

ELECTRICAL MACHINE TRAINERS

EM-30300

EDU-LABS



The EDU-LABS EM-30300 Electrical Machine Trainers has been designed for experimental and testing in electrical machines in education.

The machines are basically industrial models, self protect kind, with coupling half-joint, especially equipped to be suitable for student training in laboratory. For this purpose the winding ends are connected to 4 mm safety socket in a metal housing on top of which a clear synoptic diagrams as educational terminal board. The student can easily understand operation and winding connection. Also most of accessories and instruments designed in Panel System A4 high in standard. The machines powers are 370W, as the supply requirement for the system operation requires 240/415V, 50Hz.

- Modularized design providing the most flexible requirement of this experimental equipment.
- Each Module panel height compatible with DIN A4 standard.
- Using 4 mm safety sockets and plugs.
- Each DC/AC power supply equipped with overload protection.
- Adopting digitized and microprocessor-based measuring instrument to provide high-accuracy measurement.
- AC & DC Generator Brake with constant speed/constant torque function, easy to operate.

**DC SHUNT WOUND MACHINE
EM-30-01-01**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**DC SERIES WOUND MACHINE
EM-30-01-02**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**DC COMPOUND WOUND MACHINE
EM-30-01-03**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**THREE PHASE INDUCTION MOTOR
EM-30-02-01 (1/2HP) (3 UNITS)**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 450 / 690V (Delta/Star)
- Nominal Current: 2.50 / 1.50A (Delta/Star)
- Nominal Speed: 3000 rpm
- Cooling Method: Self Cooling Fan
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**THREE PHASE SLIP RING MOTOR
EM-30-02-02**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 240 / 415V (Delta/Star)
- Nominal Current: 4.5 / 4.0A (Delta/Star)
- Nominal Speed: 1500 rpm.
- Frequency: 50Hz
- Cooling Method: Self Cooling
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**THREE PHASE SYNCHRONOUS MACHINE
EM-30-03-02 (Field Excitation)**



- Nominal Power: 350W (1/2HP)
- Nominal Voltage: 240 / 415 V (Delta/Star)
- Nominal Current: 1.85 / 2.85 A (Delta/Star)
- Nominal Speed: 3000 rpm
- Frequency: 50 Hz
- Excitation Voltage: 0 ~ 110 VDC
- Excitation Current: 0.25 A
- Winding Poles: 2
- Cooling Method: Self Cooling
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**SINGLE PHASE CAPACITOR START MOTOR
EM-30-04-01**



- Nominal Power: 375W
- Nominal Voltage: 240VAC
- Nominal Current: 2.5A
- Nominal Speed: 1500rpm
- Frequency: 50Hz
- Power Factor: 0.78
- Winding Poles: 4
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**SINGLE PHASE CAPACITOR START & RUN
MOTOR EM-30-04-02**



- Nominal Power: 375W
- Nominal Voltage: 240VAC
- Nominal Current: 2.5A
- Nominal Speed: 1500rpm
- Frequency: 50Hz
- Power Factor: 0.78
- Winding Poles: 4
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit

**SINGLE PHASE SPLIT PHASE MOTOR
EM-30-04-04**



- Nominal Power: 375W
- Nominal Voltage: 240VAC
- Nominal Current: 2.5A
- Nominal Speed: 1500rpm
- Frequency: 50Hz
- Power Factor: 0.78
- Winding Poles: 4
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS

**UNIVERSAL AC/DC MOTOR
EM-30-04-05**



- Nominal Power: 350W (AC/DC)
- Nominal Voltage: 240 V (AC/DC)
- Nominal Current: 3.0 A
- Nominal Speed: 3000 rpm.
- Frequency: 50 Hz
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS

**DC GENERATOR BRAKE
EM-30-06-05**



- Nominal Power: 750W (1HP)
- Nominal Voltage: 220VDC
- Nominal Current: 2.0A
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Cooling Method: Self Cooling
- Base Plate: Attachable To Break Load Unit

**THREE PHASE AC GENERATOR BRAKE
EM-30-06-07**



- Nominal Power: 750W (1HP)
- Nominal Voltage: 240/415AC
- Nominal Current: 2.5A
- Nominal Speed: 3000 rpm.
- Frequency: 50 Hz
- Excitation: Permanent Magnet
- Cooling Method: Self Cooling
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Motor Unit

**TORQUE SPEED MEASURING MODULE
EM-30-06-19**



- Modular design
- Power Supply: 240 V, 50/60 Hz
- Unit Type: Panel H2
- Torque range: -99999-99999 N.m.
- Torque display: 0-99999N.m
- Speed display: 0-99999
- Power consumption: 0-99999
- Measurement resolution: support resolution 1/1000000
- Measuring speed: 25 times per second
- Pulse input signal: all kinds of output sensor signal, like NPN, PNP, OC, switches and rotary encoder
- Measurement Frequency: Speed pulse input 0.3Hz~20KHz Torque pulse input, 5KHz~15KHz, can extend to 1HZ~60KHZ
- Standard transmitter output
 - Optoelectronic isolation
 - Two 4mA~20mA DC current output, Output resolution ratio: 1/4000; error less than $\pm 0.2\%$, F.S, loading capacity: less than 600 Ω
- External Power Supply: $\pm 15\text{VDC}$ or 24VDC optional, loading capacity more than 300mA
- Serial communication port as standard configuration
 - Optoelectronic isolation
 - RS232 default setting or RS485 optional

