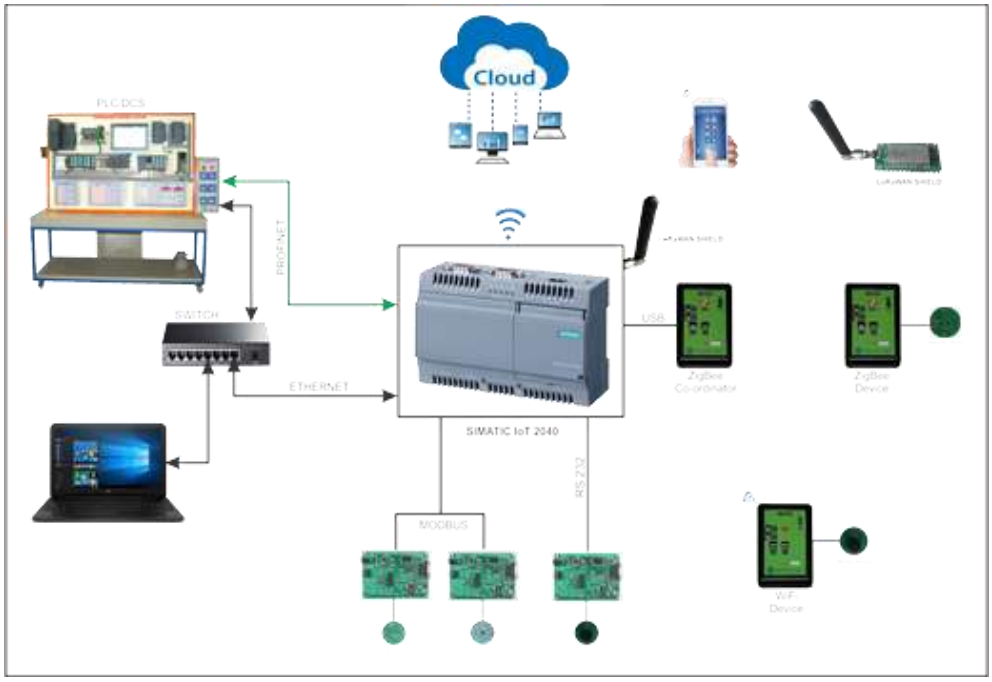
INDUSTRIAL IOT GATEWAY DEVELOPMENT SYSTEM – 2050

MODEL-IIOT2050

SPECIFICATIONS



This trainer has been designed with a view to provide practical and experimental knowledge of using Programmable Logic Controllers (PLC), Distributed Control Systems (DCS), Supervisory Control and Data Acquisition Systems (SCADA) with Industrial IOT Gateway. IIoT Gateway is reliable open platform for collecting, Processing and transmission data.

SPECIFICATIONS

A. Main Specs

1. Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch.
2. The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place.
3. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement.
4. Modules and Parts should be removable without desodlering for easy repair / replacement
5. The acrylic cover is fitted on PCB to safeguard main parts.

B. Features

1. These devices and sensors based on either wired or wireless communication protocols like Profinet, Profibus, Modbus, WiFi, and Zigbee can be connected to this IIOT Gateway.
2. This Gateway can be used with multiple programming languages and protocols.
3. PLC and sensors of many brands can be integrated through Ethernet & Serial ports.
4. Open Protocols: Modbus, Profinet, REST or MQTT, AMQP, OPC UA
5. Based on Intel Quark X1020 ,(x86)@400MHz
6. Compatible With Open Source Software Arduino IDE and Yocto Linux
7. High level language support : Java, Python, C/C++
8. 1 GB RAM, 8MB Flash ,256KB SRAM
9. Micro SD card Slot up to 32GB
10. One miniPCIe Slot for hardware expansion for WLAN / Additional Ethernet Port
11. Arduino Uno – R3 Compatible
12. Intel Wi-Fi + Bluetooth Module for 300MB data rate
13. 2 x RS232 / 422 / 485 (Switchable)
14. 1xUSB Controller + 1 x Device
15. 2 x 10 /100 Mbps Ethernet RJ45

