We have designed a new Variant of Multi-controller IoT4U, which is ready to use with a various Wireless protocol's like Wi-Fi, BLE, LoRa and Embedded AI/ ML with onboard sensors. In "IoT4U Kit" students can perform more than 200+ lab experiments.

Technical Specifications

- Raspberry Pi Bus Interface (External I/F)
- Ardiuno Uno Module
- Raspberry PiCo Module
- ESP32 Module
- STM32 Module
- RFM95W – LoRa Module with onboard Antenna
- 1.8" TFT LCD
- 2 Channel onboard Relay
- Accelerometer and Gyroscope Sensor (MPU6050)
- Pressure Sensor (BMP280)
- Temperature and Humidity Sensor (DHT11)
- RGB LED, Push Button, POT and Buzzer
- GSM Module
- RS232 Convertor
- RS485 Convertor
- CAN Module
- NB-IoT/Zigbee Module (Provision)
- External Power Pins (5V & 3.3V)

Note: Specifications are subject to change.

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IOT4U - Four Industrial Microcontrollers and ready to use with a various Wireless protocol's like Wi-Fi, BLE, LoRa and Embedded AI/ML with onboard sensors

On Board Sensors

Description	Specifications
MPU6050 Sensor	• Operating Voltage (VDC): 3 – 5 • Communication: I2C Protocol • Gyro range(Å°/s): Å± 250, 500, 1000, 2000 • Acceleration range(g) : Å± 2 Å± 4 Å± 8 Å± 16
BMP280	• Operating voltage (v) : 1.71 – 3.6 • Peak current : 1.12mA • Operating Pressure: 300 hPa – 1100 hPa. • Operating Temperature:-40 – +85 Å°C
DHT 11	• Power Supply: 3.3~5.5V DC • Measurement Range: Humidity 20-90%RH, Temperature 0~50°C • Accuracy: Humidity +-5%RH, Temperature +-2°C • Resolution: Humidity 1%RH, Temperature 1°C
1.8" TFT Display	• Display Size (inch) : 1.8 • Input Voltage (V) : 3.3 to 5 • Pixel Resolution : 128 x 160 • Interface Type : SPI
Relay	5V - 10A
Potentiometer	100 K
Pushbutton	SPST
Buzzer	5V
RGB LED	5V RGB LED

Communication Models

Description	Specifications
LoRa	Frequency : 865 -867MHz | Power Output Capability : +20 dBm 100 mW | Voltage range: 1.8V to 3.6V
RS232	IC Chip: MAX3232 | Operating Voltage: 3.3-5.5V
RS485	IC Chip : MAX485 | Operating Voltage (VDC) : 5 V
CAN	CAN transceiver TJA1050 Supports CAN V2.0B
Zigbee / NB-IoT	Zigbee - 2.4GHz for worldwide deployment | NB-IoT - BC95-B5
GSM	SIM 800L 850/900/1800/1900MHz | GPRS data (TCP/IP, HTTP, etc.).

Note: Specifications are subject to change.

Microcontroller Details

Parameters	Arduino UNO	ESP 32	STM32 - BLUPILL	PI PICO
Architecture	RISC	RISC	RISC	RISC
Pin Count	20	36	47	40
SRAM	2 KiloBytes	512 kiloByes	20 kiloBytes	264 KiloBytes
Serial wire Debug	1	1	1	1
Flash Memory	32 KiloBytes	4MB	64/128 KiloBytes	2MB
CPU speed	16 MHz	80 MHz	72 MHz (max)	133 MHz
USB Connector	USB-B	Micro	Micro	Micro
ADC	6	18	2	3
On-Board Wireless Interface	Nil	WiFi & BLE	Nil	Nil
USB module	Yes	Yes	Yes	Yes
I2C	1	2	2	2
SPI	1	3	2	2
UART	2	2	2	2
I2C	2	2	2	2
Operational Temperature	-40°C to +125°C	-40°C to +125°C	-40C – +105C	-20°C to +85°C
Source/Sink Current	20mA	6 mA	6 mA	6 mA
Operational Voltage	5v	3.3v	2.0V – 3.6V	3.3v
USART module	Yes	Yes	Yes	Yes
Internal Oscillator	16 MHz	4-16 MHz	4-16 MHz	4-16 MHz
Ext. Wireless Protocol	LoRa	LoRa	LoRa	LoRa
AI / ML	Yes	Nil	Nil	Yes

Note: Specifications are subject to change.

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