



# Adhiyamaan College of Engineering

(An Autonomous Institution, Accredited by NAAC with 'A' Grade-UGC,  
Affiliated to Anna University, Chennai)



## Department of Electronics and Communication Engineering

(Accredited by NBA)

### CENTRE OF EXCELLENCE (CoE) IN EMBEDDED SYSTEMS & IoT TECHNOLOGIES

#### EQUIPMENT & INFRASTRUCTURE

The Centre of Excellence (CoE) in Embedded Systems & IoT Technologies is equipped with advanced hardware platforms, development boards, communication modules, and software tools to provide practical exposure and research support in embedded and IoT domains.

#### 1. Embedded System Development Boards

##### PIC Microcontroller Trainer Kit

- Used for learning 8-bit microcontroller programming.
- Includes 7-segment displays, DAC interface, keypad, and peripheral modules.
- Suitable for basic embedded system experiments.

##### ARM STM32 Development Board

- 32-bit ARM Cortex microcontroller.
- Supports real-time applications.
- Equipped with LCD display, GPIO headers, USB interface.
- Used for advanced embedded projects.

##### Arduino UNO

- ATmega328P-based development board.
- Easy programming using Arduino IDE.
- Used for beginner IoT and sensor interfacing projects.

##### ESP32 DevKit

- Wi-Fi and Bluetooth enabled microcontroller.
- Supports IoT cloud connectivity.
- Used for smart home and IoT applications.

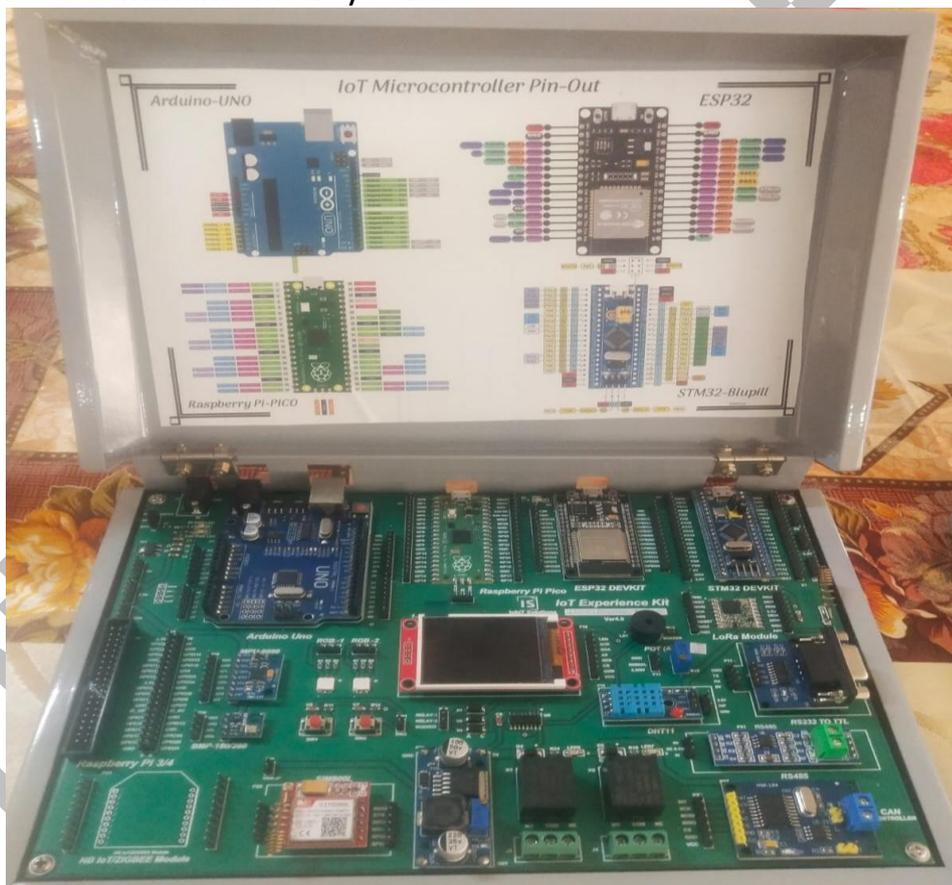
##### Raspberry Pi Pico

- RP2040 microcontroller board.
- Supports MicroPython and C/C++.
- Used for embedded and automation projects.

