



SALIENT FEATURES :

- 01 Facilitates easy and safe wiring by students due to use of 4mm sturdy Shrouded banana patch cords & shrouded socket arrangements.
- 02 All machines are mounted on finely painted sturdy base frame with easy machine interchangeability. Use of gear coupling facilitates screwless coupling. interchangeability. Use of gear coupling facilitates screwless coupling.
- 03 With due emphasis on student safety machines operate upto 300W power levels and upto 1500 RPM, without compromising on didactic use. Able to draw all graphs.
- 04 Trunnion mounted DC Integrated machine is used as Dynamometer for loading other machines (Motors / generators both); unlike magnetic powder brake or eddy current brake which can load only coupled Motors and not generators, with facility to measure shaft power using electronic torque / speed Measurement

DC Motor Coupled 1ph. Synch. Motor Trainer

Name of the Experiments

- | | |
|---------------|--|
| Experiment-1 | speed torque curve of DC shunt motor with 1 phase synchronous motor |
| Experiment-2 | speed torque curve of DC series motor with 1 phase synchronous motor |
| Experiment-3 | Speed torque curve of separately excited DC motor with 1phase synchronous motor |
| Experiment-4 | Speed torque of DC compound motor with 1 phase synchronous motor |
| Experiment-5 | v-i efficiency curve for DC shunt generator with 1 phase synchronous motor |
| Experiment-6 | v-i efficiency curve for DC series generator with 1 phase synchronous motor |
| Experiment-7 | v-i efficiency curve for DC separately excited generator with 1phase synchronous motor |
| Experiment-8 | v-i efficiency curve for DC compound generator with 1 phase synchronous motor |
| Experiment-9 | v-i efficiency curve for occ of shunt generator with 1 phase synchronous motor |
| Experiment-10 | Speed torque curve of synchronous motor |
| Experiment-11 | Efficiency and input power factor measurement of 1ph. synch. Motor. |
| Experiment-12 | Study of 'V' curve of 1ph. synch. Motor. |
| Experiment-13 | Out volt-amp charACteristics of synchronous motor |
| Experiment-14 | Efficiency of synchronous generator. |
| Experiment-15 | Performance with R, L and C load. |

Panels Provided

- 01 Aluminum Machine trainer Rack
- 02 Multifunction Meter (Single Phase/Three Phase AC 50Hz)
- 03 1 Phase Motor, Alternator & Sync. Motor
- 04 DC voltmeter & Ammeter and Torque Measurement Meter
- 05 Variable DC Power Supply

Note: Specifications are subject to change.

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- 06 Input Single Phase DOL Starter Panel AC DC Fix / Variable Supply
- 07 AC Load Resistor
- 08 AC Load Inductor
- 09 Capacitive (C) Load
- 10 Lamp Load
- 11 Extension Board

Motors Provided

- 01 DC Integrated (Trunnion Mounted) Motor
- 02 1 Phase. Synchronous Motor

Accessories Provided

- 01 Hand held digital Tachometer
- 02 Shrouded connecting leads 4mm 50 / 100cm assorted Red & Black

Technical Specification of Motors



DC INTEGRATED (TRUNION MOUNTED) MOTOR

Voltage : $V_{arm} = 180V$ $V_{field} = 180V$

Capacity -300W/2 Pole m/c, RPM - 1500, Shrouded Socket - 12

Rotor Construction: Standard commutator / brush arrangement with laminated stack, brought out on 2 terminals

Stator construction : Separately excited field winding with laminated solid yoke 2 pole and series winding brought out on 4 terminals.

Toque characteristic: Provision of load cells 6 Kg. 2 No. assembly to measure the torque .



1 PHASE. SYNCHRONOUS MOTOR

Voltage : 230 VAC, 50Hz

Capacity -300W/4 Pole m/c, RPM - 1500, Shrouded Socket - 8

Rotor Construction : Single phase wound rotor with terminals brought out on two slip rings mounted on shaft.

Stator construction : One winding will be used to configure synchronous motor & Alternator output when used as single phase generators.

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Technical Specification of Panels

MULTIFUNCTION METER (Single Phase/ Three Phase AC 50Hz)



- 1 Bidirectional Multifunction Meter
- 2 3 Phase 4 wire, 440V, Current 5A
- 3 LED display,
- 4 Aux supply 230V, 45-65Hz, 5W
- 5 To measure parameters ie Voltage Current., KVA, Frequency, Power factor, Active Power (W), Reactive Power (vary) etc.
- 6 Shrouded socket 08Nos. etc.

AC LOAD RESISTOR



- 1 AC Resistors
10K/5K/3.5K/2.5K/2K/1.5K/OFF
200W x 3 phases/ 6 taps
- 2 Load Resistance switch 3 POL
7 Way/10Amp.
- 3 Cooling Fan size 4" 230V
Operated
- 4 Shrouded socket 12Nos.

1 PH. MOTOR, ALTERNATOR & SYNC. MOTOR



- 1 1 ph. MCBs of 4A/1.6A 1 each.
- 2 2 no. 2P2W selector switches to run as 1ph. Alternator then as synchronous motor.
- 3 2A push button switch to simulate as centrifugal switch.
- 4 1 Lamp load holder with lamp
- 5 Shrouded socket 14Nos.

AC LOAD INDUCTOR



- 1 Inductive load =0.15H/0.3H/
0.45H/0.6H/0.75H/1.5H/3H/
400mA X 3Nos.
- 2 Load inductor switch 3 Pole
7 Way/10Amp.
- 3 Shrouded socket 12Nos.

DC VOLTMETER & AMMETER WITH TORQUE MEASUREMENT METER



- 1 TWO DPM DC voltmeter
(0-1000V)
- 2 TWO DPM DC Ammeter (0-20A)
- 3 Torque Measurement Meter
- 4 Shrouded socket 16Nos.

CAPACITIVE (C) LOAD



- 1 Capacitive load =1.25mF
/2.5mF/5mF/440VX 3Nos
- 2 Shrouded socket 18Nos.

LAMP LOAD



- 1 3 Nos. Lamp 100W with
Holder & switch
- 2 Shrouded socket 12Nos.

VARIABLE DC POWER SUPPLY



- 1 Half bridge SCR based 0V-200V / 3
Amp cosine firing with linear
characteristics, 3 Nos. Switch SPDT
to On/Off with indication
- 2 Three Nos. of these supplies required
for DC Armature, DC motor field and
AC generator field.
- 3 Shrouded socket 8Nos.

EXTENSION BOARD

- 1 Operating Voltage 230VAC \pm 10% at 50Hz
- 2 ON OFF Switch with indicator
- 3 Eight Nos. five pin 5 Amp Electrical Sockets

INPUT SINGLE PHASE DOL STARTER PANEL AC DC FIX / VARIABLE SUPPLY



- 1 MCB 2 pole 10A with indicator
 - 2 Emergency Switch
 - 3 Push button switch for Stop/Start
 - 4 DOL 9A Contractor with 230V /
50 Hz / 11VA Coil .
 - 5 Shrouded socket 4Nos.
- Variable AC Supply (0-200V)**
1 Shrouded socket 6Nos.
- Fix/Variable DC Supply (0-200V)**
1 Shrouded socket 4Nos.

ALUMINUM FRAME - MODULAR PANELS



Electrical motor trainer rack madeup aluminium profile size 40×40mm, foldable and light in weight 10 panel setup can be interchange conveniently to perform experiments. Dimension Length1100×Hieght 1000×Depth 350mm.

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