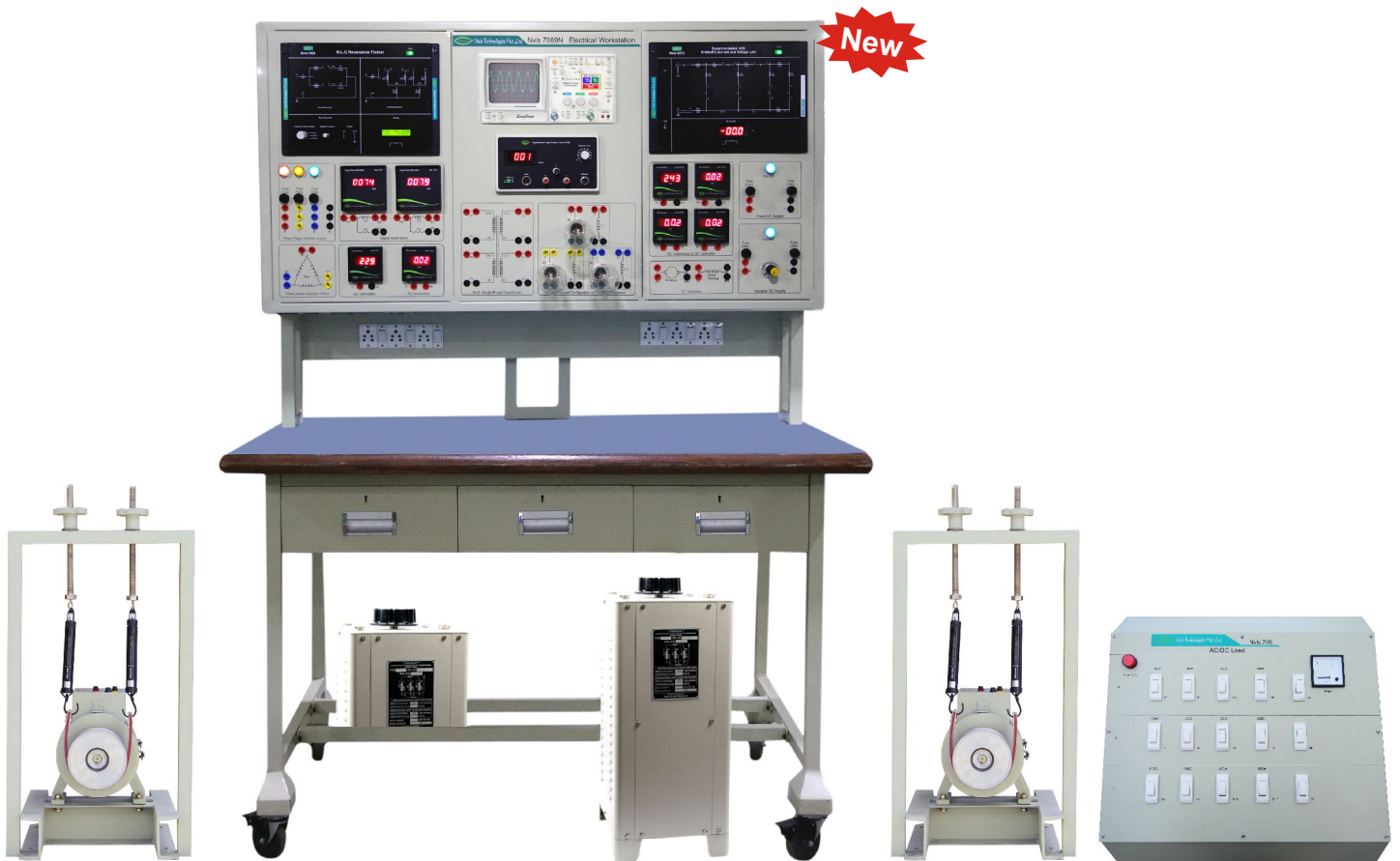




Electrical Workstation

Nvis 7089N



Nvis 7089N Electrical Workstation offers an excellent approach to the teaching of Electrical Machines principles by introducing a unique modular designed control unit. It provides flexibility for the students to carry out experiments over AC and DC Machines using a large selection of Industry standard inbuilt components.

Electrical Machines is one of the most important area of study as it helps users to understand the operational characteristics and working of AC and DC Machines. Nvis 7089N enables user to put their theory knowledge into practice with ease. There is an additional facility to make wireless connection on workstation with computer and to monitor real time electrical parameters using computer interfacing software. Users can also observe a real time graph between any of the AC and DC electrical parameters on computer.

Workstation comprises of separate AC and DC measuring sections equipped with all the necessary instruments such as digital meters, facility to connect AC and DC Supplies along with protection devices such as Fuses, MCB's, Supply Indicators, etc. There are multiple buses provided on the Workstation to make external connections while performing AC and DC Machines Experiments.

The design of the control unit ensures to get the highest quality practical experience to user. All the necessary protective measures are taken to avoid fault or danger.



