ETEK
TOTAL AUTOMATION SOLUTIONS

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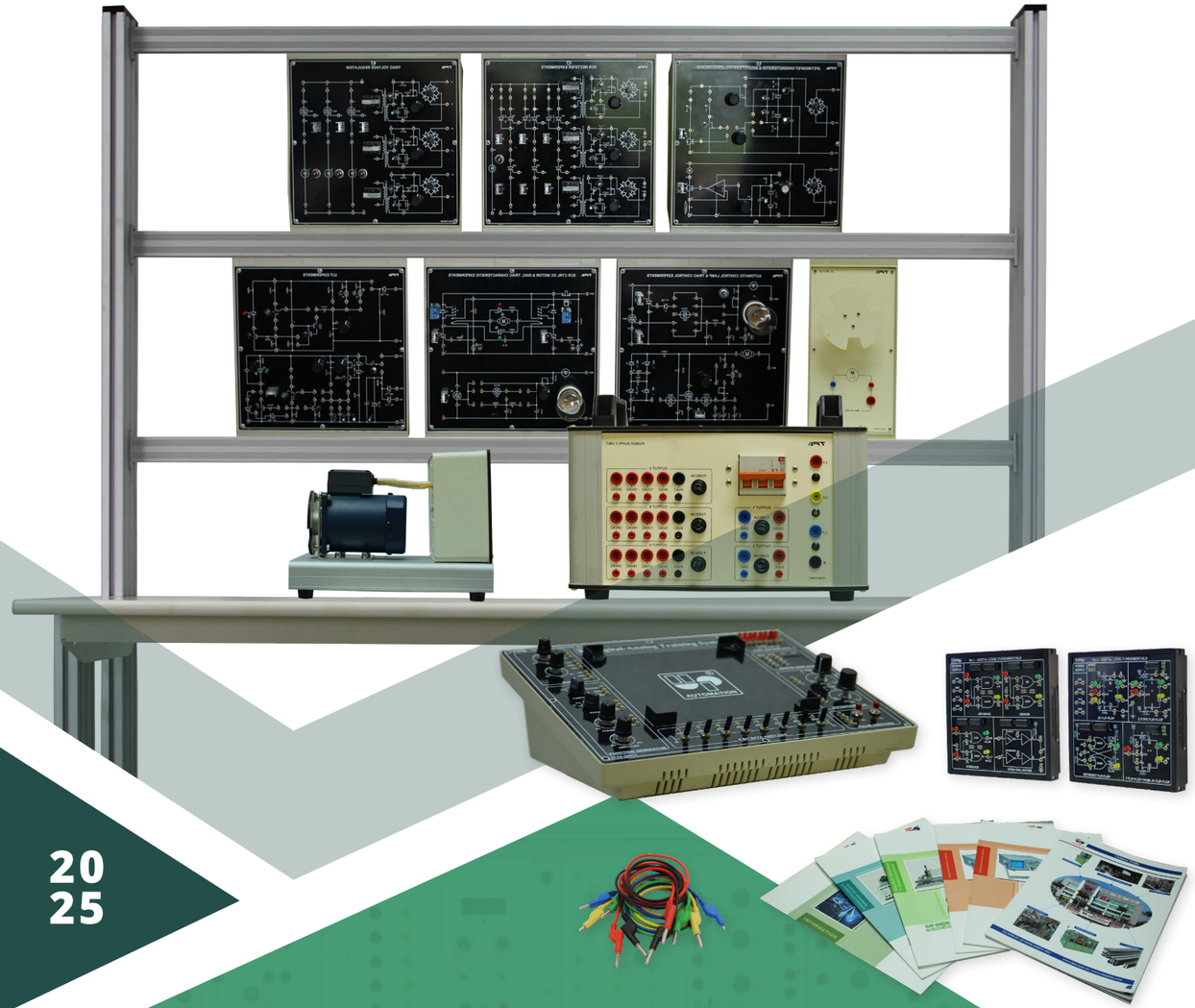
ETEK
TOTAL AUTOMATION SOLUTIONS



2025

Training Equipment

ELECTRONIC

ETEK Automation Solutions

etek.edu.vn

BASIC ELECTRONICS

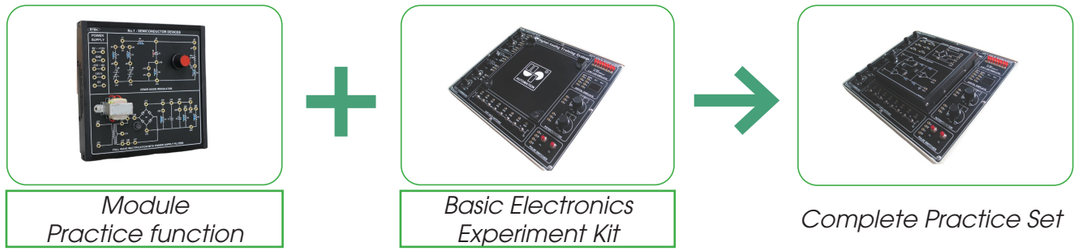
Product name	Product code
BASIC ELECTRONICS PRACTICE KIT	ST.BE.A0001
MAIN MODULE FOR BASIC ELECTRONICS EXPERIMENT KIT WITH COMPUTER CONNECTION	ST.BE.A0018
BASIC EXPERIMENT SET FOR DC CIRCUITS	ST.BE.A0002
EXPERIMENT SET FOR DC CIRCUIT THEOREMS	ST.BE.A0003
AC-1 CIRCUIT BASIC EXPERIMENT SET	ST.BE.A0004
AC-2 BASIC CIRCUIT EXPERIMENT SET	ST.BE.A0005
SEMICONDUCTOR COMPONENTS EXPERIMENT KIT	ST.BE.A0006
TRANSISTOR AMPLIFIER CIRCUIT EXPERIMENT KIT	ST.BE.A0007
TRANSISTOR POWER AMPLIFIER EXPERIMENT KIT	ST.BE.A0008
TRANSISTOR FEEDBACK CIRCUIT EXPERIMENT KIT	ST.BE.A00009
POWER SOURCE ADJUSTMENT CIRCUIT EXPERIMENT KIT	ST.BE.A00010
POWER CONTROL AND THYRISTOR EXPERIMENT KIT	ST.BE.A00011
ALGORITHM AMPLIFIER BASIC EXPERIMENT SET	ST.BE.A00012
APPLICATIONS OF AMPLIFIER ALGORITHM EXPERIMENT KIT	ST.BE.A00013
BASIC FET TRANSISTOR EXPERIMENT SET	ST.BE.A00017
DIGITAL PRACTICE SET	ST.BE.B0100
ANALOG ELECTRONICS BASIC EXPERIMENT SET	ST.BE.A0023
PULSE TECHNIQUE PRACTICE SET	ST.BE.B0110
ANALOG ELECTRONIC CIRCUIT ASSEMBLY PRACTICE KIT	ST.BE.C0200
DIGITAL ELECTRONIC CIRCUITS ASSEMBLY PRACTICE KIT	ST.BE.C0210

