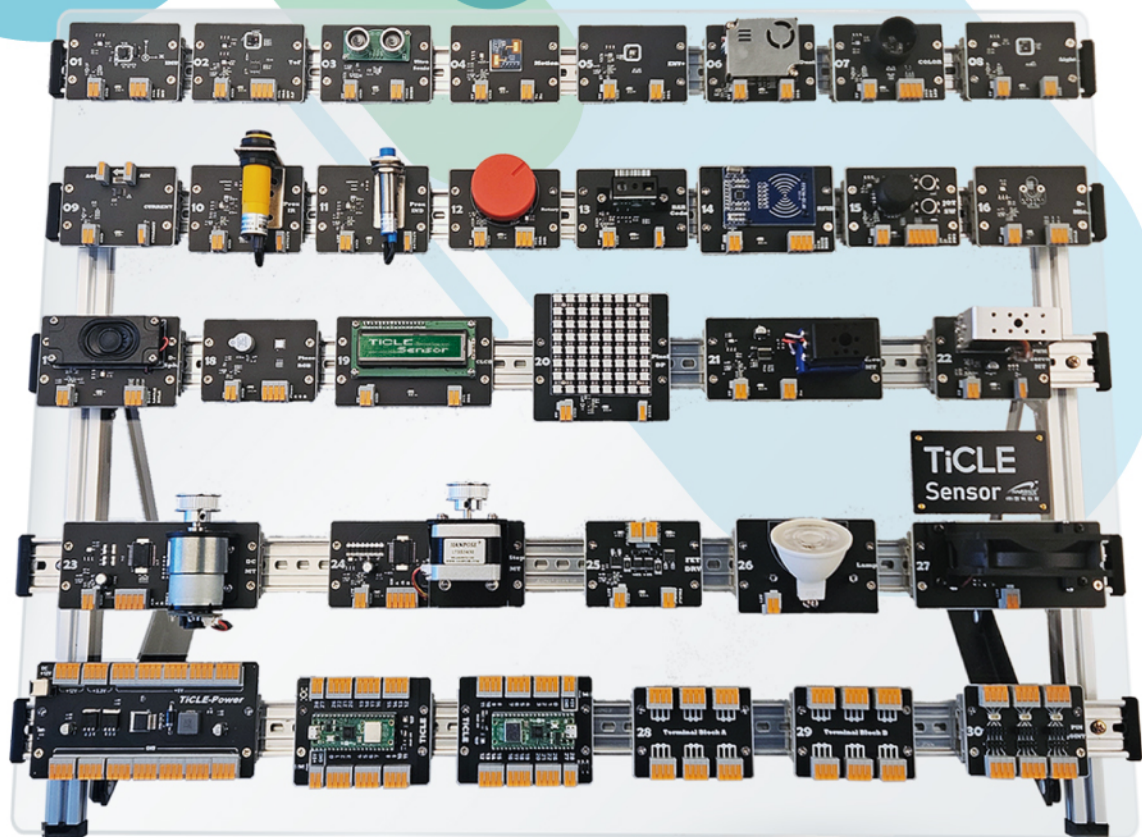




Modular Physical AI Sensor Practice Equipment

TiCLE Sensor



TICLE Sensor

Modular Sensor and Actuator Configurations Specialized by Field

Environmental & Spatial Physical Quantity Measurement Sensor

9-AXIS IMU



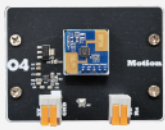
8x8 ToF



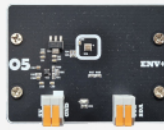
Ultrasonic Distance



mmWave Movement



Complex Environment



Fine Dust



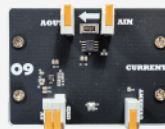
Color Proximity Gesture



Illuminance



Current Sensor



Object Recognition & Proximity Position Detection Sensor

Infrared Proximity



Metal Proximity



Magnetic Rotary



Barcode QR Reader



RFID Reader



Motor Drive & Heavy-Load Actuator

Bus Servo Motor



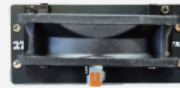
DC Motor (Encoder included)



