation and dropwise condensation, Controlled heater to adjust the boiling temperature.



GAS ABSORPTION DESORPTION COLUMN

Understanding of gas absorption and desorption working principles, Study of the basic principles of the absorption of a gas into a liquid using packed column, Study of basic principles of gas desorption of liquid into air using a packed column, Determine the heating effects on desorption rate and efficiency.



PERFECT GAS LAWS APPARATUS

To study relationship between pressure & temperature of Perfect Gas, To verify Boyle's Law for a perfect Gas, Compact unit designed to demonstrate relationship between pressure & temperature of Perfect Gas, Microprocessor based temperature controller to maintain precise air temperature.



VENTURI AIR SCRUBBER TRAINER

Demonstration of Venturi scrubber in dust pollution control, To study the effect of liquid-to-gas (L/G) ratio upon separation efficiency, To verify the theoretical relationship between total pressure drop, P and inlet velocity.



CHEMICAL REACTORS SERVICE

Supply unit for 6 different chemical reactor types, Connection of the reactors via hoses with quick-release couplings, Water circuit with tank, 100W heater, temperature controller, pump and low water cut-off for heating and cooling (with water chiller).



CONTINUOUS STIRRED TANK REACTOR

Effect of residence time on conversion, Residence time distribution, Evaluation of empirical rate expressions from experimental data, Determination of reaction rate constant, Effect of temperature on reaction rate.



TUBULAR REACTOR

Determination of reaction rate constant, Investigation of the effect of throughput on conversion, Study of the effect of flow-rate on conversion, Determination of the residence time distribution, Demonstration of the temperature dependence of the reaction and the rate constant.



TRANSPARENT BATCH REACTOR

Supply unit for 6 different chemical reactor types, Connection of the reactors via hoses with quick-release couplings, Water circuit with tank, 100W heater, temperature controller, pump and low water cut-off for heating and cooling (with water chiller), Temperature control of the reactants and reactors.



PLUG FLOW REACTOR

Temperature control of the reactants and reactors, 3 Glass tanks for reactants and products, 5 Peristaltic pumps to deliver the reactants and products, 2 Combined sensors for measuring the conductivity and temperature.



32331

LAMINAR FLOW REACTOR

Demonstration of the flow pattern in the reactor and comparison with the theoretical model. Effect of flow rate and feed concentration on the steady state conversion, Visual demonstration of the reactor response with tracer techniques and laminar flow.



32332

TEMPERATURE MEASUREMENT APPARATUS

Study of different types of temperature measuring devices, Study calibration of Different Temperature sensors, Functions of individual temperature measuring devices, Response characteristics of sensors, Steady state & Non-steady state behavior of the temperature measuring devices.



32333

GAS ABSORPTION COLUMN

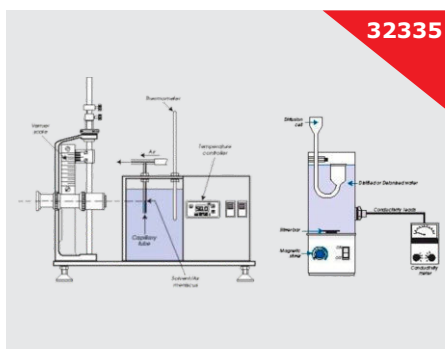
Study of the basic principles of the absorption of a gas into a liquid using a packed column, Demonstration of methods of gas and liquid quantitative analysis, Production of mass balances for a packed absorption column, Method of transferring units, including calculation of NTU and HTU.



32334

GAS ABSORPTION UNIT

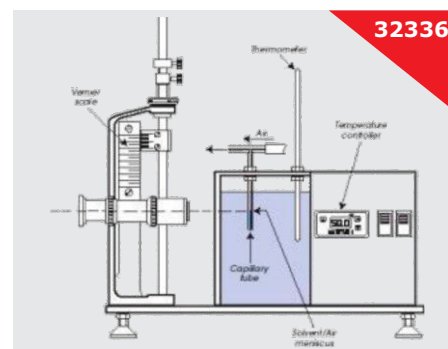
Investigation of the absorption process when separating gas mixtures in a packed column, Determination of pressure losses in the column, Representation of the absorption process in an operating diagram investigation of the variables influencing the effectiveness of absorption.



32335

MASS TRANSFER & DIFFUSION COEFFICIENT APPARATUS

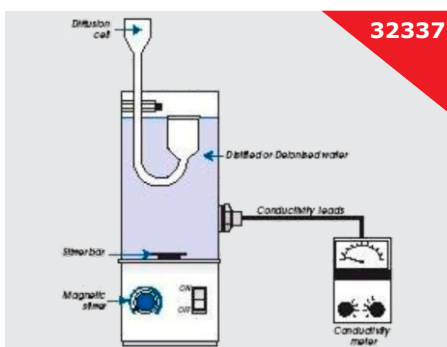
Direct measurement of mass transfer rates in the absence of convective effects, Use of gas laws to calculate concentration differences in terms of partial pressures, Use of Fick's Law to measure diffusion coefficients in the presence of a stationary gas.



32336

GASEOUS DIFFUSION COEFFICIENTS APPARATUS

Direct measurement of mass transfer rates in the absence of convective effects, Use of gas laws to calculate concentration differences in terms of partial pressures, Use of Fick's Law to measure diffusion coefficients in the presence of a stationary gas.



32337

LIQUID DIFFUSION COEFFICIENT APPARATUS

Essentially, the cell consists of a honeycomb of accurately dimensioned capillaries, positioned between two liquids of differing concentration of the solute whose diffusion coefficient is to be determined.



32338

THERMOMETERS & TEMPERATURE MEASUREMENT APPARATUS

Experiments in the fundamentals of temperature measurement with 7 typical measuring devices, Various heat sources or storage units laboratory heater, immersion heater, vacuum flask, Calibration units precision resistors and digital multimeter.



32339

FLASH & FIRE POINT APPARATUS

Compact, comprehensive, sturdy design, Heater control system, Demonstration of complete experimentation of flash point and fire point, Fully instrumentation for experimentation of thermocouple calibration, Direct reading of temperature at various points.



BATCH ENZYME REACTOR

Understanding the principles of batch enzyme kinetics, Understanding the factors affecting enzyme performance, Understanding the principles of polarimetry and Biot's law, Teaching exercises are included to familiarize the students with the following topics.



SATURATION VAPOR PRESSURE APPARATUS

Observation of the patterns of boiling at the surface of the water, Measurement of the temperature of saturated steam over the range of pressures 0 to 7 bar gauge and comparison of the saturation curves obtained with those published in steam tables, The concept of a saturation line.



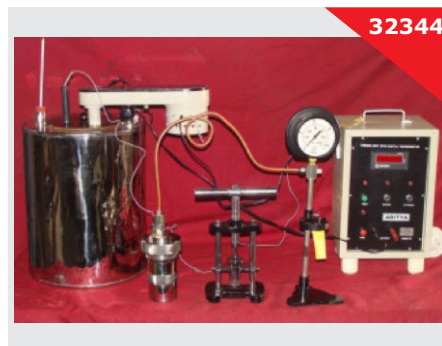
HEAT TRANSFER – BOILING & CONDENSATION

Visual observation of film-wise and drop-wise condensation, as well as nucleate boiling, To determine overall heat transfer coefficient, To demonstrate of Dalton law of partial pressure.



GAS CALORIMETER – JUNKER'S

To determine Calorific Value of gaseous fuel, Compact, comprehensive, sturdy design, Entire assembly made of corrosion resistant metals, User-friendly operation, Junker's Type Gas Calorimeter consists of chiefly the calorimeter with burner on a tripod stand, gas flow meter (non recording type) and pressure governor.



BOMB CALORIMETER

To determine Calorific Value of Solid & Liquid fuels, Determination of heat of combustion, The Bomb Body- SS Calorimeter vessel, Study of High pressure Valve, Study of Electrodes, Study of Water Jacket, Study of Stirrer. Study of Firing unit, Study of Thermometer, Study of Pallet Press.



CHANGE OF STATE OF GASES APPARATUS

Experimental investigation of gas laws Transparent measuring tank 1 for investigation of isothermic change of state, Hydraulic oil filling for changing volume of test gas, Built-in compressor generates necessary pressure differences to move the oil volume.



HEAT EXCHANGER SUPPLY UNIT WITH DAQ

Supply unit for heat exchangers, Hot water circuit with tank, heater, temperature controller, pump and protection against lack of water, Cold water circuit from laboratory mains or water chiller, Temperature controller controls the temperature of hot water, Flow adjustable using valves.



TUBULAR HEAT EXCHANGER

Demonstration of indirect heating/cooling by transfer of heat from one fluid stream to another when separated by a solid wall, Energy balance determination (heat balance) and calculation of efficiencies by measuring the flow rates and temperature changes in the hot and cold fluid streams.



PLATE HEAT EXCHANGER

Compact, mobile unit, designed to provide required services for testing various Heat Exchangers using single source, Entire process is computer controlled, including change of direction of flow for parallel & counter-flow analysis.



32350

SHELL & TUBE HEAT EXCHANGER

Supply unit for heat exchangers, Hot water circuit with tank, heater, temperature controller, pump and protection against lack of water, Cold water circuit from laboratory mains or water chiller, Temperature controller controls the temperature of hot water, Flow adjustable using valves.



32351

STIRRED TANK WITH JACKETED VESSEL AND COIL

Using the Logarithmic Mean Temperature Difference (LMTD) in heat transfer calculations, Energy balance determination (heat balance) and calculation of efficiencies by measuring the flow rates and temperature changes in the hot and cold fluid streams, Demonstration of the transition from linear to turbulent flow.



32352

LINEAR CONDUCTION HEAT TRANSFER

Understanding the Fourier rate equation in determining the rate of heat flow through solid materials, Measuring the temperature distribution for steady state conduction of energy through a uniform plane solid and a composite plane solid.



32353

CONCENTRIC TUBE HEAT EXCHANGER MODULE

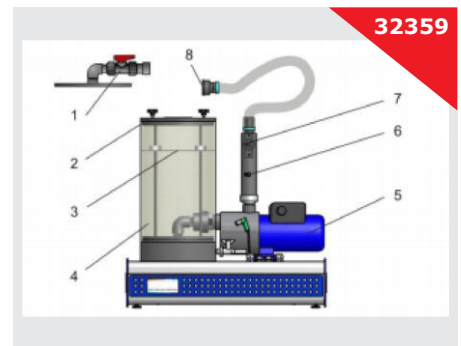
Concentric Tube Heat Exchanger Module allows the study of heat transfer between hot water flowing through an internal tube and cold water flowing in the ring area lying between the internal and the external tubes, This exchanger allows measuring hot and cold water temperatures at different points of the exchanger.



32358

HEAT TRANSFER BY CONVECTION & RADIATION MODULE

Heat transfer between heating element and vessel wall by convection and radiation, Operation with various gases possible, Experiments in vacuum or at a slight positive gauge pressure.



32359

TURBINE PUMP BASE UNIT

Basic experiments on a centrifugal pump together with the turbines, Determination of typical turbine curves, Performance curves at varying turbine speeds, Determination of efficiencies.



32360

AIR COMPRESSOR TEST APPARATUS INCLUDES DAQ

To investigate performance of reciprocating Air Compressor, To study effect of delivery pressure on power consumption & compressor efficiency, To determine mechanical efficiency of reciprocating compressor, To determine Free Air Delivery (FAD) of the Air Compressor.



32361

TWO STAGE AIR COMPRESSOR TEST APPARATUS INCLUDES DAQ

To investigate performance of reciprocating Air-Compressors of Single Cylinder and Two cylinder compressors, To study effect of delivery pressure on power consumption & compressor efficiency, To determine mechanical efficiency of reciprocating compressor.



32362

CENTRIFUGAL AIR COMPRESSOR TEST APPARATUS

To investigate performance of Centrifugal Compressor, To study effect of blower speed on delivery pressure, air flow rate, To study blower characteristics as function of speed, air flow rate & delivery pressure, To determine mechanical efficiency of centrifugal compressor.



32363

DISTILLATION COLUMN

Pressure drop across the column as a function of boil-up rate, Column efficiency as a function of boil-up rate, at total reflux, Binary mixture separation of components with changes in the feed flow rate, feed temperature, reflux ratios and reboiler temperatures. Comparing Raoult-Dalton Law using the method of McCabe-Thiele.



32364

POOL BOILING HEAT TRANSFER APPARATUS

Study of Visualization of different forms of evaporation, Study of Free convection boiling, Study of Nucleate boiling, Study of Film boiling, Study of Heat transfer, Study of Effect of temperature and pressure on the evaporation process concept of a saturation line.



32365

NUCLEATE POOL BOILING HEAT TRANSFER APPARATUS

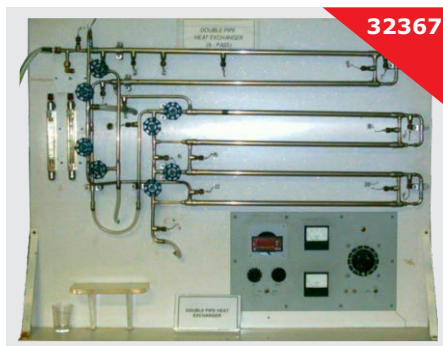
Visualization of boiling and evaporation in a transparent pressure vessel, Evaporation with heating element, Condensation with tube coil, Safety valve protects against over-pressure in the system, Pressure switch for additional protection of the pressure vessel, adjustable.



32366

THERMAL CONDUCTIVITY OF LAGGED PIPES

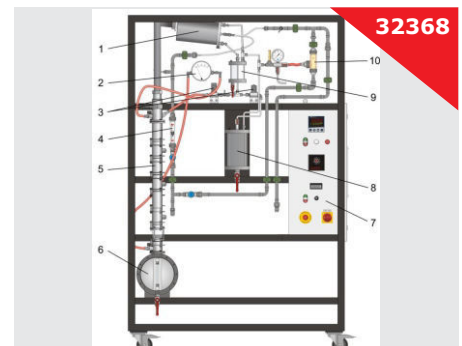
To determine heat flow rate through lagged pipe and compare it with the heater input for known values of thermal conductivity of lagging material, To determine thermal conductivity of lagging material by assuming input to be heat flow rate through lagged pipe.



32367

DOUBLE PIPE HEAT EXCHANGER

A device used to transfer heat from a fluid flowing on one side of a barrier to another fluid (or fluids) flowing on the other side of the barrier, It is used to accomplish simultaneous heat transfer and mass transfer heat exchangers become special equipment types.



32368

DISCONTINUOUS RECTIFICATION

Investigation and comparison of sieve plate and packed columns, In discontinuous mode, In vacuum mode, With different reflux ratios, With different numbers of plates, Determination of concentration profiles.



32369

DOUBLE PIPE HEAT EXCHANGER TRAINER

Determine heat transfer coefficients for sensible heat transfer, Mobile, compact, comprehensive, sturdy design, Fully instrumentation for experimentation of Double pipe heat exchanger, Direct reading of temperature, voltmeter and ammeter measurement.



32370

FLOW THROUGH PACKED COLUMN

Study of Function of a packed column - compare operating modes With water, Study of Water-air operation in parallel flow water-air operation in counter-flow, Study of Demonstration of wall effect, Study of Stream formation loading point, Study of Flooding point, Study of Hydraulic characteristics.



32371

GAS FLOW CLASSIFICATION

Learning the fundamental principle of wind sifting (gas flow classification), Coarse material fraction, Fine material fraction, Dependent on solid mass flow rate and volumetric air flow rate, Separation function, Separation size, Sharpness of separation.



32372

ADVANCED OXIDATION PROCESS

Study of advanced oxidation process for wastewater treatment, Study of advanced oxidation with hydrogen peroxide and UV light, Influence of the amount of hydrogen peroxide in the oxidation process, Analysis of the reaction kinetics.



32373

GAS CYCLONIC SEPARATOR

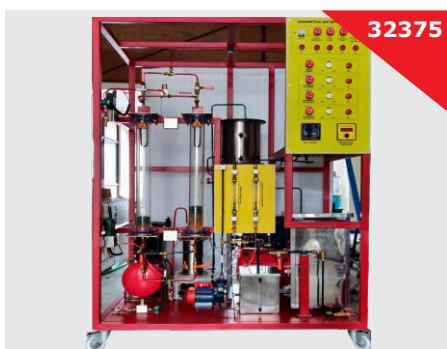
Influence of solid content and volumetric air flow rate on, Pressure loss at the cyclone, Degree of separation, Separation function and separation size (with suitable analysis device), Comparison of pressure loss and degree of separation with theoretically calculated values.



32374

ADVANCED CONDUCTION UNIT

Determination of thermal conductivity for various materials, Thermal energy balance of heat source and heat sink, Linear Heat Conduction in Metal Bars, Simple and Clear layout of system, Experiments are visible in a bell jar both ends of the test bar.



32375

ADSORPTIVE AIR DRYING

Fundamental principle of adsorption and desorption, Investigation of the variables influencing adsorption and desorption, Air flow rates, Air humidity and temperature, Bed height of adsorbent, Depiction of the processes in a h-E diagram, Plotting of breakthrough curves and determination of breakthrough time.



32376

MULTI-VARIABLE CONTROL VACUUM DEGASSING APPARATUS

Coupled level and pressure control, Level control with various controller types, Pressure control with various controller types, Plotting step responses.



32377

FIRST LAW OF THERMODYNAMICS TEST APPARATUS HEAT CONDUCTION AND CONVECTION

Effect of heat conduction and convection on heat transfer, Effect of free and forced convection on heat transfer, Calculate convective heat transfers, Effect of different materials on heat conduction, Effect of sample length on heat transfer.



32378

FIXED BED CATALYZES

Fundamentals of chemical catalysis, Fundamentals of enzymatic catalysis, Use of a photometric analyser Drawing up a quantity balance Determining yield, Investigation of catalytic reactions, 3 reactors (PMMA) for comparison of various fixed bed catalysis.



32379

FLOW INJECTION ANALYSIS

Using the flow injection analysis (FIA), Determining the concentration, Determining the yield for TH 165, Injection valve, injection syringe and injection loop for adding the enzyme 'glucose oxidase' required for verification.



32380

CORROSION STUDIES APPARATUS

Corrosion behavior of different metallic materials (rust/passivation), Formation of local elements, Influence of pH value of the electrolyte solution, Influence of salt concentration in the electrolyte solution, Oxygen corrosion, Corrosion protection.



DIFFUSION OF LIQUIDS & GASSES APPARATUS

Fundamentals of diffusion Fick's law, Derivation of the calculation formula for the diffusion coefficients for the given experimental conditions, Determination of the diffusion coefficient for the mass transport in gas.



SCREENING UNIT

Determination of particle size distributions, It enables users to separate a mixture of solids into several classes of particle sizes, In the screening process, each particle is compared with a screen mesh in terms of size and shape.



HUMIDITY MEASURE METHODS APPARATUS

Measuring methods for air humidity measurement, Psychrometric humidity measurement, Hygrometric humidity measurement, Capacitive humidity measurement, Characteristic variables to describe air humidity, Changes of the state of humid air in the h-x diagram.



EXPANSION OF IDEAL GASSES

Determination of the adiabatic exponent according to Clément-Desormes, Isothermal change of state by Boyle-Mariotte law, Isochoric change of state by Gay-Lussac's law, Idiabatic change of state of air, Isochoric change of state of air.



RISING FILM EVAPORATOR MODEL

Fundamental principle of film evaporation for increasing the concentration of temperature sensitive solutions, Investigation of the variables influencing the solid concentration in the solution, Influence of pressure and feed flow rate on the separating process, Influence of flow rate and pressure of the heating steam on the separating process.



ION EXCHANGE CHAMBER

Learning the fundamental principle of softening and desalination by ion exchange, Identification of the different modes of operation of cation and anion exchangers, Combined use of cation and anion exchangers for desalination, Exchanging capacities and regeneration.



MULTI-PROCESSING VESSEL

For Batch size from as low as 5 litres going to 20 litres, Comprehensive Control & instrumentation at front, Fully self contained system on lockable wheels, On board utilities, Dual purpose Heating as well as Cooling jacket.



THERMAL EXPANSION TRAINING UNIT

Measurement of the pipe sections elongation, Determination of the thermal expansion of different materials such as stainless steel, copper, PVC and PE, Study of the effect of varying pipe diameter in the thermal expansion, Determination of the thermal expansion coefficients.



SIEVE PLATE DISTILLATION COLUMN

To study the Sieve Plate Distillation Column, Stainless Steel tanks and wetted parts, Superb Painted structure, Simple to operate & maintain.



PACKED BED DISTILLATION COLUMN

To estimate the batch distillation curves for a binary system and verify the binary batch distillation equation for a known packed height, To operate the column under total reflux condition and estimate the HETP for the packing.



VAPOUR IN AIR DIFFUSION APPARATUS

Determination of the diffusion co-efficient of an organic vapour in air, To study the effect of temperature on diffusion co-efficient, A stirrer is fitted to maintain constant temperature inside the bath.