ANALOG ELECTRONICS

Product name	Product code
Power Electronics Components Practice Set	ST.PE.E0901
High Voltage Power Electronics Trainer	ST.PE.E0101
1-phase, 3-phase PWM inverter and inverter principle training set	ST.PE.E0601
Electronic Switch Trainer (Power Semiconductor Valve)	ST.PE.E0401
Uncontrolled Power Rectifier Trainer	ST.PE.E0201
Controlled Power Rectifier Trainer	ST.PE.E0202
AC Voltage Regulator Trainer	ST.PE.E0402
Controlled inverter trainer	ST.PE.E0301

DESIGN SOLUTIONS

BASIC ELECTRONICS PRACTICE



Module Practice function + *Basic Electronics Experiment Kit* → *Complete Practice Set*

BASIC ELECTRONICS PRACTICE KIT WITH COMPUTER CONNECTION

Module Practice function + *Basic Electronics Experiment Kit* → *Complete Practice Set*

PRACTICE SETS

ST.BE.A0001 BASIC ELECTRONICS PRACTICE KIT

SPECIFICATIONS

- Box size: 330 x 264 x 109 (WxDxH)
- Quality Management Standard ISO 9001:2015
- Input power supply for module: 220VAC/50Hz
- Output powerblock: 0 ~ ± 15V/500mA
- Module design uses standard plastic box
- Standard M2 type pin
- The printing pattern guides the printing of the film on the module surface, ensuring aesthetics and the longevity of the device

TRAINING CONTENT

- AC power supply for AC circuit
- DC power supply for DC circuit
- Pulse generator for oscillator circuit
- Generate 8-bit signal using logic switch
- Single LED displays 8-bit signal
- 7-segment LED input BCD code
- Generate pulse using push button Px, Py

ST.BE.A0018 BASIC ELECTRONICS PRACTICE KIT WITH COMPUTER CONNECTION

SPECIFICATIONS

- Box size: 330 x 264 x 109 (WxDxH)
- Quality Management Standard ISO 9001:2015
- Input power supply for module: 220VAC/50Hz
- DC output power block: ±5V/500mA, ±12V/500mA
- Module design uses standard plastic box
- Standard M2 type pin
- The printing pattern guides the printing of the film on the module surface, ensuring aesthetics and the longevity of the device

TRAINING CONTENT

- Simulate practical exercises on basic electronics
- Simulate practical exercises on analog electronics, digital electronics, pulse techniques
- AC power supply for AC circuits
- DC power supply for DC circuits
- Pulse generator for oscillator circuits
- Generate 8-bit signals using logic switches
- Single LED displays 8-bit signals
- 7-segment LED inputs to BCD code
- Generate pulses using push buttons Px, Py

ST.BE.A0002 BASIC DC CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Operating voltage: DC (Max ±15V)
- The training kit allows students to study the following main contents:
- DC power source and circuit
- Ohm's law
- Resistor circuit

SKILLS ACHIEVED

- The practice set helps students improve their
- knowledge and verify the laws when learning
- about circuit theory
- Ohm's law, calculating resistance in series or
- parallel circuits
- On the circuit board, there are built-in
- components and drawings of intuitive, easy-tounderstand circuit principles

TRAINING CONTENT

- DC power sources in series and parallel
- Dual DC power sources
- Determining the type of switching
- Concept of commutation
- Ohm's law: Resistance, current, circuit voltage
- Resistance, current, voltage in series resistor circuits
- Resistance, current, voltage in parallel resistor circuits
- Resistance, current, voltage in mixed resistor circuits
- Power in series, parallel and mixed resistor circuits

MODULE PRACTICE FUNCTION

TPAQ.B0100

TPAQ.B0200

TPAQ.B0300

ST.BE.A0003 DC CIRCUIT THEOREMS TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Operating voltage: DC (Max ±15V)
- The training kit allows students to study the following main contents:
- Kirchhoff's laws and node/loop equations
- Advanced calculation methods: Stacking, Millman, etc.
- Transformations and network equivalence: Tee, Pi, Wye, Delta

SKILLS ACHIEVED

- The practice set helps students improve their knowledge and verify the laws when learning about circuit theory
- Ohm's law, calculating resistance in series or parallel circuits
- On the circuit board, there are built-in
- components and drawings of intuitive, easy-tounderstand circuit principles

TRAINING CONTENT

- Current, node current in 2-element branch circuit
- Voltage in 3-element series circuit
- Voltage addition in series circuit
- Node/loop equation
- Kirchhoff voltage law with 2-source circuit
- Kirchhoff current law with 2-source circuit
- Network method with 2-source circuit
- Superposition method with 2-source circuit
- Millman's theorem with 2-source circuit
- Thevenin method with single-source network
- Thevenin method with dual-source network
- Thevenin resistor in bridge circuit
- Thevenin voltage in bridge circuit
- Thevenin to Norton conversion
- Norton to Thevenin conversion
- Tee, Wye, Pi and Delta networks
- Delta and Wye Networks conversion

MODULE PRACTICE FUNCTION

TPAQ.B1100

TPAQ.B1200

TPAQ.B1300

ST.BE.A0004 BASIC AC-1 CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Operating voltage: AC (Max 12V)
- The training kit allows students to study the following main contents:
- Basic AC quantities
- Inductance & reactance
- Transformers
- Capacitors and RC circuits

SKILLS ACHIEVED

- The practice set helps students improve their
- knowledge of AC circuit theory
- Effects of impedance, series/parallel inductance
- Series/parallel RC/RL circuits, AC waveforms
- AC phase angle control, transformers
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- AC waveform generators
- AC amplification measurement
- AC voltage, current and impedance measurement using an oscilloscope
- Frequency measurement and setting
- Inductance
- Phase angle
- Series and parallel reactances
- Reactance and impedance
- Series/parallel RL circuits
- Electromagnetic fields
- Transformer windings
- Mutual inductance
- Transformer turns ratio and voltage
- Transformer secondary loads
- Capacitors in series and parallel circuits
- Basic effects of capacitors
- Series/parallel RC circuits
- RC time factor
- RC/RL waveforms