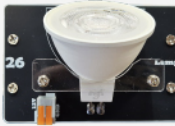
Stepping Motor



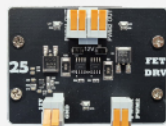
12V Cooling Fan



12V Lamp



MOSFET Driver



PWM Servo Motor



Human-Machine Interface & Visual / Audio Module

Joystick & Switch



Digital Microphone



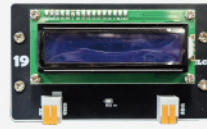
Speaker



Piezo Buzzer & RGB LED



Character LCD

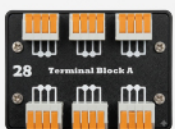


8x8 RGB Pixel Display

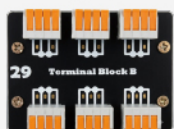


System Wiring & Hardware Link Infrastructure

Lever-Type Terminal Block A



Lever-Type Terminal Block B

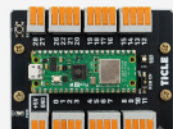


Multi-Type Connector Module

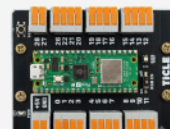


Core Module

Core 1



Core 2



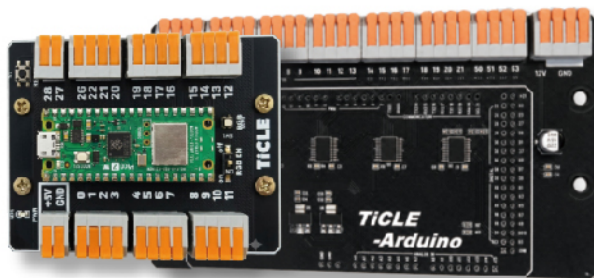
RP2350

Power Module



3V3 / 5V / 12V

/ Flexible System Architecture Supporting Multiple Core Boards



- 01 Raspberry Pi MCU Platform
Default core board operating at 3.3V (Pico 2W)
- 02 Arduino MCU Platform (Option)
Arduino platform operating at 5V requires separate voltage matching
- 03 Other 3.3V Core Platforms
Raspberry Pi 5, Orin Nano, etc. require dedicated interface board development

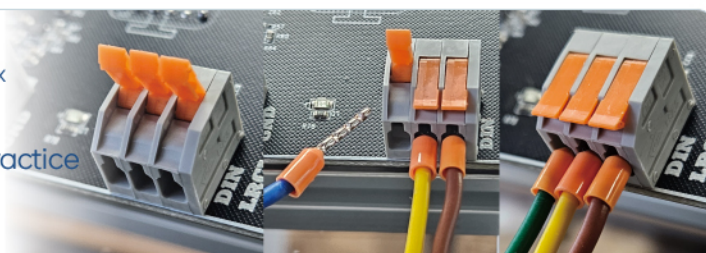
/ Modular System Using Standard DIN Rail Structure

- ✓ Applies Standard DIN Rail Mounting Structure
Modules can be freely placed and fixed at positions desired by the user
- ✓ Flexibility in Practice and Rapid Rearrangement
Quickly implements practice for logistics and manufacturing automation



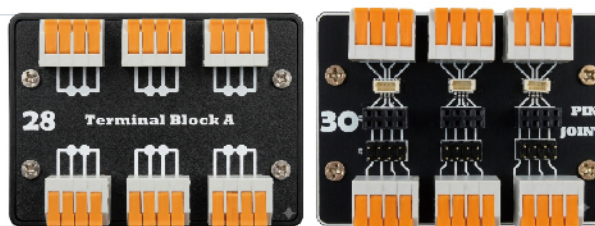
/ Easy Wiring and Maintenance based on Lever Connector

- ✓ Applies Solderless Lever Connector Method
Connect module without separate soldering or complex breadboard wiring
- ✓ Supports for Maintenance and Repeated Practice
Efficiently execute various project configurations and repetitive experiments



/ Support for Cable Routing and Heterogeneous Connection

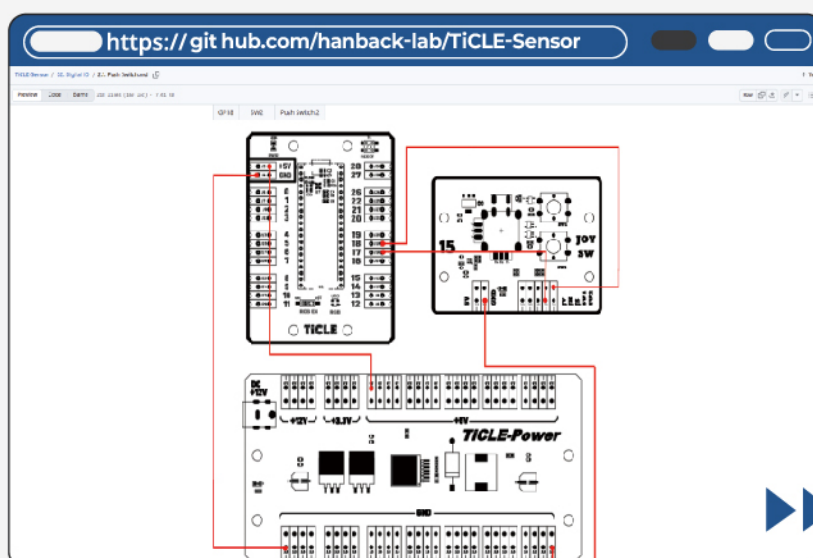
- ✓ Terminal Block Module
Real-time monitoring of voltage and data send/receive status
- ✓ Connector Adapter Module
Connect universal sensors and external actuator modules with different standards



