

## Electrical Vehicle Testing & Measurement Workbench

### Specifications:

It offers an excellent approach to learn complete fundamental aspects of Electrical Vehicle with a new updated technology and measurement devices.

### Features

- 1 Built-in Drives to operate PMSM, BLDC, PMDC & Induction Motor.
- 2 Standard BS-10 terminals, patch cords for safety purpose
- 3 High Quality Digital Tachometer for RPM Measurement which is also interfaced with DAQ (Data Acquisition System)
- 4 Motors provided with standard Mechanical Loading Arrangement Facility
- 5 Motors with "aluminum" casted Brake-Drum/Pulley with heat suppression facility
- 6 Rust Free Powder Coat mechanical structure
- 7 Machines with Class "B" Insulation
- 8 Designed by considering all the safety measures

### Technical Specifications:

- 1 Operating Voltage : Three phase, 415V  $\pm$ 10%, 50Hz
- 2 Control Circuits
- 3 Three Phase Induction Motor Drive
- 4 Make : Siemens
- 5 Topology : V/F
- 6 Input Voltage : Three phase, 415V  $\pm$ 10%, 50Hz
- 7 Power Rating : 1HP Output Frequency Range : 0-599Hz
- 8 Protection Class : IP20 BLDC Drive
- 9 Voltage Rating : 24V
- 10 Current Rating : 10Amp.
- 11 Function : Speed reversal & braking

### PMDC Drive

- 1 Fixed DC
- 2 Output Voltage : 220V  $\pm$ 10%, 2A Variable
- 3 Output DC Voltage: 0-220V  $\pm$ 10%, 12A
- 4 Function : Separately & Self Excited Mode

### PMSM Drive

- 1 Frequency : 0-400Hz
- 2 Graphical LCD : (128 X 64 Pixels) Electrical Vehicle Machines

### Three Phase Induction Motor

- 1 Type : Squirrel Cage Rating: 1HP
- 2 Voltage Rating: Three Phase
- 3 Speed: 1440 RPM  $\pm$  5%
- 4 Insulation: Class B
- 5 Loading arrangement: Mechanical Brake Drum/Pulley: Aluminum Casted

**BLDC Motor**

1 Mains Supply: Single Phase, 230V  $\pm 10\%$ , 50Hz Machine Type: BLDC Rating: 200W Voltage Rating: 24V  
Current: 8 A Speed: 2500 rpm  $\pm 10\%$  Loading arrangement: Mechanical Brake Drum/Pulley: Aluminum casted

**PMDC Motor**

1 Rating: 1HP  
2 Voltage rating : 220V  $\pm 10$  Speed: 1500 RPM  $\pm 5\%$   
3 Insulation: Class B  
4 Loading arrangement: Mechanical Brake Drum/Pulley: Aluminum Casted

**PMSM Motor**

1 Rating: 1HP  
2 Speed: 1440 RPM  $\pm 5\%$   
3 Insulation: Class F  
4 Loading arrangement: Mechanical Brake Drum/Pulley: Aluminum Casted  
5 Electrical Measuring Instruments

**AC Ammeter**

1 Type : Digital  
2 Range : 10A

**AC Voltmeter**

1 Type : Digital  
2 Range : 450Vrms DC Ammeter  
3 Type : Digital  
4 Range : 20A

**DC Voltmeter**

1 Type : Digital  
2 Range : 300V

**Test and Measuring Instruments**

Electrical Data Acquisition System includes three inputs each for Voltage and Current, two inputs each for DC Voltage and DC Current to measure an entire Three Phase Parameters and DC Parameters such as AC and DC Voltage, AC and DC Current, Active Power, Reactive Power, Apparent Power, Power Factor, Frequency, etc. along with Over Load Protection Indicators and buzzer at the same time.

All these parameters will be displayed on the PC Software screen provided with the product. Electrical Data Acquisition System is compatible for three phase/three wire and three phase/four wire configurations. User can also plot a real time graph between any of these parameters on computer through the facility of wireless connectivity.

