

ELECTRICAL MACHINE & TRANSFORMER TRAINER

EM-30800Q



SCIENSCOPE
EDU-LABS



The EDU-LABS EM-30800Q Electrical Machine & Transformer 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 machine's powers are 370W/750W, as the supply requirement for the system operation requires 240/415V, 50Hz.

- Modularized design provides 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 AC/DC power supply equipped with overload protection.
- Adopting digitized and microprocessor-based measuring instruments 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: 370W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS (Option)

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



- Nominal Power: 370W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS (Option)

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



- Nominal Power: 370W (1/2HP)
- Nominal Voltage: 220VDC
- Nominal Current: 1.50
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS (Option)

**THREE PHASE INDUCTION MOTOR
EM-30-02-01-SD**



- Nominal Power: 370W (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
- Coupling: EM-21-CS (Option)

**THREE PHASE INDUCTION MOTOR
EM-30-02-01 (750W) (2 UNITS)**



- Nominal Power: 750W (1HP)
- Nominal Voltage: 240 / 415V (Delta/Star)
- Nominal Current: 2.85 / 1.850A (Delta/Star)
- Nominal Speed: 1500 rpm
- Cooling Method: Self Cooling Fan
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS (Option)

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



- Nominal Power: 370W (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
- Coupling: EM-21-CS (Option)

**THREE PHASE SYNCHRONOUS MACHINE
EM-30-03-02**



- Nominal Power: 370W (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 ~ 50 VDC
- Excitation Current: 0.25 A
- Winding Poles: 2
- Cooling Method: Self Cooling
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Break Load Unit
- Coupling: EM-21-CS (Option)

**ROTOR RESISTANCE STARTER UNIT
EM-30-08-05**



Switching adjustable in 2 steps and able to start Three Phase Slip Ring Machine (Wound Rotor Motor) up to 750W, 415V, 50Hz.

- Horse Power : 2
- F.L.S.T. : 150
- Rotor Voltage : 120
- Rotor Current : 5
- Step : 2
- STAR Point : 1

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



- Nominal Power: 370W
- 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 (Option)

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



- Nominal Power: 370W
- 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 (Option)

**SINGLE PHASE INDUCTION MOTOR
EM-30-04-03**



- 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 (Option)

**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 (Option)

**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 (Option)

**TACHOGENERATOR
EM-30-11-10**



- Power Rating: 350W
- Output Voltage: 0 ~ 80V
- Current: 250mA
- Speed: 3000rpm
- Motor Coupling Set (Must Compatible For Motor or Prime Mover)
- Base Plate (Musts Compatible With Motor or Prime Mover)
- Coupling: EM-21-CS (Option)

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



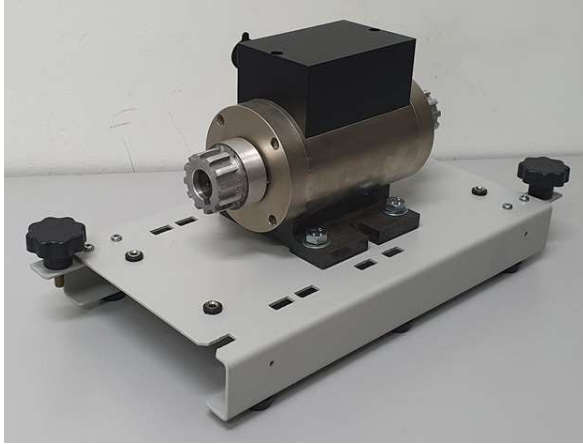
- Nominal Power: 750W (1HP)
- Nominal Voltage: 220VDC
- Nominal Current: 2.0A
- Nominal Speed: 1500 rpm
- Terminals: 4mm Safety Socket
- Cooling Method: Self Cooling
- Base Plate: Attachable To Break Load Unit

