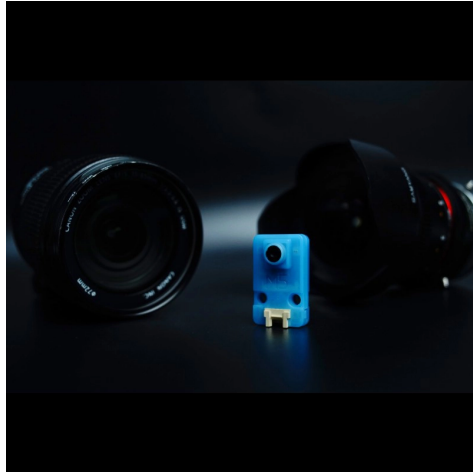
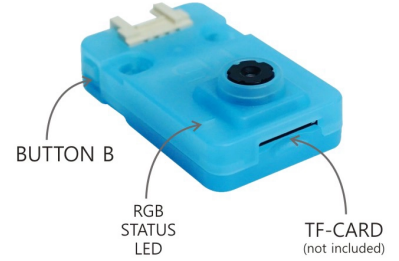


UnitV-OV7740

SKU:U078-C



Description

UnitV-OV7740 is a powerful AI vision processing camera unit equipped with the Kendryte K210 chip, integrating a dual-core 64-bit RISC-V CPU and an neural network processor edge computing system-on-chip.

This camera is compact and easy to embed into various devices, offering excellent machine vision processing capabilities. It supports multiple image recognition functions, such as real-time acquisition of the size, coordinates, and type of detected targets, and can perform convolutional neural network calculations even in low-power states, providing users with a zero-threshold machine vision embedded solution.

In terms of the development environment, it supports MicroPython, making the program code more concise during project development. The OV7740 image sensor it carries makes it an ideal choice for machine vision projects.

From a hardware configuration perspective, the device features two programmable buttons, a front-facing RGB LED indicator for status display, and a bottom-mounted HY2.0 x 4P interface and a TYPE-C interface for easy connection to the main control device. Additionally, it supports TF card expansion for memory, facilitating the use of relevant materials and model files.

Features

- Dual-core 64-bit RISC-V RV64IMAFDC (RV64GC) CPU / 400Mhz (Normal)
- Double-precision FPU
- 8MiB 64-bit on-chip SRAM
- Neural Network Processor (KPU) / 0.8Tops
- Programmable I/O Array (FPIOA)
- AES, SHA256 Accelerator
- Direct Memory Access Controller (DMAC)
- Supports MicroPython
- Firmware encryption support
- Onboard hardware resources:
 - Flash: 16M
 - Camera: OV7740
 - Buttons: 2
 - Status LED: WS2812 LED
 - Expansion card interface: TF card/microSD
 - Interface: HY2.0/compatible GROVE

Includes

- 1 x UnitV-OV7740
- 1 x HY2.0-4P Grove cable (20cm)

Applications

- Object detection/classification
- Real-time acquisition of target size and coordinates
- Real-time acquisition of detected target types
- Shape recognition
- Video recording

Specifications

Specification	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 size	5.5MiB-5.9MiB
Interface	Type-C x 1, HY2.0-4P (I2C+I/O+UART) x 1
RGB LED	WS2812 x 1
Buttons	Custom buttons x 2
Camera	OV7740 (30W pixels)
FOV	65°
External storage	TF Card/microSD
Product Size	40.0 x 24.0 x 12.7mm
Product weight	8.4g
Package Size	54.0 x 37.0 x 15.0mm
Gross weight	14.5g
Casing material	Plastic (PC)

Learn

KENDRYTE K210

Kendryte K210 is a system-on-chip (SoC) with integrated machine vision capabilities. Using TSMC's ultra-low-power 28nm advanced process, it features a dual-core 64-bit processor with excellent power efficiency, stability, and reliability. This solution aims for zero-threshold development, enabling rapid deployment into user products, empowering AI applications.