SOLID IN AIR DIFFUSION APPARATUS

To calculate the mass transfer co-efficient of vaporization of naphthalene in air using a packed bed of spherical particles of naphthalene, The equipment is fitted with a vertical glass column with a mesh near the base of column to hold the spherical balls.



BATCH DISTILLATION COLUMN

Preparation of solutions, Analytic valuation techniques, Filling of the column, Batch operation, Obtaining the McCabe-Thiele diagram Without reflux, Obtaining the number of plates Without reflux.



FLUIDIZATION & FLUID BED HEAT TRANSFER UNIT

Observation of the behaviour in fluidized bed of a wide range of granular materials, from onset of fluidization to entrainment, Measurement of air flow and pressure drop through a variety of granular materials, as packed and as fluidized beds.



DROP WISE & FILM WISE CONDENSATION APPARATUS

To study the Film wise & Drop wise condensation of steam on a vertical surface, Visualization of condensation process in drop wise as well as film wise condition.

Our Clients



MTC Military Technological College Oman



Fiji National University Fiji



African Development Bank



The University of Southern Queensland, Australia



The University of Zambia Zambia



Wolaite Sodo University Ethiopia



Emirates Aviation University UAE



Asian Development Bank



Food and Agriculture Organization of the United Nations



Eldoret National Polytechnic, Kenya



OL'Lessos TTI Kenya



Princess Nourah Bint Abdulrahman University Saudi Arabia



Bushenyi, Kichwamba, Kyema - Uganda



Mbari University of Science and Technology Uganda



National Institute of Technology Andhra Pradesh India



Bharat Electronics Ltd Bangalore, Karnataka India



Bhartiya Skill Development University India



World Skill Center Odisha, India



32443

SUBSONIC WIND TUNNEL

Flow past bodies with pressure and velocity observations in the wake, Performance of an aerofoil, Pressure distribution around a cylinder, Study of the pressure distribution around an aerofoil model to derive the lift and comparison with direct measurement of lift, Study of the characteristics of models involving basic measurement of lift and drag forces.



32444

SUBSONIC WIND TUNNEL FOR MACHINE

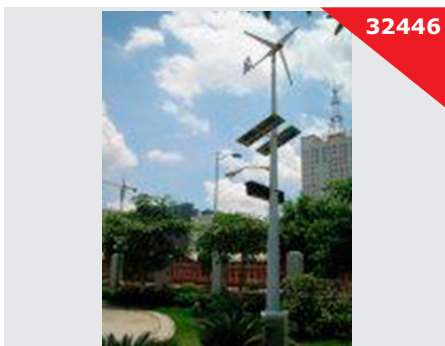
Determine drag and lift coefficients for different models, Pressure distribution when flowing around drag bodies, Flow past bluff and streamlined bodies with pressure and velocity observations in the wake, Study of characteristics of models involving basic measurement of lift and drag forces.



32445

SUBSONIC WIND TUNNEL

Measurement of static and total pressures in wind tunnel, Application of Pitot probe for mean velocity measurement, Wind tunnel flow velocity and fan speed measurement, Surface pressure measurements on a symmetric aerofoil, Lift, drag and pitching moment measurements in aerofoil testing.



32446

WIND POWER GENERATOR

Low start-up wind speed is needed, High system efficiency, Little better in operation, Lower noise, Small and nice looking, Easy installation and maintenance, New unique technology eliminates the trouble of cable twist when in windward which often happens in traditional small wind energy conversion system (WECS).



32447

WIND TUNNEL SYSTEM

Measurement of static and total pressures in wind tunnel, Application of Pitot probe for mean velocity measurement in wind tunnel, Wind tunnel low velocity and fan speed measurement and calibration, Surface pressure measurements on a symmetric aerofoil.



32448

AERODYNAMIC TRAINER

Illustrative demonstration without detection or analysis of measured values, Flow patterns in real fluids when flowing around and through models, Aerofoil with adjustable angle of attack, Orifice plate for change in cross-section, Flow separation and stall.



32449

SUPERSONIC WIND TUNNEL

Velocity Range is Subsonic through Mach 1.8 with help of interchangeable Test Section, Continuous Operation using Variable Speed Air Blower, working on Vacuum Principle, Compressed air collecting tank & air dryer not required.



32450

SECTIONED STEAM PRESSURE RELIEF VALVE

Study on the working principles of steam pressure relief valve, Familiarisation with the construction parts of steam pressure relief valve, Familiarisation with the function of each of the major components of steam pressure relief valve.



32451

COMPACT STEAM POWER PLANT

Study of steam operated power plant, First and second law of thermodynamics analysis of complete steam plant, Determination of turbine power output with closed nozzles, Measurement of power by dynamometer, Study of Efficiency of generator.



AIR - CONDITIONER BLOWER TRAINER

The trainer components used are constructed from actual new model, vehicle components and connectors, The blower motor is made miniaturized version of actual motor for safety reasons.



AIR - CONDITIONING SIMULATOR

Simulates the magnet clutch fault condition, such as short circuit or open circuit, Simulates the faults in refrigeration components, Simulates high pressure switch cut off, Generates the pressure reading at various point of cycle, when it operates in abnormal condition.



AIR - CONDITIONING SIMULATOR TRAINER

Working of External temperature sensor, Operating principle of refrigeration cycle, Working of Exhaust gas sensor, Electrical test, Working of Linear pressure sensor, Operation of Sunlight sensor, Working of Anti-frost sensor, Troubleshooting.



BUS AIR - CONDITIONING TRAINER

Basic operating principal of vapour refrigeration cycle, Bus air conditioner operating principal, Electrical control of the system, Diesel engine operating principal, Basic trouble shooting skill training.



AIR - CONDITIONING DEMONSTRATOR TRAINER

The trainer consists of Basic element components in automotive air conditioner unit automotive compressor, electric motor, dryer, high / low pressure gauge set, side glass, air cool condenser, finned tube evaporator with force draft fan, temperature controllers, ammeter and voltmeter.



ELECTRONIC CLIMATE CONTROL TRAINER

Fully operational climate control trainer manufactured using original components, Including evaporator, compressor, condenser, associated pipe work, climate control and electronic control, Based on a Suzuki / Hyundai / Toyota climate control system or optionally regular air-conditioning system.



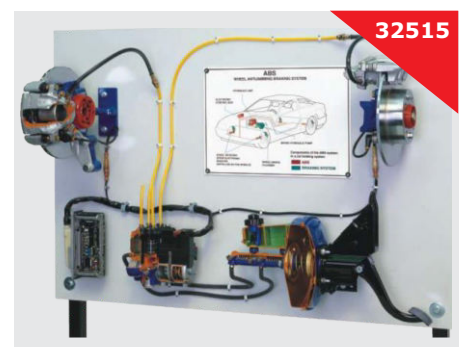
ELECTRIC COOLING FAN TRAINER

Defroster and Control Circuit, Two (2) Cooling Fans w/ Relays, Ten (10) Real World Faults for Diagnosis, Test Points for Diagnosis and Troubleshooting.



HEATER AIR CON BLOWER MOTOR SYSTEM

Magnetic-type motor is designed to handle the demands of continuous operation, Brushless and magnetic-brush styles available, Most are equipped with permanently lubricated, self-aligning bearings designed for long life and dependable performance.



ABS BRAKING SYSTEM DEMONSTRATOR

Clearly visible fully functional braking system and its components, Cross diagonal hydraulic braking system with front and rear discs with calipers, Functional parking brake, electronic ABS system, brake booster, With installed pressure gauges can be monitored the pressure in the brake circuit of each wheel.



32516

DISC BRAKE BRAKING SYSTEM

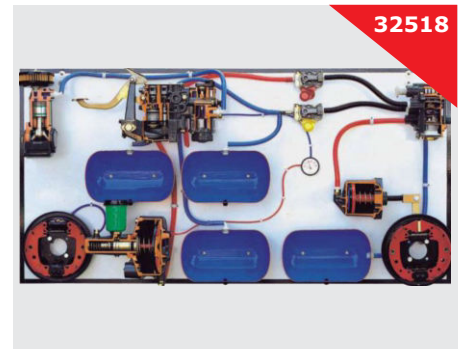
Drum brake, Brake pump, Brake pedal, Hand brake lever, Oil tank-stop light, Sectioned pump, Sectioned cylinder, Sectioned caliper, On Stand with Wheels.



32517

DRUM BRAKE BRAKING SYSTEM

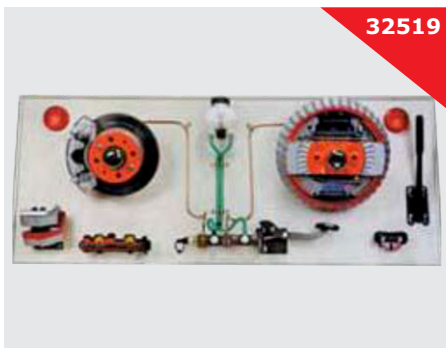
Drum brake, Brake pump, Brake pedal, Hand brake lever, Oil tank, Stop lights, Sectioned pump, Sectioned cylinder, On Stand with Wheels.



32518

HYDRAULIC PNEUMATIC BRAKING SYSTEM

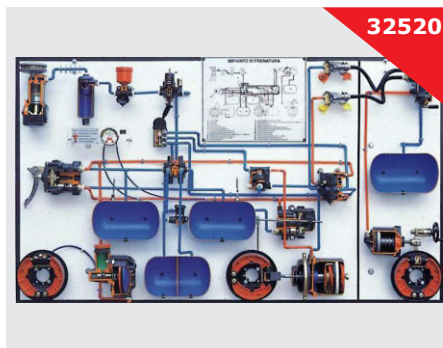
Piston Air Compressor Complete with Valves, Marelli-Triplex Distribution Assembly, Power-Assisted Pneumo - Hydraulic Brake, Complete Truck - Trailer Coupling, Automatically Re-loaded, Servo-Auto-Distributor for Braking.



32519

TWIN CIRCUIT DRUM & DISC BRAKE

Disc Brake-drum Brake, Brake Pump-brake Pedal, Hand Brake Lever, Oil-tank Stop Light, Sectioned Pump, Sectioned Cylinder, Sectioned Caliper, Wall Mount Model.



32520

TWIN LINE HYDRAULIC - PNEUMATIC BRAKING SYSTEM

Duplex Brake Valves, Pedal-Operated, Dual Control Relay Valve, Triple Control Relay Valve Built, In Modulated Relay Emergency Diverter Valve, Hand Control Brake Valve, Load/Pressure Modulator, Hydraulic - Pneumatic Pump with Brake Chamber.



32521

BRAKE BOOSTER SECTION

Sectioned original booster brake element, Function of the brake elements and linings can be demonstrated, Function of plunger can be demonstrated, Function of the holding spring can be observed, All sectioned parts and components are color coded.



32522

BRAKE MASTER CYLINDER SECTION

Sectioned original tandem brake master cylinder, Function of the sliding pressure rod piston can be demonstrated, Function of closing chamber can be demonstrated, Function of the differential and tracking bore function, build up of pressure can be observed.



32523

CAR ABS TRAINER

Study of ABS System Components & their functions, Demonstration of ABS Braking system, Fault Diagnostics of ABS System, Simulation of wheel lock to activate abs modulator, Speed simulation 0-160 KMPH.



32524

DRUM & DISC BRAKE SYSTEM TRAINER

Automotive Drum and Disc Brake System Trainer Order Code : 32524 performs and exhibits actual brake operations in automobile, Bleeding brakes, Hydraulic pressure tests, Inspection of brake components.



HYDRAULIC BRAKE SYSTEM TRAINER

All components are mounted on corrosion resistance metal plate, Hydraulic measuring points are provided for pressure measurement, Built in hydraulic pressure switch is provided to activate brake light.



HYDRAULIC DOUBLE CIRCUIT BRAKE SYSTEM SIMULATOR

Study how to maintain of the braking system, Calculate the efficiency of braking system, Simulate the front circuit failures, Simulate the rear circuit failures, Simulate the presence of water in the braking system, Recognition study of servo brake, Study the functioning of service brake.



BASIC HYDRAULIC DUAL CIRCUIT BRAKE SYSTEM DEMONSTRATOR

To show the operation of the hydraulic brake pump, To demonstrate the function of the servo unit, To display the transformation of the brake pedal movement into a movement of the brake cylinder in the disc and the drum brake at the wheels, To show the function of the hand brake at the rear wheels.



TRUCK AIR BRAKE WITH ABS TRAINER

Implementation of ABS control system, Learning the method of setup & trouble shooting, Microprocessor based fault simulator, designed to enable the lecturer to enter various type of faults and then assess the fault-finding abilities of the student.



SINGLE CYLINDER FOUR STROKE PETROL ENGINE, SECTIONED

single cylinder, four - stroke model of a petrol engine, The engine is water-cooled and the camshaft is in the engine block, Motorized and operates at 220 volts.



SINGLE CYLINDER FOUR STROKE PETROL ENGINE, HAND CRANK OPERATED

Four Stroke Petrol Engine, cc. 220 – HP 5.5, Single Cylinder, Side Values, Camshaft in the Crankcase, Carburetor, Electronic Ignition, Splash Lubrication, Air Cooling, Sectioned, Hand Crank Operation.



SINGLE CYLINDER FOUR STROKE PETROL ENGINE, RECOIL START

Four Stroke Petrol Engine, Single Cylinder, Side Values, Camshaft in the Crankcase, Carburetor, Electronic Ignition, Splash Lubrication, Air Cooling, Fully Operating @ 220V, 50Hz, AC, Recoil Starting.



SINGLE CYLINDER FOUR STROKE DIESEL ENGINE WITH HAND-CRANK OPERATION

cc. 200 - 225, Single Cylinder, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated by Camshaft, Air Cooling, Lubrication forced by Vane Pump.



SINGLE CYLINDER FOUR STROKE DIESEL ENGINE, ELECTRIC START MOUNTED ON WORK-BENCH

Four Stroke Diesel Engine, cc. 225 – HP 4.8, Single Cylinder, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated by Camshaft, Air Cooling, Lubrication forced by Vane Pump.



32559

SINGLE CYLINDER FOUR STROKE DIESEL ENGINE, RECOIL START

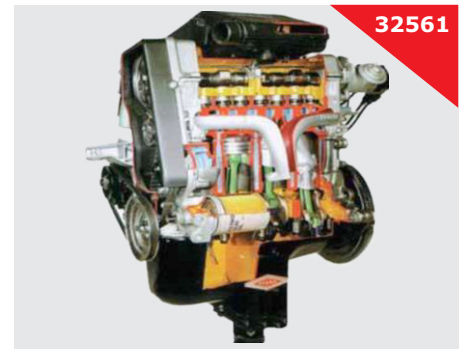
Four Stroke Diesel Engine, cc. 225 – HP 4.8, Single Cylinder, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated by Camshaft, Air Cooling, Lubrication forced by Vane Pump.



32560

FOUR CYLINDER FOUR STROKE PETROL ENGINE WITH OVERHEAD CAMSHAFT, CARBURETOR TYPE

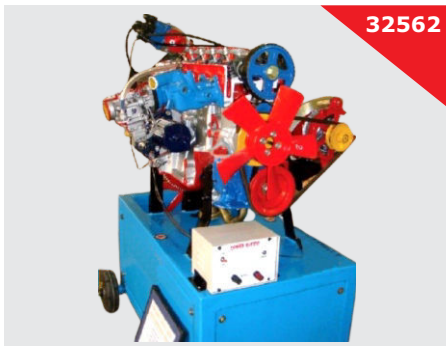
Petrol engine, 4 strokes, 4 cylinders in line, overhead camshaft, toothed belt, air filter, gear oil pump, oil filter, water cooling, dry clutch single plate.



32561

FOUR CYLINDER FOUR STROKE PETROL ENGINE WITH OVERHEAD CAMSHAFT & ELECTRONIC INJECTION

Petrol Engine, 4 Strokes, 4 Cylinders In Line, Overhead Camshaft, Toothed Belt, Air Filter, Gear Oil Pump, Oil Filter, Water Cooling, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse differential.



32562

FOUR CYLINDER FOUR STROKE PETROL ENGINE

4 Stroke 4 Cylinder Diesel Engine – Motor Driven Actual Cut Section Working Model with Valve Timing Attachment The engine can be sectioned to show the internal constructional details, The working of individual part and accessories like Valves, Pistons, pumps, Crank and Camshaft, etc. will be demonstrated.



32563

FOUR STROKE FOUR CYLINDER PETROL ENGINE WITH OVERHEAD CAMSHAFT WITH CLUTCH, GEARBOX & CARBURETOR

Petrol Engine, 4 Strokes, 4 Cylinders In Line, Overhead Camshaft, Toothed Belt, Air Filter, Gear Oil Pump, Oil Filter, Water Cooling, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse differential.



32564

FOUR CYLINDER FOUR STROKE PETROL ENGINE WITH OVERHEAD CAMSHAFT, CLUTCH, GEARBOX & ELECTRONIC INJECTION

Petrol engine, 4 strokes, 4 cylinders in line, overhead camshaft, toothed belt, air filter, gear oil pump, oil filter, water cooling, dry clutch single plate, gearbox 4 forward + reverse differential.



32565

FOUR CYLINDER FOUR STROKE PETROL ENGINE WITH PUSHRODS AND ROCKER ARMS

Petrol Engine, 4 Strokes, 4 Cylinders in Line, Camshaft in the Crankcase, Push Rods and Rocker Arms, Chain Drive, Carburetor, Air Filter, Coil Ignition, Gear Oil Pump, Oil Filter, Water Cooling, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse, Electric Motor Operation.



32566

SECTIONED TRANSMISSION SYSTEM

Transmission System carefully sectioned, complete with hydraulic converter and epicyclic gear change with 3 forward speeds + reverse, The torque converter, epicyclic braking system, multiple-plate clutches and control valves.



32567

2-STROKE PETROL ENGINE

2- stroke engine, cut from real one in every details, carburettor, ignition, The suction-exhaust-transfer lights are especially highlighted so as to make it easy to learn the cycle, Piston displacement 46 cu. Cm, Air cooling, Electronic ignition, Box carburettor.



32568

DIRECT INJECTION 2-STROKE DIESEL ENGINE MODEL (ON BASE)

Two Stroke Diesel Engine is a manual Driven engine, The engine is sectioned to show the internal constructional details, The working of individual part and accessories like Valves, Pistons, pumps, Crank and Camshaft.



32569

TWO STROKE SINGLE CYLINDER PETROL ENGINE

Two Stroke Single Cylinder Petrol Engine is a manual Driven engine, The engine is sectioned to show the internal constructional details, The working of individual part and accessories like Valves, Pistons, pumps, Crank and Camshaft.



32570

AIR COMPRESSOR TWO CYLINDERS

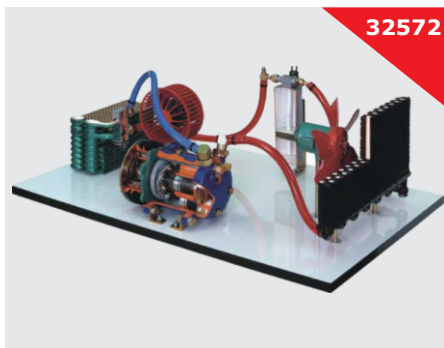
Piston Air Compressor Complete with Valves, Marelli-Triplex Distribution Assembly, Power-Assisted Pneumo-Hydraulic Brake, Complete Truck-Trailer Coupling, Automatically Re-loaded, Servo-Auto-Distributor for Braking.



32571

AIR COMPRESSOR

Piston Air Compressor Complete with Valves, Marelli-Triplex Distribution Assembly, Power-Assisted Pneumo-Hydraulic Brake, Complete Truck -Trailer Coupling, Automatically Re-loaded, Servo-Auto-Distributor for Braking.



32572

SECTIONED AIR CONDITIONING SYSTEM

Radial piston compressor, Condenser, Filler, Expansion valve, Evaporator, Electric fans, High and low pressure connecting hose.



32573

SECTIONED ALTERNATOR

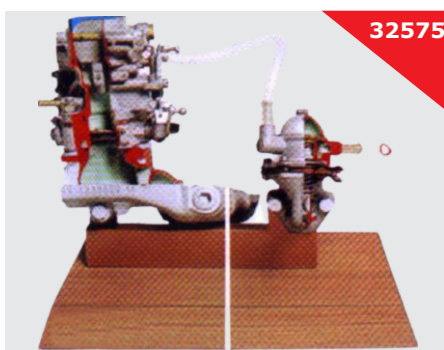
On base, Dimensions: 22 x 22 x 20H in cms, Weight : approximately 5 Kgs.



32574

SECTIONED AUTOMATIC GEARBOX (3 SPEED + REVERSE)

Hydraulic torque converter, Hydraulic valves, Epicyclic gear train, On Stand with Wheels, Handcrank Operation.