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



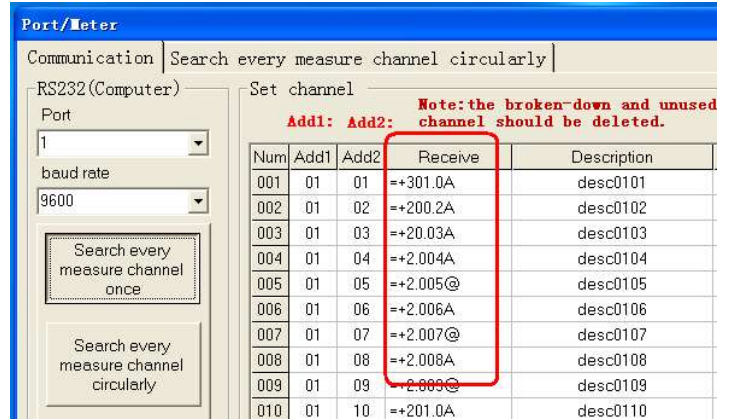
- Nominal Power: 750W (1HP)
- Nominal Voltage: 240/415AC
- Nominal Current: 2.5A
- Nominal Speed: 3000 rpm.
- Frequency: 50 Hz
- Excitation: Permanent Magnet
- Cooling Method: Self Cooling
- Terminals: 4mm Safety Socket
- Base Plate: Attachable To Motor Unit

**TORQUE 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.

**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 24VDCoptional, 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 (2 UNITS)**



- 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

**SHUNT FIELD RHEOSTAT
EM-30-08-02**



- Modular design
- Resistance: 0 ~ 2200Ω Adjustable
- Current: 1.5A
- Rated Power: 300W
- Protection: Fuse
- Terminals : 4 mm safety sockets

**SINGLE PHASE TRANSFORMER
EM-30-05-01**



- Rated Transformer
- Primary Voltage: 2x240V
- Secondary Voltage: 2x120V
- Power: 300VA
- Frequency: 50Hz
- Terminals: 4mm Safety Socket
- Unit Type : Panel H1

**THREE PHASE TRANSFORMER
EM-30-05-02**



Each primary and secondary windings are divided in two sections to allow many possibilities of connection including star, delta and zig-zag.

- Primary Voltage: Three Phase 415V (3x2x207.50V)
- Secondary Voltage: Three Phase 240V (3x2x120V)
- Power: 1000VA
- Frequency 50Hz
- Terminals: 4mm Safety Socket
- Unit Type : Panel H1

**RESISTIVE LOAD UNIT
EM-30-07-01**



Single & Three phase Resistive Load 7 steps variable per phase

- Max Power : 3x100 watt
- Voltage : 240/415 Volt
- Frequency : 50Hz
- Protection : Fuse

**INDUCTIVE LOAD UNIT
EM-30-07-02**



Single-Three phase Inductive Load 7 steps variable per phase

- Max Power : 3x100 VAR
- Voltage : 240/415 Volt
- Frequency : 50Hz
- Protection : Fuse

**CAPACITIVE LOAD UNIT
EM-30-07-03**



Single & Three phase Capacitive Load 7 steps variable per phase

- Max Power : 3x100 VAR
- Voltage : 240/415 Volt
- Frequency : 50Hz
- Protection : Fuse

**REACTIVE COMPENSATOR
EM-30-08-09**



- Modular design
- Capacitors: 2µF / 450V x 3
3µF / 450V x 3
- Terminals : 4 mm safety sockets

**DIGITAL DC VOLTMETER
EM-30-13-01 (2 UNITS)**



- 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 : $1M\Omega$
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**DIGITAL DC AMMETER
EM-30-13-02 (2 UNITS)**



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

**DIGITAL AC VOLTMETER
EM-30-13-03 (3 UNITS)**



- 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 : $1M\Omega$
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

**DIGITAL AC AMMETER
EM-30-13-04 (3 UNITS)**



- 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 : $< 0.1\Omega$
- Power source : 220Vac, 50/60 Hz
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets

THREE PHASE POWER QUALITY METER EM-30-13-16 (2 UNITS)



- 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-30-15-06 (2 SETS)



- Motor Coupling EM-21-CS for each Motors and Generator (17 units)
- Coupling sleeve (2 units) for mechanical connection of two Electrical Machines.
- Coupling guard (2 Units)
- 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: $\pm 0.05\% + 1$ 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)

**POWER DRIVE - SOFT STARTERS MODULE
EM-30-10-10**



- Modular Design
- Connection: TP+N
- Soft Starter: 2 Phase-Controlled 3 ϕ , 415V
- Power Rating: 3HP, 4.8 A , $U_c=110-230V$ AC/DC
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket

**AC VARIABLE FREQUENCY DRIVE
EM-30-14-02 (2 UNITS)**



- Type: 1.5KW (2 HP)
- Power Supply: Single phase 240V, 50Hz
- Power Terminals: R, S, T terminals
- Inverter Output: U, V, W
- Braking Resistor Terminals: P & B
- Panel Control Start/Stop, FWD and REV
- Terminal Control Start/Stop, FWD and REV
- Signal Input: 0-10V
- Digital Input: S1 to S5
- Analog Output: 4-20mA & AO
- Relay Output: RA, RB, RC
- Terminals : 4mm Safety Sockets
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**UNIVERSAL AC & DC POWER SUPPLY
EM-30-09-02-01**



The system designed to provide all fixed and variable AC and DC supplies which necessary in an electrical machines laboratory to perform the experiment required and work project.