**AC/DC GENERATOR BRAKE CONTROLLER
EM-30-06-06**



- Modular design
- Suitable for all type of AC and DC Generator Brake up to 2HP
- Measurement Range: 0% to 100%
- Protection: Fuse
- Unit Type : Panel H2
- Terminals: 4mm Safety Sockets

**EXPERIMENT PANEL FRAME
EM-30-16-02-02**



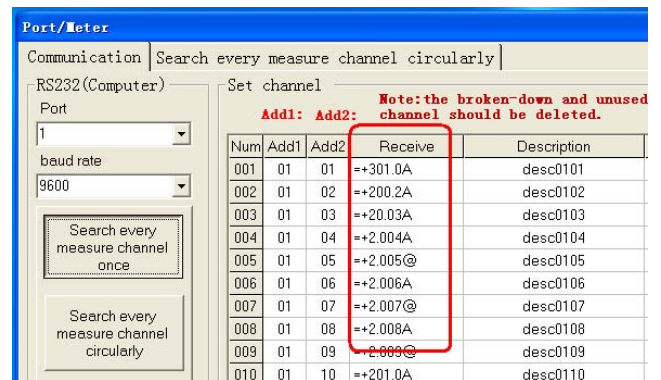
- Din Standard A4 With Two Shelves
- Side Frame: T Shape
- Dimension:
 - Length : 1450mm
 - Width : 20mm
 - Height : 300mm

**TORQUE SENSOR MODULE
EM-30-06-18**



- Motor direct coupling design
- Sensor Type: Noncontact rotation torque transducer
- Max. torque: $\pm 10\text{Nm}$
- Max Rotation speed: 12000rpm
- Torque Output: Frequency
- Speed Output: Frequency
- Connection: Shaft and Coupling

**TORQUE MANAGEMENT SOFTWARE
EM-30-06-20**



- PC management software
- Data collection the measured data by computer serial port
- Display and save the real-time data
- Transform the saved data to TXT, EXCEL file
- By curve analyses, curve print, trend browse, report generation, report edition and report print, etc.

**DIGITAL DC VOLTMETER
EM-30-13-01**



- Modular design
- Measurement range : DC 0 ~ 600V
- Display : 3 ½ digits 14.2 mm LED
- Accuracy : $\pm 0.2\% \pm 1$ digit
- Resolution : 1V
- Input impedance : $1\text{M}\Omega$
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**DIGITAL DC AMMETER
EM-30-13-02**



- Modular design
- Measurement range : DC 0 ~ 10A
- Display : 3 ½ digits 14.2 mm LED
- Accuracy : $\pm 0.3\% \pm 1$ digit
- Resolution : 0.01 A
- Input impedance : $< 0.1\Omega$
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**DIGITAL AC VOLTMETER
EM-30-13-03**



- Modular design
- Measurement range : AC 0 ~ 600V
- Display : 3 ½ digits 14.2 mm LED
- Accuracy : $\pm 0.2\% \pm 1$ digit
- Resolution : 1V
- Input impedance : 1M Ω
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**DIGITAL AC AMMETER
EM-30-13-04**



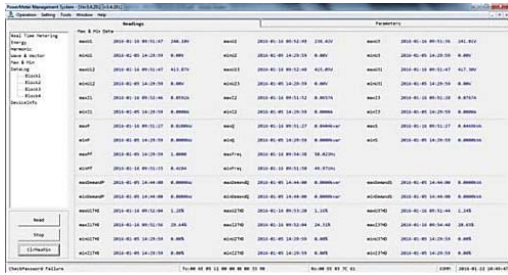
- Modular design
- Measurement range : AC 0 ~ 5A
- Display : 3 ½ digits 14.2 mm LED
- Accuracy : $\pm 0.3\% \pm 1$ digit
- Resolution : 0.01 A
- Input impedance : < 0.1 Ω
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**THREE PHASE POWER QUALITY METER
EM-30-13-16**



