XNode Plus

IoT connectivity application training equipment based on wireless personal network (WPAN) and low-power wide area network (LPWAN)

Consists of high-performance edge server with integration of base station and network server, module type sensor node and expansion module

Edge server supports sensor node control and AI fusion programming in a web browser environment through the AIoT dedicated operating system Soda OS and Pop library

Edge server supports mDNS/DNS-SD, SSH, SFTP, SMB/CIFS, MQTT, and NX X Window protocols

Provides 2100mA battery, RGB LED for indicator, light sensor based on lux unit and temperature/humidity sensor for independent operation of sensor node

Sensor node supports interpreter-style Python 3 so that control programs can be easily and concisely written

AIoT dedicated operating system Soda OS and Pop library

Visual Studio Code-based integrated development environment for professional application development

Provides training contents for Python-based edge server and sensor nodes

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Since 1984

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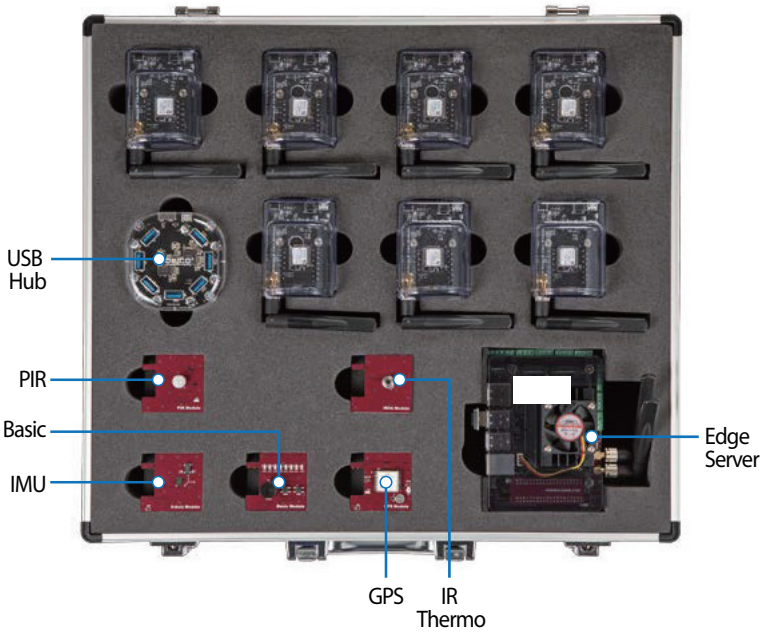
Software Specifications

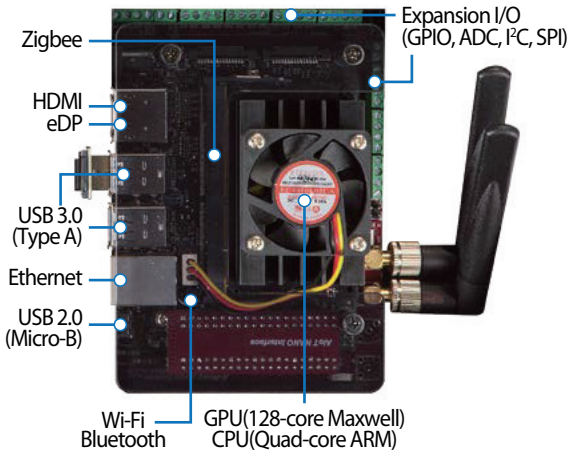
List			Specifications
Edge Server	Soda OS	Linux Kernel	aarch32 4.x or aarch64 4.x
		Lightweight Desktop	X-Server, Openbox, lxdm, Tint2, blueman, network-manager, conky pcmanfm, lxterminal
		CLI	Zsh with Oh-My-Zsh, Tmux, Peco, powerlevel9k thema, Powerline fonts
		Tool Chain	GCC (c, c++), JDK, Node JS, Python3, Cling
		IDE	Visual Studio Code, NeoVim, Geany
		Connectivity	SSH Server, Samba Server, Remove Desktop Server, mDNS(avahi) Bluez, MQTT Server(Mosquitto), Blynk Server
		Multimedia	PulseAudio, sox (lame, oggenc), snowboy, Google Assistant OpenGL ES, OpenCV 4
		Data Science & AI	Numpy, Matplotlib, Pandas, Scipy, Seaborn Scikit-learn, TensorFlow, Keras, PyTorch, TorchVision, OpenAI Gym
		Jupyter Lab	Python3 and Cling support IPython Widgets Terminal support
	Pop Library	Multimedia Object	AudioPlay, AudioPlayList, AudioRecord, Tone, SoundMeter
		Voice Assistant Object	GAssistant, create_conversation_stream
		AI Object	Linear Regression, Logistic Regression, Perceptron, ANN, DNN, CNN, DQN Pilot with AutoCar & SerBot
Node		MicroPython 3 (built in node)	
		Soda IDE	
		Configuration Software (compatible with Linux, OS X and Windows)	
		Remote Terminal & Remote Desktop support	
	Pop Library	Output Object: LED, Buzzer Input Object: Switch, PIR, Thermopile, 9Axis IMU, GPS	