- Connection: 3P+N+PE Output terminations by using 4mm terminals socket.
- Input fed with AC 5 pin plug 32A AC Plug and Socket.
- Pilot lamps are provided to indicate all live supplies.
- With On/Off Selector Switch
- Fuse Protection
- Power Rating: 3KVA

Output Supply Section

- Fixed Single Phase AC Power Supply:
 - 3 x 240V AC; 5A AC (Phase To Neutral; R-N, B-N, Y-N)
- Fixed Three Phase AC Power Supply:
 - 3 x 450V AC; 5A AC (Phase To Phase; R-Y, Y-B, B-R)
- Adjustable Single Phase & Three Phase AC / DC Power Supply (Simultaneously):

The unit is contained in a metal housing with clear front panel label and 4mm safety sockets that make its easy and safety for student experiments.

Specification

- Power Input Requirement: Three Phase 240V/415V, 50Hz

- 3 x 0 ~ 450VAC; 5A AC (Phase To Phase)
- 3 x 0 ~ 240VAC; 5A AC (Phase To Neutral)
- 1 x 0 ~ 430VDC; 5A DC (DC Output)

**UNIVERSAL AC/DC POWER SUPPLY
EM-30-09-06-03**



The system designed to provide all fixed and variable AC and DC supplies which necessary in an electrical machines laboratory to perform the experiment required and work project.

The unit is contained in a metal housing with clear front panel identification and 4mm safety sockets that make its easy and safe.

Three Phase Power Supply EM-30-09-01-SS

- Power Input: 3 Phase 240V/415V, 50Hz via input 5 core cable with 5 pin AC Plug, 32A
- 5 Pin AC Socket Output 16A
- Indicator: 3 pilot lamp for power line in three color coded. (Red, Yellow & Blue)
- Fuse Protection: Three Phase Output
- Connection: 3P+N+PE.
- Emergency Push Button Switch
- Keylock Switch
- START Push Button Switch
- STOP Push Button Switch
- Protection: Earth leakage circuit breaker and miniature circuit breaker and AC Contactor

- Fixed Three Phase AC Power supply: 3 x 415V AC; 32A AC (Line To Line)
- Fixed Single Phase AC Power supply: 3 x 240V AC; 32A AC (Line To Neutral)

AC/DC Variable Power Supply EM-30-09-04-03

- Fixed Single Phase AC Power Supply: 240VAC, 50Hz
- Adjustable Single Phase AC/DC Power Supply (Simultaneously) :
 - 0 ~ 250VAC, 0 ~ 12A AC
 - 0 ~ 230VDC, 0 ~ 12A DC
- AC/DC Voltmeter & AC/DC Ammeters provided to indicate output volts and amps.

AC Socket Outlet EM-30-09-05

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

**UNIVERSAL AC/DC POWER SUPPLY
EM-30-09-10-01D**



The system designed to provide all fixed and variable AC and DC supplies which necessary in an electrical machines laboratory to perform the experiment required and work project.

The unit is contained in a metal housing with clear front panel identification and 4mm safety sockets that make its easy and safe.

Three Phase Power Supply EM-30-09-01-SS

- 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 40A, 300mA and 20A Miniature Circuit Breaker.
- Complete with Emergency Switch, Keylock Switch, Start Switch, Stop 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)

**AC/DC Variable Power Supply (Three Phase)
EM-30-09-02-01D**

- Connection: 3P+N+PE.
- Protection: Miniature Circuit Breaker (3 Pole 20A)
- Three Phase Power Analysis Meter

- The instrument can measure Voltage, Current, Power Factor, Active Power, Reactive Power, Apparent Power And Energy consumption KWH, KVARH, Frequency.
- All parameters are true value (TRMS), input signal can be all kinds of wave.
- Display: Programmable setting, switching, circularly 3 lines LED / LCD display
- Software communication with RS485 and Modbus RTU
- Adjustable AC / DC Power supply (Simultaneously) :
 - Three Phase 0 ~ 450V AC; 5A AC (Line To Line)
 - Single Phase: 0 ~ 240V AC; 5A AC (Line To Neutral)
 - DC Power supply: 0 ~ 450V DC; 5A DC

**AC/DC Variable Power Supply (Single Phase)
EM-30-09-04-01D**

- 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 (Digital LED Type) & AC/DC Ammeters (Digital LED Type) provided to indicate output volts and amps.