32575

CARBURETOR WITH MECHANICAL FUEL PUMP

On Wooden Base, Dimensions: 32x22x30H in cms, Weight: approximately 5 Kgs.



32576

DIESEL INJECTION PUMP ELEMENT

Single element in line injection pump, camshaft-pump cylinder, pump piston-adjustment rod, pump spring-injector-hand wheel, On Wooden Base.



32577

DOUBLE DISK CLUTCH

Double Disk Clutch is one of the most common car clutch single disk type, It's operation can be clearly observed by pressing the foot pedal control and rotating the rotating the flywheel manually through a suitable hand-wheel.



32578

ELECTRIC FUEL PUMP

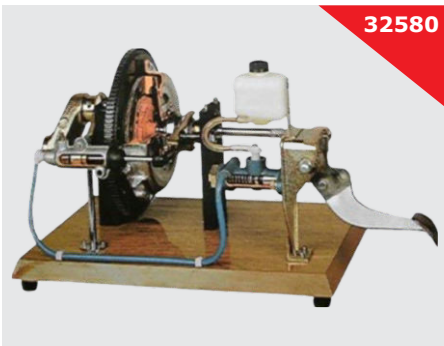
Dimensions: 8x8x14H in cms, Weight: approx. 1 kgs.



32579

SECTIONED GENERATOR

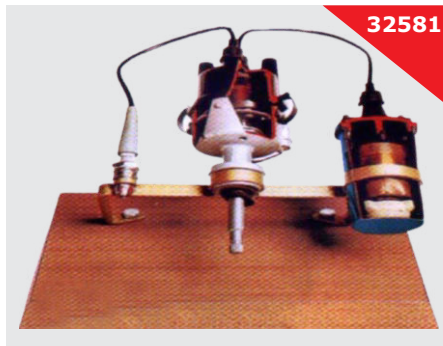
On base, Dimensions: 22x22x20H in cms, Weight: approx. 6 kgs.



32580

HYDRAULIC CONTROL CLUTCH

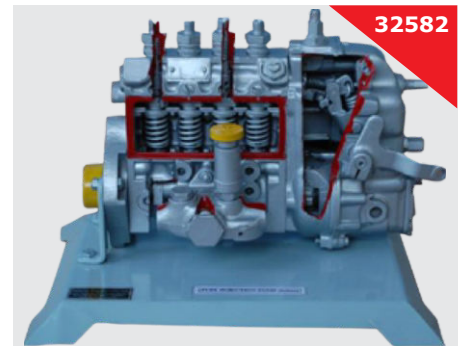
Hydraulic Control is used at carefully cut section of an hydraulic circuit controlling a diaphragm clutch for cars, The pump, the cylinder and clutch unit are fully sectioned in order to show all components.



32581

IGNITION SYSTEM

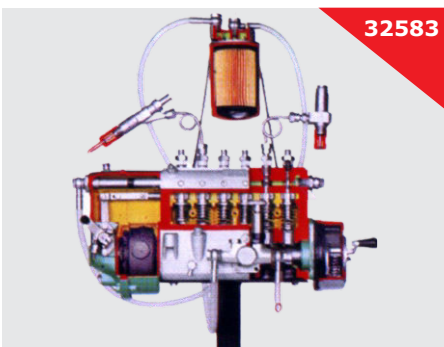
Dimensions: 32 x 22 x 30 cms, Weight: approx. 4 Kgs.



32582

IN LINE DIESEL INJECTION PUMP MODEL

In line Diesel Injection Pump is a working of diesel fuel pump is shown with the help of actual parts assembled on iron base, All the necessary parts of diesel fuel pump are shown in actual working form, This model helps the student to understand the working of the diesel fuel pump very easily.



32583

IN LINE DIESEL INJECTION PUMP, INDIRECT INJECTION INJECTOR

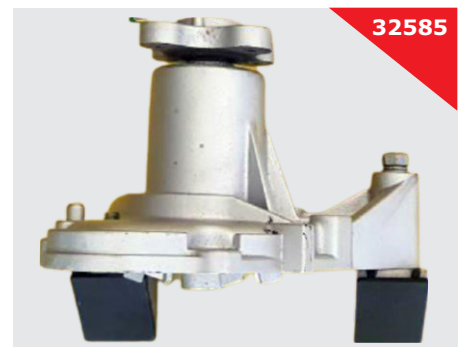
Camshaft, Centrifugal regulator, Adjustment rack, Pump cylinder, Pump piston, Injection timing, Fuel pump-fuel filter, Direct injection injector, Indirect injection injector, Hand wheel, On Stand with Wheels.



32584

TURBO - INTERCOOLER (ON BASE)

Exhaust gas turbine, Waste-gate valve, Centrifugal compressor, Lubricating circuit, Air-air exchanger cutaway model, connected to the turbo-supercharger.



32585

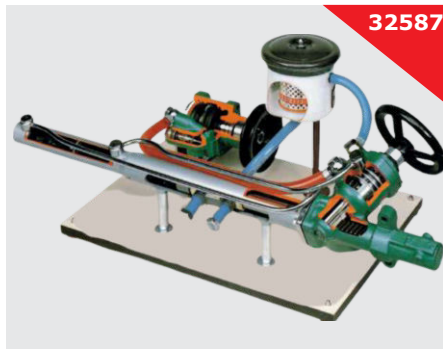
WATER PUMP

Weight and Dimensions, Cm :25x25x15cmH, Net weight:8 kg, Gross weight :12kg.



OIL PUMP

Two Stroke Diesel Engine is a manual Driven engine, The engine is sectioned to show the internal constructional details, The working of individual part and accessories like Valves, Pistons, pumps, Crank and Camshaft.



POWER STEERING RACK AND PINION

Rack type steering box, Hydraulic pump, Oil tank with relevant filter, Connecting pipes, Operated by hand through a hand wheel, The cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections, lubricating circuits, fuel system.



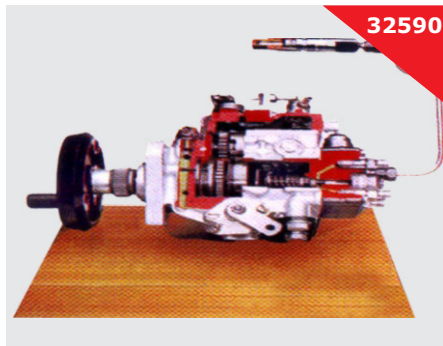
POWER STEERING RECIRCULATING BALLS (ON BASE)

Ball type steering box, Hydraulic vane pump, Oil tank with relevant filter, Connecting pipes, Operated by hand through a hand wheel.



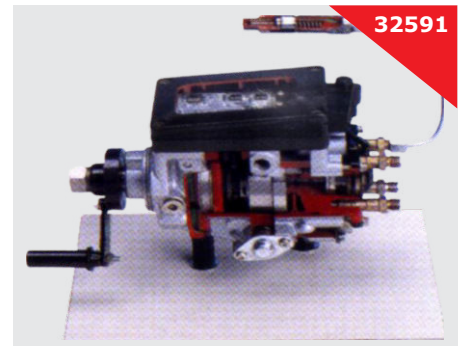
PRESSURE POWER BRAKES FOR TRUCKS

Cylinder, Piston - push rod, Spring - hydraulic brake pump, Oil tank, On Metal Base, Dimensions: 22x32x34H in cms, Weight: approx. 7 Kgs.



ROTATING DIESEL INJECTION PUMP

Supply pump, High pressure pump with distributor, Mechanical regulator, Electromagnetic stop valve, Injection advance variator, Injector, Hand wheel, On Wooden Base, Dimensions: 37x22x30H in cms, Weight: approx. 8 Kgs.



ROTATING DIESEL RADIAL PISTON INJECTION PUMP

Drive shaft, Cam ring, Vane type pump Distributor plunger, Solenoid valve, Injector, Hand wheel, On Metal Base, Dimensions: 35x22x38H in cms, Weight: @ 10 kgs.



ROTATING DIESEL INJECTION PUMP ELECTRONICALLY CONTROL

Solenoid valve for quantity control, Digital-incremental distance measurement, Control pump unit, Regulator valve injector, Hand wheel, On Metal Base, Dimensions: 35x22x38H in cms, Weight: @10 Kgs.



SECTIONED BATTERY

Mobile, compact, comprehensive, sturdy design, All working Systems can be studied to their operations, Cut sections are painted with different colours, All-important parts are well elaborated.



SECTIONED DIESEL INJECTION PUMP

Sectioned Diesel Injection Pump is the in-line alternating pump for six cylinder diesel engine, The system is built up to expose the internal parts, a camshaft with it's characteristic profile, the injection advance, the centrifugal the rack, the small piston and the return spring.



SECTIONED FRONT SUSPENSION UNIT

Sectioned Front Suspension Unit demonstrates the operation and interaction of the steering on a McPherson structure type suspension, It is essentially designed to enable the students to study of The function of the stabilities, Shock absorbers Steering linkage Suspension.



SECTIONED RACK AND PINION STEERING BOX

The unit is carefully sectioned as to clearly show all the internal parts, All sectioned areas are painted and color-coded to allow for easy identification of parts, Steering gear operation can be demonstrated by using the hand wheel to turn the mechanism.



SECTIONED WORM & ROLLER GEAR

The unit is carefully sectioned and is painted with different colors and shades to better distinguish its parts, The sections clearly show all the internal parts and the steering gear operation can be demonstrated by using the hand wheel to turn the mechanism.



SECTIONED SHOCK - ABSORBER

Sectioned Shock Absorber.



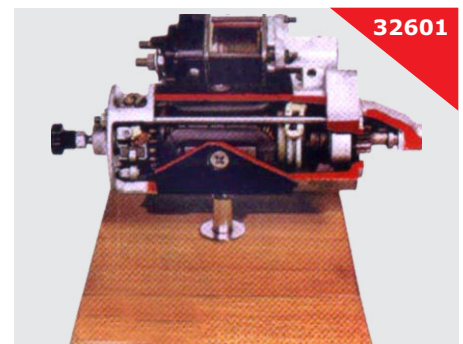
SECTIONED SINGLE CARBURETOR

On wooden Base, Dimensions: 20x20x25H in cms, Weight: @ 8 kgs.



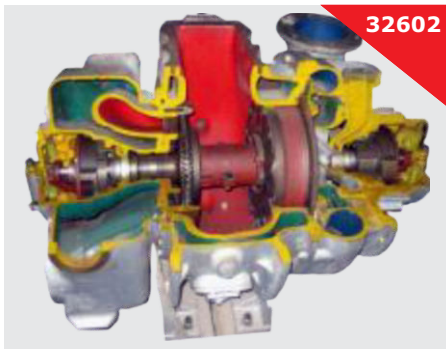
SECTIONED SINGLE DISK CLUTCH

Typical Single Disk Clutch is the most common car clutch single disk type, The operation can be clearly observed by pressing the foot pedal control and rotating the rotating flywheel manually through a suitable handwheel.



SECTIONED STARTER MOTOR

On Wooden Base, Dimensions: 30x22x20H in cms, Weight: approx. 6 Kgs.



32602

SECTIONED TURBOCHARGER

Centrifugal compressor, Centripetal turbine, Wastegate valve, On Wooden Base, Dimensions: 30x22x26H in cms, Weight: approx 8 Kgs.



32603

SECTIONED TWIN CARBURETOR

On Wooden Base, Dimensions: 20x20x20H in cms, Weight: approx. 5 kgs.



32604

SECTIONED TWO STROKE PETROL ENGINE WITH GEARBOX AIR - COOLED

Petrol engine, 2 strokes, 1 cylinders in line, Carburetor, Petrol feeding, Air cooling, Multi-disc clutch, Gearbox 3 forward, On Stand with Wheels.



32605

SECTIONED VACUUM POWER BRAKES FOR CAR

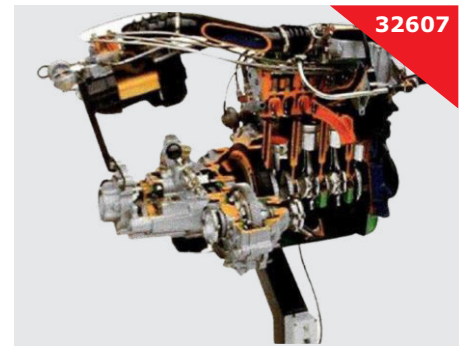
Booster, Diaphragm, Piston - brake pedal, Spring - dual brake pump, Oil tank - depression valve, Power chamber, Slave cylinder, Valves, Fluid reservoirs, On Wooden Base.



32606

SECTIONED SINGLE CYLINDER TWO STROKE PETROL ENGINE

Two Stroke Petrol Engine, 150cc to 250cc, Single Cylinder, Carburetor, Electronic Ignition, Petrol Feeding, Air Cooling, Fully Operating, Recoil Starting, Mounted on Working Bench.



32607

SECTIONED 4 CYLINDER PETROL ENGINE WITH K-JETRONIC IGNITION

4 in-line cylinder displacement 1600/1800 cubic cm, Overhead camshaft, Distribution by means of a toothed belt, Gearbox 5 forward speeds + reverse with built-in differential, Carefully painted in different colors to distinguish every part section, cuts, fuel, lubrication and cooling system.



32608

AIR BRAKE SYSTEM MODEL

Master cylinder, Wheel cylinder, Brake drum, Brake shoes, Foot valve, Unloading valve, Compressed air with brake lines.



32609

CLUTCH FUNCTIONAL MODEL

Clutch Functional is an educational system to study internal structures and the operating principle of hydraulic type clutch equipped of passenger car by cross-sectioning it, Operations of master cylinder, release cylinder, release fork.



32610

CONTINUOUSLY VARIABLE TRANSMISSION CVT GEARBOX ON WHEELS & STAND

Electro-magnetic clutch, Forward and Reverse insertion Lever, Primary Pulley, Secondary Pulley, Roller Belt, Final Reduction unit, Hydraulic command unit.



32611

GEARBOX WITH DIFFERENTIAL FRONT DRIVE (5 SPEED + REVERSE)

Helical gears, Selector slider, Speed forks, Differential, On Stand with Wheels.



32612

DIFFERENTIAL WITH LOCKING SYSTEM BY DISK

Crown, pinion, planets, satellites, Thrust rings, Friction disks, On Heavy Metal Base, Dimensions: 42x32x35H in cms, Weight: approx. 32 Kgs.



32613

GEARBOX WITH REDUCER (4 SPEED + REVERSE)

Helical gears, Selector slider, Speed forks, Reduction gear, Drum brake, On Stand with Wheels.



32614

MECHANICAL GEARBOX (4 SPEED + REVERSE)

Helical gears, Selector slider, Speed forks, Reduction gear, Drum brake, On Stand with Wheels.



32615

MECHANIC GEARBOX (5 SPEED + REVERSE)

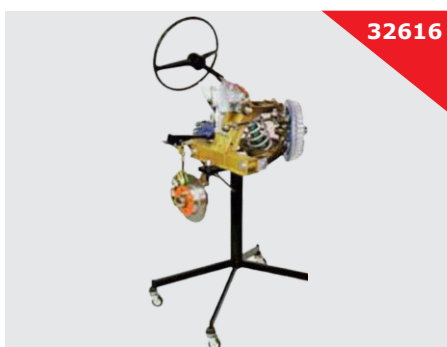
Helical gears, Selector slider, Speed forks, Dry clutch single plate, On Stand with Wheels.



32616

SECTIONED REAR AXLE

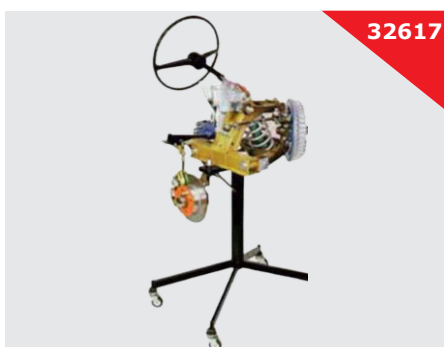
Differential with crown, Pinion, planets, satellites, Axle shafts – drum brakes, On stand with wheel.



32616

SECTIONED REAR AXLE

Differential with crown, Pinion, planets, satellites, Axle shafts – drum brakes, On stand with wheels, Dimensions: 60x45x125 h. cms, Weight: approx. 30 Kgs.



32617

STEERING SYSTEM WITH DISC & DRUM BRAKE

Front independent suspension trapezoid-arm type, Swinging arms, Spring-shock absorber, Sector gear steering box, Drum brake-steering wheel, On Stand with Wheels, Dimensions: 80 x 60 x 140 H in cms, Weight: approx. 55 Kgs.



32618

STEERING UNIT WITH SUSPENSION & BRAKES

The globe type steering unit is connected to the spindle through a steering bar, so that the steering operations can be seen, The trainer allows students to investigate all the principle and operations of a front wheel drive steering and suspension system.



TURBO JET ENGINE MODEL

High & Low Pressure Compressors, super model of a modern two wave turbine shown in detailed construction and operating system of such a motor, Low pressure and high pressure compressor, low pressure and high pressure turbine are readily recognizable.



Ø 4-STROKE SINGLE-CYLINDER CVT ENGINE WITH CARBURETTOR

Electronic ignition, Water cooling system, CVT automatic clutch, Disc brake, Silencer, Operated Manually, through a crank handle, On Stand with Wheels.



Ø 4-STROKE SINGLE-CYLINDER CVT ENGINE WITH ELECTRONIC INJECTION

Electronic ignition, Water cooling system, CVT automatic clutch, Disc brake, Silencer, Operated Manually, through a crank handle, Equipment Layout On Stand with Wheels.



Ø 2-STROKE SINGLE-CYLINDER CVT ENGINE WITH CARBURETTOR

These are single cylinder, two/four stroke continuously variable transmission engine models of a petrol engine, The engine is water-cooled and the camshaft is in the engine block, The model is motorized and operates at 220 volts.



SECTIONED TWO WHEELED TRACTOR

Actual sectioned independent two wheel tractor, Includes all the links & mechanisms, Cut sections are painted with different colors, Clutch Unit, Gearbox, Pinion gear-ring gear, Steering Clutch, Reducer.



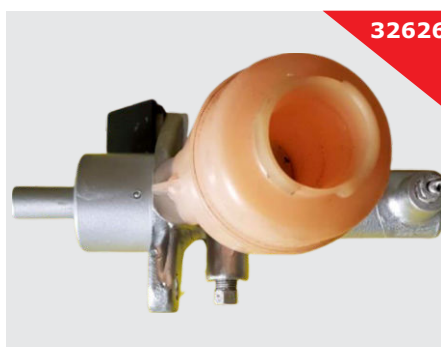
SECTIONED 4 WHEELED TRACTOR WITH DIESEL ENGINE

4 stroke / 2 cylinder engine, Indirect injection, Water cooling, Overhead valves, In-line injection pump, Steering box, Gear box.



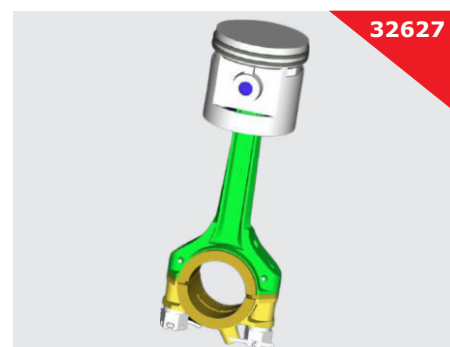
AUTOMOTIVE COOLING SYSTEM

Cooling System consists of a working of a cooling system of a car is shown with the help of actual parts assembled on a metal stand, All the necessary parts of a cooling system of a car are shown in actual working form.



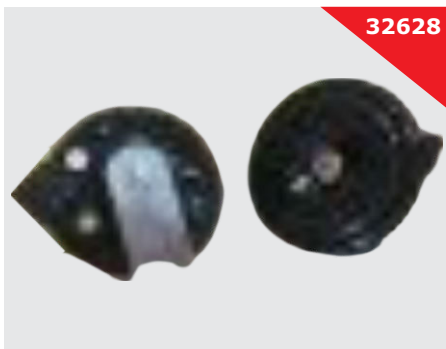
BRAKE MASTER PUMP

Brake Master Pump shows internal construction of the car brake master pump.



SECTIONED PISTON WITH CONNECTING ROD

Sectioned Piston with Connecting Rod shows internal construction of the car brake master pump.



32628

SECTIONED CAR ELECTRIC HORN

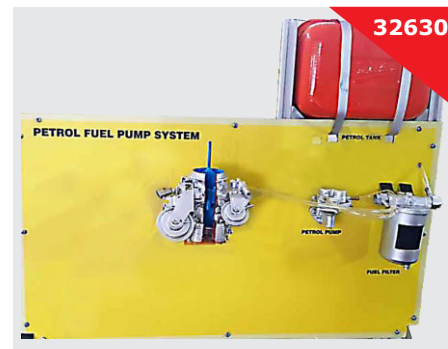
Sectioned Car Electric Horn shows internal construction of the car electric horn, mounted on a board with parts named.