/ Open Textbook Available

Latest Version
Update via GitHub

SCAN ME



[Optional] TiCLE Host to Replace Development PC

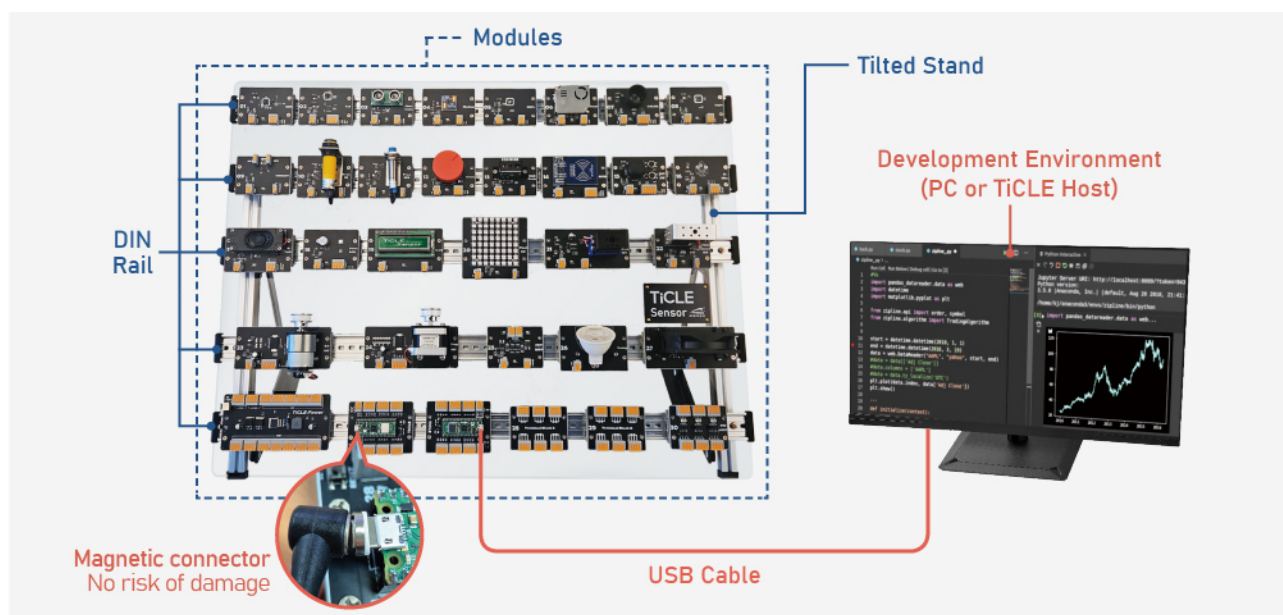


Integrated Development Equipment for VS Code

Conf. High-Performance Single Board Computer, 24" Display, Wireless Input Device

- ✓ Kiosk-type development equipment
- ✓ Supports embedded development environments such as MicroPython, C/C++
- ✓ Connects with the Core board to perform control code writing, sensor data monitoring, firmware flashing, and file system management
- ✓ Supports expanding into Physical AI projects, including GUI (PySide6), MQTT (uPaho/paho-mqtt), vision processing (OpenCV/MediaPipe), and sound recognition (Faster Whisper)

Layout Size(55X72cm)



Training Contents

Basic Sensor / Actuator Control

- Basics of I2C, SPI, UART, PWM Communication and MicroPython Driver Control

Sensor / Actuator Integrated Control

- Comprehensive Capstone Design Project

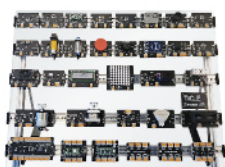
Signal Processing and Data Preprocessing

- FFT Audio Conversion, ToF 8x8 Array Mapping, IMU Time-Series Filtering

Implementing MicroPython Edge AI

- Multi-Space & Motion Recognition (IMU + mmWave + ToF + Environment)
- Mobility & Motor Precision Control (Motors + Rotary/Encoder + Proximity Sensor)
- Object Identification & Audio Intelligence (Barcode + RFID + Microphone + Color/Light)
- High-Power Control & Display Feedback (MOSFET + Fan/Lamp + LCD + WS2812)

Components



TICLE-Sensor



Micro B Type Magnetic USB Cable



DC 12V 10A Adaptor



Male to Male Jumper Cable 1set



(Option) TiCLE Host



(Option) TiCLE Arduino