## 2. IoT Experience Kit

The IoT kit includes:

- Multiple development boards (Arduino, ESP32, STM32, Raspberry Pi Pico)
- Sensors (Temperature, Humidity – DHT11/DHT22)
- LoRa module
- RS232 to TTL converter
- RS485 module
- CAN communication module
- Relay modules
- TFT/LCD display module
- This kit enables students to work on:
  - Smart agriculture
  - Smart home automation
  - Industrial IoT
  - Wireless communication systems



## 3. Communication & Interface Modules

- LoRa Module – Long range wireless communication.
- RS232/RS485 – Serial industrial communication.
- CAN Module – Automotive and industrial network communication.

- ZigBee Module – Low-power wireless communication.

#### 4. Software Infrastructure

- Embedded C programming tools
- Keil IDE for ARM development
- Arduino IDE
- MATLAB for signal processing
- IoT Cloud platforms for remote monitoring

#### 5. Laboratory Infrastructure

- 35 High-Performance Intel i7 Systems.
- High-speed internet connectivity.
- Soldering stations and PCB fabrication support.
- Power supplies and testing instruments (CRO, Multimeter, Function Generator).

#### DEVELOPMENT BOARDS AND INTERFACES



ESA IUP-UXP INTELLIGENT  
UNIVERSAL PROGRAMMER



RASPBERRY PI



ESA I/F ADP FOR MCBX51  
(DEVELOPMENT BOARD)



TEMPERATURE TRANSDUCER



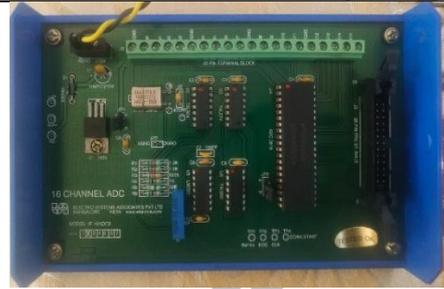
KEIL DEVELOPMENT KIT



16 CHANNEL DAC



REAL TIME CLOCK



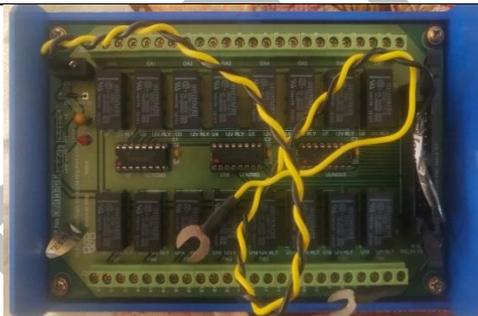
16 CHANNEL ADC



DUAL SLOPE ADC



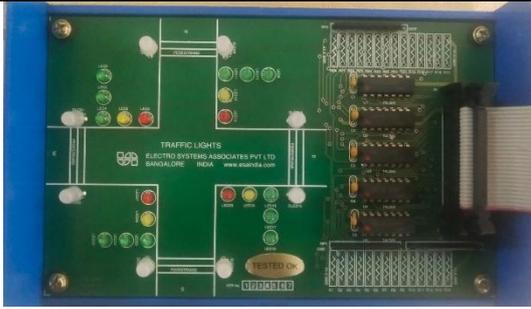
12 BIT 8 CHANNEL ADC



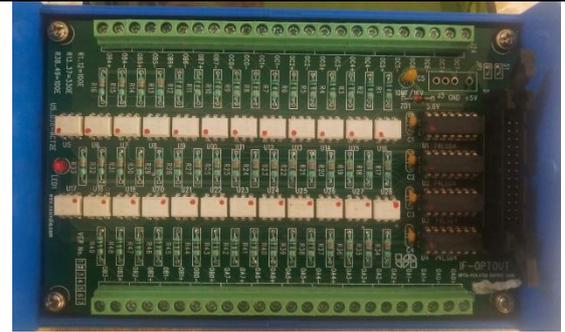
16 CHANNEL RELAY BOARD



MUSICAL TONE GENERATOR



TRAFFIC LIGHT TRAINER KIT



IF-OPTOUT (OPTO-ISOLATED OUTPUT BOARD)



ELEVATOR MODEL (IF-ELV)



NUMERIC KEYPAD MODULE



DAC FOR ADC AND TEMPERATURE SENSOR



HEX KEYPAD MODULE (IF-HEX KPD)



X'TAL FREQUENCY DIVIDER



PHYTON EMULATOR