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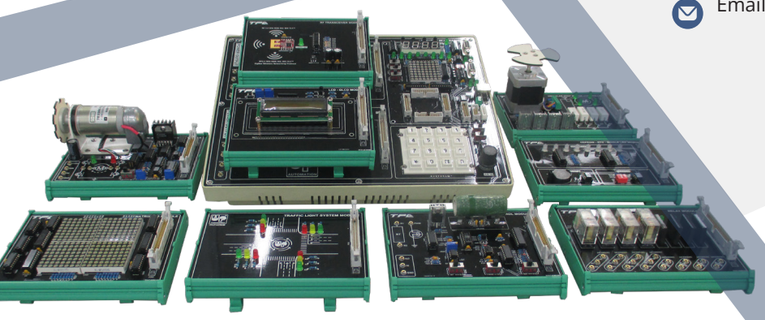
TOTAL AUTOMATION SOLUTIONS



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Training Equipment

MICROPROCESSOR MICROCONTROLLER

ETEK Automation Solutions

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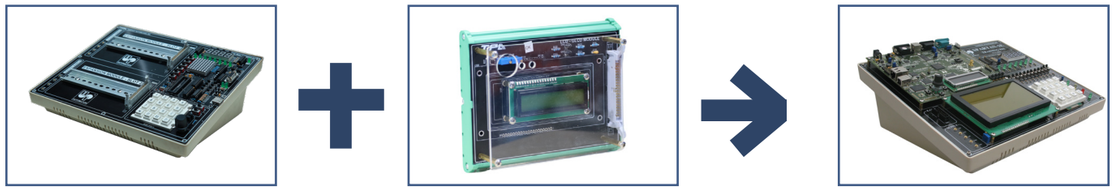
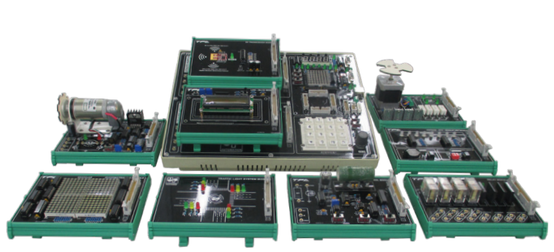
DESIGN SOLUTIONS



Main practice set | Expansion Module | Microcontroller Trainer

PRACTICE SETS



MICROCONTROLLER

MICROCONTROLLER

Name	Code
AVR microcontroller training kit	ST.MP.A0010
8051 microcontroller training kit	ST.MP.A0020
PIC Microcontroller Training Kit	ST.MP.A0030
DSPIC Microcontroller Training Kit	ST.MP.A0040
Multi - Microcontroller Training Kit	ST.MP.A0050
Computer Interface Training Kit	ST.MP.A0060
Digital Logic Programming CPLD Training Kit	ST.MP.A0070
Digital Logic Programming FPGA Training Kit	ST.MP.A0080
AMR Microcontroller Training Kit	ST.MP.A0090
PSOC Microcontroller Training Kit	ST.MP.A0100
DSP Digital Signal Processing Training Kit	ST.MP.A0110
Arduino Microcontroller Training Kit	ST.MP.A0120
Set Of Module for Microcontroller Training Kit	ST.MP.A0130
Sensor Module for Microcontroller Training Kit	ST.MP.A0140
Raspberry Pi Embedded Programming Training Kit	TPAR.B0600
Arduino UNO Training Kit	TPAR.B0800

IOT & AI

Name	Code
IOT Arduino/ESP32 Training Kit	ST.BE.I0001
AI/IOT Using Raspberry Pi Training Kit	ST.BE.I0002
AI-Based Mobile Robot Training Kit	ST.BE.I0007
Zigbee Training Kit	TPAR.V6000
IoT Experiment Kit for Smart Home Monitoring and Control	TPAR.V4000

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ST.MP.A0010 AVR MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practical exploration of AVR microcontroller architecture
- Practical study of instruction set and registers
- Practical programming of I/O communication interfaces
- Practical programming of Timer and Counter control
- Practical programming with external interrupts
- Practical programming of ADC reading and signal conversion
- Practical programming of PWM signal generation
- Practical programming of single LED control
- Practical programming of 7-segment LED display control
- Practical programming of LED matrix display control
- Practical programming of matrix keypad reading
- Practical programming of computer communication using RS232 standard protocol
- Practical programming of computer communication using RS485 standard protocol

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU ATMEGA128
- Flash memory: 128 Kbytes
- Memory: SRAM 4 Kbytes, EEPROM 4 Kbytes.
- Frequency: Up to 16 MHz
- Functions: 04 Timer/Counter, 08 ADC (10bit),
- 02 PWM (8bit),
- Communication: 02 UART, SPI, I2C.
- Number of I/O ports: 53 DIO