32629

SECTIONED CAR ELECTRIC HORN RELAY

Sectioned Car Electric Horn Relay shows internal construction of the car electric horn relay, mounted on a board with parts named.



32630

PETROL FUEL PUMP SYSTEM

Petrol Fuel Pump System Model AM 280 consists of a working model with original parts, consisting of petrol fuel tank, fuel filter, feed pump and carburetor.



32631

SYNCHROMESH GEAR BOX – 4 FORWARD & 1 REVERSE

Synchromesh Gear Box – 4 Forward & 1 Reverse is Actual Cut Section, The working of gear box is shown with the help of actual parts assembled on square iron pipe frame, All the necessary parts of gear box are shown in actual working form.



32632

SYNCHROMESH GEAR BOX – 4 FORWARD & 1 REVERSE

Synchromesh Gear Box – 4 Forward & 1 Reverse is Actual Cut Section, The working of gear box is shown with the help of actual parts assembled on square iron pipe frame, All the necessary parts of gear box are shown in actual working form.



32633

DIFFERENTIAL GEAR ASSEMBLY

The working of differential gear is shown with the help of actual parts assembled on square iron pipe frame, All the necessary parts of differential gear are shown in actual working form.



32634

SECTIONED STEAM ENGINE

Instructive model of a modern horizontal steam engine with piston valve control, The model can be put in motion by turning the flywheel, thus showing the manner of operation of the engine and of the built-on centrifugal governor.



32635

2-STROKE MOTORCYCLE PETROL ENGINE MODEL (ON BASE)

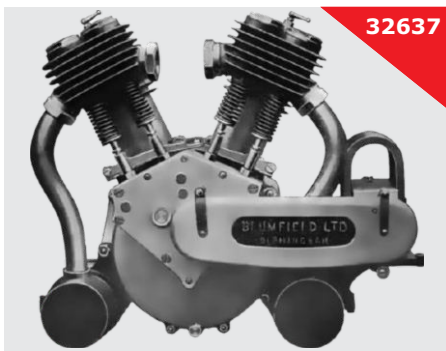
Piston displacement 48 cu. cm, Air cooling, Plug point and magnet flywheel ignition, Box carburettor, The engine operates manually through a crank handle, The cutaway models are carefully sectioned for training purposes.



32636

INTERCOOLER HEAT EXCHANGER (ON BASE)

Dimensions: 50x20x30h cm, Net weight : 7 kg, Gross weight : 10 kg.

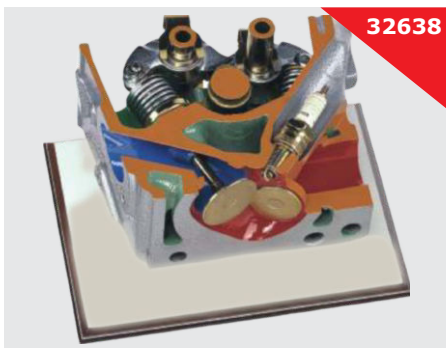


V-TYPE 350-500CC MOTORCYCLE ENGINE

Carefully sectioned of the motorcycle V-type twin-cylinder 350/500 cu. cm engine, The engine operates electronically on 220 volts and runs at a reduced speed to let student easily understand and observe the operation of the various mechanical parts. The cutaway models are carefully sectioned for training purposes.



Bangkok Exhibition



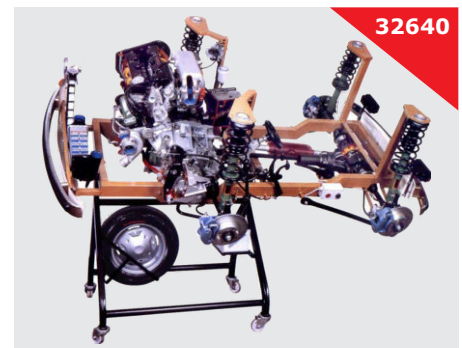
TWIN VALVES OHC ENGINE HEAD

Accurate twin valves per cylinder engine head, Dimensions: 25x20x20h, Net weight : 5 kg, Gross weight : 8 kg.



REAR WHEELS WITH AXLE WITH DIFFERENTIAL GEARS ASSEMBLY

Rear Wheels with Axle with Differential Gears Assembly Rigid rear axle complete with differential unit, axle shafts and rear drum brakes, carefully sectioned to show the operation of the differential unit where planetary gears, the ring gear and the pinion are clearly displayed.



CHASSIS 4 WHEEL DRIVE TURBO PETROL ENGINE ELECTRONIC INJECTION

Tilting Chassis Four Wheel Drive, Petrol Engine, 4 Strokes, 4 Cylinders in Line, Turbo-charger, Intercooler, Twin Overhead Camshaft, Toothed Belt, Electronic Injection SPI, Air Filter, Electronic Ignition, Gear Oil Pump.



OPERATIONAL SINGLE CYLINDER 4 STROKE DIESEL ENGINE

Four Stroke Diesel Engine, cc. 1000CC to 1500cc, Single Cylinder, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated by Camshaft, Air Cooling, Lubrication forced by Vane Pump.



OPERATIONAL SINGLE CYLINDER FOUR STROKE DIESEL ENGINE

Four Stroke Diesel Engine, cc. 1000CC to 1500cc, Single Cylinder, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated by Camshaft, Air Cooling, Lubrication forced by Vane Pump.



OPERATIONAL TWO STROKE SINGLE CYLINDER PETROL ENGINE

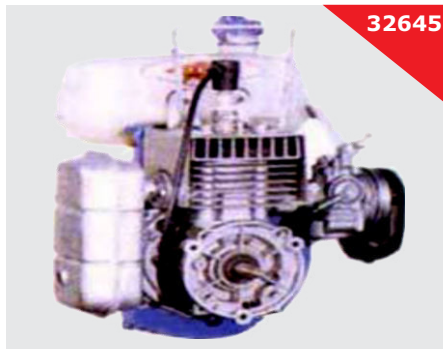
Two Stroke Single Cylinder Petrol Engine can operate in a normal way with great ease, The strong trestle has 4 wheels which can all be locked while the engine itself is fastened with elastic couplings so that vibrations are reduced almost to zero.



32644

OPERATIONAL TWO STROKE SINGLE CYLINDER PETROL ENGINE

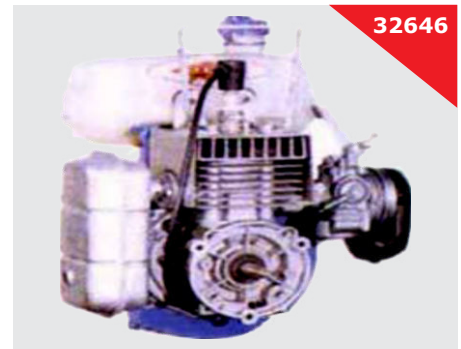
Petrol Feeding, Single Cylinder, Mounted on Working Bench, Two Stroke Petrol Engine, Carburettor, cc. 41 – HP 3.0, Electronic Ignition, Air Cooling, Fully Operational.



32645

OPERATIONAL TWO STROKE SINGLE CYLINDER PETROL ENGINE, RECOIL OPERATED

Base mounted Two Stroke Single Cylinder Petrol Engine, Two Stroke Petrol Engine, 41 – HP 3.0, Single Cylinder, Carburettor, Electronic Ignition, Petrol Feeding, Air Cooling, Fully Operating, Recoil Starting, Mounted on Base.



32646

OPERATIONAL SINGLE CYLINDER 4 STROKE PETROL VCR ENGINE

In conjunction with AM 501 test stand and loading unit, in addition to the standard basic experiments, Influence of compression ratio, mixture composition, ignition timing on engine characteristics and exhaust gas temperature.



32647

OPERATIONAL FOUR STROKE FOUR CYLINDER DIESEL ENGINE

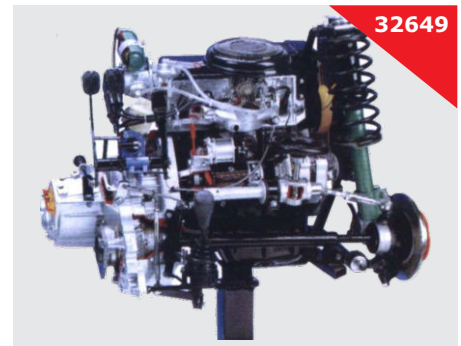
Four Stroke Water Cooled Diesel Engine, Power Output 47KW at 3000 rpm, Four Cylinder, Displacement: 1968cm, Torque: max. 200Nm at 1750rpm, Direct Injection, Pushrod and Rocker Arms, Overhead Values, Camshaft in the Crankcase, Injection Pump operated.



32648

OPERATIONAL ELECTRONIC INJECTION 4 CYLINDER 4 STROKE PETROL ENGINE WITH CNG & TWIN OVERHEAD CAMSHAFT

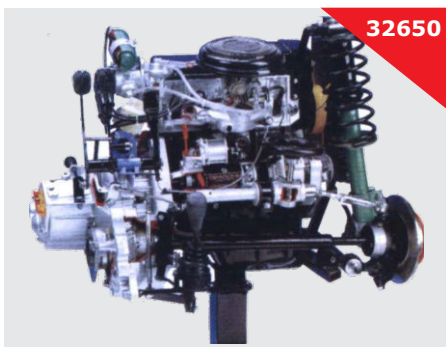
Petrol engine: 1500cc, With Switch Over to CNG (Compressed Natural Gas), 4 strokes, 4 cylinders in line, Twin overhead camshaft, Toothed belt, Mono-Jetronic injection, Electronic ignition, Gear oil pump, Oil filter, Water cooling, Dry clutch single plate.



32649

OPERATIONAL FRONT-WHEEL DRIVE 4 CYLINDER 4 STROKE PETROL ENGINE OVERHEAD CAMSHAFT CARBURETOR

4 Cylinders In Line, Overhead Camshaft, Toothed Belt, Air Filter, Gear Oil Pump, Oil Filter, Water Cooling, Radiator, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse, Rack And Pinion Steering Box, Steering Wheel, Complete Pedal Board.



32650

FRONT-WHEEL DRIVE PETROL ENGINE OVERHEAD CAMSHAFT ELECTRONIC INJECTION

4 Cylinders In Line, Overhead Camshaft, Toothed Belt, Air Filter, Gear Oil Pump, Oil Filter, Water Cooling, Radiator, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse, Rack And Pinion Steering Box, Steering Wheel, Complete Pedal Board.



32651

MONO-JETRONIC INJECTION 4 CYLINDER 4 STROKE PETROL ENGINE TWIN OVERHEAD CAMSHAFT

4 cylinders in line, Twin overhead camshaft, Toothed belt, Mono-Jetronic injection, Electronic ignition, Gear oil pump, Oil filter, Water cooling, Dry clutch single plate, Clutch and accelerator pedals.



32652

MULTIPOINT ELECTRONIC INJECTION 4 CYLINDER 4 STROKE PETROL ENGINE TWIN OVERHEAD CAMSHAFT

4 cylinders in line, Twin overhead camshaft, Toothed belt, Mono-Jetronic injection, Electronic ignition, Gear oil pump, Oil filter, Water cooling, Dry clutch single plate, Clutch and accelerator pedals.



CHASSIS STRUCTURE EDUCATIONAL SYSTEM (PETROL)

Engine system, Transmission, Rear axle and rear wheels of the car, It is also equipped with an electrical motor (with reduction unit) to rotate the engine and transmission for easy observation of the mechanical parts in movements.



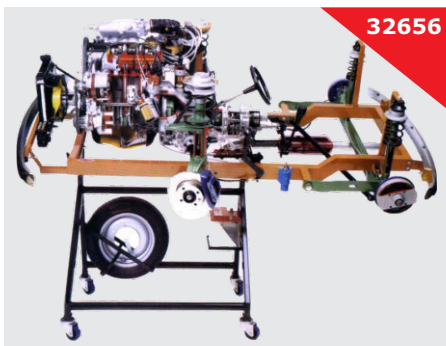
STRUCTURE EDUCATIONAL SYSTEM (PETROL) WITH ELECTRICAL FAULT SIMULATOR

Rear axle and rear wheels of the car, It is also equipped with an electrical motor (with reduction unit) to rotate the engine and transmission for easy observation of the mechanical parts in movements.



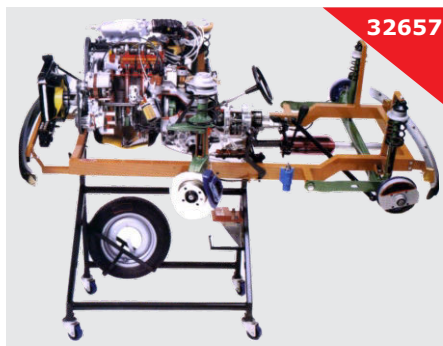
CHASSIS 4 WHEEL DRIVE TURBO PETROL ENGINE ELECTRONIC INJECTION WITH WORKING LIGHT SYSTEM AND FULL OPERATING BRAKES

Tilting Chassis Four Wheel Drive, Petrol Engine, 4 Strokes, 4 Cylinders in Line, Turbocharger, Intercooler, Twin Overhead Camshaft, Toothed Belt, Electronic Injection SPI.



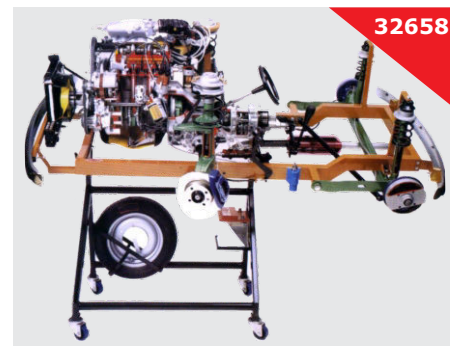
CHASSIS FRONT - WHEEL DRIVE PETROL ENGINE CARBURETOR TWIN OVERHEAD CAMSHAFT

Brake - Clutch - Accelerator, McPherson Suspensions, Rear Axle with Stabilizer, Hydraulic Shock - Absorbers, Front Wheel Disc Brakes, Rear Wheel Drum Brakes, Wheel with Sectioned Type, Stop Light - Rear Fog Lights - Reverse Light, Horn - Emergency Blinker, Fully Operating Brakes.



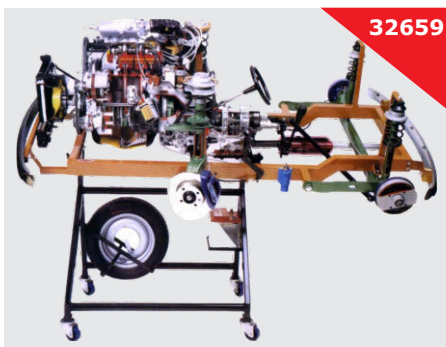
CHASSIS FRONT - WHEEL DRIVE PETROL ENGINE

Automatic Transmission Carburetor Twin Overhead Camshaft, Overhead Camshaft, Toothed Belt, Air Filter, Electronic Ignition, Gear Oil Pump, Oil Filter, Sectioned Battery, Wheel With Sectioned Type.



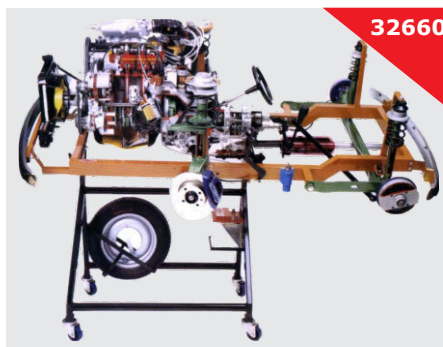
WHEEL DRIVE DIESEL ENGINE

Indirect Injection Rotating Distributor Overhead Camshaft With working Lighting System And Fully Operating Brakes, 4 Cylinders in Line, Turbo-charger, Intercooler, Twin Overhead Camshaft, Toothed Belt, Electronic Injection SPI, Air Filter, Electronic Ignition, Gear Oil Pump.



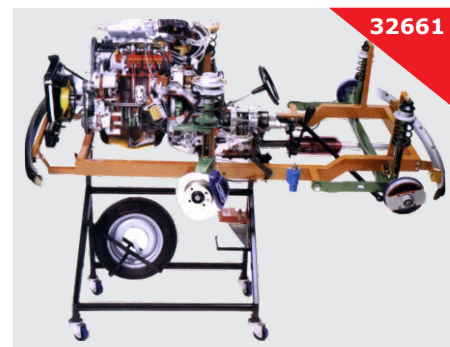
WHEEL DRIVE PETROL ENGINE MULTIPOINT INJECTION

Twin Overhead Camshaft with Working Lighting System and Fully Operating Brakes, Tilting Chassis, 4 Strokes, 4 Cylinders in Line, Overhead Camshaft, Toothed Belt, Air Filter, Sectioned Battery, Wheel with Sectioned Type.



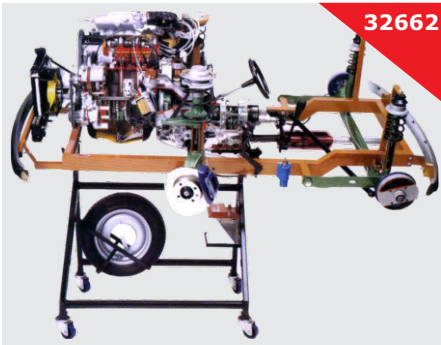
CHASSIS FRONT - WHEEL DRIVE DIESEL ENGINE INDIRECT INJECTION

Tilting Chassis, 4 Strokes, 4 Cylinders in Line, Overhead Camshaft, Toothed Belt, Air Filter, Sectioned Battery, Wheel with Sectioned Type, Electronic Ignition, Gear Oil Pump, Oil Filter, Water Cooling, Radiator.



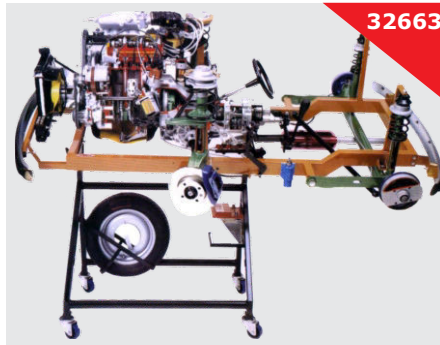
CHASSIS FRONT - WHEEL DRIVE PETROL ENGINE MULTIPOINT INJECTION

Twin Overhead Camshaft, Tilting Chassis, 4 Strokes, 4 Cylinders in Line, Overhead Camshaft, Toothed Belt, Air Filter, Sectioned Battery, Wheel with Sectioned Type.



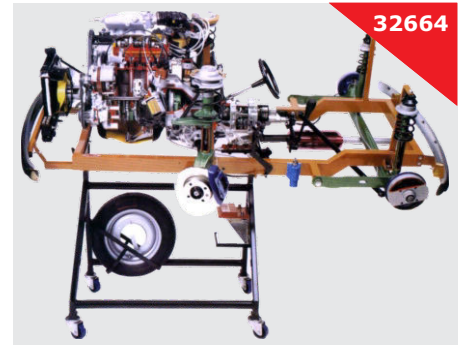
CHASSIS FRONT - WHEEL DRIVE DIESEL ENGINE TRAVERSE POSITION

Indirect Injection Rotating Distributor Overhead Camshaft with working Lighting System and Fully Operating Brakes, Tilting Chassis, 4 Strokes, 4 Cylinders in Line, Overhead Camshaft, Toothed Belt, Air Filter.



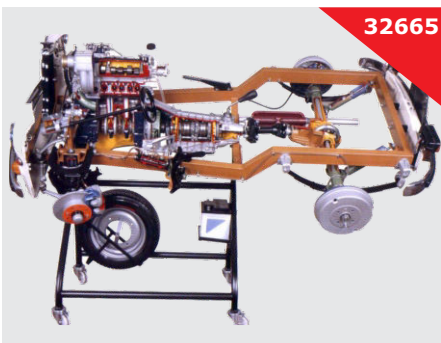
CHASSIS FRONT - WHEEL DRIVE PETROL ENGINE CARBURETOR

Working Lighting System and Fully Operating Brakes, Electronic Ignition, Gear Oil Pump, Oil Filter, Water Cooling, Radiator.



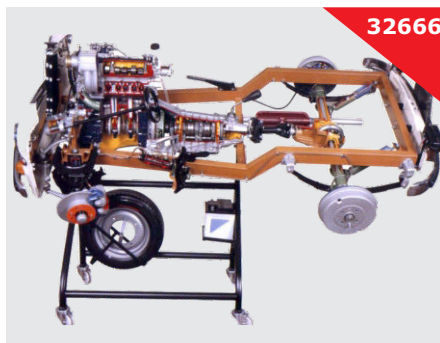
CHASSIS FRONT - WHEEL DRIVE PETROL ENGINE K - JETRONIC INJECTION

Tilting Chassis, 4 Strokes, 4 Cylinders in Line, Overhead Camshaft, Toothed Belt, Wheel with Sectioned Type, Air Filter, Electronic Ignition, Gear Oil Pump, Oil Filter.



