



VERITAS Engineering

Catalog
Of

IoT Training System

Brand: VERITAS

Model: VIOT-2401

Picture: IOT Training System

Technical Specification

Features:

Main module supporting AI acceleration calculation, multimedia and various IoT sensors are integrated into the base board.

5-inch TFT LCD with 800x480 or higher resolution and 8M pixel high resolution camera

Digital microphones and speakers should support cloud-based speech recognition and audio playback

4 dedicated expansion interfaces support various IoT sensor modules

Soda OS, the exclusive AIoT operating system, and Pop library

A dedicated web browser-based learning environment for training Python 3 and C/C++

Educational contents for IoT sensor control, multimedia and AI

Training Contents:

Introduction to AIoT Home:



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Configuration and Practice Environment of AIoT Home

Python and Linux 101

IoT Application Technology

Sensor Control:

File and DB-Based Data Persistence

Audio Recording and Playback

Google Text-to-Speech Converter, Google Assistant and

User Device Actions

Camera and Sensor Applications

AI Technology:

Numpy for Fast Multidimensional Matrix Operations Pandas for Time Series and Tabular Data

Analysis Matplotlib for Data Visualization Supervised and Unsupervised Learning

Theory & Practice for Pop.AI-based Linear and Logistic

Regression Algorithm, Perceptron, ANN, DNN, and CNN & Open AI DQN-based Reinforcement

Learning, Understanding Tensor flow.

Software Specifications: Soda OS:

Linux Kernel: 4.19

Desktop: X-Server, Openbox, LightDM, Tint2, blueman, network-manager, conk

CLI: Zsh, Tmux, Peco, powerlevel9k thema, Powerline fonts

IDE: Visual Studio Code, NeoVim, Geany

Data Science & AI: Python3, Numpy, Matplotlib, sympy,

Pandas, Seaborn, Scipy, Gym Scikit-learn, Tensor flow, Kerast

Pop Library:

Output Object (C/C++, Python3): Led, Laser, Buzzer, Relay, RGB Led, DC Motor, Steeper Motor,

OLed, Piezo Buzzer, Pixel Display, Text LCD, FND, Led Bar

Input Object (C/C++, Python3): Switch, Touch, Reed, Limit Switch, Mercury, Knock, Tilt, Opto, PIR,

Flame Line Trace, Temp Humidity, Ultrasonic, Shock, Sound, Potentiometer, CdS, Soil Moisture,

Thermistor, Temperature, Gas, Dust, Psd. Gesture

AI (Python3): Linear Regression, Logistic Regression, Perceptron, ANN, DNN, CNN, DQN

Hardware Specifications:

Main Module:

CPU: 6-core NVIDIA Carmel ARM v8.2 64-bit; 6MB L2 + 4MB

L3; Max Freq: 2-core@1900MHz, 4/6-core@1400Mhz



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GPU: 384-core NVIDIA Volta™ GPU with 48 Tensor Cores

Max Freq: 1100MHz

Memory: Minimum 8GB 128-bit LPDDR4x@ 1600MHz

Video Encoder: 2x464MP/sec(HEVC), 2x4k@30(HEVC); 6x1080p@ 60(HEVC), 14x 1080p@ 30(HEVC)

Video Decoder: 2x690MP/sec(HEVC), 2x4k@ 60(HEVC), 4x4k@30(HEVC); 12x1080p@ 60(HEVC), 32x 1080p@ 30(HEVC), 16x 1080p@30(H.264)

CSI Camera: Up to 6 cameras (36 via virtual channels); 12

Lanes MIPI CSI-2, D-PHY 1.2 (up to 30 Gbps)

Connectivity: Dual Band Wireless Wi-Fi 2GHz/5GHz Band, 867Mbps, 802.11ac; Bluetooth 4.2; 10/100/1000 Base-T Ethernet

Display: 2 multi-mode DP 1.4/eDP 1.4/HDMI 2.0

USB: Min. 4x USB 3.0, Min. USB 2.0 Micro-B

Base Board:

Camera:

Image Sensor: Sony IMX219

Resolution: Min. 8M Pixel Native Resolution Sensor (3280 x 2464 or higher Pixel Static Images)

Video: 1080p30, 720p60 and 640x480p90

Linux Integration: V4L2 Driver Available

Sound:

Sound IC: WM8960

Channel: Input 2ch, Output 2ch

2CH Microphone

Stereo Speaker

Servo Motor:

Working Speed: 0.12sec/60 (4.8V no Load)

Stall torque: 1.2kg/cm (4.8V), 1.6kg/cm (6.0V)

TEXT LCD:

Format Size: 20 X 04

LED B/L, Black and White

Interface: GPIO

LED:

(1x3) Group x 3EA: Light Display



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Stand Light Display 1EA

Interface: GPIO

RGB LED:

Size: 5pi

Wavelength: RED (630 nm), GREEN (525 nm), BLUE (430 nm)

Interface: I2C

PIEZO:

Rated Current: Max 30mA

Sound Output at 10cm(dB): Min 85dB

FAN:

Size: 30 X 30mm

Speed: 900RPM

Supply Voltage: 5V

LED BAR x 2EA:

Size: 20 X 10mm

Humidity & Temperature Sensor:

Humidity Resolution: 12bit(0.04%RH), 8bit(0.7%RH)

Humidity Accuracy: +-3%RH or better

Temperature Resolution: 14bit(0.01C), 12bit(0.04C)

Temperature Accuracy: +-4°C or better

PIR Sensor:

Transmittance: ≥75%, Detecting Distance: 10~80cm

DUST Sensor:

Based on Laser Scattering Technology

Measured Particle Size: 0.3μm~10μm

Measurement Range: PM1.0/PM2.5/PM10: 0~1,000μg/m³

TFT LCD:

Size: Minimum 4 inch, Resolution: 800X480 or higher

IPS technology, High quality and perfect displaying from very wide viewing angle

Interface: HDMI

Illuminance Sensor:

Sensor: CdS, Power Dissipation (at 25): 100mW, Temp. Range: -30~+70°C, Interface: ADC

GAS Sensor:

Measure: LPG, Alcohol, Propane, Hydrogen, CO and Even Methane



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Touch Keypad:

16 Key Input

Sensor Module Block:

Sensor Block1: +5V, +3.3V, GND, I2C, ADC, GPIO

Sensor Block2: +5V, +3.3V, GND, I2C, ADC, GPIO

Sensor Block3: +5V, +3.3V, GND, SPI, GPIO

Sensor Block4: +5V, +3.3V, GND, ADC, GPIO

Main Board Size: Minimum 460 X 310 (mm)

Sensor Pack:

Flame Module:

Sensing Range: 60 Degree

Eco Sensor Module:

Light Sensor: Illuminance to digital converter; Wide range: 1~ 65535(lx)

Temperature Measure: -40 ~ 85°C or higher

Humidity Measure: 0 ~ 100%r.H.

Pressure Range: 300 ~ 1100hPa or higher

VOC Measure: Ethane, Ethanol, Acetone, Carbon Monoxide, Butadiene, methyl

Carbon Dioxide (CO2) Gas Sensor Module:

Measuring Range: 0 ~ 10000 ppm or higher

Accuracy: $\pm 7\%$ ~ ± 50 ppm or better

Pixel Display:

Color: Pixel RGB, Pixel: 8x8

Digital Thermopile Module Laser (DTPML):

IR Refresh Rate: 50Hz, Digital Resolution: 0.1°C, Accuracy: $\pm 2\%$ or better

Microwave Motion Sensor Module:

Frequency Setting: 10.525 GHz (Typ), Spurious Emission: -7.3 dBm,

Pulse Repetition Frequency: 2KHz

IR Receiver Module:

Carrier Frequency: 38kHz

PIR Sensor Module:

Sensing Range: 110°

Spectral Response: 5 ~ 14 μ m