- Modular design
- Display Type: HD LCD Display
- Real-Time Measurement
 - Phase voltage: V1, V2, V3, Vlnavg Line voltage: V12, V23, V31, Vllavg Current: I1, I2, I3, Iavg, In Active power: per phase and total active power Reactive power: per phase and total reactive power Apparent power: per phase and total
- Energy And Demand
 - Four quadrant active energy: Import, Export, Total, Net Four quadrant reactive energy
- Power Quality Analysis
 - Voltage unbalance Current unbalance Voltage THD (Total harmonic distortion), Odd-even harmonic distortion Voltage individual harmonics, Crest factor Current THD, Odd-even harmonic distortion Current individual harmonics, K factor
- Communication
 - Ethernet 10/100M network port
 - RS485 communication port
 - MODBUS RTU communication protocol
- Settable Logging Interval
 - Logging from 1min to 60min, interval settable
- Software Accessibility
 - 4 Tariffs (DataLog) Sharp, peak, flat, valley in different season and schedule (TOU)
- PowerMeter Management Software Interface
- Accuracy: $\pm 0.5\%$
- Protection: Fuse
- Power Supply: AC240VAC, 50Hz
- Terminals: 4mm Safety Socket
- Unit Type : Panel H2

**POWER MANAGEMENT SOFTWARE
EM-30-13-16-PMS**



- PC management software; web browse data
- True-RMS measuring parameters
- ANSI and IEC 0.2 accuracy class
- Power quality analysis
- 4 quadrant energy
- Data logging
- Measure individual harmonics from 2nd to 49th
- TOU, 4 Tariffs, 6 Seasons, 6 Schedules

**MOTOR COUPLING SLEEVE & SAFETY GUARD
EM-30-15-04**



- Coupling sleeve for mechanical connection of two Electrical Machines.
- Coupling guard
- Material : Epoxy Coated Plate
- Attachable guard for protection against contact with electrical machines rotating parts

**TACHOMETER
EM-30-11-07**



- Range: 5 to 99,999 RPM
- Resolution:
 - 0.1RPM <1000RPM
 - 1RPM >1000RPM
- Display: 5 Digits, 10mm (0.4")LCD
- Accuracy: ±0.05%+1 Digits
- Photo Detection Distance: 50 to 150mm
- Battery: 1.5V AA x 4 pcs
- Memory: Last Value, Max. Value, Min. Value
- Size: 190 x 72 x 37 mm
- Weight: 250g

**CONNECTING SAFETY TEST LEAD SET WITH
BRIDGING PLUG SET EM-30-15-01**



- The set consists of 2 type lead set and 2 type bridging plug set in 5 different coded colors and lengths chosen to allow the realization of all experiment manual.
- Leads are capable of 15A current safety plugs.
- Safety Terminal Socket (4mm): 25cm x 15 units; 50cm x 20 units; 100cm x 15 units
- 19mm Bridging Plug Set x 10 units
- 19mm Bridging Plug Set (Stackable) x 10 units

**STAR DELTA STARTING SWITCH MODULE
EM-30-10-01**



- Modular design
- Switch load: 400VAC/15A
- Switch positions: 0-1-2 (0-Y-Δ)
- Unit Type : Panel H1
- Terminals : 4 mm safety sockets

**ROTATION REVERSING SWITCH MODULE
EM-30-10-02**



- Modular Design
- Switch Load: 400VAC/15A
- Switch positions: FORWARD-OFF-REVERSE
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets (Color Coded)

**UNIVERSAL AC/DC POWER SUPPLY
EM-30-09-10-03**



Three Phase Power Supply

- Power Input: 3 Phase 240V/415V, 50Hz via input 5 core cable with 5 pin AC Plug, 32A.
- 5 Pin AC Socket 16A.
- Indicator: 3 pilot lamp for power line in three color coded. (Red, Yellow & Blue)
- Connection: 3P+N+PE.
- Protection: Earth leakage circuit breaker and miniature circuit breaker.
- Three Pole ON/OFF Selector Switch.
- Fixed Three Phase AC Power supply: 3 x 415V AC; 13A AC (Line To Line)
- Fixed Single Phase AC Power supply: 3 x 240V AC; 13A AC (Line To Neutral)

Three Phase Adjustable Power Supply

Power Input: 3 Phase 240V/415V, 50Hz via

- input 5 core cable with 5 pin AC Plug, 32A.
- 5 Pin AC Socket 16A.
- Indicator: 3 pilot lamp for power line in three color coded. (Red, Yellow & Blue)
- Connection: 3P+N+PE.
- Protection: Miniature circuit breaker (3 Pole)
- Voltmeter Selector Switch
- Voltmeter (0 ~ 500VAC)
- Adjustable Three Phase AC Power supply: 0 ~ 450V AC; 12A AC (Line To Line)
- Adjustable Single Phase AC Power supply: 0 ~ 450V AC; 12A AC (Line To Neutral)
- Adjustable DC Power supply: 0 ~ 450V DC; 12A DC

AC/DC Variable Power Supply

- Fixed Single Phase AC Power Supply: 240VAC, 50Hz
- Adjustable Single Phase AC/DC Power Supply (Simultaneously) :
 - 0 ~ 250VAC, 0 ~ 5A AC
 - 0 ~ 250VDC, 0 ~ 5A DC
- AC/DC Voltmeter & AC/DC Ammeters provided to indicate output volts and amps.

AC Socket Outlet

- 2 nos. 13A / 250V AC switched socket outlets.

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.