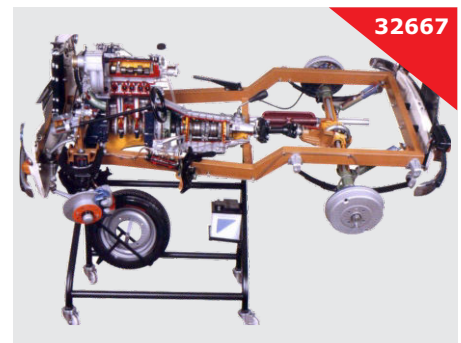
CHASSIS REAR - WHEEL DRIVE DIESEL ENGINE IN-LINE INJECTION

Pump Pushrods and Rocker Arms, Tilting Chassis, Diesel Engine, 4 Strokes, 4 Cylinders in Line, Air Filter, Gear Oil Pump, Oil Filter, Air Filter, Water Cooling, Radiator, Gearbox 4 Forward + Reverse, Worm and Sector Steering Box, Dry Clutch Single Plate.



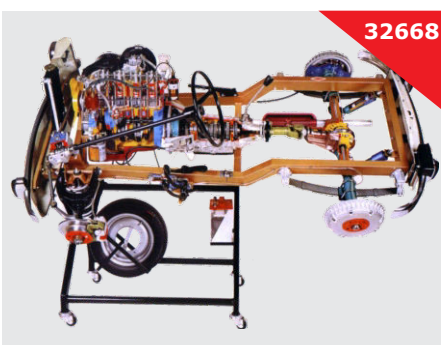
CHASSIS REAR - WHEEL DRIVE SOHC DIESEL ENGINE IN-LINE INJECTION

Dry Clutch Single Plate, Gearbox 4 Forward + Reverse, Worm and Sector Steering Box, Steering Wheel, Complete Pedal Board, Brake-Clutch-Accelerator, Shaft with Flexible Coupling and Cardan Joint, Front Helical Springs, Rear Leaf Springs.



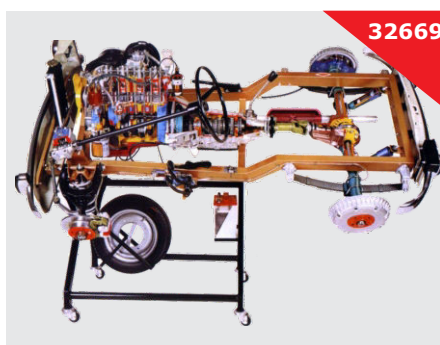
CHASSIS REAR - WHEEL DRIVE DIESEL ENGINE ROTATING OVERHEAD CAMSHAFT

4 Cylinders In Line, Overhead Camshaft, Toothed Belt, Air Filter, Gear Oil Pump, Oil Filter, Water Cooling, Radiator, Dry Clutch Single Plate, Gearbox 4 Forward + Reverse, Rack And Pinion Steering Box, Steering Wheel, Complete Pedal Board.



CHASSIS REAR - WHEEL DRIVE 4 CYLINDER 4 STROKE PETROL ENGINE

Complete Pedal Board, Brake-Clutch-Accelerator, Shaft with Flexible Coupling, and Cardan Joint, Front Helical Springs, Rear Leaf Springs, Differential, Hydraulic Shock-Absorbers, Front Wheel Disc Brakes, Rear Wheel Drum Brakes.



REAR - WHEEL DRIVE 4 CYLINDER 4 STROKE PETROL ENGINE

Twin Overhead Camshafts Without Body Ends, Worm and Sector Steering Box, Steering Wheel, Complete Pedal Board, Brake-Clutch-Accelerator, Shaft with Flexible Coupling, and Cardan Joint, Front Helical Springs, Differential, Hydraulic Shock-Absorbers, Front Wheel Disc Brakes.



BASIC ENGINE FUEL TRAINER

To Study Car fuel supply system, To Study Difference of diesel and fuel-injection fuel system, To Study Various fuel level indicator, To Study Actual fuel supply running condition.



32671

ENGINE LUBRICATION & COOLING SYSTEM

The system consists of a sectional automotive cooling system radiator of the plate and tube design, The model includes a sectional air cooled and liquid cooled cylinder head, This system is mounted on the steel frame with heavy duty rollers.



32672

SECTIONED STRUCTURE FOR EDUCATIONAL SYSTEM OF A DIESEL ENGINE CAR

Rear axle and rear wheels of the car, It is also equipped with an electrical motor (with reduction unit) to rotate the engine and transmission for easy observation of the mechanical parts in movements.



32673

SECTIONED STRUCTURE EDUCATIONAL SYSTEM OF A PETROL CAR

Engine system, Transmission, Rear axle and rear wheels of the car, It is also equipped with an electrical motor (with reduction unit) to rotate the engine and transmission for easy observation of the mechanical parts in movements.



32674

SECTIONED STRUCTURE EDUCATIONAL SYSTEM

Petrol Car With Electrical Fault Simulator, The training model is built with the original automotive parts, fitted on a frame specially built by us, It is equipped with petrol engine-4 cylinders in line with water cooling.



32675

STRUCTURE EDUCATIONAL SYSTEM OF AUTOMATIC PETROL CAR

Electrical Fault Simulator, Fuel Level Sensor, Engine Temperature, Ignition System, Fuel Injection System, Front Lighting System, Alarm Faulty, Alternator System, Charging System, Brake Switch Faulty.



32676

PETROL ENGINE CAR STRUCTURE EDUCATIONAL SYSTEM

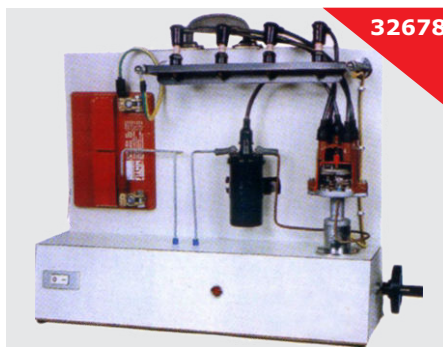
Petrol Engine Car Structure Educational System demonstrates the inter-relationship between components of an actual car, The training model is built with the original automotive parts, fitted on a frame specially built by us.



32677

AUTOMOTIVE IGNITION / CHARGING DEMONSTRATION TRAINER

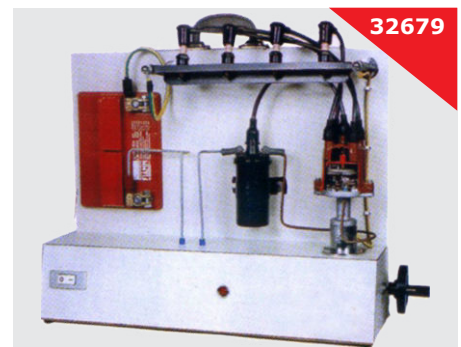
Relevant theory of engine ignition and charging systems, Practical activities using the circuit board, Multimeter and oscilloscope for observation, measurement and troubleshooting, Multimeter and oscilloscope is as an optional item.



32678

DISTRIBUTOR IGNITION TRAINER

4 spark plugs – distributor, contact breaker points, rotor arm – coil, battery – hand wheel.



32679

TRANSISTORIZED DISTRIBUTOR IGNITION

Dimensions: 70x19x55H in cms, Weight: approx. 11 Kgs, Main Supply : 220 V AC 50Hz 1Ph, 4 spark plugs – distributor, Pulse generator, Coil – battery, Hand wheel.



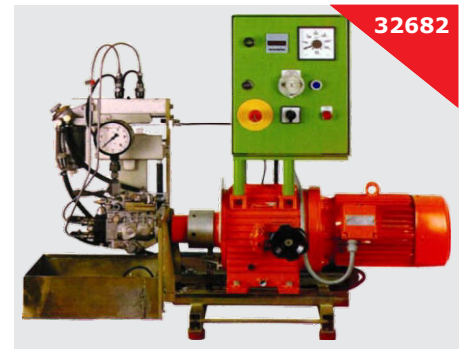
AUTOMATIC IGNITION DEMONSTRATOR

Mounted on a mobile dedicated test bed, Four cylinder with four stroke system, Spark ignition engine, Power of 55KW at 5500 rpm, Single point injection, The trainer is constructed from corrosive resistance materials on a mobile an robust test bed.



DIESEL FUEL INJECTION SYSTEM

The System is individual injection pump type to show the operating principle and structure of governor, timer and injection nozzle, The injection pressure and spray pattern allow to analyze by adopting two fuel pressure gauges and visible cylinder.



DIESEL FUEL INJECTION SYSTEM TEST BENCH

Compact and sturdy construction, Easy and versatile operation, Full performance tests possible, Design for fail-safe operation, Extensive choice of engines, Rapid change over of engines, Self contained-minimum service required.



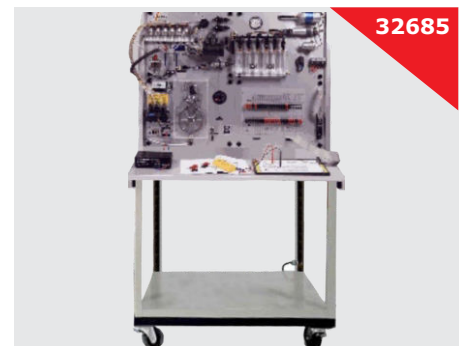
DISTRIBUTOR, IGNITION COIL & SPARK PLUG

Automotive Distributor, Ignition Coil & Spark Plug demonstrates the operating principle and cross sectional view of distributor, ignition coil and spark plug, Starter switch, Resistor, Spark plugs, Distributor, Ignition coil.



EFI IGNITION DEMONSTRATOR

Graduated Fuel Volume Meter for each Injector, Complete Ignition System (detailed below), Variable speed drive for ignition with Tachometer, Silk-screened engine Diagram showing layout of components, Throttle position sensor.



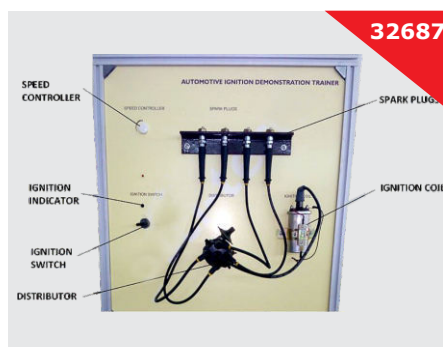
FUEL INJECTION SYSTEM TRAINER

Stoichiometric ratio, Pulse injection & continuous injection system, Air flow meter ratio, Operation sensor reporting to the ECM, Sequential electronic fuel injection system Hardware, Throttle - body injection, Solenoid-operated fuel injector.



IGNITION DEMONSTRATION TRAINER

Mounted on a dedicated reduce-wear bed (RWD) type mobile unit, Suitable for Four cylinders, 4-stroke Engine, Single point injection with monomotoric control unit, Error switch integrated into the control system.



IGNITION DEMONSTRATION TRAINER

Air quantity indication shown by inclined-tube manometer, Pressure measurement gauge to indicate system pressure and control pressure, Engine speed measurement digital display, Boost switch-off with digital display of cut-in speed.



K-JETROIC 1.5 ELECTRONIC FUEL INJECTION/IGNITION TRAINER

Air quantity indication shown by inclined-tube manometer, Pressure measurement gauge to indicate system pressure and control pressure, Engine speed measurement digital display, Boost switch-off with digital display of cut-in speed.



32689

LE-JETROIC 1.5 ELECTRONIC FUEL INJECTION/IGNITION TRAINER

Air boost supply provided by means of high performance speed dependent suction blower, Multiple measuring sensors allowing individual measurement of fuel delivered by fuel injectors, Power supply cable, Operating instructions, Circuit diagram practice board.



32690

LH-JETROIC 1.5 ELECTRONIC FUEL INJECTION

Multiple measuring sensors allowing individual measurement of fuel delivered by fuel injectors, Power supply cable, Operating instructions, Circuit diagram practice board, Training films and worksheets, Plug-board cable set, test lamp and storage rack.



32691

MOTRONIC 1.5 ELECTRONIC FUEL INJECTION/IGNITION TRAINER

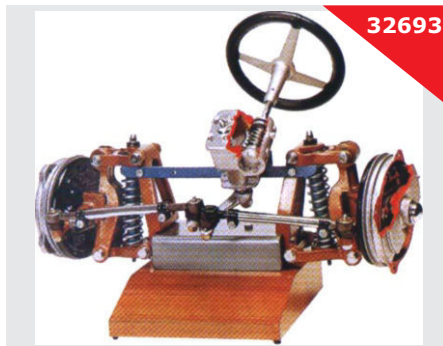
Air boost supply provided by means of high performance speed dependent suction blower, Multiple measuring sensors allowing individual measurement of fuel delivered by fuel injectors, Power supply cable, Operating instructions, Circuit diagram practice board.



32692

IGNITION SYSTEMS TRAINER

Measure the waveforms and check the changes according to RPM speed, Engine operation check the operation of the injector and sparks in the order of switch plugs (1, 3, 4, 2) and inspect whether normal operation of each sensor, Failure code the device allows to inspect failures on purpose.



32693

DUAL STEERING SYSTEM

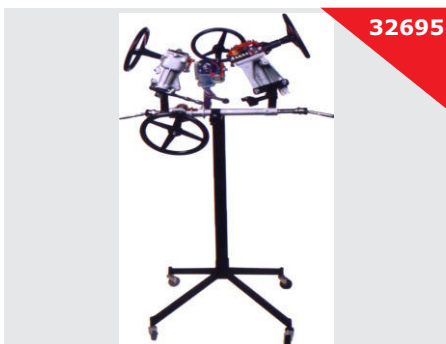
Dual front independent suspension trapezoid-arm type springs, Shock absorber, Sector gear steering box, Drum brake-steering wheel, On Wooden Base, Dimensions: 75x30x50H in cm.



32694

RACK AND PINION STEERING BOX

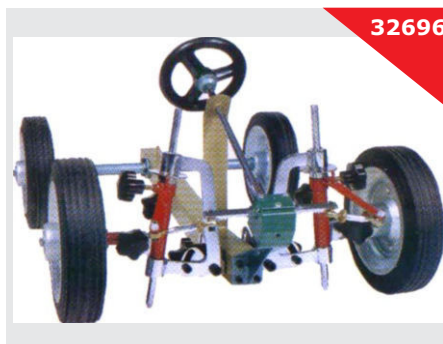
Steering wheel, Rack, Pinion, On Wooden Base, Dimensions: 74x27x35H in cm, Weight: approx. 6 Kg.



32695

STEERING BOX GROUP

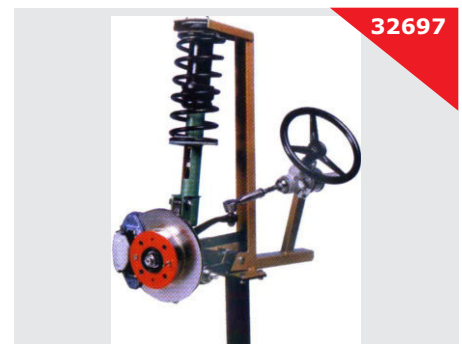
Worm and Sector, Re-circulating Balls, Worm and Roller, Rack and Pinion Steering Boxes, Stand with Wheels, Dimensions: 80x65x140H in cm, Weight: Approx. 25 Kg.



32696

STEERING GEOMETRY

Effect of the JEANTEAUD quadrilateral-camber, Angle of incidence-turning radius, Steering angle-toe-in and toe-out, All real driving conditions can be simulated, An instruction manual is provided for correct use both in theory and practice.



32697

STEERING SYSTEM WITH MCPHERSON SUSPENSION

McPherson suspension, Shock absorber, Spring, Rack-and-pinion steering box, Disc brake, Steering wheel, On stand with Wheels.



32698

FRONT AXLE STEERING, SUSPENSION, BRAKE & TYRES MECHANISM TRAINER

Adjustment of the wheels and centering of the steering mechanism, Adjustment of castor and camber King pin angle inclination, Wheel alignment toe-in and toe-out.



32699

FRONT AXLE POWER STEERING TRAINER

Fully operational Electric power assisted steering and suspension trainer manufactured using Original components, Based on a generic locally available cars, complete with sub-frame, torsion bar, wishbone's, front hub assembly.



32700

FRONT AXLE THREE TYPES OF POWER STEERING TRAINER

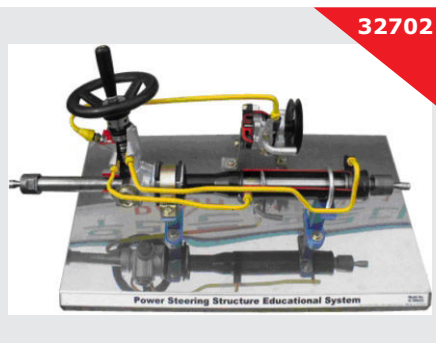
Jacks fitted beneath the road wheels to load the suspension, Rotating parts covered by mesh guards, Board mounted in a box section paint frame with castors, Powder coated paint finish.



32701

FRONT AXLE STEERING GEOMETRY TRAINER

The training model is built to demonstrate with ease the various angles and positions of the steering wheels as well as the effect geometries when the vehicle is moving, Adjustment of the wheels and centering of the steering mechanism.



32702

RACK & PINION POWER STEERING BOX

Oil pump, control valve, and chamber are precisely cross-sectioned for education of structures and the movement of rack and pinion can be clearly seen during operation, Mirror finish stainless steel adjustable base frame.



32703

RACK AND PINION STEERING BOX

On Metal Base, Rack, Composed of, Weight: approx. 6 Kg, Steering wheel, Pinion, Dimensions: 74x27x35H in cm.



32704

POWER STEERING & SUSPENSION EDUCATIONAL SYSTEM

Steering rack and pinion with power assist, Tilt steering wheel and column assembly, Power steering pump, MacPherson struts, Front wheel assembly, Electric motor and drive, Electric control box.



32705

RACK & PINION POWER STEERING TRAINER

Power Steering & Suspension Educational System is able to demonstrate the actual operation and study of steering and suspension system, The system is constructed on a robust chassis mounted on wheels for mobility.



32706

RACK AND PINION POWER STEERING TRAINER

To Study Basic rack & pinion steering & recirculation ball steering operating principle, To Study Power steering components operating principal, such as pump, rotary valve, steering arm linkage & hydraulic fluid circuit.



32707

COMPLEX STEERING GEOMETRY STUDY

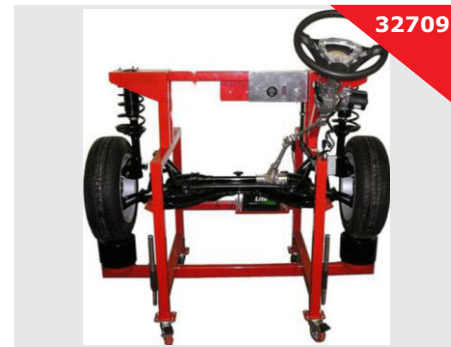
To Study the steering geometry is a rational training model allowing easy explanation of the complex steering geometry, provided with active suspension, The wheels can be adjusted separately to emphasize all faults which can occur in a car having front carriage defects.



32708

FRONT END STEERING & GEARS SYSTEM

Front independent suspension trapezoid-arm type, Shock absorber, Stabilizer, Disc brakes, Linkages, Rack and-pinion steering box, Steering gear, Spring, Steering wheel.



32709

STEERING, SUSPENSION, BRAKE & TIRES TRAINER

Direct view of the structure, working principle and real-time running status of the system, Data from all sensors can be detected & tested with millimeters & other instruments, Strong, processed with high-temperature spray painting.



32710

SUSPENSION AND STEERING TRAINING PROGRAM

Explain alignment procedures, Experiment of steering angles and how each affects vehicle handling, Experiment of Diagnose and correct suspension and steering problems, Experiment of Diagnose and service wheels, tyres and wheel bearings.



32711

ELECTRONIC POWER STEERING TRAINER

Understanding the operating principle and diagnostic test of electronic power steering system, Real-time automobile EPS system is used to illustrate the structure of the system, 3-phase motor drives a booster pump to operate the steering wheel and adjust the speed signal imitation knob.



32712

CENTRAL MONITORING WARNING SYSTEM TRAINER

The control unit has the task of the continuously monitoring the system and if fault is detected, the corresponding fault indicator lamp is lit, Some control functions (e.g. oil and fuel levels), include a delay time to prevent unnecessary short-term indications.



32713

AUTOMOTIVE CLUTCH TESTING MACHINE

Determination of Power Transmitted by Single Plate Clutch at different speed & torque inputs, Designed for demonstration of power transmission by frictional clutch, Digital Instruments for measurement of parameters Torque, Input power, RPM.



32714

COMPUTERIZED IC ENGINE TEST RIGS

Three Cylinder Four Stroke MPFI Petrol Engine 796 cc, Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency, Measurement & Calculation of Volumetric efficiency, Measurement & calculation of specific fuel consumption.