MODULE PRACTICE FUNCTION

TPAQ.B2100

TPAQ.B2200

ST.BE.A0005 BASIC AC-2 CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Operating voltage: AC (Max 12V), DC (Max 15V)
- The training kit allows students to study the following main contents:
- RLC circuit
- Resonance characteristics
- Power in AC circuit
- Filters & applications

SKILLS ACHIEVED

- The practice set helps students improve their
- knowledge of AC circuit theory
- Series/parallel RLC circuit, RLC resonant circuit
- Power in AC circuit, low-pass filter, high-pass filter
- The circuit board is integrated with components
- and drawings of intuitive and easy-to-understand
- circuit principles

TRAINING CONTENT

- Series RLC circuits
- Parallel RLC circuits
- Series resonant circuits
- Q and frequency range of series RLC circuits
- Resonant frequency in parallel LC circuits
- Q and frequency range
- Power division
- Power factor
- Low pass filter
- High pass filter
- Band pass filter
- Stop band filter

TPAQ.B3100

TPAQ.B3200

ST.BE.A0006 SEMICONDUCTOR COMPONENTS TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- The training kit allows students to study the following main contents:
- Basic semiconductor devices
- Rectifier & power circuits
- Control & voltage regulation
- Transistor applications

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of semiconductor components such as diodes, zener diodes,
- PNP/NPN transistors, optocouplers, and CD4066 ICs
- Applications for rectifier circuits, transistor switching, voltage doubling, waveform diodes, etc.
- The circuit board is pre-integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Identification of Semiconductor Devices
- Semiconductor Switching Control
- Diodes and DC Characteristics
- Half-Wave/Full-Wave Rectification with Diodes
- Power Supply Filtering
- Voltage Doubler
- Diode Waveforms
- Zener Diode Voltage Regulation
- Transistor Functional Testing
- Current Control Circuits Using PNP Transistors
- Emitter-Base Bias Voltage
- Collector Reverse Bias
- DC Circuit Voltage Using Transistors
- Load Line Using Transistors
- Opto-Isolator ICs
- Photoresistors

MODULE PRACTICE FUNCTION

TPAQ.B4100

TPAQ.B4200

TPAQ.B4300

TPAQ.B4400

ST.BE.A0007 TRANSISTOR AMPLIFIER CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Basic amplifier circuits
- Transistor effects and parameters
- Transistor cascade amplification

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of the theory of amplifier circuits using transistors
- Common B amplifier circuit, common E amplifier,
- common C amplifier, coupling circuits...
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- DC/AC operation of Common Base circuit
- DC/AC operation of Common Emitter circuit
- DC/AC operation of Common Collector circuit
- Temperature effect on Fixed Bias circuit
- Temperature effect on Voltage Divider Bias circuit
- Transistor parameter range
- Using Transistor parameter table
- DC operation of RC coupled amplifier
- RC coupled amplifier gain and phase angle relationship
- RC coupled amplifier frequency response
- DC/AC operation of Transformer coupled amplifier
- Transformer coupled amplifier frequency response
- DC/DC operation of Direct coupled amplifier
- Direct coupled amplifier frequency response

TPAQ.C0100

TPAQ.C0200

ST.BE.A008 TRANSISTOR POWER AMPLIFIER TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- Power amplification principle using transistors
- Power amplifier circuits
- Darlington pair characteristics
- Troubleshooting, circuit failure

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of the theory of amplifier circuits using transistors
- Common B amplifier circuit, common E amplifier, common C amplifier, coupling circuits...
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Introduction to Transistor Power Amplifiers
- Single DC Output Power Amplifier Operation
- Single AC Output Voltage and Power Amplifier
- Split-Phase DC Operation
- Voltage Amplification and Phase Relationship of Input/ Output Signals
- Symmetrical DC Power Amplifier Operation
- Symmetrical AC Power and Voltage Amplifier
- Power Compensated DC Operation
- AC Compensated Voltage and Power Amplifier
- Push-Pull Power Amplifier
- Darlington Pair Current Amplifier Characteristics
- Darlington Pair Input and Output Impedances
- Circuit Troubleshooting and Basics

MODULE PRACTICE FUNCTION

TPAQ.C1000

TPAQ.C1000

ST.BE.A0009 TRANSISTOR FEEDBACK CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC (Max ±15V)
- The training kit allows students to study the following main contents:
- Power regulation principle
- Feedback regulation
- Voltage regulator IC
- DC-DC conversion

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of power source circuit theory
- Theory of voltage regulator circuits, voltage regulator circuits, current source circuits
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Introduction to Power Supply Regulation
- Parallel Regulation Operation
- Line Regulation
- Load Regulation
- Series Regulation Operation
- Voltage Feedback Regulation Operation
- Load Regulation Using Voltage Feedback
- Reverse Current Limiting Protection Circuit
- Current Regulation Operation
- Line Regulation Using Current Regulators
- Load Regulation Using Current Regulators
- 3-Pin IC Regulation Operation and Voltage Regulation
- 3-Pin IC Current Regulation and Efficiency
- DC to DC Conversion Characteristics
- Voltage Regulation Using DC to DC Conversion and Efficiency

TPAQ.C2000

TPAQ.C2100

ST.BE.A0010 POWER SUPPLY REGULATION CIRCUIT TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC (Max ±15V)
- The training kit allows students to study the following main contents:
- Power regulation principle
- Feedback regulation
- Voltage regulator IC
- DC-DC conversion

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of power source circuit theory
- Theory of voltage regulator circuits, voltage regulator circuits, current source circuits
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Introduction to Power Supply Regulation
- Parallel Regulation Operation
- Line Regulation
- Load Regulation
- Series Regulation Operation
- Voltage Feedback Regulation Operation
- Load Regulation Using Voltage Feedback
- Reverse Current Limiting Protection Circuit
- Current Regulation Operation
- Line Regulation Using Current Regulators
- Load Regulation Using Current Regulators
- 3-Pin IC Regulation Operation and Voltage Regulation
- 3-Pin IC Current Regulation and Efficiency
- DC to DC Conversion Characteristics
- Voltage Regulation Using DC to DC Conversion and Efficiency

MODULE PRACTICE FUNCTION

TPAQ.C6000

TPAQ.C6100

TPAQ.C6200

ST.BE.A0011 POWER CONTROL AND THYRISTOR TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC (Max ±15V), AC (Max 12V)
- The training kit allows students to study the following main contents:
- SCR DC Gate
- SCR AC Gate
- Triac
- Controlled rectifier