C. IIoT Gateway Module

1.	Processor type	: ARM TI AM6528 HS (4 Core)
2.	Graphics controller	: Integrated
3.	SD Card Slot	: 1x microSD card slot
4.	Main memory	: 1 GB RAM, DDR4
5.	8MB Flash, 256KB SRAM	
6.	Add on Slots	: Arduino, mPCIe Wifi Card
7.	Number of digital inputs	: 20
8.	Number of digital outputs	: 20
9.	PROFIBUS / MPI can be implemented with plug-in card	: Yes
10.	Number of industrial Ethernet / PROFINET interfaces	: 2 Nos
11.	USB port	: 2 Nos USB 2.0
12.	Connection for Keyboard / Mouse	: USB
13.	Serial interface	: COM Port - RS 232 / 422 / 485
14.	Graphics interface	: Display Port

D. PLC Module

1.	Supply Voltage	: 24V DC
2.	Number of Inputs	: 8 Nos
3.	Output Type	: Transistor
4.	Input Type	: Analogue, Digital
5.	Number of Digital Inputs	: 8 Nos
6.	Number of Outputs	: 4 Nos
7.	Number of Digital Outputs	: 4 Nos
8.	Number of Analogue Inputs	: 4 Nos
9.	Network Type	: RJ45 Ethernet
10.	Display Included	: Yes
11.	Programming Interface	: Ethernet

E. RS485 Modbus Protocol Converter Board

1. Based on Arduino Mega 2560 Processor
2. Two Serial Ports RS232 configured as RS485 Modbus Ports
3. Two RS485 multi dropped and terminated at one 9 Pin D Type Connector
4. One Serial Port configured as RS232 Port and to use as RS232 to RS485 Modbus Protocol Converter
5. Sensors are provided for each Port so that the CPU can Read the sensor outputs and send it to any Host against request with RS232 & RS485 Modbus Protocol.
6. One RS232 Port is connected to USB based COM Port
7. One USB Connector
8. One Relay is provided and its terminals terminated at Screw Type Connector.
9. The processor I/O lines should is allotted to RS232 & 2xRS485 Ports, as follows
   One 10 pin RMC Connector for 2xAI, 2xDI, 2xDO for RS232
   One 10 pin RMC Connector for 2xAI, 2xDI, 2xDO for RS485#1
   One 10 pin RMC Connector for 2xAI, 2xDI, 2xDO for RS485#2

F. Wireless Gateways

1. Wifi and BLE Gateway Module - mPCIe Wifi Card : 1 No
2. Zigbee End Device and Co-ordinator : 2 Nos
3. GSM Cellular IOT Gateway Module : 1 No
4. LoraWAN Transmitter and Receiver - MKR1310 : 2 Nos
5. Bluetooth Transmitter and Receiver : 2 Nos
6. GPS Module : 1 No

G. Programming Language

1. Ladder - LD
2. STL
3. FBD
4. SLC
5. ST- Graph

H. Onboard IOT Protocols

1. Bluetooth
2. BLE
3. Wifi
4. Zigbee
5. USB
6. TCP / IP - Ethernet
7. UDP
8. HTTP
9. FTP
10. COAP
11. TTL
12. I2C
13. SPI
14. MQTT
15. REST
16. OTA

I. PLC Protocols

1. RS232-UART
2. RS422
3. RS485 - MODBUS - RTU
4. 4-20 mA
5. Profibus
6. Profinet
7. S7
8. OPC UA
9. AMQP
10. EMQX

J. Applications Software

1. Red-Node
2. Mandix
3. NPM
4. SQlite
5. Grafana
6. UBidots
7. Dockers & Containers
8. Portainer
9. Alexa Voice control
10. TIA
11. QT Creator / Designer
12. OPENHAB
13. MATLAB
14. Labview
15. Scilab

K. Protocol Conversion

1. Serial to Modbus TCP IP
2. Serial to WiFi
3. Serial to Bluetooth
4. Serial to GPRS, GSM, GPS, 4G
5. Serial to Ethernet

L. Simulation Software

1. Tinker CAD
2. Wakwi

M. Database Servers

1. InfluxDB
2. MAP DB
3. MYSQL

N. Cloud Services

1. AWS
2. GPC- Google
3. Azzure
4. IBM Watson/Blue mix
5. The Thing Network -TTN
6. Thing Speak
7. Blynk IOT
8. Dedicated server
9. Sens Technic

O. Operating System and Utilities

1. Operating System and Utilities
2. Linux - Yocto
3. Python
4. Debian -11
5. GitHub
6. Java
7. C++

P. Data Acquisition

1. Ethernet IOT DAQ
2. Wifi IOT DAQ
3. Cellular IOT DAQ

Q. Sensors

1. Temperature and Humidity Sensor - DHT11 : 1 No
2. Soil Moisture Sensor : 1 No
3. Infrared Sensor – Digital Output Module : 1 No
4. Ultrasonic Sensor - HC-SR04 : 1 No