- Equipped with machine vision capabilities
- Better low-power vision processing speed and accuracy
- Features a convolutional neural network hardware accelerator KPU for high-performance convolutional neural network operations
- TSMC 28nm advanced process, temperature range -40°C to 125°C, stable and reliable
- Supports firmware encryption, difficult to crack using ordinary methods
- Unique programmable IO array, making product design more flexible
- Low voltage, lower power consumption compared to systems with similar processing capabilities
- 3.3V/1.8V dual voltage support, no need for level conversion, saving costs

This product features a dual-core 64-bit high-performance low-power CPU based on RISC-V ISA, with the following characteristics:

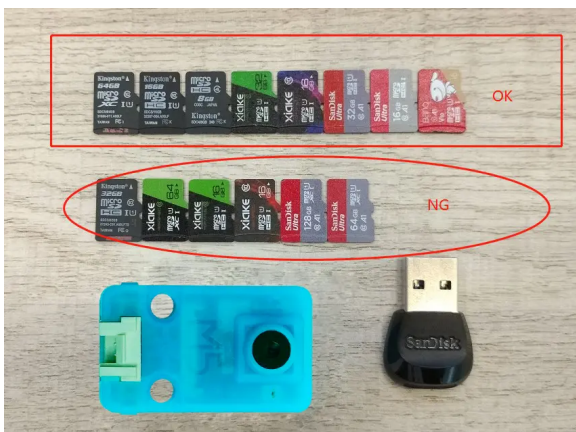
- Core count: Dual-core processor
- Processor width: 64-bit CPU 400MHz
- Nominal frequency: 400MHz
- Instruction set extension: IMAFDC
- Floating-point processing unit (FPU): Double precision
- Platform interrupt management: PLIC
- Local interrupt management: CLINT
- Instruction cache: 32KiB x 2
- Data cache: 32KiB x 2
- On-chip SRAM: 8MiB

OV7740

- Supported output formats: RAW RGB and YUV
- Supported image sizes: VGA, QVGA, CIF, or smaller sizes
- Supports sunspot elimination
- Supports 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-locked loop (PLL)
- Embedded 1.5 V regulator for the core
- Array size: 656 x 488
- Power supply: - Core: 1.5VDC \pm 5% - Analog: 3.3V \pm 5% - I/O: 1.7~3.47V
- Temperature range: - Operating: -30°C to 70°C - Stable image: 0°C to 50°C
- Output formats: - 8/10-bit raw RGB data - 8-bit YUV
- Lens size: 1/5"
- Input clock frequency: 6~27 MHz
- Sensitivity: 6800 mV / (Lux-sec)
- Maximum exposure interval: 502 x tROW
- Pixel size: 4.2 μ m \times 4.2 μ m
- Image area: 2755.2 μ m \times 2049.6 μ m

SD Card Test

Unit V currently cannot recognize all types of microSD cards. We have tested some common microSD cards, and the results are as follows.



Brand	Memory	Type	Transfer speed	Partition format	Test result
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