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of power source circuit theory
- Theory of DC rectifier circuit using half-wave/full-wave controlled SCR
- SCR trigger circuit using UJT, AC voltage regulator circuit using Triac
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Learn the principles and practice of half-wave SCR DC Gate circuit
- Learn the principles and practice of full-wave SCR DC Gate circuit
- Learn the principles and practice of AC power control circuit using Triac
- Learn the principles and practice of controlled rectifier circuit
- Learn the principles and practice of half-wave SCR AC Gate circuit
- Learn the principles and practice of full-wave SCR AC Gate circuit

MODULE PRACTICE FUNCTION

TPAQ.C4000

TPAQ.C4100

ST.BE.A0012 BASIC OPERATIONAL AMPLIFIER TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Basic characteristics of Op-Amp
- Basic amplifier circuits
- Op-Amp applications
- Advanced operations

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of power source circuit theory
- Inverting/non-inverting amplifier circuit theory, buffer circuit
- Adder/subtractor circuit, differential amplifier circuit, comparator circuit...
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

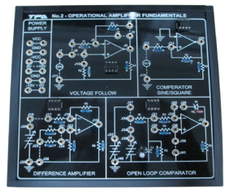
TRAINING CONTENT

- Basic characteristics and parameters of operational amplifiers.
- Study the principles and practice of inverting amplifiers
- Study the principles and practice of non-inverting amplifiers
- Study the principles and practice of inverting amplifiers
- Study the principles and practice of non-invertingamplifiers.
- Study the principles and practice of voltage loop circuits
- Study the principles and practice of sine wave to square wave converter circuits
- Study the principles and practice of differential amplifiers
- Study the principles and practice of open-loop circuits
- Study the principles and practice of resonant gate amplifiers
- Study the principles and practice of exponential amplifiers
- Study the principles and practice of subtractive amplifiers

MODULE PRACTICE FUNCTION

TPAQ.D0100

TPAQ.D0200



TPAQ.D0300

ST.BE.A0013 EXPERIMENTAL SET OF APPLICATIONS OF OPERATIONAL AMPLIFIERS

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Basic application circuits
- Signal filtering circuits
- Signal processing & limiting circuits
- Comparator circuits

SKILLS ACHIEVED

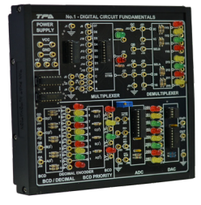
- The practice set helps students improve their knowledge of power source circuit theory
- DC rectifier circuit theory using half-wave/full-wave controlled SCR
- SCR trigger circuit using UJT, AC voltage regulator circuit using Triac
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

- Learn the principles and practice with full-wave diode bridge driver circuits
- Learn the principles and practice with integrator circuits
- Learn the principles and practice with differentiator circuits
- Learn the principles and practice with low-pass filter circuits
- Learn the principles and practice with high-pass filter circuits
- Learn the principles and practice with band-pass filter circuits
- Learn the principles and practice with limiter circuits
- Learn the principles and practice with latching and sampling circuits
- Learn the principles and practice with window comparator circuits

MODULE PRACTICE FUNCTION

TPAQ.D1000



TPAQ.D2000

TPAQ.D3000

ST.BE.A0017 BASIC FET TRANSISTOR TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Basics of JFET
- Oscillator circuit using JFET
- Special components UJT
- MOSFET & optical applications

SKILLS ACHIEVED

- The practice set helps students improve their knowledge of FET circuit theory
- Hartley/Colpitts JFET circuit
- MOSFET circuit, fiber optic sensor circuit
- The circuit board is integrated with components and drawings of intuitive, easy-to-understand circuit principles

TRAINING CONTENT

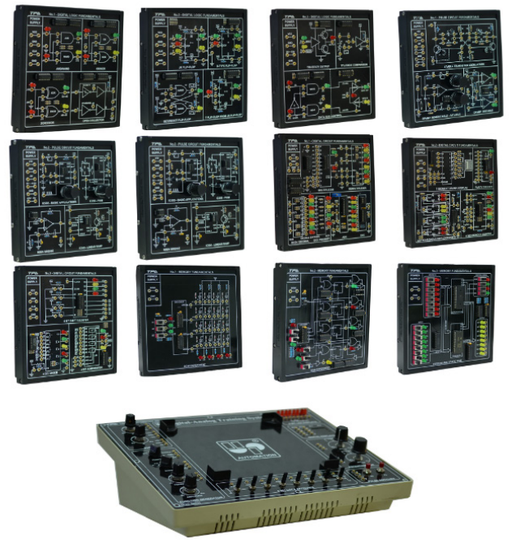
- Learn the principle and operating characteristics of JFET
- Learn the principle and practice with JFET amplifier circuit
- Learn the principle and practice with JFET CURRENT circuit
- Practice DC source current operation/ load voltage change with JFET
- Learn the principle and practice with Colpitts oscillator circuit
- Learn the principle and practice with HARTLEY oscillator circuit
- Learn the principle and practice with thermistor circuit
- Learn the principle and practice with UJT waveform control and generation characteristics
- Learn the principle and practice with photoresistor circuit
- Learn the principle and practice with fiber optic transceiver circuit
- Learn the principle and practice with dual gate MOSFET operation mode and adder

MODULE PRACTICE FUNCTION

TPAQ.B5000

TPAQ.B5100

ST.BE.B0100 DIGITAL LOGIC TRAINING KIT



SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC +12V, +5V
- The training kit allows students to study the following main contents:
- Basics of digital circuits
- Sequential circuits
- Multiplexing & switching circuits:
- Combinational digital circuits
- Counter & register circuits
- Digital memory

SKILLS ACHIEVED

- Identify and analyze digital components: Determine the location, function and operating principles of digital components such as logic gates, flip-flops, counters, registers and memories.
- Basic digital circuit design and application: Assemble, analyze and apply logic circuits, multiplexers/
- demultiplexers, ADC/DAC converter circuits, 7-segment display circuits.
- Analyze and practice data storage systems: Understand
- and work with ROM, RAM, EEPROM, SRAM memories in digital systems.
- • Digital system design: Install and adjust counters,
- multiplexers/demultiplexers, decoders and other digital
- circuits to meet technical requirements