ST.MP.A0020 8051 MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practical exploration of 8051 microcontroller architecture
- Practical study of instruction set and registers
- Practical programming of I/O interfaces
- Practical programming of Timer and Counter control
- Practical programming with external interrupts
- Practical programming of single LED control
- Practical programming of 7-segment LED display control
- Practical programming of LED matrix display control
- Practical programming of matrix keypad reading
- Practical programming of computer communication using RS232 standard protocol

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU AT89S52
- 8 KByte fast programmable memory, capable of up to
- 1000 write/erase cycles
- Operating frequency: 0Hz to 24 MHz
- 3 levels of programmable memory lock
- 3 16 Bit Timer/counter
- 256x8 Bit internal RAM.
- 4 8-bit I/O ports.

ST.MP.A0030 PIC MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practice basic programming: I/O, timer, counter, external interrupt INT
- Practice programming to read and process ADC conversion.
- Practice programming to control PWM pulse generation.
- Practice programming to read and write internal ROM.
- Practice programming to control single LED display.
- Practice programming to control 7-segment LED display.
- Practice programming to control matrix LED display.
- Practice programming to read matrix keyboard.
- Practice programming to communicate with computer using RS232 communication standard

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: PIC16F877A
- Flash memory: 8K x 14
- Memory: RAM 368 x 8 bytes,
- Frequency: 20 MHz
- Functions: 03 Timer/Counter, 08 ADC (10bit), 02 PWM (10bit).
- Communication: UART, SPI, I2C.
- Number of I/O ports: 35 DIO

ST.MP.A0040 DSPIC MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practice learning the structure of 16-bit dsPIC microcontrollers
- Practice basic programming: I/O, timer, counter, INT external interrupt
- Practice programming to read and process ADC conversion.
- Practice programming to control motors using PWM motor control: .
- Practice programming to read motor speed using encoder via Quadrature Encoder
- Practice programming to control single LED display.
- Practice programming to control 7-segment LED display.
- Practice programming to control matrix LED display.
- Practice programming to read matrix keyboard.
- Practice programming to communicate with computer using RS232 communication standard
- Practice programming to communicate with computer using RS485 communication standard

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: DSPIC 33FJ128MC706:
- Flash memory: 128 Kbyte
- Memory: SRAM 16 Kbyte
- Frequency: 40MHz
- Functions: 09 Timer/Counter, 08 PWM (16bit), Quadrature Encoder.
- Communication: 02-UART, 02-SPI, 02-I2C, 02 CAN
- Number of I/O ports: 53 DIO

ST.MP.A0050 MULTI-MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practice learning the structure of 8051, AVR, PIC, DsPIC microcontrollers
- Practice basic programming: I/O, timer, counter, external interrupt INT
- Practice programming to read and process ADC conversion.
- Practice programming to generate PWM motor control pulses.
- Practice programming to control single LED display.
- Practice programming to control 7-segment LED display.
- Practice programming to control matrix LED display.
- Practice programming to read matrix keyboard.
- Practice programming to communicate with computer using RS232 communication standard
- Practice programming to communicate with computer using RS485 communication standard

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- 01 MCU 0851 89S52 series
- 01 MCU AVR ATMEGA 8535 series
- 01 MCU AVR ATMEGA128 series
- 01 MCU PIC 16F877A series
- 01 MCU dsPIC 33FJ128MC706 series

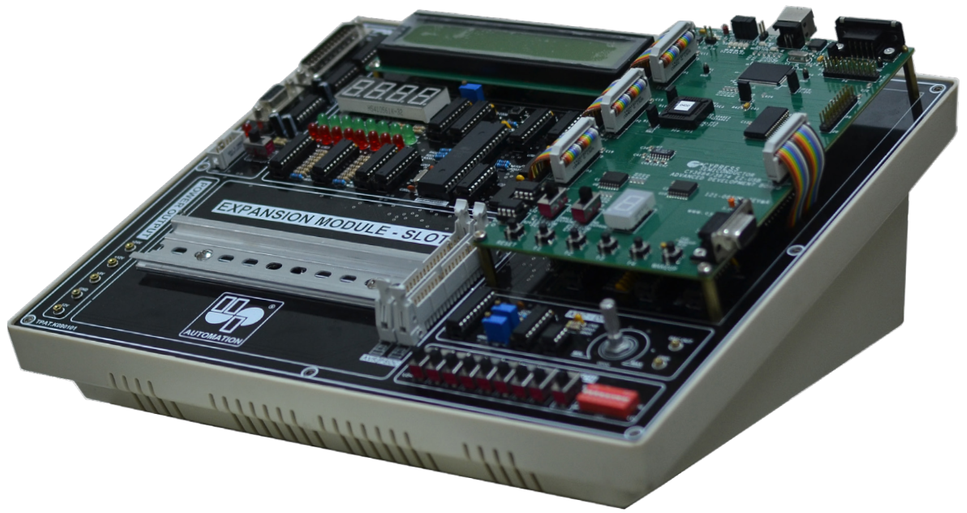
ST.MP.A0060 COMPUTER INTERFACE TRAINING KIT