R. Other Parts

1. Relay – 24 V, 5A : 1 No
2. Audio Buzzer – Active High : 1 No
3. Input Switches : 12 Nos.
4. Output LEDs : 12 Nos
5. Servos : 1 No
6. HMI : 1 No
7. 24 VDC, 5A Industrial Power Supply – Rail type : 1 No
8. Industrial Ethernet Switch Rail type : 1 No
9. Buzzer : 1 No
10. ADC-MCC118 : 1 No
11. DAC- MCC152 : 1 No
12. mPCIe Wireless and Bluetooth Card – 300 MHz : 1 No
13. Arduino Relay Shield : 1 No
14. Arduino Lora Shield : 1 No
15. Arduino Motor Shield : 1 No
16. Arduino I/O Shield : 1 No
17. Arduino 2560 Board : 1 No

S. Accessories

1. All Cables and Adaptors
2. Pen Drive : 16 GB with All Codes and Soft copy of Manual
3. E-Books for IOT Subject : 100 Nos. in PDF Format
4. Mp4 Video for IOT Subject : 100 Nos
5. Online Cloud/Server Services : For 1 Years on Cloud Server
6. Live Training at College : For 2 Days for 4 Hours per Day
7. After Sale Training support : By Online Zoom Meeting or By Whatsapp Video Call

EXPERIMENTS

1. Introduction to Industrial IOT Gateway, PLC, Arduino 2560 and all other parts
2. To install IIOT Gateway with PC
3. To install all software and utilities required for IIOT Gateway in PC as well as In IIOT Gateway
4. To send Sensors data from Arduino to IIOT Gateway using Bluetooth Gateway
5. To send Sensors data from Arduino to IIOT Gateway using BLE Gateway
6. To send Sensors data from Arduino to IIOT Gateway using Zigbee Gateway
7. To send Sensors data from Arduino to IIOT Gateway using Wifi Gateway
8. To send Sensors data from Arduino to IIOT Gateway using LoRaWAN Gateway
9. To send Sensors data from Arduino to IIOT Gateway using Ethernet Port
10. To send Sensors data from Arduino to IIOT Gateway using USB Port
11. To send Sensors data from Arduino to IIOT Gateway using Serial COM Port
12. To send Sensors data from Arduino to IIOT Gateway using RS485 Port
13. To send Sensors data from PLC to IIOT Gateway
14. To use Arduino Relay Shield and Control Outputs
15. To use Arduino Motor Shield and Control Motors
16. To use Arduino I/O Shield and Control Outputs
17. To send Sensors data to Mobile using GSM Module and IIOT Gateway and display it on Mobile by SMS
18. To send Sensors data to Mobile using GSM Module and IIOT Gateway and display it on Mobile by webpage
19. To detect Sensors data Location using GPS module and control it using LoRaWAN Server via IIOT Gateway
20. To send Sensors data to Mobile and display them in Mobile App via IIOT Gateway
21. To send Sensors data to Cloud and display them on Website page via IIOT Gateway
22. To send Sensors data to MySQL Cloud Server and then store and export it in xls file via IIOT Gateway
23. To send Sensors data to Local Host Server, store and export it in xls file
24. To send Sensors data to Local Host Server and Display on website html page
25. To send Sensors data to LoRaWAN Cloud Server via IIOT Gateway
26. To export Sensors data from LoRaWAN Cloud Server to xls file
27. To analyse, monitor and Draw Graph of Sensors Data using Smart Dashboard Remotely
28. To make Smart Dashboard for Remote Monitoring and Analysis

Contact us

Registered Office

SIGMA TRAINERS AND KITS
E-113, Jai Ambe Nagar,
Near Udgam School,
Drive-in Road,
Thaltej,
AHMEDABAD-380054. INDIA.

Factory

SIGMA TRAINERS AND KITS
B-6, Hindola Complex,
Below Nishan Medical Store,
Lad Society Road,
Near Vastrapur Lake,
AHMEDABAD-380015. INDIA.

Contact Person

Prof. D R Luhar – Director

Mobile : 9824001168

Whatsapp : 9824001168

Phones:

Office : +91-79-26852427

Factory : +91-79-26767512

+91-79-26767648

+91-79-26767649

E-Mails :

sales@sigmatrainers.com

drluhar@gmail.com