TRAINING CONTENT

- General circuit operation and basic ICs
- Basic logic gates: AND, NAND, OR, NOR, XOR, XNOR, NOT
- DC operation of a NOT and an OR
- Transition characteristics of a Schmitt gate and a TTL LS gate
- D-type Flip-Flop, SET/RESET, Static JK Flip-Flop, Dynamic JK Flip-Flop
- 3-state gates
- TTL and CMOS gate conversion
- Data bus control
- Multiplexing and demultiplexing circuits
- BCD to binary converter circuit practice, BCD PRIORITY
- Practice with ADC/DAC converter circuits
- Practice with 7 SEGMENT DRIVER/DISPLAY circuits
- Practice with PARITY CHECKER circuits
- Practice with ASYNCHRONOUS RIPPLE COUNTER circuits
- Practice with ASYNCHRONOUS COUNTER circuits
- Practice with 4 BIT shift registers SHIFT REGISTER
- Practice with 4 BIT ADDER circuit
- Practice with 4 BIT COMPARATOR circuit
- Practice with data latch
- Practice with Johnson counter with decoding output
- Practice with pre-set counter
- How to set up counter, set up counter up, counter down
- Practice with 10-count synchronous counter
- Learn about counter multiplexing principle
- Practice with 8-3 encoder
- Practice with 3-8 decoder
- Practice with 1-8 demultiplexer
- Practice with 2-1 multiplexer
- Practice with 2-4 decode
- Practice with 2-4 demultiplexer
- Practice with 4-bit Johnson counter
- Practice with ROM memory circuit
- Practice with RAM memory circuit
- Practice with EEPROM memory circuit
- Practice with SRAM memory circuit

MODULE PRACTICE FUNCTION

TPAQ.E0300

TPAQ.E0400

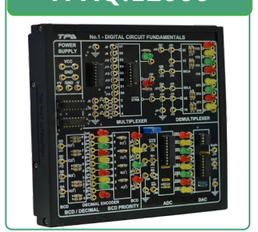
TPAQ.E0500

TPAQ.E1400

TPAQ.E1500

TPAQ.E1600

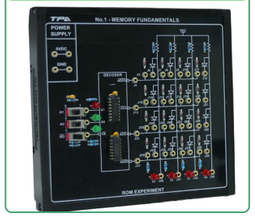
TPAQ.E2000



TPAQ.E2100

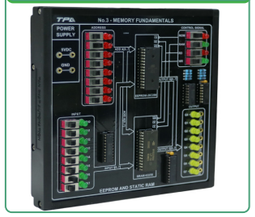
TPAQ.E2200

TPAQ.G0100



TPAQ.G2000

TPAQ.G3000



ST.BE.A0023 BASIC ANALOG ELECTRONICS TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Analog switching
- Signal amplification
- Special amplification
- Oscillator circuit

SKILLS ACHIEVED

- Analog Circuit Design: Assemble, test and optimize analog amplifiers, oscillators and switches.
- Analyze the operating principles of electronic components: Understand and apply transistors, operational amplifier ICs, oscillators in electronic systems.
- Apply electronic circuits in practice: Apply amplifiers, oscillators and switches in the design and improvement of electronic systems.

TRAINING CONTENT

- Learn the principles and practice of analog switching circuits using 4051
- Learn the principles and practice of analog switching circuits using 4066
- Learn the principles and practice of signal amplifier circuits using LM358
- Learn the principles and practice of phase shift oscillator circuits using BJT2N3904
- Learn the principles and practice of PNP transistor amplifier circuits using 2N3906 transistors
- Learn the principles and practice of logarithmic amplification using IC LM358
- Learn the principles and practice of quartz oscillators
- Learn the principles and practice of transformer coupled Armstrong oscillators
- Learn the principles and practice of LC resonant oscillators

MODULE PRACTICE FUNCTION

TPAQ.C5000

TPAQ.C5100

TPAQ.C5200

ST.BE.B0110 PULSE ELECTRONICS TRAINING KIT

SPECIFICATIONS

- Module size: 173x169x25mm (LxWxH)
- Modules must come with the basic electronics practice main kit
- Power supply: DC ±12VDC
- The training kit allows students to study the following main contents:
- Basic oscillator circuit
- IC555 and application
- Waveform signal processing circuit
- Signal conversion
- Pulse circuit & UJT

TRAINING CONTENT

- Practice stable multivibrator circuit using transistor
- Practice monostable oscillator circuit using OP-AMP
- Practice unstable oscillator circuit using OP-AMP
- Practice bistable oscillator circuit using OP-AMP
- Practice basic application of IC555
- Practice with IC555 - PWM circuit
- Practice pulse generation using IC555 microchip
- Practice with Wien bridge circuit
- Practice with linear IC555 circuit
- Practice with clipping circuit
- Practice with clamping circuit
- Practice with differential circuit
- Practice with integrator circuit
- Practice with frequency to voltage converter circuit
- Practice with voltage to frequency converter circuit
- Practice pulse generation circuit using UJT
- Practice pulse reduction circuit
- Practice pulse circuit using IC 74122
- Practice multivibrator oscillator circuit

MODULE PRACTICE FUNCTION

TPAQ.F0300

TPAQ.F0400

TPAQ.F0500

TPAQ.F0700

TPAQ.F0600

ST.BE.C0200 ANALOG ELECTRONICS ASSEMBLY TRAINING KIT

SPECIFICATIONS

- **The practice set includes components and wires to assemble onto the board.**
- **The ICs and components are pins, standard IC pins 2.54mm.**
- **Male-male 2-head plugs to connect components.**
- **2 Component Boxes with 36 compartments to hold components**
- **2 Wire Boxes**
- **1 1600-hole Board**

TRAINING CONTENT

- Assemble and practice circuits:
- Semiconductor diode in DC circuit
- Light-emitting diode in DC circuit
- Semiconductor diode in AC circuit, half-wave rectification
- Semiconductor diode in AC circuit, full-wave rectification
- Using bridge diode in DC circuit
- Using bridge diode in AC circuit
- Filter circuit, regulating DC pulse source
- Power circuit using PI filter
- Voltage multiplying circuit using diode and capacitor
- Common emitter current amplifier circuit
- Layer amplifier circuit
- Single-End audio amplifier circuit
- Pull-Push audio amplifier circuit
- Push-pull symmetrical compensation amplifier circuit
- Transistor field effect circuit
- Zero-Phase shift oscillator circuit
- Phase shift oscillator circuit
- ARMSTRONG oscillator circuit
- Hartley oscillator circuit
- Colpitts oscillator circuit
- AND gate number circuit
- OR gate number circuit
- OR - AND gate number circuit
- Circuit inverting
- NAND circuits
- NOR circuits
- Adder circuits

SKILLS ACQUIRED

- Identify common components used in analog electronic circuits.
- Design and application of power circuits: Design and analysis of rectifiers, power filters, voltage multipliers and DC power regulators.
- Design of amplifiers and oscillators: Understand the principles and applications of signal amplifiers, audio amplifiers, RC and LC oscillators.
- Design and application of basic digital logic circuits: Assemble and practice with AND, OR, NAND, NOR logic gates, invertors and adders in digital electronic systems.