TRAINING CONTENT

- Practice computer communication with LPT standard
- Practice computer communication with RS232 standard
- Practice computer communication with RS485 standard
- Practice computer communication with USB 2.0 standard
- Practice computer communication with Ethernet standard
- Specialized computer software included

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU STM32F103VET6
- Maximum operating speed: 72MHz
- 32-bit processor
- RAM: Up to 64 Kbytes
- FLASH memory: 256 - 512 Kbytes
- Timer: 11 16-bit Timers
- 01 RS232/ RS485 communication module
- 01 USB communication module
- 01 Ethernet communication module



ST.MP.A0070 DIGITAL LOGIC PROGRAMMING CPLD TRAINING KIT

TRAINING CONTENT

- Architecture analysis and design optimization with CPLD.
- Research and application of VHDL programming language in CPLD design.
- Optimizing the design and testing of basic digital logic gates on CPLD.
- Building and optimizing complex combinational logic circuits on CPLD.
- Developing advanced sequential logic systems with CPLD.
- Controlling smart lighting effects with single LED on CPLD.
- Designing 7-segment LED display circuits and smart effects on CPLD.
- Designing dynamic and interactive information display systems with LCD on CPLD.
- Optimizing signal communication from a single keyboard via CPLD.
- Developing a system to scan and read signals from a matrix keyboard using CPLD.
- Designing a high-speed RS232 data communication system with CPLD.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: XC2C128-7VQG100C
- Maximum connection speed: 5.7ns
- Signal assignment function for pins.
- Manufactured with 0.18 micro CMOS CPLD technology
- Usable Gate Number: 3000
- Macrocells Number: 128
- Logic Array Number: 8
- Maximum I/O Number: 80

ST.MP.A0080 DIGITAL LOGIC PROGRAMMING FPGA TRAINING KIT

TRAINING CONTENT

- Research on FPGA microcircuit structure and architecture.
- Research and application of VHDL programming language in FPGA design.
- Design and optimization of digital logic gates on FPGA.
- Design and optimization of combinational logic circuits on FPGA.
- Design and optimization of sequential logic circuits on FPGA.
- Design of intelligent single LED display control system on FPGA.
- Design of 7-segment LED scanning and control system on FPGA.
- Design of LCD screen control interface system on FPGA.
- Design of signal reading and processing system from single keyboard on FPGA.
- Design of advanced matrix keyboard reading and scanning system on FPGA.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- FPGA XC6SLX16-2CSG324
- SPI Flash memory: 8Mbit.
- DDR2 RAM memory: 128Mbit.
- USB 2.0 interface using Cypress IC.
- 10/100M Ethernet RJ-45 interface.
- UART interface: 01 UART to USB port
- Memory card reading function.

ST.MP.A0090 AMR MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Practice learning the structure of 32-bit ARM microcontrollers.
- Practice basic programming: I/O, timer, counter, external interrupt INT
- Practice programming ADC/DAC conversion.
- Practice programming to generate PWM motor control pulses.
- Practice programming to control single LED display.
- Practice programming to control 7-segment LED display.
- Practice programming to control matrix LED display.
- Practice programming to read matrix keyboard.
- Practice programming to communicate with computer using RS232 communication standard
- Practice programming to communicate with computer using RS485 communication standard
- Practice programming to communicate with computer using USB communication standard

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: STM32F103VET6
- Flash memory: 256 512 Kbytes
- RAM memory: Up to n 64 Kbytes
- Frequency: 72MHz
- Functions: 11 Timers (16bit), 12 DMA sets, 21 ADCs (12bit), 02 DACs (12bit), 16 PWMs (12bit).
- Communication: 05 USARTs, 03 SPIs, 02 I2Cs, 01 CANs, 01 USB 2.0, 01 SDIO
- Number of I/O ports: 112 Fast DIO