**Technical Specifications**

- 1 Communication Frequency : 2.4GHz RF Power : 1mWatt
- 2 Range : 10Mtr.
- 3 Antenna : 2Nos

**Measurement Ranges**

- 1 AC Voltage Range : 25-450Vrms, accuracy  $\pm 1\%$
- 2 AC Current Range : 0.20-10Amp, accuracy  $\pm 1\%$
- 3 DC Voltage Range : 25-300Vrms, accuracy  $\pm 1\%$
- 4 DC Current Range : 0.20-15Amp, accuracy  $\pm 1\%$
- 5 Frequency : 45-55Hz, accuracy  $\pm 0.5\text{Hz}$
- 6 Active Power : 50-3000Watts, accuracy  $\pm 2\%$
- 7 Reactive Power : 50-3000Watts, accuracy  $\pm 2\%$
- 8 Apparent Power : 50-3000Watts, accuracy  $\pm 2\%$
- 9 Power Factor : 0.30 to 0.99 both Lead and Lag, accuracy  $\pm 3^\circ$
- 10 Electrical Speed : Up to 2500 RPM
- 11 Torque : 0-25 N-m
- 12 Auxiliary Supply : 230VAC  $\pm 10\%$ , 50Hz

**Battery Parameter Tester**

Battery tester will test lead acid batteries, NiCD batteries as well as lithium-ion batteries. It will measure and record battery voltage, impedance, and temperature. It also supports discharge testing. It will measure the voltage and current throughout the discharge cycle can also measure the impedance and temperature throughout the discharge cycle.

**Features**

- 1 Measures impedance on cells up to 200 V
- 2 Measures cell impedance, Cell voltage, Cell temperature, Cell voltage ripple, AC current (ripple), DC current (float)  
Supports battery discharge testing
- 3 Supports lead acid, NiCD and lithium-ion Measures DC voltages up to 1000 V
- 4 Measures AC voltages up to 600 V
- 5 Touch screen set-up and trending
- 6 USB and micro SD card
- 7 Measures AC and DC current



Note Shown image is just for illustration original may differ

**Technical Specifications Input Power AC/Adapter**

- 1 Input : 100–240 V AC (50/60 Hz)
- 2 Output : 12 V DC at 2.5 A.

**Battery**

- 1 Li-ion rechargeable pack : > 5.4 Ah
- 2 Voltage rating : 7.4 V
- 3 Charge time : 4 hrs
- 4 Battery life : > 8 hrs with 300 charge/discharge cycles
- 5 Internal Impedance : 3mΩ - 3000

- 1 Voltage (AC/DC) : 5V–600V
- 2 Current (AC/DC) : 4A–600A
- 3 Record Capacity
- 4 Memory : 8 G up to 16 G flash storage
- 5 Impedance record : Max 1000 records
- 6 VA record : Max 512 records

**Application**

- 1 Battery impedance testing
- 2 Battery discharge testing
- 3 Solar combiner box measurements up to 1000 V DC
- 4 Lithium-ion battery testing up to 200 V DC
- 5 Machine Parameter Tester Introduction
- 6 Motor Tester suite of insulation resistance tests (IR). It takes the test abilities of proven IR test instruments adding DLRO four wire Kelvin low resistance test, inductance and capacitance tests to provide a versatile motor tester, all packaged in a robust hand held instrument, which up to now has simply not been available.
- 7 Additionally, It incorporates temperature measurement and compensation (for IR tests), motor direction of rotation plus supply phase rotation tests.
- 8 These new test abilities make it a real world, versatile, hand held motor test instrument.
- 9 It comes in an over-moulded case, providing increased protection and robustness, achieving an IP54 weatherproof rating

**Features**

- 1 Guard terminal, to eliminate any surface leakage current.
- 2 Detachable test leads with interchangeable clips and probes for different applications.
- 3 Stores test results for up to 256 motors, which can be downloaded to a USB mass storage device.
- 4 Rotary dial control, full graphic display, simple and easy to use.
- 5 Environmental protection to IP54, providing protection against moisture and dust ingress, including the battery and fuse compartment.
- 6 Rechargeable batteries with mains charger kit option.

**Applications**

- 1 Production tests for new manufactured motors and generators.
- 2 Test repaired and refurbished motors and generators.
- 3 Monitoring and maintenance of in service motors (off line) in the field