ST.BE.C0210 DIGITAL ELECTRONICS ASSEMBLY TRAINING KIT

SPECIFICATIONS

- The practice set includes components and wires to assemble onto the board.
- The ICs and components are pins, standard IC pins 2.54mm.
- Male-male 2-head plugs to connect components.
- 2 Component Boxes with 36 compartments to hold components
- 2 Wire Boxes
- - 1 1600-hole Board

TRAINING CONTENT

Assembly and practice with the following circuits:

- Basic logic functions 1, 2, 3, 4
- Boolean algebra and simplification of logic expressions 1, 2, 3, 4, 5, 6
- DeMorgan's theorems 1, 2, 3, 4, 5
- Definition and operation of TTL NAND/NOR gates 1, 2
- XOR logic function and its applications 1, 2, 3, 4, 5, 6, 7
- Full adders and full subtractors 1, 2, 3, 4, 5
- Flip-flop types 1, 2, 3
- Binary counters and binary number system 1, 2
- Divide-by-n counters and decade counters 1, 2, 3, 4, 5
- Shift registers and counters 1, 2, 3, 4
- Pulse generation using Schmitt Trigger 1, 2
- Timing circuits using 74122, 74121, and 555 timers (type 1 and type 2)
- Decoder and encoder circuits 1, 2, 3, 4
- Working memory area with random access memory (RAM) 1, 2
- Operational amplifiers 1, 2, 3
- Digital-to-Analog (D/A) and Analog-to-Digital (A/D) converters – types 1, 2
- MOS (CMOS) characteristics – types 1, 2
- MOS (CMOS) – TTL interface – types 1, 2

SKILLS ACHIEVED

- Identify common components used in analog electronic circuits.
- Design digital logic circuits: Understand and practice basic logic functions, Boolean algebra, DeMorgan's theorem, TTL gates, XOR, adders/subtractors, counters, shift registers.
- Analyze and apply digital and analog circuits: Practice with pulse generators, timers, decoder/encoder circuits, RAM, operational amplifiers, ADC/DAC converters.
- Work with MOS technology and digital interfaces: Understand MOS (CMOS) characteristics, practice MOS-CMOS-TTL interfaces and applications in digital electronic circuit design.

BASIC ELECTRONICS

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ST.PE.E0901 POWER ELECTRONICS COMPONENTS TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Test voltage: Maximum 24 VAC
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: Standard A4, with size being a multiple of 133mm
- Safety test jack 4mmm

TRAINING CONTENT

- Study the characteristics and applications of UJT in electric circuits
- Study the characteristics and applications of SCR in electric circuits
- Study the characteristics and applications of DIAC and TRIAC in electric circuits
- Study the automatic adjustment of light bulbs and speed control of AC motors using TRIAC
- Study and application of JFET and MOSFET in electric circuits

SKILLS ACQUIRED

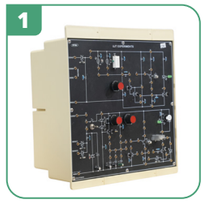
- Analyze and design power circuits using power components such as UJT, SCR, TRIAC, DIAC, JFET, MOSFET and IGBT.
- Application of power components in motor control, rectification, dimming and energy conversion.
- Practice measuring, evaluating component characteristics and optimizing power electronic circuits for practical applications.

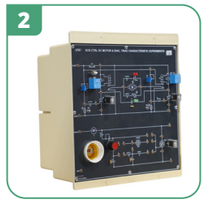
POWER ELECTRONICS

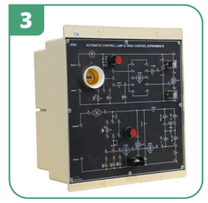
ST.PE.E0901 POWER ELECTRONICS COMPONENTS PRACTICE SET

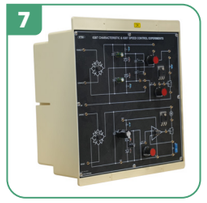
EQUIPMENT LIST

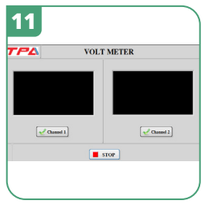
No.	Device Name	Module Code
1	UJT Experiment Module	TPAP.C0100
2	SCR Experiment Module	TPAP.C1000
3	DIAC and TRIAC Experiment Module	TPAP.C2000
4	TRIAC Voltage Regulator Experimental Module	TPAP.G5000
5	Experimental module on rectifier circuit using SCR	TPAP.E1100
6	Experimental module on JFET and MOSFET	TPAP.C3000
7	IGBT Experimental Module	TPAP.C4000
8	Power electronic power supply module	TPAC.A7300
9	DC motor training module	TPAE.G8100
10	AC motor training module (Single phase squirrel cage rotor 25w/24vac)	TPAE.E0100
11	Digital waveform meter and display	
12	Accessory Kit	
13	Accessory Kit	











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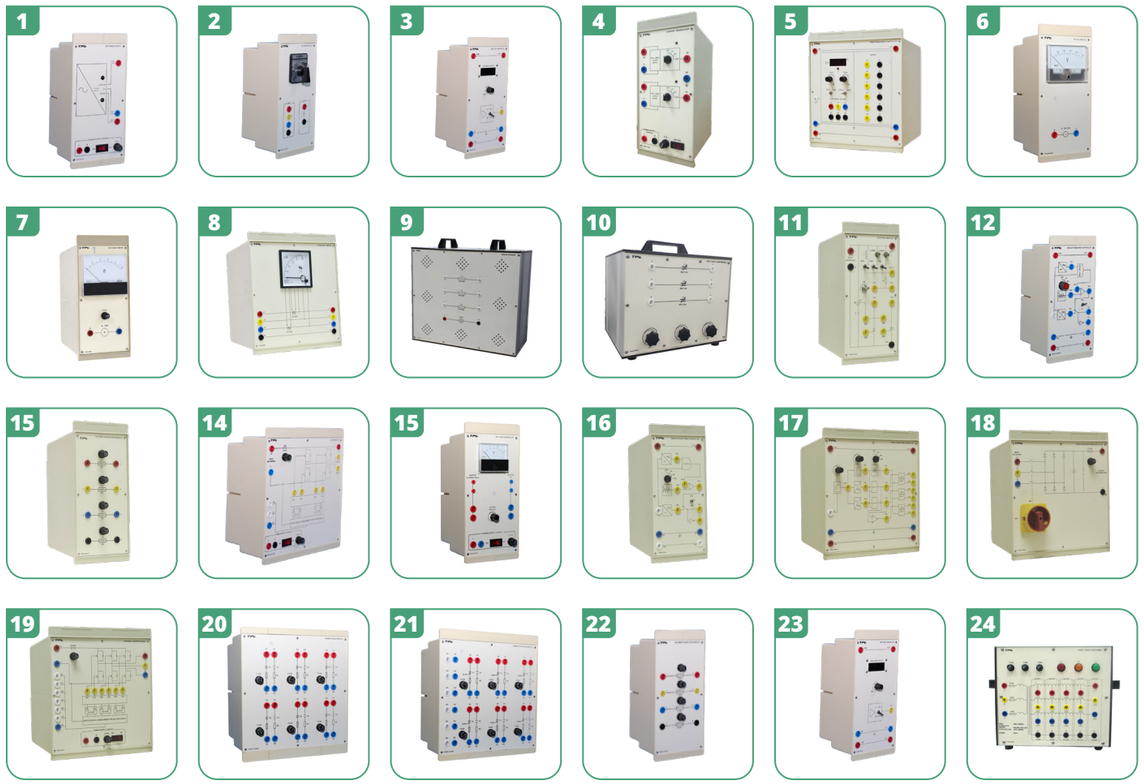
ST.PE.E0101 HIGH-VOLTAGE POWER ELECTRONICS TRAINING KIT