ST.MP.A0100 PSOC MICROCONTROLLER TRAINING KIT

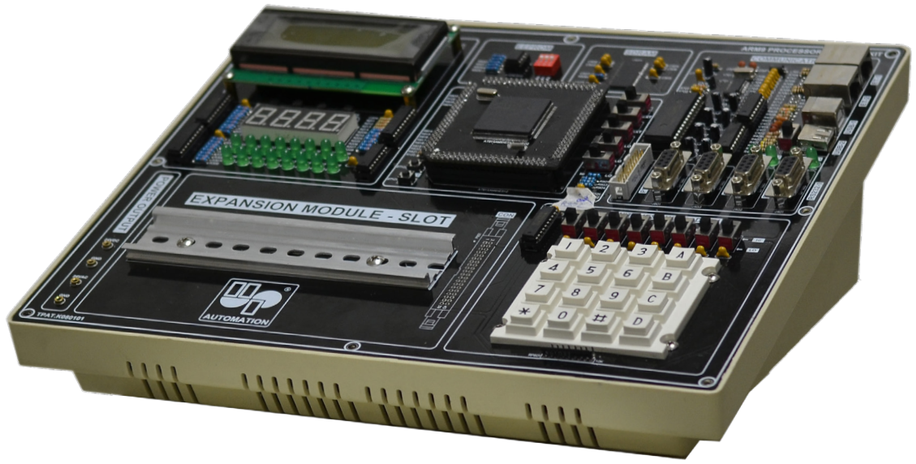
TRAINING CONTENT

- Research on PSoC microcontroller architecture.
- Research on instruction set and programming optimization on PSoC microcontroller.
- Design and program advanced I/O system with PSoC
- Program and optimize multi-function Timer/Counter system on PSoC.
- Design intelligent and fast-response interrupt processing system for real-time applications.
- Design high-performance ADC signal processing system on PSoC.
- Generate high-quality analog signals using DAC on PSoC platform.
- Design PWM pulse generation system on PSoC.
- Design single LED display control system with customized effects on PSoC.
- Scan and control high-speed 7-segment LED on PSoC.
- Design smart matrix LED display system on PSoC.
- Design matrix keyboard reading system and keystroke signal processing on PSoC.
- Implement high-speed RS232 communication and data processing on PSoC.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: CY8C29666
- Flash memory: 32 Kbytes
- Memory: SRAM 2 Kbytes.
- Frequency: 24MHz
- Functions: Timer up to 32bit, 12 ADC (14bit), 04 DAC (9bit), PWM
- Communication: 02 UART, 02 SPI, I2C
- Number of I/O ports: 64 DIO

ST.MP.A0110 DSP DIGITAL SIGNAL PROCESSING TRAINING KIT



TRAINING CONTENT

- Analyze DSP digital signal controller architecture and application in embedded systems.
- Study instruction set and register configuration to optimize signal processing on DSP.
- Program high-speed I/O interface and peripheral control on DSP.
- Program and optimize multi-function Timer system.
- Program high-resolution ADC signal processing in precision measurement applications.
- Generate PWM pulses to control motors with optimal algorithm programming on DSP.
- Program encoder signal decoder using QE (Quadrature Encoder) on
- Program single LED display with smart dynamic effects on DSP.
- Program digital display on 7-segment LED with fast scanning algorithm on DSP.
- Program matrix LED display with advanced graphics and effects on DSP.
- Control LCD display with multi-line display programming and dynamic data processing on DSP.
- Process matrix keyboard signals and anti-interference on DSP.
- High-speed RS232 communication programming and parallel data processing on DSP. Real-time CAN communication programming for industrial applications on DSP.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: TMS320F28335
- Flash memory: 256K x 16
- Memory: RAM 34K x 16, ROM 8K x 16
- Frequency: 150 MHz
- Functions: 09 16bit Timers, 03 32bit timers, 18 PWM, 16 ADC (12bit), 06 DMA
- Communication: 03 UART, 02 McBSP, 01 I2C, 02 CAN
- Number of I/O ports: 88 DIO

ST.MP.A0120 ARDUINO MICROCONTROLLER TRAINING KIT

TRAINING CONTENT

- Research on Arduino microcontroller architecture
- Analyze and practice using Arduino instructions and registers
- Research on the principles of I/O communication and controlling peripheral devices.
- Research and program Timer/Counter in measuring time, generating signals, counting events.
- Programming external interrupt signal processing in real-time systems.
- Programming Analog signal processing and ADC conversion.
- Programming pulse width modulation (PWM).
- Programming intelligent lighting effect control on single LED.
- Principles of controlling and programming advanced 7-segment LED displays.
- Programming to build dynamic display systems on matrix LEDs.
- Programming to process signals from matrix keyboards.
- Research on RS232 communication standards and programming communication with computers.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- CPU: Arduino MEGA2560:
- Flash memory: 256 KB, 8 Kbyte Bootloader
- Memory: 8KB SRAM, 4KB EEPROM.
- Frequency: 16 MHz
- Functions: 15 PWM, 16 ADC, 06 INT.
- Communication: 04 UART, 01 SPI, 01 I2C.
- Number of I/O ports: 54 DIO