32718

ELECTRICAL-ELECTRONIC SIMULATOR TRAINING SYSTEM

The system provides exhaustive study of electrical circuitry of automotive vehicles, such as starting, ignition, lighting and other electrical system of the car, The simulator is mounted on a working table with intermediate board to hold power supply units.



32719

SINGLE CYLINDER PETROL / DIESEL ENGINE TEST BED

Investigate Engine Performance at different Throttle Settings & Load conditions, Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency, Measurement & Calculation of specific fuel consumption.



32720

SINGLE CYLINDER PETROL AND/OR DIESEL ENGINE TEST BED WITH DAQ

Investigate Engine Performance at different Throttle Settings & Load conditions, Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency, Measurement & Calculation of Volumetric efficiency.



32724

SINGLE CYLINDER PETROL & DIESEL ENGINE TEST BED SCADA

Investigate Engine Performance at different Throttle Settings & Load conditions, Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency, Measurement & Calculation of Volumetric efficiency.



32725

EXHAUST GAS CALORIMETER

Calorimeter consisting of finned pipe heat exchanger and insulated tank, Instrumentation 4 temperature sensors, flow meter, Measuring amplifier with digital displays, Connection between engine, Calorimeter using exhaust gas hose.



32726

BRAKE & CLUTCH MASTER CYLINDER PRESSURE TEST KIT

Unique Brake & Clutch Master Cylinder Pressure Test Kit measures the pressure of front or back master cylinders, The adapters install directly into master cylinder line access holes.



32727

TABLE-TOP SINGLE CYLINDER PETROL AND DIESEL ENGINE TEST BED W/O DAQ

Unique Brake & Clutch Master Cylinder Pressure Test Kit measures the pressure of front or back master cylinders, The adapters install directly into master cylinder line access holes.



32728

TABLE-TOP SINGLE CYLINDER PETROL AND DIESEL ENGINE TEST BED WITH DAQ

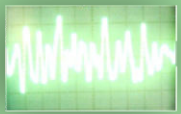
Investigate Engine Performance at different Throttle Settings & Load conditions, Calculation of Mechanical Efficiency & Plot brake power versus mechanical efficiency, Measurement & Calculation of Volumetric efficiency.



Order Code	Item Name	Order Code	Item Name
32729	Single Cylinder Petrol Engine with Variable Compression Ratio W/O DAQ	32745	4 Stroke 1 Cylinder Diesel Engine Test Bed With DAQ
32730	Single Cylinder Petrol Engine with Variable Compression Ratio With DAQ	32746	4 Stroke 1 Cylinder Diesel Engine Test Bed Without DAQ
32731	Air-cooled Single-cylinder Four-stroke Diesel with Variable Compression Ratio Engine Test Bed W/O DAQ	32747	4 Stroke 2 Cylinder Diesel Engine Test Bed With DAQ
32732	Air-cooled Single-cylinder Four-stroke Diesel with Variable Compression Ratio Engine Test Bed With DAQ	32748	4 Stroke 2 Cylinder Diesel Engine Test Bed Without DAQ
32733	Single Cylinder 4 Stroke Asynchronous Start Petrol Engine Test System W/O DAQ	32749	4 Stroke 1 Cylinder Petrol Engine Test Bed With DAQ
32734	Single Cylinder 4 Stroke Asynchronous Start Petrol Engine Test System With DAQ	32750	4 Stroke 1 Cylinder Petrol Engine Test Bed Without DAQ
32735	Single Cylinder 2 Stroke Petrol Engine With DAQ	32751	Universal Brake & Drive Unit
32736	Single Cylinder 2 Stroke Petrol Engine Without DAQ	32752	CRDi Diesel Engine Fault Simulator With DAQ
32737	4 Stroke 4 Cylinder Petrol Engine Test Bed With DAQ	32753	CRDi Diesel Engine Fault Simulator Without DAQ
32738	4 Stroke 4 Cylinder Petrol Engine Test Bed Without DAQ	32754	CRDi Diesel Engine Automatic Transmission Trainer With DAQ
32739	4 Stroke 3 Cylinder Petrol Engine Test Bed With DAQ	32755	CRDi Diesel Engine Automatic Transmission Trainer Without DAQ
32740	4 Stroke 3 Cylinder Petrol Engine Test Bed Without DAQ	32756	CRDi Diesel Engine Fault Simulation Trainer With DAQ
32741	4 Stroke 4 Cylinder Diesel Engine Test Bed With DAQ	32757	CRDi Diesel Engine Fault Simulation Trainer Without DAQ
32742	4 Stroke 4 Cylinder Diesel Engine Test Bed Without DAQ		
32743	4 Stroke 4 Cylinder Diesel Engine Test Bed With DAQ		
32744	4 Stroke 4 Cylinder Diesel Engine Test Bed Without DAQ		

BIO-MEDICAL TRAINERS

We have a special range for Biomedical Engineering Institutes to provide detailed learning for their students. In this segment students can get hands on practice and can understand complete technology behind the working of major instruments used in Biomedical Sector like Blood Pressure (BP) Measurement Trainer | Pulse Rate Meter Trainer | Respiration Rate Monitor Trainer | Phono cardiograph Trainer | Electro Encephalogram (EEG) Trainer | Electro Myograph (EMG) Trainer | Electrocardiogram (ECG) Simulator Trainer | Heart Rate cum ECG Monitor Trainer | Bio Medical Instrumentation Trainer covering all in one set up.



BM2101

DC SUPPLY

Study of Placement of Electrodes. Measuring the electrical activity generated by the heart, Different Lead combination. Study of normal ECG waves, intervals and segments, The waves an ECG include the P wave, Q wave, R wave, S wave, T wave & signal processing Placement of Electrodes.



BM2102

ECG AMPLIFIER 12 LEADS SELECTOR

Measuring the electrical activity generated by the heart, Different Lead combination I, II, III, aVR, aVL, aVF, V1 to V6 Chest lead, tudy of normal abnormal ECG waves.



BM2104

ECG AMPLIFIER 3 LEAD WITH HEART RATE + HI-LO

To Study Measuring the electrical activity generated by the heart R wave Detection, To Study Heart Rate Measurement, Study of arrhythmias & signal processing, Placement of Electrodes, Amplification.



BM2105

ECG AMP.12 LEADS SELECTOR +USB BIOWAVE

To Study Measuring the electrical activity generated by the heart, To Study Different Lead combination lead, Study of normal abnormal ECG waves.



BM2106

ECG AMPLIFIER 3 LEADS WITH PLETHYSMOGRAPH

Study of Measuring the electrical activity generated by the heart wave Detection, Study of Heart rate Pulse Measurement, Study of PPG Signal & signal processing, Placement of Electrodes, Amplification, Filters, Gain, Self test.



BM2121

EEG AMPLIFIER 3 LEAD ELECTRODES

EEG (Electroencephalography) Real Time 3 Lead amplifier trainer kit, EEG output to DSO through 4mm socket, Test Point on the top of Instrument, Amplifier available with & without USB connectivity, Study of eye & Brain activity & signal processing.



BM2122

EEG AMPLIFIER 10-20 METHOD SINGLE 1CH.

Study of electric potentials generated by the Brain, Study of patterns as Beta, Alpha, Theta, and Delta, Study & Analyses of Neurology & signal processing Placement of Electrodes 10-20 Method, Amplification, Filters, Gain, Self-Test & Frequency responses.



BM2124

EEG AMPLIFIER 10-20 WITH USB +BIOWAVE

Study of Brain activity & signal processing, Power Supply 230 $\pm$ 10%, 50Hz, Dimensions 305 X100 X 250 mm $\pm$, EEG DSO & USB output through 4mm socket & USB.



BM2126

EOG AMPLIFIER 3 LEAD ELECTRODES

Study of electric potentials generated by the eyes movements of a stationary subject, Detection Moment Right, Left, Up & Down. Study of Pick voltage & Duration of Moments & signal processing.



BM2128

EOG AMPLIFIER 3 LEAD WITH USB +BIOWAVE

Study of electric potentials generated by the eyes movements of a stationary subject, Detection Moment Right, Left, Up & Down, Study of Pick voltage & Duration of Moments & signal processing Placement of Electrodes, Amplification, Filters, Gain, Self test, Voltage & Frequency responses.



BM2131

EMG AMPLIFIER 3 LEAD WITH AUDIO

Bipolar Real Time EMG Amplifier 3 Lead with Audio Trainer, Real time EMG wave measurement, Unipolar & Bi-polar Mode Disc Electrodes with Velcro & Disposable Electrodes, EMG & Self Test Mode, Gain & Test adjustable. DSO output through 4mm sockets Audio output CW 1wat $\pm$.



BM2132

EMG AMPLIFIER 3 LEAD WITH SIMULATOR

Study of electric potentials generated by the muscles, muscle activity, Nerve Conduction Velocity, Muscle feedback, Muscle strength & signal processing Placement of Electrodes, Amplification, Filters, Gain, Self test, Voltage & Frequency responses, Simulator.



BM2133

EMG AMPLIFIER 3 LEAD WITH STIMULATOR

Bipolar Real Time EMG Amplifier 3 Lead with Stimulator Trainer Kit, Study on EMG Amplifier 3 Lead with Stimulator, Power Supply 230 V, 50Hz, Dimensions 305 X100 X 250 mm±, Disc Electrodes with Velcro & Disposable Electrodes.



BM2134

EMG BIOFEEDBACK 3 LEAD

Bipolar Real Time EMG Biofeedback 3 Lead Trainer, EMG & Self Test Mode, Gain, Threshold & Audio adjustable, Disc or disposable Electrodes with Velcro. DSO output through 4mm socket, Audio output CW 1wat ±. Test Point on Top of Instrument.



BM2135

EMG AMPLIFIER WITH USB + BIOWAVE

EMG & Self-Test Mode, Gain & Test adjustable. USB & DSO output, Audio output CW 1wat ±, Test point on the top of instrument 2mm Sockets, Power Supply 230 V, 50Hz. Dimensions 305 X100 X 250 mm±, Disc Electrodes with Velcro & Disposable Electrodes.



BM2141

PCG AMPLIFIER WITH 5 FILTER

Phonocardiogram Amplifier with 5 Filter Trainer Kit, Real time amplified PCG output up to 15Vpp±, PCG Transducer. Adjustable Gain & Adjustable Audio with Head Phone. Rotary switch to select 5 positions Filter, Filter Range 25Hz to 1400Hz±, Heart beat indication. Output PCG through 4mm socket. Test points.



BM2146

AUDIOMETER

Tests both the intensity and the tone of sounds, balance issues, and other issues related to the function of the inner ear, also measure ability to discriminate between different sound intensities, recognize pitch, or distinguish speech from background noise.



BM2151

HEAT RATE INDICATOR LED

Heart rate the number of heart beats per minute, Study of Heart Rate, Finger Optical transducer, signal processing, Placement of Electrodes, Amplification, Filters, Gain, Comparator, Frequency to Voltage Converter, Voltage & Frequency responses.



BM2152

HEAT RATE INDICATOR LCD MICROCONTROLLER

Real Time Finger Heart Rate Monitor, Finger Plethysmograph, Pulse Monitor, Visible & Audible indication DSO output through 2mm socket, Monitor with using Microcontroller, LCD Display 16 X 2, Key Board 4x1 matrix.



BM2161

RESPIRATION RATE METER LED

Real Time Respiration Rate Monitor, Display 3 Digit, 7 Segment LED Display, Piezoelectric Transducer, Output up to 5Vpp±, Real time wave measurement, DSO output through 4mm socket, Test point on the top of instrument.



BM2162

RESPIRATION RATE LCD-MICRO APNEA MONITOR

Respiration Rate Monitor Trainer using Microcontroller, Real Time Respiration Rate Monitor, LCD Display 16 X 2, Key Board 4x1 matrix, Piezoelectric Transducer, Output up to 5Vpp±, Output Rate Pulse, Tachypnea and Apnea indicator, Self-Test.



BM2165

PRESSURE AMPLIFIER

Display 3 Digit, 7 Segment LED Display or LCD Display, Air Pressure Transducer, Input from Mouth or Air Pump, Microcontroller with 16x2 LCD Display.



BM2172

PHYSIOGRAPH 6 CHANNEL (WITHOUT AMP.)

Real Time AD C, 6 Channel USB Trainer Kit, 6 Analog Inputs through 3 pin connectors, 6 channel USB interfacing physiograph Trainer Kit, Amplified output to PC through USB.



BM2173

PHYSIOGRAPH ECG, EEG, EMG (3 AMPLIFIERS)

EEG (Electroencephalography) Real Time 3 Lead amplifier trainer kit, EEG output to DSO through 4mm socket, Test Point on the top of Instrument, Amplifier available with & without USB connectivity, Study of eye & Brain activity & signal processing.



BM2174 BW

PHYSIOGRAPH ECG/EEG/EMG/PCG-USB BIOWAVE

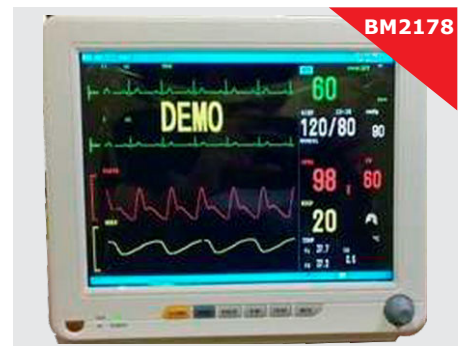
Study of ECG, EEG, EM G, PCG. Study Signal Processing & Graph, Close, Exit, Offset Setting, Voltage, Time & Frequency measurement, Signal Values in Excel, Multicolour Signal Wave, Capture the signal & put on PC screen, Signal Store, Print, Open, Save As, Start, Responses of Subject.



BM2176

PHYSIOGRAPH ECG/EEG/EOG/EMG/PCG/GSR/RR M/PMG/TEMP(ANY 6CH)-USB

Indigenous Digital Student Physiograph, It is Compact light weight and easy to operate by a beginner. , On screen 6 channels select. By external switching can be set up to Input 9 Signal, Unit having PC Interfacing's USB output.



BM2178

PATIENT MONITOR

Patient Monitor ECG/SpO2/BP Patient Monitor, high quality "Multi Parameter Monitor" 12 inch Five Standard parameters like ECG, RESP, NIBP, SPO2, TEMP, PR/HR.



BM2182

BABY INCUBATOR MICROCONTROLLER

Using microcontroller, Supply 230V/ 50Hz, Test point in the front panel of instrument, Dimension 600 X 300 x 500mm±, Two Sensor, Body & Canopy Temperature Sensor.



BM2191

BLOOD PRESSURE MONITOR(BP) (ONLY DIGITAL)

Blood pressure measurement Trainer, Automatic Air Release Valve, LCD Display, Test points AC & DC air pressure, Compressor, Valve.



BM2192

BP CAL & MEASUREMENT

Study of BP Measurement using different technique, Study of Sphygmomanometer, Aneroid (Dial), Digital Bp Apparatus, Compare the pressure sensitivity, Readings, Stability, Accuracy, Effect of applied pressure on Blood Flow.



BLOOD FLOW MEASUREMENT ULTRASONIC

Ultrasonic Blood Flow Measurement Trainer Kit, Transducer Piezoelectric Doppler Type, Audio & visible indication, Control Audio & Output Control, Output audio Head Phone & speaker, Power Supply 230V / 50Hz, Dimension 250 x 75 x 250 mm.



BLOOD CELL COUNTER

Blood Cell Counter Demonstration Type Trainer Kit for Electrodes, Vacuum Socket, Indication Zero position, start Wait, End process Threshold control for Trigger the samples, Barker, Test Tube, BNC or EP Socket Blood Cell, Red Blood Cell, Haemoglobin, PCV, MCV, MCH, Mean Cell.



SOLID STATE ELECTRO SURGERY 250W / 500W

Study of Solid State Electro Cautery Machine, Study of Principal & Operating Procedure, Study of Electrodes, Monopolar & Bipolar, Pencil Switch, Foot Switch.



SHORT WAVE DIATHERMY (VALVE TYPE)

Heat generation through short wave diathermy, Study of molecular activity within the tissue exposed, Differential heating is noted within bone, muscle and fat, Heat stimulation to superficial nerve endings.



LONG WAVE THERAPY

Study of Operation Principal of Long Wave Diathermy machine, Study of effect on Body of Diathermy, Study advantages & disadvantages of Long Wave Diathermy & other Physiotherapy Machine, Study of placement of Electrodes.



TNS MINI

Study of TENS operating, Study effect of TENS on Body, Study of Different frequency & its effect, Study of output signal, Study of Placements of Electrodes, Study of different models & it's applications.



NERVE AND MUSCLE STIMULATOR

Study of Normal Activity & after Stimulation activity of Muscle, Study of Intensive Galvanic (IG) & Search Faradic (SF) Signal, Study of Signal Duration & Effect on object, Study of Muscle activity using EMG & Stimulator, Study of Block Diagram, Study Signal Generation.



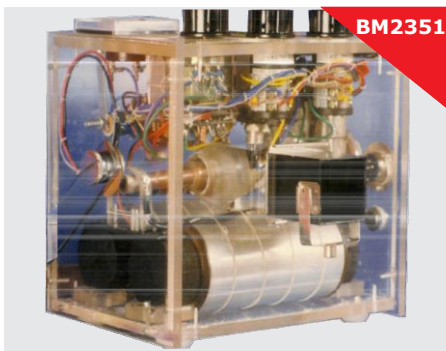
ULTRASONIC THERAPY 1MHZ

Digital or Microprocessor based digital model, Digital treatment timer, Timer 0 to 15 Minutes, Select the Mode Pulse & Continues, LCD/Digital Display, Key for Select the parameters, Operating Frequency 1MHz & 3 MHz, Continuous 15 Watts $\pm$ / cm², Pulse 21 Watts $\pm$ /cm².



INTERFERENCE THERAPY MICROCONTROLLER

Study of basic principle of Interferential Therapy, Study of what is physiological effects of low frequency electrical stimulation of nerves, Study of effect of IFT & other Therapeutic instruments, as TENS and IFT.



BM2351

IR/RED/BLUE/ IR-RED THERAPY 500MW

Power supply-230 V / 50Hz, 5 Amp, X-RAY System-Demonstration, X-RAY Generation-Simulation, using dummy X-RAY tube, X-RAY tube - Dummy tube with visible radiations to simulate X-RAY.



BM2371

DIGITAL VIBROSENSE

Study of Placement of Transducer, Measuring the electrical activity generated by the Transducer, Study of Human Body Vibration sensitivity, Study of Diabetic Patient & Normal Person, Study of Sensitivity of Human Body.



BM2501

ECG SIMULATOR PORTABLE

Compact & Portable, 12 Lead 4 Arrhythmia - Bradycardia 30, Normal 60, 100, Tachycardia 120, Standard PQRS Waveform, Feather Touch Arrhythmias selection, LED indicates for each Arrhythmia, 10 Leads- RA, LA, RL, LL, & V1-V6 with Universal Sockets.



BM2502

ECG SIMULATOR TABLE MODEL

Normal 60, 90, Bradycardia, Tachycardia, Ventricular Tachycardia, Atrial Fibrillation, Pacid Arrhythmia, Missed Beat, Fusin Beat, R on T, Ventricular Fibrillation, Asystol, Pulse, Universal Output Sockets for Button & 4mm Pin.



BM2503

ECG ARRHYTHMIAS SIMULATOR 12L,15A

Compact & Portable, 12 Lead 15 Arrhythmia - Normal 60, 90, Bradycardia, Tachycardia, Ventricular Tachycardia, Atrial Fibrillation, Pacid Arrhythmia, Heart Block, Bigminy, Missed Beat, Fusin Beat, R on T, Ventricular Fibrillation, Asystol, Pulse.



BM2521

EEG SIMULATOR

Testing & Calibration of EEG Machine, Study of Signal Patterns, Normal rhythms, Adjustable rhythms, Rhythms Selection, Delta (d), Theta (f), Alpha (a), Beta (b), Gamma (g), Amplitude adjustable 0 to 10mV±.



BM2531

EMG SIMULATOR

EMG Simulator 3 Lead Educational Trainer kit, Testing & Calibration of EMG related Instruments or System, Multiple Patterns gradation by Conduction (Voltage) & Frequency knob, Output 0 to 10mV, For Differential Output Button type Male connector.



BM2571

BIO-SIGNAL SIMULATOR ECG/EEG/EMG/HR

Bio-signal Simulator with four Parameter, Calibration & Testing of ECG, EEG, EMG Instruments, Pulse output for Heart Rate or Respiration, Select 3 Parameters or any one by Selector switch.



BM2602

D.C. DEFIBRILLATOR USING MICROCONTROLLER

Study of Defibrillation technique, How to use in emergency, Study of an electrical shock to reset the electrical state of the heart so beat to a rhythm controlled by its own natural cells, Study of Different Block & output at test point.