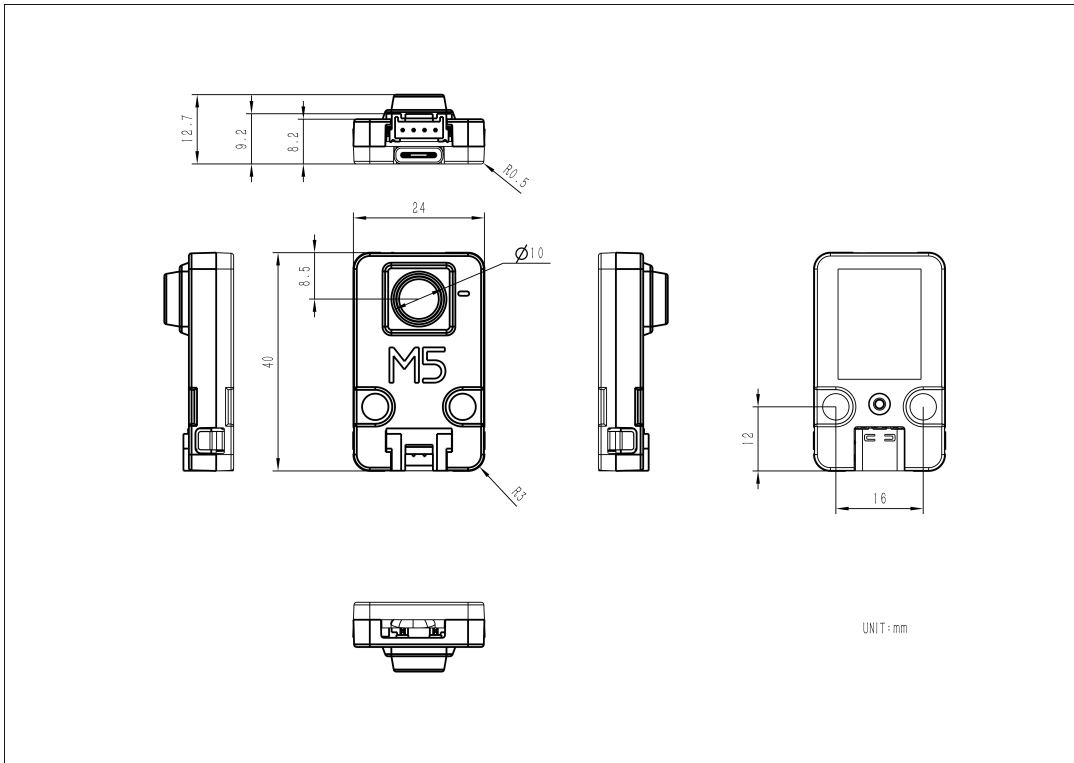
PinMap

UnitV-OV7740

UnitV	G8	G19	G18	G34, G35
Hardware	RGB LED	Button A	Button B	
HY2.0-4P				Interface



Model Size



Datasheets

- [K210 Datasheet](#)
- [OV7740 Datasheet](#)

Quick Start

Choose the development platform you want to use and check the corresponding tutorial & quick start guide.

- [UnitV-OV7740 V-Function Guide](#)
- [UnitV-OV7740 V-Training Guide](#)
- [UnitV-OV7740 Maixpy Guide](#)

Arduino

- [UnitV-OV7740 Arduino Tutorial](#)

UiFlow1

- [UnitV-OV7740 UiFlow1 Docs](#)

UiFlow2

- Coming soon...

USB Driver

UnitV-OV7740 may not work driver-free on some systems. Users can manually install the FTDI VCP driver to resolve this issue. Taking Windows 10 as an example, download the driver file that matches your operating system and extract it. Then, install it via Device Manager. (Note: In certain system environments, you may need to install the driver twice for it to take effect. The unrecognized device name is usually **M5Stack** or **USB Serial**. For Windows, it is recommended to use Device Manager to install the driver manually (custom update). The executable installation method may not work properly.)

FTDI VCP Driver Download Page:

Operating System	Release Date	Processor Architecture							Comments
		X86 (32-Bit)	X64 (64-Bit)	PPC	ARM	MIPSII	MIPSIV	SH4	
Windows (Desktop)*	2025-03-04	2.12.36.20	2.12.36.20	-	2.12.36.20A *** *	-	-	-	WHQL Certified. Includes VCP and D2XX. Available as a setup executable (non-ARM64). Please read the Release Notes and Installation Guides .
Windows (Universal)***	2025-03-04	2.12.36.20U	2.12.36.20U	-	2.12.36.20UA	-	-	-	WHQL Certified. Includes VCP and D2XX.
Linux	-	-	-	-	-	-	-	-	All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19. Refer to TN-101 if you need a custom VCP VID/PID in Linux. VCP drivers are integrated into the kernel.
Mac OS X 10.3 to 10.8	2012-08-10	2.2.18	2.2.18	2.2.18	-	-	-	-	Refer to TN-105 if you need a custom VCP VID/PID in MAC OS
Mac OS X 10.9 to 10.13	2019-12-24	-	2.4.2	-	-	-	-	-	This driver is signed by Apple
Mac OS X 10.14	2019-12-24	-	2.4.4	-	-	-	-	-	This driver is signed by Apple
Mac OS X10.15 and macOS 11/12	2022-06-13	-	1.5.0 (zip) 1.5.0 (dmg)	-	1.5.0 (zip) 1.5.0 (dmg)	-	-	-	This is a Beta driver release and the installer should be run from the Applications folder on your machine

* Includes the following version of the Windows operating system: Windows 10, Windows 11, Windows Server 2022 and Windows server 2025.

*** Windows 10 and Windows 11 only. Universal Windows Drivers enable developers to create a single driver package that runs across multiple different device types, from embedded systems to tablets and desktop PCs.

**** Windows 11 only for ARM64 based Windows PCs. Also works on Mac M1/M2/Mx running Parallels or VMWare Virtual Machines running Windows.

Installation Method:

1. In Device Manager, expand 'Other devices' and right-click on 'USB Serial Port'.

2. In the 'Update Drivers' dialog, select 'Browse for drivers on your computer'. The search location is set to '%SystemRoot%\System32\Drivers\CDM+v2.12.36.1+WHQL+Certified'.

3. In the 'Update Drivers' dialog, select 'Ports (COM & LPT)' and then 'USB Serial Port (COM4)'.

Other

- [UnitV-OV7740 with RoverC Track Ball Example](#)

| Video

[unitV.mp4](#)

| Product Comparison

To compare information on the UnitV series products, you can visit the [Product Selection Table](#), check the target products, and get the comparison results. The selection table covers key information such as core parameters and functional features, and supports comparison of multiple products simultaneously.