ST.MP.A0130 SET OF MODULE FOR MICROCONTROLLER TRAINING KIT

ISO 9001:2015

TRAINING CONTENT

- Analyzing and programming the integration of analog temperature sensors, digital temperature sensors.
- Processing ADC signals to monitor temperature and control temperature with PWM.
- Controlling the speed of DC motors using open-loop method, closed-loop DC motors with PID algorithm.
- Controlling stepper motors with full-step and half-step modes.
- Using relays to control devices with high safety and reliability.
- Developing traffic light control systems with intelligent logic management.
- Displaying characters and numbers on 16x2 LCD screen with optimal performance of running text and dynamic effects on LED matrix screen.
- Converting external ADC/DAC signals with MCU that does not support internal ADC/DAC integration.
- Managing long-term data with external EEPROM and real-time synchronization.
- Programming to generate sine PWM pulses to control 3-phase inverters for AC motors.
- RF wireless communication for IoT system.
- Development of Bluetooth smart device control system.
- Advanced data display on 16x4 LCD screen.
- Design of professional interface on graphic LCD screen.

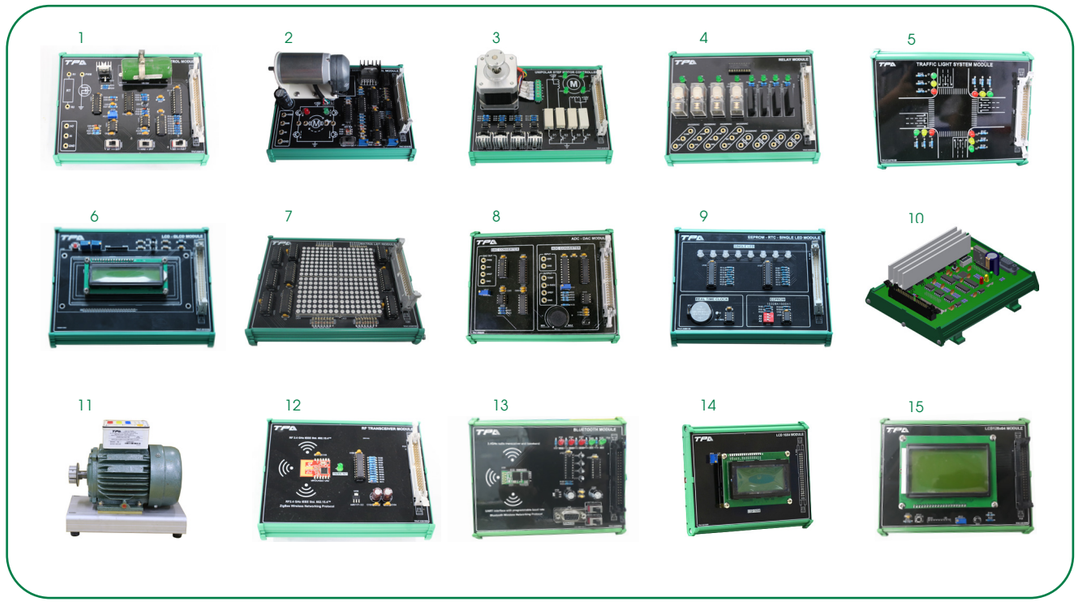
SPECIFICATIONS

- Box Dimensions: 159 x 125 x 40 mm (LxWxH)
- Enclosure Material: Green ABS plastic, specialized for laboratory use, ensuring rigidity, insulation, and aesthetics
- Module Surface Material: FR04 PCB
- PCB Thickness: 1.6 mm
- Mounting Feet: Made of ABS plastic, designed for placement on a flat surface or mounting on a DIN rail of the main kit
- Power Supply and Connection: Via 20x2 connector to the main kit

MICROCONTROLLER

EQUIPMENT LIST

No	Name	Code
1	01 Temperature control module	TPAD.R1802
2	01 DC motor module	TPAD.R1901
3	01 Stepper motor module	TPAD.R7600
4	01 Relay module	TPAD.R1401
5	01 Traffic light module	TPAD.R1501
6	01 LCD module 16x2	TPAD.R1701
7	01 Led Matrix module 16x16	TPAD.R1601
8	01 ADC, DAC expansion practice module	TPAD.R7070
9	01 EEPROM, RTC, 2-color single LED expansion module	TPAD.R7010
10	01 3-phase motor control expansion module	TPAD.R7500
11	01 AC motor practice module	TPAD.E6202
12	01 RF wireless communication practice module	TPAD.R8040
13	01 Bluetooth wireless communication practice module	TPAD.R8060
14	01 LCD module 16x4	TPAD.R7070
15	01 LCD module 128x64	TPAD.R7050



