Tuya Sandwich Evaluation Kit Overview

Device Development > Tuya Development Boards > Tuya Sandwich Evaluation Kits > Development Guide

Version: 20200606

Online Version

Contents

1 Differences from ordinary development boards **2**

2 Overall architecture **3**

3 Development method **4**

4 Hardware Introduction **5**

4.1 Main control board 5

4.2 Communication board 5

4.3 Function board 6

4.4 Power Board 6

5 software platform **7**

Tuya Smart has accumulated tens of thousands of product intelligence experiences, split common IoT products, and made a more mature development board based on the Arduino specification, because it can be easily superimposed in a similar way to a “sandwich” To form a complete IoT product prototype, we named it “Tuya Sandwich Evaluate Kit”. The “Tuya Sandwich Evaluate Kit” complies with Arduino development specifications. Developers can choose any Arduino interface development board, and simply and quickly build new smart devices through the Arduino IDE.

1 Differences from ordinary development boards

Tuya Sandwich Evaluate Kit is layered like a sandwich, and you can quickly implement a complete IoT product prototype. It is suitable for junior developers to get started, as well as professional hardware developers, and can more quickly prototype products based on graffiti schemes. Tuya Sandwich Evaluate Kit can shorten the product development cycle and bring the product to mass production quickly. Relying on the Arduino open source ecosystem, any open device can connect to Tuya Cloud through Zigbee, BLE, Wi-Fi, NB-IoT and other rich access types of Tuya Cloud modules. Tuya Sandwich Evaluate Kit can give developers a lot of space in the IoT field.

2 Overall architecture

The overall architecture of the product developed through Tuya Sandwich is shown below:

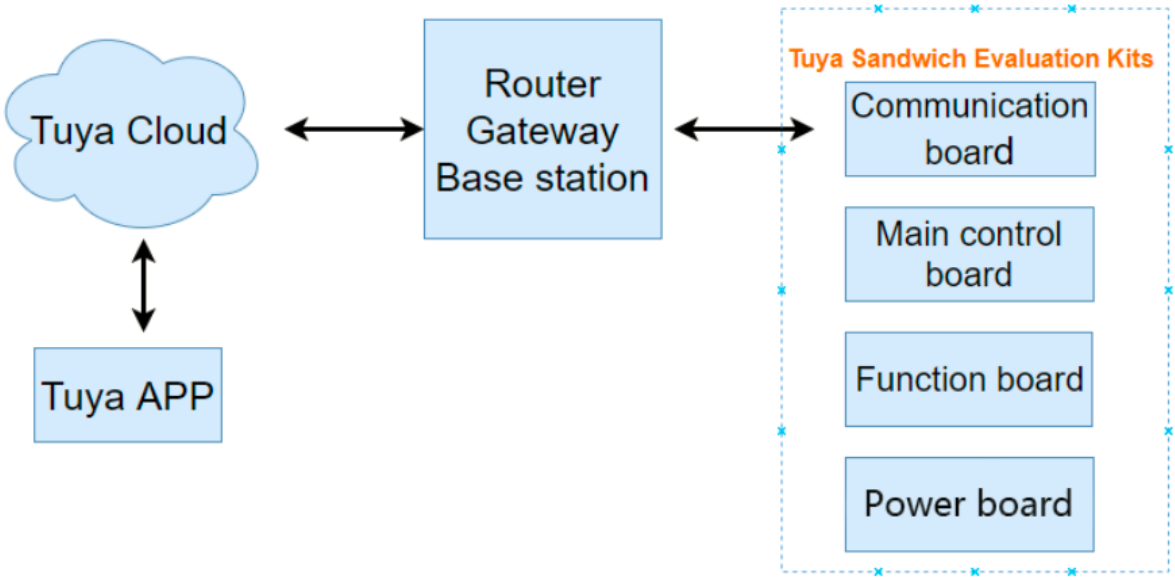

Figure 1: image.png

- The functions that Tuya Sandwich Main Control Board needs to implement as the device end are: execute the corresponding peripheral operations according to the DP function points issued by the App, and complete the protocol docking work with the Sandwich Communication Board through the serial port.
- Sandwich communication board runs Tuya serial universal firmware, which can realize some functions such as device network configuration, device binding, device unbinding, device reporting and instruction issuing.

Each product has its corresponding product PID in the Tuya IoT platform. The sandwich communication board queries the MCU's product information through the serial port protocol. After the device is activated on the network, it provides platform access services. Users only need to create the corresponding DP function point, you can send the DP to the device through the App panel for corresponding control.

3 Development method

For Master Control Board, we provide two development solutions:

- SoC free development method, suitable for the main control board starting with Tuya Sandwich
- MCU development method (please see [MCU environment setup]/arduino-development-environment-setup), MCU Quick Start, suitable for Arduino UNO and ST Nucleo development boards

4 Hardware Introduction

Tuya Sandwich Evaluate Kit can be divided into: main control board, communication board, function board, power board according to different functions.

4.1 Main control board

The main control board has the ability to read and control the information of peripheral devices. The main control boards supported in the kit are:

- MCU access method:
- Arduino-compatible main control board (such as Arduino UNO, ST Nucleo)

> The MCU's main control board is the MCU's work. It can quickly complete the protocol connection with the communication board through the Tuya MCU SDK and connect to Tuya Cloud.

- SoC free development method: - Tuya Sandwich Wi-Fi SoC Board (E3S) - Tuya Sandwich BLE SoC Board (BT3L) - Tuya Sandwich Zigbee SoC Board (ZS3L) - Tuya Sandwich Zigbee SoC Board (ZS5)

> The SoC development-free main control board has the communication capability to connect to Tuya Cloud itself. You can connect to Tuya Cloud without adding another communication board.

4.2 Communication board

The wireless communication board can provide rich networking capabilities for the main control board. The wireless communication boards supported in the kit are:

- Tuya Sandwich Wi-Fi MCU Board (E3S)
- Tuya Sandwich BLE MCU Board (BT3L)
- Tuya Sandwich Zigbee MCU Board (ZS3L)
- Tuya Sandwich NB-IoT MCU Board (NM1)
- Tuya Sandwich Voice Wi-Fi Board (VWXR2)

For different application scenarios, different wireless access methods are provided. Meet the needs of indoor, outdoor, long and short distance, access number, gateway, etc. Among them, the voice Wi-Fi communication board supports local far-field voice wake-up, online voice recognition and control functions.

4.3 Function board

The function board provides substantial peripheral functions for the development kit, such as sensors, actuators, etc. The function boards supported in the kit are:

- Tuya Sandwich (PWM) Lighting Board
- Tuya Sandwich (PWM + IIC) Lighting Board
- Tuya Sandwich Socket Board
- Tuya Sandwich Infrared Remote Control Board
- Tuya Sandwich Alexa Voice Board
- Tuya Sandwich Vibration Sensor Board
- Tuya Sandwich Environment Sensor Board
- Tuya Sandwich Door Sensor Board

4.4 Power Board

The power board provides a stable and continuous current for the development kit, increasing the power supply capacity of the main control board, and can output different levels for device debugging. The power boards supported in the kit are:

- Tuya Sandwich Non-Rechargeable Battery Board
- Tuya Sandwich DC-DC Power Battery Board

5 software platform

The software used by Arduino IDE to write Arduino programs. After the programs are written, they can be uploaded to Tuya Sandwich Evaluate Kit hrough this software. Arduino IDE has cross-platform features and can run on three major operating systems: Windows, Macintosh OS X, and Linux.