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Features

- Rust Free Powder Coating Structure
- Equipped with Measurement Facilities for Experimentation on AC Machines, DC Machines and Transformers Separate AC and DC Measuring Sections
- Built-in DC Power Supply (Fixed and Variable) Compatible with DC Shunt Machine.
- Built in Inductive load (500 mA 3 nos.)
- Diagrammatic representation of AC and DC Machines for better understanding
- Standard BS-10 terminals, patch cords for safety purpose
- High Quality Digital Tachometer for RPM Measurement
- Machines provided with Heavy Duty Base/Channel with suitable interconnection
- Machines provided with suitable protections such as MCB's, Fuses, etc.
- Motors provided with standard Mechanical Loading Arrangement Facility
- Motors with "aluminum" casted Brake-Drum/Pulley with heat suppression facility with spring balance
- Inbuilt Resonance circuit module :- Low cost Board demonstrating both Series and Parallel Resonance to determine its Resonance Frequency on the same board with Inbuilt Signal Generator, Voltmeter and Frequency Counter
- Experiments can be performed with Inbuilt Oscilloscope & Inbuilt Power Supply
- Inbuilt Hysteresis Loop Tracer module : Display of magnetic field in gauss with Variable magnetic field
- Provided good quality solenoid coil
- Inbuilt KCL & KVL Trainer Module :- Built DC power supply and DC Ammeter
- Diagrammatic representation for the ease of connections
- System should have Simtel (at least single user) Technology based, user friendly and easy navigation, detailed theory, explanation of complex topics with animations and user interactive simulations.
- Inbuilt High Quality 30 MHz CRO for signal analysis & Measurements

Technical Specifications

Electrical Measuring Instruments

AC Ammeter (2 Nos.)

Type : Digital

Range : 10A

AC Voltmeter (2 Nos.)

Type : Digital

Range : 450V

DC Ammeter (2 Nos.)

Type : Digital

Range : 20A

DC Voltmeter (2 Nos.)

Type : Digital

Range : 500V

Single Phase Wattmeter (2 Nos.)

Type : Digital

Range : 1.5kW (Customized)

Resolution : 1W

Protective Devices

Three Phase MCB (TPN): 2 Nos.

Single Phase MCB (DP) : 1 No.

Interconnections : 4mm BS-10 Safety Terminals

For Resonance trainer Inbuilt Module:

Mains Supply : 90 - 275V, 50/60Hz

Generator Output : 8Vpp

Frequency Ranges : 1KHz, 10KHz, 60KHz

Voltmeter : 2V

For Hysteresis Loop Tracer Inbuilt Module:

Display : 3½ digit

Sample Type : Soft Iron, Nickle, Hard Steel

Length : 39mm

Diameter : 1.00mm (approx.)

Diameter of pickup coil : 3.21mm

Mains Supply : 230V ±10%, 50Hz



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For KCL & KVL Inbuilt Module:

Mains supply	: 230V \pm 10%, 50Hz
DC Power supply	: +12V
Fuse	: 500 mA, slow blow
DC Ammeter Range	: 2 μ A to 200mA
Display	: 3 ½ digit

Machine Specification

Type	: Shunt
Power Rating	: 0.5 HP
Voltage Rating	: 230V DC \pm 5%
Rated Speed	: 1500RPM \pm 7.5%
Insulation	: Class 'B'
Loading arrangement	: Mechanical
Spring Balance	: 2Nos.(Tubular Type)
Brake Drum/Pulley	: Aluminum casted with heat suppression Facility
Machine Base	: "C" Channel
Protection	: Fuses (mounted at the terminal box of the Machines)

Three phase Induction Machine

Type	: Three Phase Squirrel Cage Induction Motor
Power Rating	: 1HP
Voltage Rating	: 415V AC \pm 5%, 50Hz
Rated Speed	: 1440RPM \pm 7.5%
Insulation	: Class 'B'
Loading arrangement	: Mechanical
Spring Balance	: 2Nos.(Tubular Type)
Brake Drum/Pulley	: Aluminum casted with heat suppression Facility
Machine Base	: "C" Channel
Protection	: Fuses (mounted at the terminal box of the Machines)

Scope of Learning

Study of

- Operational Working Principle of DC Shunt Motor
 - Running and reversing phenomenon of DC Shunt Motor
 - No Load Characteristic of DC Shunt Motor
 - Load Characteristic of DC Shunt Motor
 - Speed control of DC Shunt Motor using armature voltage control
 - Running and Reversing of Three Phase Induction Motor
 - No Load Test performed in a Three Phase Induction Motor
 - Block Rotor Test performed in a Three Phase Induction Motor
 - Series R-L-C Resonance and to determine its Resonance Frequency.
 - Parallel R-L-C Resonance and to determine its Resonance Frequency
 - Transformation Ratio in a Single Phase Transformer
 - Polarity Test in a Single Phase Transformer
 - Open Circuit Test in a Single Phase Transformer
 - Short Circuit Test in a Single Phase Transformer
 - Load Test and correspondingly determine the Efficiency and Voltage Regulation in a Single Phase Transformer
 - Speed-Torque characteristics in a Three Phase Induction Motor
 - Measurement of Slip in a Three Phase Induction Motor
 - Understanding the following magnetic parameters and their measurement by this set up: Coercively Retentively Saturation magnetization Various magnetic phase identification Hysteresis loss
 - 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
 - Verification of Kirchhoff's Current Law
 - Verification of Kirchhoff's Voltage Lab
- Necessary require equipments with Workstation separately**
- Three Phase Autotransformer (10 Amp)
 - Single phase Auto Transformer (10 Amp)
 - AC/ DC Load (10 Amp)