BM2603

D.C. DEFIBRILLATOR WITH SIMULATOR

Study of Defibrillation technique, How to use in emergency, Study of an electrical shock to reset the electrical state of the heart so beat to a rhythm controlled by its own natural cells, Study of Different Block & output at test point.



BM2604

D. C. DEFIBRILLATOR SIMULATOR

Work as dummy Patient, Output ECG 0 to 10mV $\pm$ Adjustable, Pulse 9V $\pm$, ECG Output RA, LA, RL, Output to ECG amplifier, Normal & three rhythms, Adjustable Threshold.



BM2611

IMPLANTABLE PACEMAKER

Study of Pacemaker working. Study & need of Mode Internal External, Study of Placement of Electrodes, Study of Demand & Fixed Mode, Study of Signal Processing, working of each Block



BM2613

PACEMAKER WITH SIMULATOR

Study of Pacemaker working, Study & need of Mode Internal External, Study of Placement of Electrodes, Study of Demand & Fixed Mode using Simulator. Study of Simulator, Study of Signal Processing, working of each Block.



BM2614

PACEMAKER SIMULATOR

Study of Signal pattern of Patients AV Block, Bradycardia, Tachycardia, Study Dummy Heart, Testing & Calibration of Pacemaker using Simulator, Study of Demand & Sync Mode.



BM2621

MEDICAL TELEMETRY PULSE SIGNAL HRI / RRM

Study of Defibrillation technique, How to use in emergency, Study of an electrical shock to reset the electrical state of the heart so beat to a rhythm controlled by its own natural cells, Study of Different Block & output at test point.



BM2622

MEDICAL TELEMETRY ANALOG SIGNAL ECG

Study of Transmitter & Receiver, Study of Effect of Range, Study of Transducer, Study of Signal Processing, Instrumentation Amplifier, Filter High Pass & Low Pass, Notch Filter Amplifier.



BM2631

MEDICAL PATIENT SAFETY MEASUREMENT

Study of Safety Measurement, Testing of Transformer open, short, Electrodes Testing, Body Conductivity or Insulation Measurement with Mains Supply, Wire Testing, Frequency & Voltage Response of ECG, EEG, EMG Machine.



BM2641

HEMO -DIALYSES MACHINE

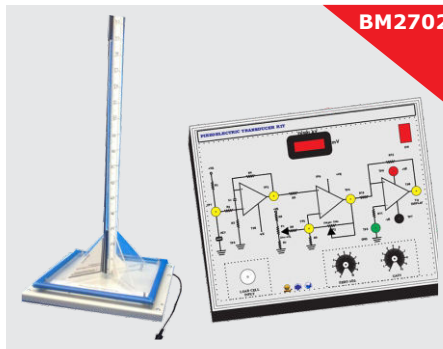
Study of Hemodialysis Machine, Study kidney, Study of Blood pump, Measure the Maximum & Minimum Speed of Blood Pump with & without load, Study Flow Dialysate & Blood Flow, Study of Detectors.



BM2646

HEART-LUNG BY PASS MACHINE

Study of Heart Lung Machine, Study of Reservoir & Oxygenator, Study of Temperature Control & PT100 sensor, Study of Blood Pump & Flow rate, Study of Blood Bubble Detector & Blood Leak Detector.



BM2702

PIEZOELECTRIC TRANSDUCER KIT

Study of measurement of Piezoelectric Transducer, Effect of zero adjust & Gain adjust, Determination of Linear Range of Operation, Determination of Sensitivity / Repeatability of the system.



BM2704

LOAD CELL TRANSDUCER KIT

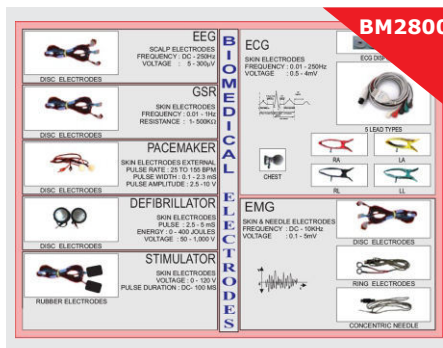
Study of measurement of load using Load Cell Effect of zero adjust & Gain adjust, Determination of Linear Range of Operation, Determination of Sensitivity / Repeatability of the system RL, LL, & V1-V6 with Universal Sockets.



BM2707

LVDT TRANSDUCER KIT

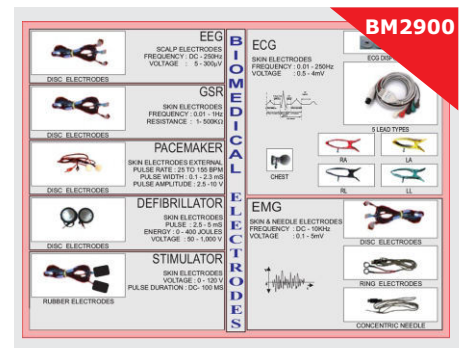
LVDT Full Stroke : + 10 mm range, Actual Displacement : By Micro meter arrangement, Pitch: 1 mm, Circuit : AC Excitations Source, Phase detector & digital display, Excitation Source : Sine wave of 2 KHz to 5 KHz variable frequency and 0 to 3V variable amplitude.



BM2800

ELECTRODES DISPLAY BOARD

ECG, EEG, EMG Disc Electrodes, EMG Ring, EMG Needle, Defibrillator, Pacemaker, Stimulator, GSR, IFT.



BM2900

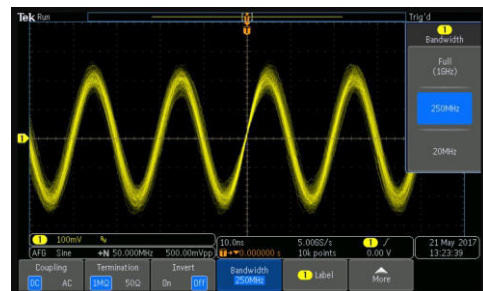
TRANSDUCER DISPLAY BOARD

Heart Rate, Respiration, SpO2, PCG, Plethysmograph, IR, Spiro meter, Fetus Doppler, Temperature Pt100, Thermocouple, Thermostat, Aluminum powder coated Frames, Acrylic Front, Approximately Size 42 x 30 x 4 inch (3.5 x 2.5 x 0.75 Feet).



Test & Measurement Instruments

We offers a wide range of Test & Measurement Instruments to full fill the needs of proper and accurate calculations while working in a laboratory or industry. In our range we have AC/DC Power Supplies | Analog Oscilloscopes | Digital Storage Oscilloscopes | DDS Function Generators | Arbitrary Waveform Generators | Frequency Counters | Multimeters | Clampmeters | Power Quality Analyzers | Analogue Portable Voltmeters | Ammeters | PF Meters | Wattmeters | Rheostats | Ohmmeters | Decade Resistance Box | Conductance Box | Inductance Box | LCR Meters | Lux Meters | Tachometers | IC Testers | Infrared Thermometers | Spectrum Analyzers | Etc.



Waveform



16913

COLOUR PATTERN GENERATOR

Type of Patterns : Vertical Bras, Horizontal Bras, Dots, Circle White, Multi Colour Colour Pattern : White, Red, Green, Blue, Black, Yellow, Magenta, Cyan, Sound Signal-Frequency : 5.5 Mhz Video Carrier Frequency modulated by 1KHz internally 50 KHz sweep, Colour Signal : 4.43 Crystal controlled



16984

DIGITAL TACHOMETER - NON CONTACT TYPE

Microcomputer and advanced semiconductor laser technology are used for fast and highly accurate measurement, The non-contact meter analyses laser beam reflected off a rotating object into the meter and converts it into RPM value, the laser reflection is eyeable for easy object locating.



16985

DIGITAL TACHOMETER - CONTACT TYPE

Microcomputer technology is used for fast and accurate measurement, Memory button recalls the last, Min and Max values during measuring period, Wide measuring range, high resolution and high reliability, Measurements can be read as RPM, meters /min or feet/min, Auto zero adjustment.



16986

DIGITAL TACHOMETER - CONTACT + NON CONTACT TYPE

LCD display with backlight, High resolution measurement, CC/CP/CR mode, Over voltage/ current/ power/ heat/ polarity reversion protection, 10 steps program, Can be controlled by PC, Can be connected in parallel, Data storage protection in power down.



AM-890

ANALOG MULTIMETER

Analog Multimeter with Mirror Scale, Inbuilt Buzzer and LED, 0W Adjustment with x100 Range, Transistor Test, hFE with Diode, Heavy ABS Housing plus compact protective holster alongside, High input impedance 20 Kohm/DCV, 9 Kohm/ACV, Dry Battery Test, Continuity Buzzer Test.



AWG-1011F

ARBITRARY WAVEFORM / FUNCTION / SIGNAL GENERATOR

Advanced DDS technology, upto 10MHz frequency output, 125MS/s sample rate, and 1μHz frequency resolution, Vertical Resolution : 14 bits, and 8K arb waveform length, Comprehensive waveform output : 5 basic waveforms, and 45 built-in arbitrary waveforms, Comprehensive modulation functions : AM, FM, PM, FSK, Sweep, and Burst



AWG-1022F

ARBITRARY WAVEFORM / FUNCTION / SIGNAL GENERATOR

Advanced DDS technology, 25MHz 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 26 built-in arbitrary waveforms.



AWG-3102

ARBITRARY WAVEFORM FUNCTION SIGNAL GENERATOR

Max 250MHz frequency output, Max 1.25GS/s sample rate, and 1μHz frequency resolution, Vertical Resolution :14 bits, max 1M arb waveform length, Comprehensive waveform output : 6 basic waveforms, and 152 built-in arbitrary waveforms.



CM-1500

LCR / CAPACITOR / TRANSISTOR METER CAPACITOR METER

The Handheld Instrument can detect as well as measure Capacitance, Resistance and Diode automatically. Also the instrument self discharges the Charged Capacitor before measurement.



CRO-1016B

CATHODE RAY OSCILLOSCOPE 10 MHZ.

The simple control panel is similar to an analogue oscilloscope, Bandwidth : 10MHz, Sample rate : 100MS/s, 1-Channel, 130,000 wfms/s waveform capture rate, easily capturing exceptional and low probability events, 3.7" Colored LCD, Compact case.



DMM-1041

DIGITAL MULTIMETER SEMI BENCH DMM, 55000 COUNT

3.5 inch (480x320) high resolution LCD 55000 counts, DC voltage accuracy up to 0.05% Up to 60 readings per second, True RMS AC voltage / current measurement, Dual line display supported, Trend analysis accessible in chart mode, SCPI support, Models available in AC powering.



DMM-3051

DIGITAL MULTIMETER BENCH DMM, 5.5 DIGIT

4 inch 480 x 320 pixels high resolution LCD, Resolutions up to 5 1/2 digits, Reading rates up to 150 readings/s, True RMS AC voltage / current measurement, Dual line display supported, The change trend analysis accessible via special chart mode, SCPI supported - remote control, and data-sharing.

**DSO-1022****DIGITAL STORAGE OSCILLOSCOPE
20 MHZ.**

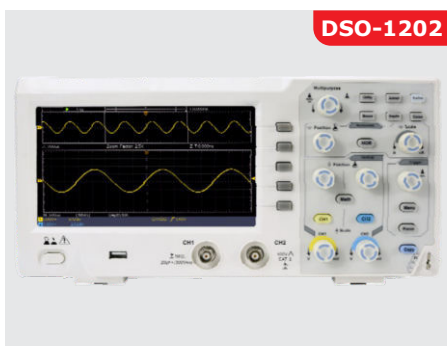
Bandwidth : 20MHz - 100MHz, 2-Channel, Sample rate : 100MS/s - 1GS/s, Ultra-thin body, 7 inch high resolution LCD, SCPI, and LabVIEW supported.

**DSO-1052****DIGITAL STORAGE OSCILLOSCOPE
50 MHZ.**

Bandwidth : 20MHz - 100MHz, 2-Channel, Sample rate : 100MS/s - 1GS/s, Ultra-thin body, 7 inch high resolution LCD, SCPI, and LabVIEW supported.

**DSO-1102****DIGITAL STORAGE OSCILLOSCOPE
100MHZ.**

Bandwidth : 20MHz - 100MHz, 2-Channel, Sample rate : 100MS/s - 1GS/s, Ultra-thin body, 7 inch high resolution LCD, SCPI, and LabVIEW supported.

**DSO-1202****DIGITAL STORAGE
OSCILLOSCOPE, 200 MHZ.**

Bandwidth : 20MHz - 200MHz, 2-Channel, Sample rate : 100MS/s - 1GS/s, Ultra-thin body, 7 inch high resolution LCD, SCPI, and LabVIEW supported.

**DSO-3062A****DIGITAL STORAGE OSCILLOSCOPE
60 MHZ.**

Digital Storage Oscilloscope 60 MHz., 2CH, 1GS/s, 25MHz. AWG, Multimeter, TouchScreen, VGA, USB Software.

**DSO-3064E****DIGITAL STORAGE OSCILLOSCOPE
60 MHZ.**

Digital Storage Oscilloscope 60 MHz. , 4CH, Coloured LCD 8", 1GS/s, USB Software.

**DSO-3104E****DIGITAL STORAGE OSCILLOSCOPE
100 MHZ.**

Digital Storage Oscilloscope 100 MHz. , 4CH, Coloured LCD 8", 1GS/s, USB Software.

**DSO-5032E****DIGITAL STORAGE OSCILLOSCOPE
30 MHZ.**

Ultra Thin: min 7cm, Super Light: 1.8kg, Sharp View: 8" Color LCD, Storage Depth: Max 10M, Display Extension: SVGA Output 6. LAN: Network Data Sharing.

**DSO-6062****DIGITAL STORAGE OSCILLOSCOPE
60 MHZ.**

Ultra Thin: min 7cm, Super Light: 1.8kg, Sharp View: 8" Color LCD, Storage Depth: Max 10M, Display Extension: SVGA Output 6. LAN: Network Data Sharing.



DSO-7102

DIGITAL STORAGE OSCILLOSCOPE 100 MHZ.

Bandwidth : 60MHz - 300MHz with dual-channel, Sample rate : 500MS/s - 3.2GS/s, 10M record length for each channel, Smart design with easy portability, Large 8 inch 800 x 600 pixels LCD, LAN remote control, Multi-function : auto-scale, Pass / Fail, current-measuring, and digital filtering.



DSO-8202

DIGITAL STORAGE OSCILLOSCOPE 200 MHZ.

Bandwidth : 60MHz - 300MHz with dual-channel, Sample rate : 500MS/s - 3.2GS/s, 10M record length for each channel, Smart design with easy portability, Large 8 inch 800 x 600 pixels LCD, LAN remote control, Multi-function : auto-scale, Pass / Fail, current-measuring, and digital filtering SCPI, and LabVIEW supported.



FC-3165

FREQUENCY COUNTER DIGITAL

8 Digits Green LED Display, Selective Range, High Stability, Two Channels, Operation mode memory, Range and Gate time adjustable, Power Supply : AC 220V, +10%.



FG-1001

DIGITAL FUNCTION GENERATOR

Frequency range : 0.1Hz to 1MHz in Six ranges, Wave forms : Sine, Square and Triangle and TM output, Output amplitude : 0-20V peak to peak for Sine, Triangle, 0-15V peak to peak for Square, DC Offset : $\pm 10V$ with adjustable to 0V, Power Supply : 220volts/50Hz, -10%.



FG-1515

DDS FUNCTION GENERATOR 15 MHZ.

Function Generator can generate multiple waveforms such as sine wave, square wave, triangle wave, pulse wave, and arbitrary wave. The frequency range up to 15MHz with duty cycle adjustment, sweep frequency, frequency signal frequency and counter function, and the output signal, amplitude, and frequency can be simultaneously.



FG-2002

FUNCTION GENERATOR DIGITAL, 2 MHZ.

The Table Top Function Generator is capable of Multi Signal i.e. Sine, Triangle and Square with Amplitude Control. Triangle and Square with Amplitude Control.



LCR-301

LCR / CAPACITOR / TRANSISTOR METER LCR BRIDGE METER

Any loss factor in capacitor or inductor does not affect measurement. It has a FUNCTION switch to select resistance (R) inductance (L) or capacitance (C). Measurement with this is as simple as with a multi-meter.



LCR-4070

LCR / CAPACITOR / TRANSISTOR METER LCR METER

A LCR meter (Inductance (L), Capacitance (C), and Resistance (R)) is a piece of electronic test equipment used to measure the inductance, capacitance and, resistance of a component. In the usual versions of this instrument these quantities are not measured directly, but determined from a measurement of impedance.



LCR-8C

LCR / CAPACITOR / TRANSISTOR METER LCR METER

Useful for measurement of winding inductance and resistance of coil, transformer, motors, wires, cables, relays, chokes etc. and capacitance of capacitors, wire, cables etc. Superior performance employing LSI IC's. Instant values of D factor measurement, cover wide measurement range 0.1mH - 2000H,



MIXED SIGNAL DIGITAL OSCILLOSCOPE 60 MHZ.

2 in 1(DSO LA), 8 inch LCD color display, Support USB for data transmission to PC, USB Flash Disk Storage, 20 Automatic measurements, Max.2M record length, Slope trigger and pulse trigger added.



MIXED SIGNAL DIGITAL OSCILLOSCOPE 100 MHZ.

2 in 1(DSO LA), 8 inch LCD color display, Support USB for data transmission to PC, USB Flash Disk Storage, 20 Automatic measurements, Max.2M record length, Slope trigger and pulse trigger added.



PC DIGITAL OSCILLOSCOPE 25 MHZ., PEN TYPE

25MHz bandwidth, 100MS/s sample rate, 5K record length, Human engineering design, Multi- action mode via creative trackball, Multi- trigger option edge, slope, and pulse, 5mV micro signal supported, USB bus powering, and optional USB isolation function.



PC DIGITAL OSCILLOSCOPE 25MHZ.

25MHz bandwidth, and 100MS/s real-time sample rate, 2-channel 1 multi-channel (aux.), 5K record length, Friendly UI : FFT, or X-Y, and waveform 2 views displayed on the same screen, Multi-trigger option: edge, video, slope, pulse, and alternate, USB bus powering, and LAN remote control (optional).



PROGRAMMABLE DC POWER SUPPLY

Power Supply Programmable DC, 4" Coloured LCD, 3 Ch., 2*0-30V/3A, 1*0-6V/3A, USB Software.



PROGRAMMABLE DC POWER SUPPLY

Small body for easy carry, 180W maximum output power, High resolution 1mV / 1mA, Low ripple/noise, Over voltage/over current protection, Multi-directional cooling system with smart fan, 3.7 inch TFT LCD display, Support RS232 digital communication, Support SCPI and Labview.



POWER SUPPLY DIGITAL 30V DC

DC Regulated Power Supply is an easy to use, low ripple high regulation precision instrument. It is particularly suitable for experimental development and low voltage applications. Its unique feature is over load protection, which makes it a safe power source for testing of electronic equipment.

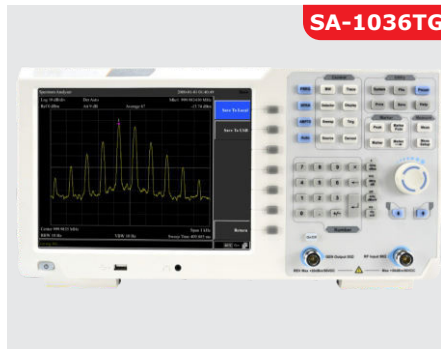




SA-1015TG

SPECTRUM ANALYSER WITH TRACKING GENERATOR 1.5GHZ.

Frequency Range from 9 kHz up to 1.5 GHz, 150dBm Displayed Average Noise Level, Phase Noise -82dBc/Hz @1Gz and offset at 10KHz, Total Amplitude Accuracy <1.5dB, 10Hz Minimum Resolution Bandwidth (RBW), EMI Pre-compliance Test Kit.



SA-1036TG

SPECTRUM ANALYSER WITH TRACKING GENERATOR 3.6GHZ.

Frequency Range from 9 kHz up to 3.6 GHz, 150dBm Displayed Average Noise Level, Phase Noise -82dBc/Hz @1Gz and offset at 10KHz, Total Amplitude Accuracy <1.5dB, 10Hz Minimum Resolution Bandwidth (RBW), EMI Pre-compliance Test Kit, Up to 3.6 GHz Tracking Generator Kit.



SM-1021M-N

FSCOPE - METER HANDHELD SCOPE, 20 MHZ., 1CH

Autoscale, 20 Automatic Measurements, 2 in 1(DSO Multimeter), Single channel, Bandwidth: 20MHz, Support USB for data transmission, TFT true color display(65535 colors), Replaceable li-ion battery back up (6 hours).