Hardware Specifications

List	Specifications	
Edge Server	CPU: Quad-core ARM A57 @ 1.43 GHz	
	GPU: Maxwell Core 128EA	
	Memory: 4GB 64-bit LPDDR4 25.6 GB/s	
	Storage: microSD (64GB)	
	Video Encoder: 4K@30 | 4x 1080p@30 | 9x 720p@30 (H.264/H.265)	
	Video Decoder: 4K@60 | 2x 4K@30 | 8x 1080p@30 | 18x 720p@30 (H.264/H.265)	
	Camera: MIPI CSI-2 DPHY lanes	
	Connectivity	Dual Band Wireless WiFi 2GHz/5GHz Band, 867Mbps, 802.11ac Bluetooth 4.2 | Gigabit Ethernet
	Display: HDMI and display port	
	USB: 4x USB 3.0, USB 2.0 Micro-B	
Expansion Module	Basic	Input Device: Tact Switch x 2EA(GPIO) | output device: LED 8EA(I^2C) Actuator: Passive Buzzer(GPIO) | Size: 46x44(mm)
	IMU	Acceleration ranges: 2g/±4g/±8g/±16g Gyroscope ranges: ±125°/s to ±2000°/s Magnetic field range: ±1300uT(x-,y-axis), ±2500uT(z-axis) Interface: I^2C | Size: 46x44(mm)
	PIR	Sensing Range: 110° | Spectral Response: 5 ~ 14 um I/O Interface: Digital Out | Size: 46x44(mm)
	IR Themo	Measurement resolution: 0.02℃ | Measure range: -40℃ ~ +125℃ Interface: I^2C | Size: 46x44(mm)
	GPS	Sensitivity: -165dBm | Update Rate: up to 10Hz AGPS Support for Fast TTFF | Consumption current(@3.3V) Acquisition: 25mA Typ | Tracking: 20mA Typ Size: 46x44(mm)
Node (7EA)	RAM: 128KB	
	Flash Memory: 1MB	
	Interface: UART, SPI, I^2C, ADC, PWM, GPIO	
	Indicator: LED	
	ZigBee 3.0	Frequency: 2.4GHz Range: Max 3200m (outdoor), Max 90m(indoor) Data rate: 250kbps | Sensitivity: -103dBm Output Power: 19dBm | Receiver Sensitivity: -100 dBm Bluetooth support
	Light Sensor	Illuminance: 1 ~ 65535(lx) | Interface: I^2C
	HUMIDITY & TEMPERATURE Sensor	Humidity Resolution: 12bit(0.04%RH), 8bit(0.7%RH) Humidity Accuracy: +-3%RH Temperature Resolution: 14bit(0.01C), 12bit(0.04C) Temperature Accuracy: +-4°C | Interface: I^2C
	Power	Micro USB B type(+5V) | Expansion Connector (+5V) Li-Po Type 3.7V/2100mAh (1EA)

Layout





Composition

Platform USB
1EA

Micro USB Cable
8EA

User Guide book
1EA

USB to Ethernet Adapter
1EA

Ethernet Cable
1EA