TRAINING CONTENT

- Study of measurement and characteristics of power electronic components
- Study of 1-phase and 3-phase rectification methods (AC DC)
- Study and application of phase control (AC AC)
- Study and application of 1-phase and 3-phase inverters (AC DC AC)
- Study and application of DC voltage conversion circuits

SKILLS ACQUIRED

- Design and analysis of power electronic circuits from basic to advanced.
- Apply modern control methods (PWM, firing angle control) in practice.
- Practice and optimize power electronic systems to meet specific technical and application requirements.



POWER ELECTRONICS

ST.PE.E0101 HIGH-VOLTAGE POWER ELECTRONICS TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	DC power module (symmetric DC15V)	TPAP.B0100
2	Reference voltage generator module	TPAP.G0100
3	Differential amplifier module	TPAP.G1000
4	Current/voltage converter module	TPAP.G2000
5	3 phase opening angle adjustment module	TPAP.G3000
6	DC Voltage Meter Training Module	TPAI.B4000
7	DC Current Meter Training Module	TPAI.A4000
8	Three-phase power meter training module	TPAI.C4200
9	Three-phase resistive load training module	TPAN.E3000
10	Inductive load training module	TPAN.E3101
11	Boost DC voltage converter module	TPAP.B1100
12	Buck DC voltage converter module	TPAP.B1200
13	Buck - Boost DC voltage converter module	TPAP.B1300
14	Single-phase power bridge module (IGBT)	TPAP.E1200
15	DC pulse width modulation module (PWM DC)	TPAP.G4000
16	Single-phase PWM inverter regulator module	TPAP.F0100
17	Three-phase PWM inverter regulator module	TPAP.F1000
18	Bridge rectifier training module (3-phase)	TPAP.E3000
19	Three-phase power bridge module	TPAP.E3100
20	Diode training module (power diode)	TPAP.C5000
21	Thyristor training module (power thyristor)	TPAP.C1300
22	SCR/TRIAC training module	TPAP.C1400
23	MOSFET/IGBT training module	TPAP.C4100
24	Transformer training module (Isolation transformer)	TPAE.L4500
25	AC power supply module Three Phase (220/380VAC Isolated)	TPAC.A2300
26	AC Motor Training Module	TPAE.F0300
27	DC Motor Training Module	TPAE.G0100
28	Fuse Training Module	TPAC.I0100
29	3 Phase Circuit Breaker Training Module	TPAC.B4400

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ST.PE.E0601 PWM INVERTER AND CONVERTER PRINCIPLES TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: A4 standard, with size being a multiple of 133mm
- Safety test jack 4mmm

TRAINING CONTENT

- Study of inverter and frequency conversion principle in power electronics
- Analysis and practice of 1-phase PWM control circuit
- Analysis and practice of 3-phase PWM control circuit

SKILLS ACQUIRED

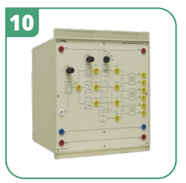
- Basic characteristics of inverter and frequency conversion principle
- Practice 1-phase PWM control circuit a
- Practice 3-phase PWM control circuit a

POWER ELECTRONICS

ST.PE.E0601 PWM INVERTER AND CONVERTER PRINCIPLES TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	DC power supply module (DC15V symmetrical)	TPAP.B0100
2	Reference voltage generation module	TPAP.G0100
3	AC voltage meter training module	TPAI.B0400
4	Switching training module	TPAC.G0100
5	AC current meter training module	TPAI.A0200
6	Three-phase resistive load training module	TPAN.E3000
7	Inductive load training module	TPAN.E3101
8	Single-phase power bridge module (IGBT)	TPAP.E1200
9	Single-phase PWM inverter regulator module	TPAP.F0100
10	Three-phase PWM inverter regulator module	TPAP.F1000
11	Bridge rectifier training module (3-phase)	TPAP.E3000
12	Three-phase power bridge module	TPAP.E3100
13	Transformer training module (Isolation transformer)	TPAE.L4500
14	AC motor training module	TPAE.F0300
15	Fuse training module	TPAC.I0100
16	Accessories / User manual	



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ST.PE.E0401 POWER SEMICONDUCTOR DEVICES TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Test voltage: Maximum 24 VAC
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: Standard A4, with size being a multiple of 133mm
- Safety test jack 4mmm

TRAINING CONTENT

- Study of measurement and characteristics of SCR in power electronic circuits
- Study of measurement and characteristics of TRIAC in power electronic circuits
- Study of measurement and characteristics of IGBT in power electronic circuits
- Study of measurement and characteristics of MOSFET in power electronic circuits
- Study of measurement and characteristics of DIODE in power electronic circuits
- Study of measurement and characteristics of TRANSISTOR in power electronic circuits

SKILLS ACQUIRED

- Understand and analyze the characteristics of power electronic components (SCR, TRIAC, IGBT, MOSFET, DIODE, TRANSISTOR) through practical measurement methods.
- Apply power components in the design and optimization of electronic circuits to meet technical requirements.

