



Synchronic Engineering

The sign of excellence

Brand : Synchro
Bangladesh



Item : ELECTRICAL CIRCUIT AND NETWORK TOTAL LAB (MODEL: CNTL-16) (DC Circuit and Network Experiments, AC 1- ϕ and 3- ϕ Experiments)

Features:

- ☞ All the experiments on AC & DC Circuit and Network (more than 60 experiments) can be performed.
- ☞ Trainer is designed to serve Professional level practicals and experiments (ie; voltage, current, power, power factor, load for both 1- ϕ and 3- ϕ)
- ☞ Big size (6 feet \times 6 feet approx), Display (6 feet \times 4 feet approx) Appropriate to demonstration for trainee in a hall room.
- ☞ Attached board for writing and drawing/graphical drawing facility.
- ☞ Easiest learning method for new learners.
- ☞ Precision work, Expected accuracy, Highest durability, Excellent performance.
- ☞ Low cost.

The Following experiments can be performed with this trainer-

DC experiments

- Verification of Ohms law
- Study the Characteristics of Series circuit
- Study the Characteristics of Parallel circuit
- Study the Characteristics of Series-Parallel or Mixed circuit
- Verification of Kirchhoff's Current Law, Voltage law
- Verification of Thevenin's Theorem. Calculation of equivalent emf source and equivalent series resistance
- Verification of Norton's theorem. Calculation of equivalent current source and equivalent parallel resistance
- Verification of Superposition theorem.
- Verification of Maximum Power Transfer Theorem. Calculation of equivalent power source, equivalent source series resistance
- Verification of Reciprocity theorem etc.

AC Experiments

- Study the characteristics of pure resistive, inductive, pure capacitive circuit as individual, series, parallel connected condition.
- Measuring current and voltage in a R-L, R-C and R-L-C series circuit, parallel circuit and drawing vector diagram.
- Determining the value of resistance, inductance, capacitance of R-L, R-C, R-L-C series circuit, Parallel circuit and drawing vector diagram.
- Determining the effective or AC resistance of a coil.
- Measuring the active power, reactive power, apparent power of an electrical load and drawing Power Triangle.
- Measuring the energy consumed by electric load.
- Determining power factor of R-L, R-C R-L-C series and parallel circuit.
- Determining phase sequence of 3-phase voltage EMF source.
- Measuring line and phase voltage & current of 3-phase star connected inductive load and capacitive load.
- Measuring line and phase voltage & current of a 3-phase delta connected inductive load and capacitive load.
- Measuring three phase power by 3-wattmeter method and 2- wattmeter method of a balanced 3-phase star connected and delta connected load.
- Measuring Phase voltage, phase current, line voltage, line current, neutral point voltage, neutral point current, power of a 3 ϕ – 4 wire balanced and unbalanced star connected load. and drawing vector diagram.
- Measuring resonant frequency, Q – factor of R-L-C series circuit and parallel circuit.
- Study the characteristics of PFI device and improving power factor of a plant or a load.

Other Facilities:

- Special Protection system of 440 V direct short-circuit condition
- Three phase supply indication system

Specification:

DC Power Source for DC Practical:

2 Sets DC EMF source arrangement of Cells and Batteries

AC Power source for AC practical :

- **Input voltage:** 1 ϕ = 220V AC, 50Hz ; 3 ϕ = 380 - 400V AC;

- **Output Capacity:**

Resistive Load: 220V, Capacity 1- ϕ = 1200 W (min); 3- ϕ = 1200 W (min);

Inductive Load : 220V, 50 Hz. Capacity 1- ϕ = 120VAR-350VAR , 3- ϕ =350VAR (min);

Capacitive Load : 220V, 50 Hz., Capacity 1- ϕ = 200VAR, 3- ϕ = 200 VAR (min);

Measuring instrument facilities ;

1. DCV & ACV ; Range mV to 600V - 3 nos
2. DCA & ACA ; Range μ A to 10 A - 3 nos
3. Resistance Ω to 40 M Ω - 2 nos
4. capacitance nF to 100 μ F - 2 nos
5. Frequency 1 Hz to 20 MHz - 2 nos
6. Temperature - 20 $^{\circ}$ c to 1000 $^{\circ}$ c - 2 nos
7. Digital Wattmeter up to 6000 watts - 1 no
8. Power factor 0.01to 1, angle 90 $^{\circ}$ to 0 $^{\circ}$ (aprox) - 1 no

Accessories : Standard Accessories, Self centered stand , Drawing/Graphical drawing accessories, jumper and leads of crocodile clips.

Papers : Manual, experiment book, Practical Worksheet.

Dimension : 73 inch (L) \times 72 inch (H) \times 31inch (D) approx

Weight : 35 kg (approx)

Manufacturing : Assembled in Bangladesh.

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