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ST.MP.A0140 SENSOR MODULE FOR MICROCONTROLLER TRAINING KIT

ISO 9001:2015

TRAINING CONTENT

- Research and program communication with various light sensors: photoresistors, photodiodes, phototransistors, reflective phototransistors.
- Develop a color recognition and measurement system with a color sensor.
- Program and apply infrared sensors.
- Integrate industrial sensors in embedded systems: Diffuse reflective optical sensors, capacitive proximity sensors, magnetic proximity sensors, fiber optic sensors.
- Build a smart motion monitoring system with motion sensors (infrared).
- Program and apply magnetic sensors.
- High-precision temperature monitoring with temperature sensors: PT100, Can K, NTC, semiconductor.
- Build a precise distance measurement system with an ultrasonic sensor.
- Program a smart electronic scale system with a loadcell.
- Develop a distance measurement system using an infrared sensor.
- Analyze and program pressure sensor communication.
- Programming remote control devices using infrared signals.

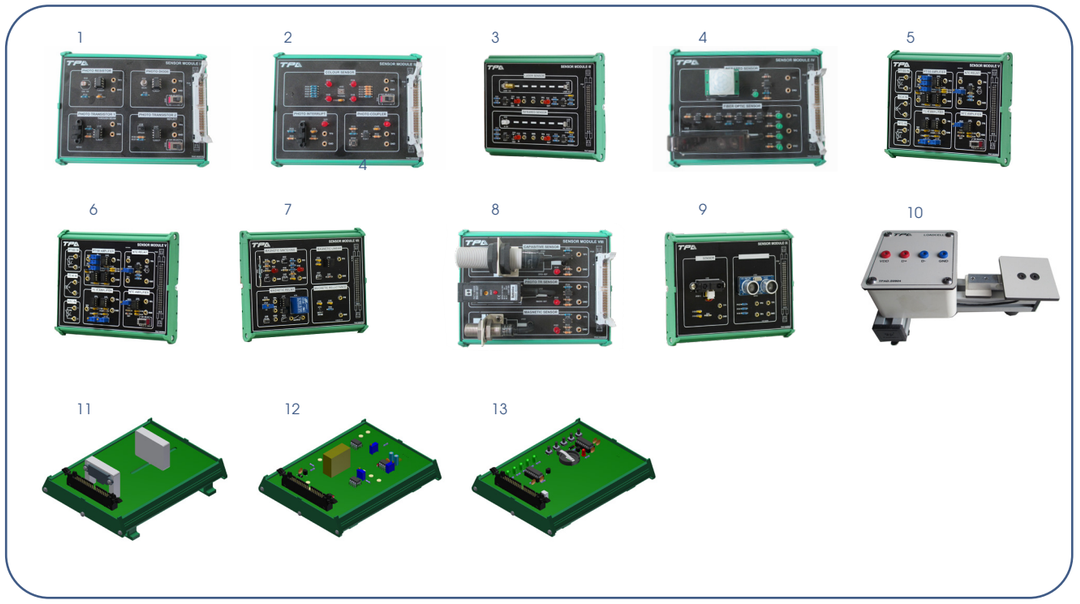
SPECIFICATIONS

- Box Dimensions: 159 x 125 x 40 mm (LxWxH)
- Enclosure Material: Green ABS plastic, specialized for laboratory use, ensuring rigidity, insulation, and aesthetics
- Module Surface Material: FR04 PCB
- PCB Thickness: 1.6 mm
- Mounting Feet: Made of ABS plastic, allowing placement on a flat surface or mounting on a DIN rail of the main kit
- Power Supply and Connection: Through a 20x2 connector to the main kit

MICROCONTROLLER

EQUIPMENT LIST

No	Name	Code
1	01 Light Sensor Practice Module	TPAD.S4001
2	01 Color Sensor Practice Module	TPAD.S4002
3	01 Infrared Sensor Practice Module (laser)	TPAD.S4003
4	01 Optical Sensor Practice Module	TPAD.S4004
5	01 Temperature Sensor Practice Module	TPAD.S4005
6	01 Temperature Sensor Practice Module (semiconductor)	TPAD.S4006
7	01 Magnetic Sensor Practice Module	TPAD.S4007
8	01 Proximity Sensor Practice Module	TPAD.S4008
9	01 Distance Sensor Practice Module (ultrasonic)	TPAD.S4009
10	01 Weight Sensor Practice Module	TPAD.S0904
11	01 Distance Sensor Practice Module	TPAD.S4090
12	01 Pressure Sensor Practice Module	TPAD.S4100
13	01 Infrared Sensor Practice Module (transmitter and receiver)	TPAD.S4110