AC Socket Outlet EM-30-09-05

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

**THREE PHASE POWER SUPPLY MODULE
EM-10-09-01**



- Modular Design
- Power Input: 3 Phase 240V/415V, 50Hz via input 5 core cable with 5 pin AC Plug, 32A.
- Connection: 3P+N+PE.
- Protection: Earth leakage circuit breaker and miniature circuit breaker
- Complete with START and STOP Push Button
- Three Pole ON/OFF Selector Switch.
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets (Color Coded)

**CURRENT LIMIT PROTECTION MODULE
EM-10-04-01 (3 UNITS)**



- Modular Design
- Connection: 3P+N+PE.
- Switch Load: 415Vac,10A
- Current Setting Range: 4 ~ 6.3A (Adjustable Current Limiting)
- Complete with START and STOP Push Button
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets (Color Coded)

**CIRCUIT BREAKER (3 POLES) MODULE
EM-10-01-01**



- Modular Design
- Connection: 3P+N+PE
- Three Pole Circuit Breaker
- Switch Load: 10A
- Unit Type : Panel H1
- Terminals: 4mm Safety Sockets (Color Coded)

**PILOT LAMP MODULE
EM-10-10-01**



- Modular Design
- 4 Units Pilot Lamp (Color: Red, Yellow, Blue & Green)
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket

PUSH BUTTON SWITCH MODULE (I)
EM-10-08-01 (2 UNITS)



- Modular Design
- Push Button Switch 1 (NCx1, NOx1)
- Push Button Switch 2 (NCx1, NOx1)
- Push Button Switch 3 (NCx2)
- Push Button Switch 4 (NOx2)
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket

MAGNETIC CONTACTOR MODULE
EM-10-03-01 (3 UNITS)



- Modular Design
- 3 Pole Magnetic Contactor
- Auxiliary Switch (NCx2, NOx2)
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket

RELAY MODULE
EM-10-07-03



- Modular Design
- Category: Relay
- Contacts: 4 Sets N.C. & N.O.
- Voltage: 240VAC
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket
- Unit Type : Panel H1

OFF DELAY TIMER MODULE
EM-10-07-02



- Modular Design
- Category: Protective Relay
- Product Type: Off Delay Timer
- Voltage: 240VAC
- Time Range: 30s
- Unit Type : Panel H1
- Terminals: 4mm Safety Socket

**PARALLEL SYNCHRONIZATION BOARD
EM-30-12-01**



- Modular design
- The synchronization board complete with six indicating lamps, three-line fuse protection and synchronizing switch terminated by color coded 4mm safety socket.
- Suitable for investigate the synchronism between AC Generators when are parallel connected or generator with main network.
- With six indicator lamps for qualitative indication of the phase relationship between mains and generator voltage (Bright-dark circuit)
- Unit Type : Panel H2

**DOUBLE VOLTMETER
EM-30-12-02**



- Modular design
- Double voltmeter 500VAC for Voltage comparison of the paralleling circuits
- Unit Type : Panel H1

**DOUBLE FREQUENCY METER
EM-30-12-03**



- Modular design
- Double frequency meter 45 – 55Hz, 500VAC for frequency comparison of the paralleling circuits
- Unit Type : Panel H1

**SYNCHRONOSCOPE
EM-30-12-04**



- Modular design
- With rotational indicator for phase comparison in synchronizing circuits with three phase or single phase AC line.
- Instrument: Air-core, electro-dynamic quotient movement.
- Unit Type : Panel H1

**PHASE SEQUENCE METER
EM-30-13-08**



- Modular design
- The display of these meters indicates the order of phase sequence to which their terminals are designed.
- Instrument: Air-core, electro-dynamic quotient movement.
- Unit Type : Panel H1

**EXPERIMENTAL TABLE
EM-30-16-01-02 (2 UNITS)**



- 5' Standard Desktop
- Dimension:
- Length : 1500mm
- Width : 800mm
- Height : 850mm
- 3 Layer Drawer (Optional)

**EXPERIMENT PANEL FRAME
EM-30-16-02-02 (2 UNITS)**



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

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