

UnitV(OV7740)

SKU:U078-C



Tutorial&Quick-Start

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Description

UnitV(OV7740) is the new AI Camera powered by Kendryte K210, an edge computing system-on-chip(SoC) with dual-core 64bit RISC-V CPU and state-of-art neural network processor.

UNIT-V AI Camera features its integration with machine vision capabilities, featuring the unprocessed acceptability to AI Visioning with high energy efficiency and low cost. We co-oped with Sipeed providing the MicroPython environment makes programming on UNIT-V easier.

Support MicroPython development environment, which makes the program code more concise when you use UNIT-V for project development. Equipped with OV7740 image sensor, it is an ideal choice for machine vision project.

It is equipped with two programmable keys and an RGB LED indicator on the front for convenient status display. At the bottom, there is a HY2.0*4P interface and a type-C interface compatible with grove, which is convenient to connect with the main controller. Support TF card to expand memory, related material and model file call more convenient.

Product Features

Dual-Core 64-bit RISC-V RV64IMAFDC (RV64GC) CPU / 400Mhz(Normal)

Dual Independent Double Precision FPU

8MiB 64bit width On-Chip SRAM

Neural Network Processor(KPU) / 0.8Tops

Field-Programmable IO Array (FPIOA)

AES, SHA256 Accelerator

AES, SHA256 Accelerator
Direct Memory Access Controller (DMAC)
Micropython Support
Firmware encryption support
On-board Hardware resources:
Flash: 16M
Camera :OV7740
Button: button * 2
Indicator light: WS2812 LED
External storage: TF card/Micro SD
Interface: HY2.0/compatible GROVE

Include

1x UNIT-V(include 20cm 4P cable and USB-C cable)

Applications

Face recognition/detection
Object detection/classification
Obtaining size and coordinates of the target in real-time
Obtaining the type of detected target in real-time
Shape recognition
Video recoder

Specification

Resources	Parameter
Kendryte K210	Dual-Core 64-bit RISC-V RV64IMAFDC (RV64GC) CPU / 400Mhz(Normal)
SRAM	8MiB
Flash	16M
Input voltage	5V @ 500mA
KPU Neural network parameter size	5.5MiB - 5.9MiB
Interface	TypeC x 1, GROVE(I2C+I/O+UART) x 1
RGB LED	WS2812 x 1
Button	x 2
Image Sensor	OV2640
FOV	65deg
External storage	TF Card/Micro SD
Net weight	8g
Gross weight	45g
Product Size	40mm * 24mm * 13mm

Package Size	70mm * 50mm * 30mm
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shell material	Plastic (PC)
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About KENDRYTE K210

The Kendryte K210 is a system-on-chip (SoC) that integrates machine vision. Using TSMC's ultra-low-power 28-nm advanced process with dualcore 64-bit processors for better power efficiency, stability and reliability. The SoC strives for "zero threshold" development and to be deployable in the user's products in the shortest possible time, giving the product artificial intelligence

Machine Vision

Better low power vision processing speed and accuracy

KPU high performance Convolutional Neural Network (CNN) hardware accelerator

Advanced TSMC 28nm process, temperature range -40°C to 125°C

Firmware encryption support

Unique programmable IO array maximises design flexibility

Low voltage, reduced power consumption compared to other systems with the same processing power

3.3V/1.8V dual voltage IO support eliminates need for level shifters

The chip contains a high-performance, low power RISC-V ISA-based dual core 64-bit CPU with the following features:

Core Count: Dual-core processor

Bit Width: 64-bit CPU 400MHz

Frequency: 400MHz

ISA extensions: IMAFDC

FPU: Double Precision

Platform Interrupts: PLIC

Local Interrupts: CLINT

I-Cache: 32KiB x 2

D-Cache: 32KiB x 2

On-Chip SRAM: 8MiB

OV7740

support for output formats: RAW RGB and YUV

support for image sizes: VGA, QVGA, CIF and any size smaller

support for black sun cancellation

support for internal and external frame synchronization

standard SCCB serial interface

digital video port (DVP) parallel output interface

embedded one-time programmable (OTP) memory

on-chip phase lock loop (PLL)

embedded 1.5 V regulator for core

Sophisticated Edge Rate Control Enables Filterless Class D Outputs

77dB PSRR at 1kHz

Low RF Susceptibility Rejects TDMA Noise from GSM Radios

Extensive Click-and-Pop Reduction Circuitry

array size: 656 x 488

power supply: – core: 1.5VDC ± 5% – analog: 3.3V ± 5% – I/O: 1.7 ~ 3.47V

temperature range: – operating: -30° C to 70°C – stable image: 0° C to 50° C

output format: – 8-/10-bit raw RGB data – 8-bit YUV

lens size: 1/5"

input clock frequency: 6 ~ 27 MHz

max image transfer rate: VGA (640x480): 60 fps – QVGA (320 x 240): 120 fp

sensitivity: 6800 mV/(Lux-sec)

maximum exposure interval: 502 x tROW

pixel size: 4.2 μm x 4.2 μm

image area: 2755.2 μm x 2049.6 μm

package/die dimensions: – CSP3: 4185 μm x 4345 μm – COB: 4200 μm x 4360 μm

SD card test

UNIT-V does not currently recognize all types of MicroSD cards. We have tested some common SD cards. The test results are as follows.



Brand	Storage	Type	Class	Format	Test Results
Kingston	8G	HC	Class4	FAT32	OK
Kingston	16G	HC	Class10	FAT32	OK
Kingston	32G	HC	Class10	FAT32	NO
Kingston	64G	XC	Class10	exFAT	OK
SanDisk	16G	HC	Class10	FAT32	OK
SanDisk	32G	HC	Class10	FAT32	OK
SanDisk	64G	XC	Class10	/	NO
SanDisk	128G	XC	Class10	/	NO
XIAKE	16G	HC	Class10	FAT32	OK(purple)
XIAKE	32G	HC	Class10	FAT32	OK
XIAKE	64G	XC	Class10	/	NO
TURYE	32G	HC	Class10	/	NO

Related Link

Web page - [sipeed](#)

datasheet - [K210](#)

PinMap



Example

If you want the complete code, please click [here](#)

Video

Last updated: 2020-12-14

PURCHASE