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TPAR.B0600 RASPBERRY PI EMBEDDED PROGRAMMING TRAINING KIT

TRAINING CONTENT

- Installing Raspberry OS
- Controlling Raspberry Pi from personal computer
- LED control with push button
- Reading PID motion sensor
- Reading DHT11 temperature and humidity sensor
- Reading HC-SR04 distance sensor
- Using PWM to control DC motor
- Designing interface using PyQt
- Introduction to Embedded System
- Embedded Linux
- Development Environment
- Linux Kernel Module
- Linux Kernel API
- Linux Kernel Driver

SPECIFICATIONS

- Designed as a specialized aluminum suitcase
- Raspberry Pi4
- CPU: Broadcom BCM2711, Cortex-A72 Quad core 64bit SoC @ 1.5GHz
- Memory: 4GB LPDDR4-3200
- Connectivity: Gigabit Ethernet, 2.4GHz and 5.0GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE
- USB: 2x USB 3.0, 2x USB 2.0
- Display: 7 inch HDMI Capacitive Touch Screen
- Expansion module: LED module, Button module, PIR module, HC-SR04, DC motor module

TPAR.B0800 ARDUINO UNO TRAINING KIT

TRAINING CONTENT

- 4×4 matrix keyboard interface and display the result on Serial screen.
- Use 4×4 matrix keyboard to control relay and buzzer.
- Read the percentage value of slide potentiometer and display on terminal.
- Use slide potentiometer to control Servo motor speed and DC motor rotation direction.
- Read temperature and humidity sensor, display on Serial screen.
- Read temperature and humidity index, display on 16x2 LCD screen.
- Measure the distance of object with ultrasonic sensor and control relay.
- Communicate with GyroScope sensor and print the result on computer screen.
- Program RGB 5050 LED to change color and control 5 color changing LED wires.
- Read color sensor and automatically control relay.
- Wi Fi station, Wi Fi access point, set SSID and Wi Fi password for circuit.
- IoT: change 16 million colors from phone app (local web server).
- IoT: update sensor parameters to cloud via MQTT/HTTP, view data graph.
- IoT: control Servo angle and motor speed from Cloud.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- Microcontroller: Arduino UNO (ATmega328P)
- Digital I/O Pins: 14 (6 pins support PWM)
- Analog Input Pins: 6 (10-bit resolution)
- Flash Memory: 32 KB
- SRAM Memory: 2 KB
- EEPROM Memory: 1 KB
- Clock Frequency: 16 MHz
- Expansion module: LCD, matrix button, DC motor, servo motor, relay, Temperature sensor, Accelerometer Sensor, RGB led, Ultrasonic sensor, color sensor

ST.BE.I0001 IOT ARDUINO/ESP32 TRAINING KIT

TRAINING CONTENT

- Providing basic knowledge of IoT, Arduino board, and current main Arduino applications
- Arduino programming methodology
- Using Arduino library
- Basic programming with sensors and actuators
- Wifi station/access point programming
- Connect sensor to smartphone (web server using)
- Bluetooth connectivity
- Zigbee connectivity
- Sensor connect to cloud using MQTT protocol
- Device control from cloud using MQTT protocol

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- Microcontroller: Arduino UNO (ATmega328P)
- Digital I/O Pins: 14 (6 pins support PWM)
- Analog Input Pins: 6 (10-bit resolution)
- Flash Memory: 32 KB
- SRAM Memory: 2 KB
- EEPROM Memory: 1 KB
- ESP32 node
- Zigbee Shield
- Epansion module: Light sensor, Temperature sensor, DC motor, ultrasonic sensor, accelermeter sensor, relay, led, button

ST.BE.I0002 AI/IOT USING RASPBERRY PI TRAINING KIT

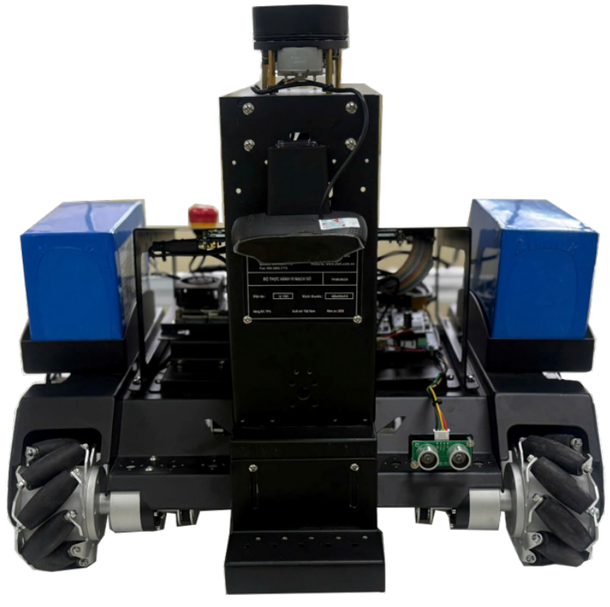
TRAINING CONTENT

- Overview of Internet of Things
- IoT smart configuration and lab environment configuration
- Practice of smart sensor control using Raspberry Pi
- Smart sensor and cloud interworking
- OpenCV library
- OpenCV with CSI Camera
- Face Detection