SM-1022M-N

SCOPE - METER HANDHELD SCOPE, 20 MHZ., 2CH

2 in 1 (DSO Multimeter), Auto-scale function, FFT function, 20 group automatic measurement options, Bandwidth : 20MHz, USB data transmission supported, Rechargeable Li-ion battery (6 hours' backup), Waveform record and replay, Multi-meter newly supported SCPI.



SMD-1098

SMD TWEEZER METER, RESISTANCE, CAPACITANCE, DIODE WITH PROBE

The Meter is a handheld and battery operated very convenient small Tool, that is specially used to measuring SMD(Surface Mounting Device), there are resistor, Capacitor, Diode, Zener and LED, Moreover, the Meter have the continuity checking function And MAX DC 36V Measurement.



16974

LOW TENSION AC/DC POWER SUPPLY WITH VOLT & CURRENT METER

Low Tension AC / DC Variable Power Supply. Output Voltage can be easily varied with the help of a Variac. Power Supply can be used for variety of applications like in Education, Engineering, Telecommunication, Industrial Electronics, Nuclear Sciences, Analogue and Digital Computers, etc...



**Buyers Visiting
at TESCA
From Multiple Countries**



19002

DECADE RESISTANCE BOXES SIX DIALS

Decade Resistance Box are precision instruments intended for general laboratory use, R&D and educational purposes. These are used as a multiplier, shunt, substitution resistor, or as an arm for AC or DC bridges. Metal Film Resistor Accuracy : $\pm 1\%$, Power rating: 1Watt, Maximum Working Voltage : 500 Volts.



**Work Station ESD
Safe -120 x 60 x 180 cm**



Work Station Table



**Work Station ESD
Safe -120 x 60 x 150 cm**



**Component Organiser -
25 Drawers**



Electronics Work Bench



Electrical Work Bench



On - Grid Solar Power Plant



All in One Solar Light



Solar Street Light



Solar Street Light- High Mast



Solar Water Heater



Solar Power Inverter



Solar Home Lighting System



**Advance Solar Home
Lighting System**



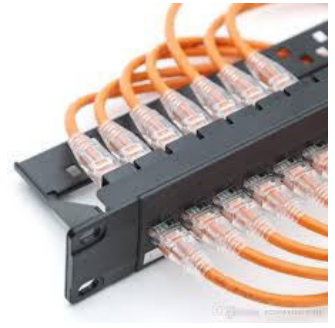
Solar Water Pump



Active Networks



Laptops & Desktop PC



**Passive Network - Cat6/
Patch Panel**



Printers



Projectors



Racks



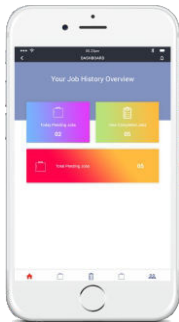
ThinClient & Nodes



UTM Hardware Firewall



Video Conferencing



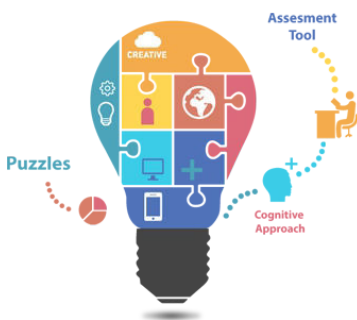
Mobile Applications



Website Development



ERP Solution



IT Solution



E-Learning LMS



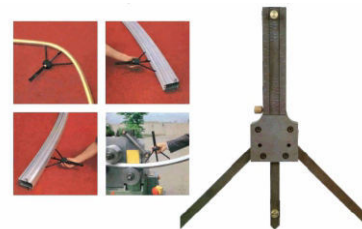
E-Learning CMS



Circle Making Machine



Special Purpose Hydraulic Pipe Bender



Bending Radius Gauge



Reinforcement Bar Bending / Braking Machine



Portable Reinforcement Hydraulic Bar Cutter



Gasoline Concrete Mixer



Tapping Machine



Hydraulic Press & Crimping Plier



Hydraulic Hand Pallet Trucks



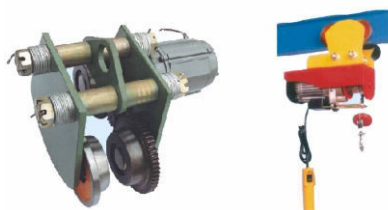
Hydraulic Hose Crimping Machine



Puncture Pipe Repair Clamps



Electric Hoist



Electric Trolley



Hand, Electric & Battery Winch



Drill Machines & Drill & Professional Hammer



Electronics Tool Kit



Coil Winding Machines



Adjustable Spanners



All Type Pliers



Screw Drivers



Screw Driver Bits



Square Drive Socket & accessories



Wrenches



Hammer



C, F - Clamp



Double Ended & Ring Spanners



Chisels, Punches, Centre Punch



Magnetic Products



Bolt Cutters



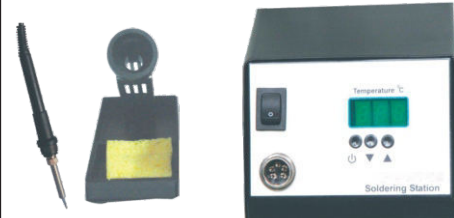
Knife & Cutter Blade



Soldering Station 60W



Soldering Station 90W



Soldering Station 60W with Japanese Ceramic Heater Element



Soldering Station 90W with Japanese Ceramic Heater Element



Soldering Station Lead Free 100W



De Soldering Station



Soldering & Desoldering Station



SMD Rework Station - 2 in 1



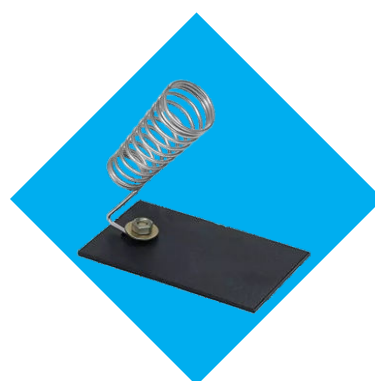
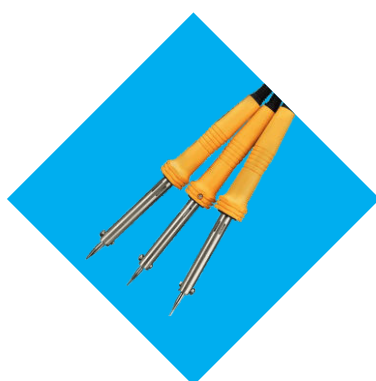
Soldering & De Soldering Digital Rework Station - 3 in 1 - 60 / 70W



Soldering & De Soldering Digital Rework Station - 4 in 1 - 60 / 70W

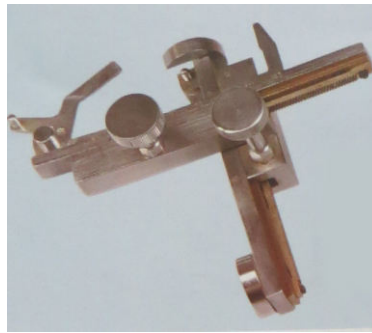


Complete Rework Station





Microscopes



Mechanical Stage Standard



Dissecting Instruments



Kymograph Electrical



Microscope Slides

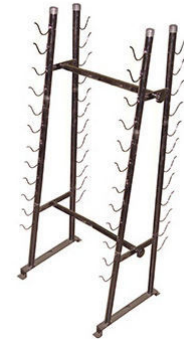
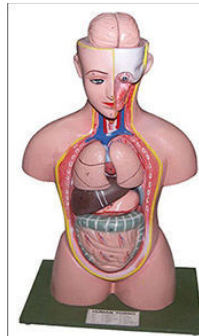


Chart Stand



DNA Model



Human Torsos



Human Skeleton With Stand



Model of Human Eye



Human Brain



Human Lungs



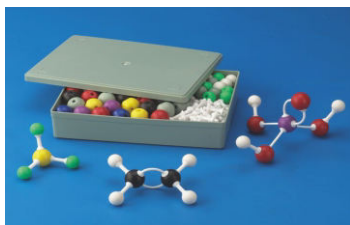
Frog Dissection



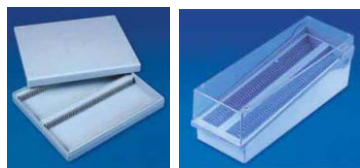
Rabbit Skull



Flower Section Model



Model Sets



Slide Mailers, Boxes & Rack



Float, Twin, & Tube Racks



Centrifuge Tubes



Containers



Vials



Test Plates



Rack for Petri Dishes



Multi Rack



Multy Type Stands



Baskets



Pipette Stand



Measuring Cylinders



Seperatory Funnel



Scoop & Spatula



PCB Art Work Film Maker



Artwork Table (Illuminated)



PCB Shearing Machine



Photo Resist Dip Coating Machine



Double Sided UV Exposure Machine



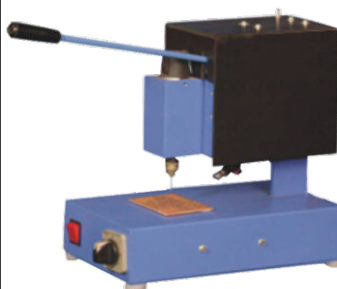
Dye & Developer Machine



DNA Roller Tinning Machine



PCB Etching Machine



PCB Drilling Machine



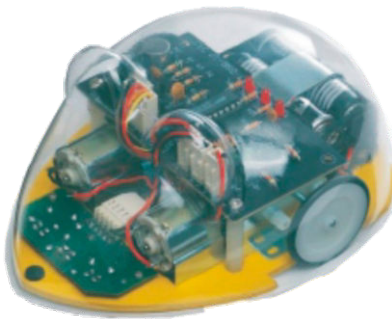
PCB Curing Machine (Oven)

BANGKOK EXHIBITION





6 Axis Industrial Robotic Arm Trainer



Robot - Line Tracking Mouse Kit



Robot - Escape Robot Kit



Robot - Titan Tank Wireless Remot Controlled



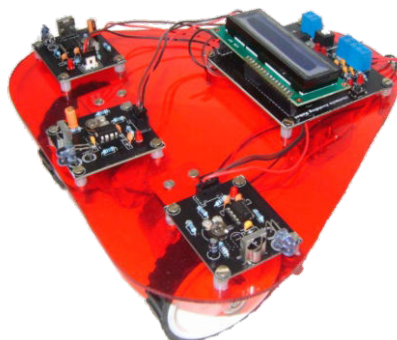
Robot - Robotic Arm USB Based



Robot - 3 in 1 All Terrain Robot Kit



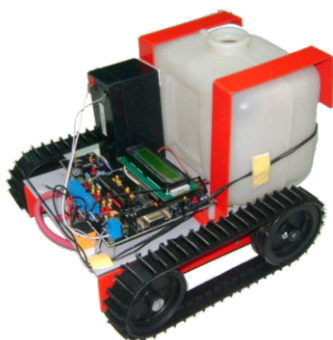
Golbo



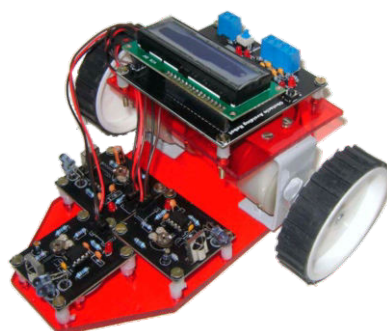
Wall Following Robot



Vacuum Cleaning Robot



Fire Fighting Robot



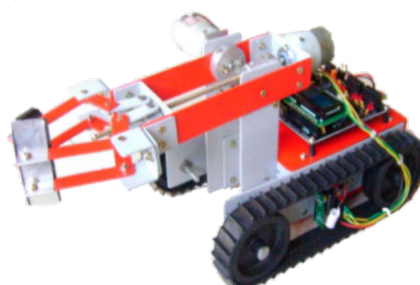
Obstacle Avoiding Robot



Quark-Servo Based Hexapod



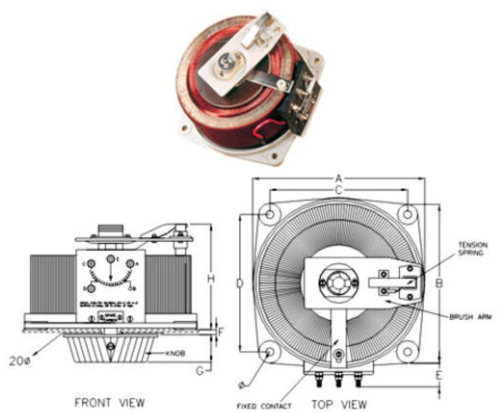
AVS Robotics Workshop Advance Kit



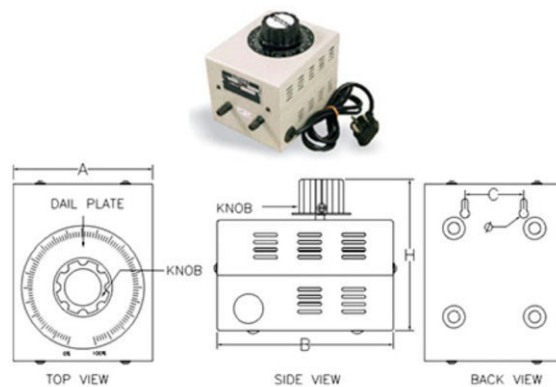
URDP Arm Kit



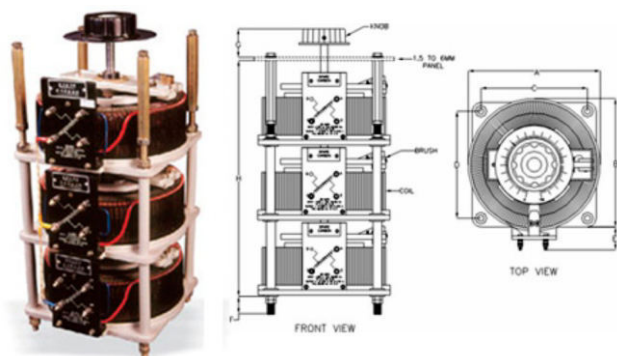
MATLAB based Surveillance Robot



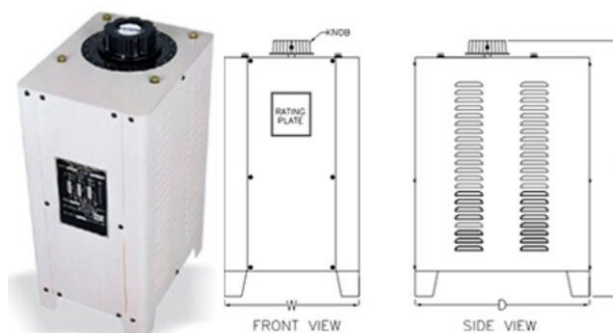
Variac - Single Phase Flush Back of Panel Open



Variac - Single Phase Portable Table / Floor Mounting Enclosed



Variac - Three Phase Flush Back of Panel



Variac - Three Phase Portable Table / Floor Mounting Enclosed

S. No.	Output Current Rating in Amps	Input 230V A.C., Output 270V A.C., 50-60Hz		Input 415V A.C., Output 470V A.C., 50-60Hz	
		F1- Variac - Single Phase Flush Back of Panel, Open	P1- Variac - Single Phase Portable Table/Floor Monuting Enclosed	F3- Variac - Three Phase Flush Back of Panel,Open	P3- Variac - Three Phase Portable Table/Floor Monuting Enclosed
1	0.75A	0.75F1	0.75P1	0.75F3	0.75P3
2	1A	1F1	1P1	1F3	1P3
3	2A	2F1	2P1	2F3	2P3
4	3A	3F1	3P1	3F3	3P3
5	4A	4F1	4P1	4F3	4P3
6	5A	5F1	5P1	5F3	5P3
7	6A	6F1	6P1	6F3	6P3
8	8A	8F1	8P1	8F3	8P3
9	10A	10F1	10P1	10F3	10P3
10	15A	15F1	15P1	15F3	15P3
11	17.5A	17.5F1	17.5P1	17.5F3	17.5P3
12	20A	20F1	20P1	20F3	20P3
13	28A	28F1	28P1	28F3	28P3
14	40A	40F1	40P1	40F3	40P3
15	50A	50F1	50P1	50F3	50P3

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Oman



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Zambia



Emirates Aviation
University
UAE



Asian Development Bank



Food and Agriculture
Organization of the United Nations

Food and Agriculture
Organization of the
United Nations



Eldoret National
Polytechnic, Kenya



OL'Lessos TTI
Kenya



Bushenyi, Kichwamba,
Kyema - Uganda



Mbara University of
Science and Technology
Uganda



National Institute of
Technology Andhra Pradesh
India



Bharat Electronics Ltd
Bangalore, Karnataka
India



Bhartiya Skill Development
University, India



World Skill Center
Odisha, India



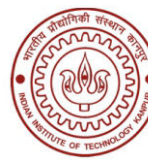
Amity University
Jaipur/Noida, India



National Institute of
Technology Agartala
India



Indian Institute of
Technology Jodhpur
India



Indian Institute of
Technology Kanpur
India



University of Electro
Communication
Tokyo, Japan



Wolaita Sodo University
Ethiopia



University of Jyväskylä
Finland



Princess Nourah Bint
Abdulrahman University
Saudi Arabia



University of Baghdad
Iraq



Challenger Institute
of Technology
Australia



Mumford Technology
University
Ghana



Buradha College
Saudi Arabia



New York University
Abu Dhabi



Soroti University
Uganda



University of the West Indies
West Indies



Manipal University
Malaysia



University Pendidikan
Sultan Idris
Malaysia



University of
Science and Technology
Yemen



Tribhuvan University Central
Department of Physics
Nepal

Worldwide Installations



Installation at Wolaita Sodo University, Ethiopia



Installation at CEDT, Senegal, Dakar



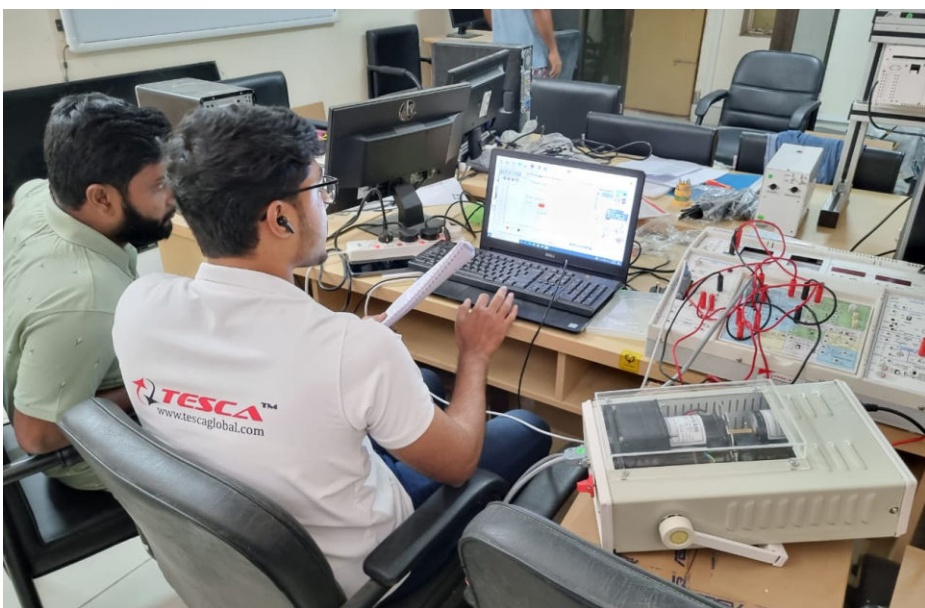
Installation at World Skill Center, Odisha, India



Installation at Eldoret National Polytechnic, Kenya



Installation at Supplied Lab Furniture's at Kashipur, India



Installation at Rajshahi University of Engineering & Technology Bangladesh (CSE Department)

sales 85+ countries

Africa

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Algeria
 Angola
 Benin
 Botswana
 Burkina Faso
 Cameroon
 Egypt
 Ethiopia
 Eritrea
 Ghana
 Ivory Coast
 Kenya
 Lesotho
 Malawi
 Mali
 Morocco
 Mozambique
 Nigeria
 Rwanda
 Somalia
 South Africa
 Sudan
 Tanzania
 Tunisia
 Uganda
 Zimbabwe
 Zambia

Asia

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Bangladesh
 Bhutan
 Brunei
 Cambodia
 China
 Fiji
 Hongkong
 India
 Indonesia
 Japan
 Mangolia
 Malaysia
 Mauritius
 Myanmar
 Nepal
 Pakistan
 Philippines
 Singapore
 Sri Lanka
 Taiwan
 Thailand
 Vietnam

Middle East

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Albania
 Bahrain
 Iraq
 Israel
 Jordan
 Lebanon
 Oman
 Palestine
 Saudi Arabia
 UAE
 Yemen

America/Europe/Australia

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Austria
 Brazil
 Bolivia
 Canada
 Chile
 Ecuador
 Finland
 France
 Germany
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 Honduras
 Iceland
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