POWER ELECTRONICS

ST.PE.E0401 POWER SEMICONDUCTOR DEVICES TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	DC15V Symmetrical DC Power Supply Module)	TPAP.B0100
2	Transformer Training Module	TPAE.L0200
3	SCR/TRIAC Training Module	TPAP.C1400
4	MOSFET/IGBT Training Module	TPAP.C4100
5	DIODE/TRANSISTOR Experiment Module	TPAP.C5100

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ST.PE.E0201 UNCONTROLLED RECTIFIER TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: A4 standard, with size being a multiple of 133mm
- Safety test jack 4mmm

TRAINING CONTENT

- Analysis and Practice of Single-Phase Half-Cycle Power Rectifier Circuit
- Analysis and Practice of Two-Half-Cycle Power Rectifier Circuit
- Analysis and Practice of Single-Phase Bridge Rectifier Circuit
- Analysis and Practice of Three-Phase Beam Rectifier Circuit
- Analysis and Practice of Three-Phase Bridge Rectifier Circuit

SKILLS ACQUIRED

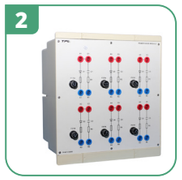
- Design and analysis of power rectifier circuits from single phase to three phase, including half-cycle, full-cycle and bridge structures.
- Application of rectifier circuits in energy conversion, optimizing performance and meeting technical requirements of power electronic systems.

POWER ELECTRONICS

ST.PE.E0201 UNCONTROLLED RECTIFIER TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	3-phase circuit breaker training module	TPAC.B4500
2	Power diode training module	TPAP.C5000
3	Three-phase AC power supply module (220/380VAC isolated)	TPAC.A2300
4	Transformer training moduleIsolation transformer	TPAE.L4500
5	Differential amplifier module	TPAP.G1000
6	Current voltage converter module	TPAP.G2000
7	Fuse training module	TPAC.I0100
8	DC voltage meter training module	TPAI.B4000
9	DC current meter training module	TPAI.A4000
10	Three-phase resistive load training module	TPAN.E3000
11	Inductive load training module	TPAN.E3101
12	DC motor training module	TPAE.G0100



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ST.PE.E0202 CONTROLLED RECTIFIER TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: A4 standard, with size being a multiple of 133mm
- Safety test jack 4mmm

SKILLS ACQUIRED

- Design and analysis of rectifier circuits from basic to advanced, including uncontrolled, controlled and semi-controlled rectifiers.
- Apply voltage and current control methods in rectifier circuits to optimize system performance.

TRAINING CONTENT

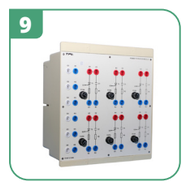
- Overview of control circuits and applications in power rectification
- Analysis and practice of single-phase half-wave uncontrolled rectifier circuit (Half-wave rectifier)
- Analysis and practice of single-phase full-wave uncontrolled rectifier circuit (Full-wave rectifier)
- Analysis and practice of single-phase half-wave controlled rectifier circuit (half-wave controlled rectifier)
- Analysis and practice of single-phase full-wave controlled rectifier circuit
- Analysis and practice of single-phase full-wave symmetrical semi-controlled rectifier circuit
- Analysis and practice of single-phase full-wave asymmetrical semi-controlled rectifier circuit
- Analysis and practice of three-phase uncontrolled rectifier circuit
- Analysis and practice of three-phase full-wave uncontrolled rectifier circuit
- Analysis and practice of three-phase controlled rectifier circuit
- Analysis and practice of three-phase full-wave controlled rectifier circuit
- Analysis and practice of three-phase full-wave semi-controlled rectifier circuit
- Analysis and practice of three-phase full-wave controlled rectifier circuit

POWER ELECTRONICS

ST.PE.E0202 CONTROLLED RECTIFIER TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	3-phase circuit breaker module	TPAC.B4500
2	Three-phase AC power module (220/380VAC isolation)	TPAC.A2500
3	Transformer circuit breaker module (Isolation transformer)	TPAE.L4500
4	DC power module (DC15V response)	TRAP.B0100
5	Reference voltage module	TRAP.G0100
6	3-phase opening angle adjustment module	TRAP.G3000
7	Error amplifier module	TRAP.G1000
8	Current/voltage converter module	TRAP.G2000
9	Thyristor circuit breaker module (power thyristor)	TPAC.C1300
10	Di circuit breaker module (power heating address)	TPAC.C5300
11	Fuse circuit breaker module	TPAC.D1100
12	DC motor circuit breaker module	TPAL.B4000
13	DC motor circuit breaker module	TPAL.M4000
14	Three-phase resistive load circuit breaker module	TPAN.E3000
15	Inductive load circuit breaker module	TPAN.E3101
16	DC motor circuit breaker module	TPAE.G2100
17	Accessories	
18	User manual	



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ST.PE.E0402 AC VOLTAGE REGULATION TRAINING KIT

SPECIFICATIONS

- Additional specifications:
- Table size: 1493 x 760 x 1705mm (L x W x H)
- Power supply: 3-phase AC 380V, 50Hz
- Table frame material: Anodized aluminum profile with insulating glue coating
- Module box material: PVC plastic
- Module size: A4 standard, with size being a multiple of 133mm
- Safety test jack 4mmm

TRAINING CONTENT

- Overview of AC Voltage Regulators and Control Methods
- Analysis and Practice of Single-Phase AC Voltage Control
- Analysis and Practice of Three-Phase AC Voltage Control

SKILLS ACQUIRED

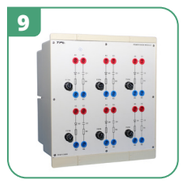
- Design and analysis of single-phase and three-phase AC voltage control circuits, applied in power electronics systems.
- Apply modern voltage control methods to optimize performance and meet practical requirements.

POWER ELECTRONICS

ST.PE.E0402 AC VOLTAGE REGULATION TRAINING KIT

EQUIPMENT LIST

No.	Device Name	Module Code
1	3-phase circuit breaker training module	TPAC.B4500
2	3-phase AC power module (220/380VAC isolation)	TPAC.A2300
3	Transformer training module (Isolation transformer)	TPAE.L4500
4	DC power module (DC15V symmetrical)	TPAP.B0100
5	Reference voltage generator module	TPAP.G0100
6	3-phase opening angle adjustment module	TPAP.G3000
7	Differential amplifier module	TPAP.G1000
8	Current/voltage converter module	TPAP.G2000
9	Thyristor training module (power thyristor)	TPAC.C1300
10	Fuse training module	TPAC.I0100
11	AC current meter training module	TPAI.A0200
12	AC voltage meter training module	TPAI.B0100
13	Three-phase resistive load training module	TPAN.E3000
14	Inductive load training module	TPAN.E3101
15	AC motor training module	TPAE.F0300
16	Three-phase power unit training module	TPAI.C4200
17	Accessories	
18	User manual	



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