SPECIFICATIONS

- Designed as a specialized aluminum suitcase
- Raspberry Pi4
- CPU: Broadcom BCM2711, Cortex-A72 Quad core 64bit SoC @ 1.5GHz
- Memory: 4GB LPDDR4-3200
- Connectivity: Gigabit Ethernet, 2.4GHz and 5.0GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE
- USB: 2x USB 3.0, 2x USB 2.0
- Display: 7 inch HDMI Capacitive Touch Screen
- Sensor: Color sensor, humidity sensor, temperature sensor
- Camera: IMX219 sensor, 8MP, 3280 x 2464 pixel stills

ST.BE.I0007 AI-BASED MOBILE ROBOT TRAINING KIT



TRAINING CONTENT

- Device introduction
- Machine Learning/Deep Learning using TensorFlow
- Python programming language
- Using OpenCV library
- Real-time image processing technology
- Omnidirectional wheel control technology
- LiDAR technology + Face detection practice
- Face recognition practice
- Object detection practice
- Traffic Sign Recognition practice
- Line-Following Robot Control practice
- Traffic Sign-Based Robot Control practice
- LiDAR Sensor Application in Mapping practice

SPECIFICATIONS

- Autonomous Robot Model
- Frame Material: Aluminum
- Frame Features:
  + Precision-cut, folded, and punched for standard and specialized assembly.
  + Allows students to assemble the robot in predefined shapes or custom designs.
  + Drive Motors: 12V DC servo motors
  + Number of Motors: 4
  + Wheels: Omni-directional wheels
- AI Card: Jetson Xavier NX Developer Kit
- Camera: 3MP, Full HD 1080p/30 fps - 720p/ 60 fps, 78° dFoV
- Sensor: Lidar, Ultrasonic, Line Detection, Limit Switch, accelermeter
- Battery: 02 Lithium Baterry 12V/18AH

IOT & AI

TPAR.V6000 ZIGBEE TRAINING KIT

TRAINING CONTENT

- Install and configure XCTU software to communicate with the sensor
- Establish a connection between the module and the Xbee Gateway.
- Read motion sensor data on the Xbee Gateway web interface.
- Read sensor data from the Xbee Gateway web interface.
- Read temperature and humidity sensor data on the Xbee Gateway web interface.

SPECIFICATIONS

- Dimensions: 330 x 264 x 109 mm (LxWxH)
- Power supply: 220V AC
- Zigbee Gateway/ Module
- Management: Secure enterprise management via Digi Remote Manager®
- Protocol: UDP/TCP, DHCP
- ZigBee Standard and ZigBee PRO versions available
- Zigbee module support: XBee S1, XBee S2, XBee 3
- Standard: Transmit power 6.3 mW (+8 dBm); Receiver sensitivity: -102 dBm
- Antenna: 1 x 50 Ω SMA (center pin: female)
- Sensor: PIT motion, Temperature & humidity, Door sensor

TPAR.V4000 IOT EXPERIMENT KIT FOR SMART HOME MONITORING AND CONTROL

TRAINING CONTENT

- Overview of IoT and Practical Applications of Arduino in Modern IoT Systems
- Setting Up the Development Environment and Managing Libraries in Arduino IDE
- Fundamentals of Programming and Real-Time Processing with Arduino: I/O, Timers, Counters, Communication Protocols
- Sensor Interfacing and Control in IoT Systems
- Integration of Sensors with IoT Cloud Platforms

SPECIFICATIONS

- Dimensions: 330 × 264 × 109 mm (L × W × H)
- Power Supply: 220V AC
- MCU: Arduino Mega 2560
- Flash Memory: 256 KB (8 KB reserved for bootloader)
- SRAM: 8 KB
- EEPROM: 4 KB
- Digital I/O Pins: 54
- Wi-Fi Module: ESP8266
- Peripherals: 4×4 matrix keypad, push buttons, indicator LEDs, relay, DC motor, electric lock, gas valve
- Sensors: Sound sensor, PIR motion sensor, oxygen concentration sensor, temperature & humidity sensor, gas leakage sensor, power consumption meterW

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