

Sensoyo[®]IO & T10

IOT enabling platform | Your first step

Overview

To begin the IOT journey, it is crucial to have a platform that helps exploration and learning. That forms the basis of the variant of T10 and Sensoyo[®] which is offered for developers and learners. While there are numerous platforms available as a starting point, the combination offered provides a unique environment keeping in mind the focus areas of developers and learners.

The Right Fit

For learning the need is to have a platform (end-to-end) that allows configurability and features which help in building an IOT solution with ease. Here are those unique features which are built keeping the developers and learners in mind,

- A reference solution with T10 and Sensoyo[®] which allows observation of the complete system and thus, provides a starting point
- T10's ease of configuration is build so that it can be connected with any other MQTT server and system
- T10 is generic enough for complete new firmware that that be programmed and numerous configurations can be tried
- Sensor (DS1820) is connected on a serial interface and thus, other sensors using similar interface can be connected easily
- Sensoyo[®] provides a portal and App which allows easy configuration and monitoring
- Entire platform is industry ready and thus, provides right detailing and exposure to technology and engineering required to build successful IOT Systems

IOT System Components

Let's explore the system components and their high level features. System consists of the T10 Device, Sensoyo[®]IO and Android App.

T10 Device

T10 is a temperature indicator, monitor and an IOT device. It works on a sensor to server (s2s[®]) architecture. A semiconductor temperature sensor DS1820 is used to sense the temperature and the same is sent over a WiFi to an IOT server over MQTT or HTTP. Data so collected at the server side is useful for remote monitoring, analysis and control. T10 can be configured for various parameters like MQTT URL, port and topic, WiFi credentials, Interval of data collection and transmission and for FOTA

Sensoyo[®]IO - your first step to IOT

Sensoyo[®] is an industry grade platform build to serve various industry verticals. A profile of the same, Sensoyo[®]IO is offered to start building an IOT system. Sensoyo[®]IO is built with a data collection framework (over MQTT and HTTP), data storage in a database (MySQL), Data visualisation (Dashboard and trends) and management of devices (Add, remove device, FOTA). Platform also supports notifications (email, websockets and FCM) and Data Services API for building your own web or mobile Applications.

Android App for Sensoyo[®]IO

An Android app to configure, remotely monitor and receive notifications from the system. All the configurations for T10 are possible using this App.

The How-To's

Following is the set-up each one who buys a device will have access to the following subsystems,

- T10 device with full featured firmware
- User account to access Sensoyo[®]IO
- Android App from playstore with access credentials (same as that of Sensoyo[®]IO)

With this, it enables the user to start working on IOT for the developer or learners. These serve as the components of a typical sensor to server IOT system and thus can help develop and learn the working.

Given below are the enablers,

1. IOT End to End - Baseline

All the three subsystems work together out of the box and thus, provide a reference anytime a developers want to validate the working of the system or any of the components

Use the T10 to monitor the temperature of the desired environment, monitor on Portal or App and get alerts per the setting. A simple end to end working system.

2. T10 with my servers

T10 can be configured with another MQTT server, port and topic, thus can send in the data to the desired server. With this a developer or learner can use the device and connect to an MQTT set-up of his/her choice and observe the system or build further features. Certain versions of T10 firmware will allow setting up of various types of JSON formats too. Some of the experiments that can be done using such a set-up are,

- Collect own data, develop a parser and use storage of ones choice
- Build a server/webapp to access such data and who it on a portal
- Build your own APIs to access the data from the server for further communication or processing or intersystem communication

In summary, a T10 with it's base firmware configured for connecting to the desired MQTT server for further development. A feature that helps a developer to focus on the other areas of the system without getting into the nitty gritty of the firmware development.

3. Develop Firmware and build my own system

T10 is built with a possibility of programming your own firmware using the standard interfaces available on the board (you may need a USB to TTL programmer).

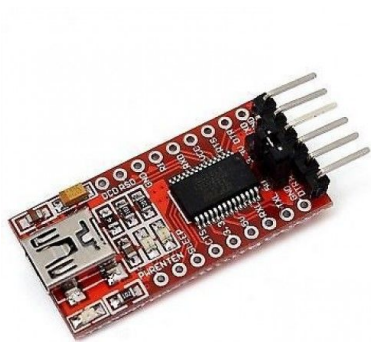
Documentation is provided with T10 which provides details of addresses and interfaces which can be used to build your own firmware and flashed into the system.

And, just in case you want to get the system back to it's normal working, the factory firmware can be re-flashed to get the system working

Tools for T10

T10 uses ESP32 series processors and thus, the entire tool chain and flashing procedure, which are well documented, can be used for development of firmware. More details are available at the links below,

<https://docs.espressif.com/projects/esp-idf/en/latest/esp32s2/index.html>



Programmer which can be used for flashing new software using suggested tools by espressif or mysys tool.

Picture credits: www.robu.in

Conclusion

At present there are development boards and sensors are available which can be used to build a device. Such a device will require a firmware to be developed. When working on an IOT system, a server and App will also need to be developed or used from various providers. Sensoyo[®]IO and T10 provide a “ready to fly” baseline and also the flexibility of building your own system, thus making it a versatile system and useful for developers and learners who wish to focus on particular areas.

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