FriendlyELEC NanoPI R6C Dual-2.5G ETH 8G RAM / 32G emmC Combo with Case

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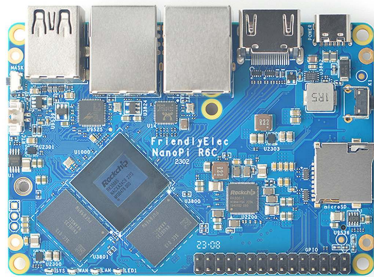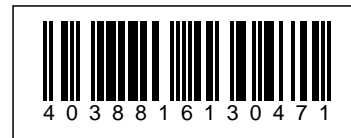
− Introduction

NanoPi R6C (as "R6C") is a one-for-all high performance platform for edge computing, designed and developed by the FriendlyElec team. It has a 2.5G and a Gbps Ethernet ports. It is based on Rockchip's RK3588S, and has 4GB/8GB LPDDR4x RAM and an optional 32GB eMMC flash. It works with systems such as FriendlyWrt, Android, Debian, Ubuntu etc. It supports GPU and VPU acceleration
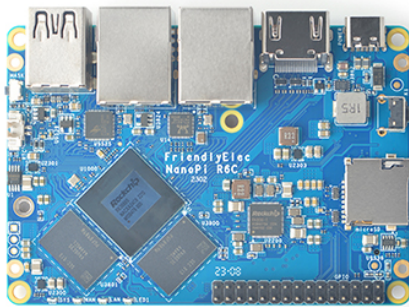
R6C is a compact board of 90 x 62 cm with rich hardware resources. It has a 30-pin GPIO header including general I/O, I2C, I2S, PWM and SPI pins. It has an HDMI output port which can play video steams such as 8K@60fps H.265/VP9 , 8K@30fps H264 etc. In addition, R6C has a Type C port that supports USB to Serial conversion, which allows developers to conveniently do development and debug issues.

R6C has an M.2 NVMe SSD interface, a USB 3.0 interface and a USB 2.0 interface. It supports popular fast PD charging mode at the USB-C port. When connected to an external hard disk, it can effectively power the hard disk. A customized CNC Aluminium housing is specifically designed and developed for this board.

In summary, R6C is well suited for enterprise customers to develop mini machine vision systems with multiple Ethernet ports and for embedded system hobbyists to explore and implement prototype designs.

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NanoPi R6C

Rockchip RK3588S | 4GB/8GB RAM + 0GB/32GB eMMC | 2.5G + 1G Ethernet Port

Rockchip RK3588S
Quad-core A76
& Quad-core A55

4GB/8GB RAM
LPDDR4X@2133MHz

32GB eMMC

2.5G+1Gbps
Ethernet Ports

HDMI 2.1
Can play H.265 8k@60P etc

FriendlyWrt 22.03
w/ Kernel 5.10

UbuntuCore/Desktop
w/ GPU&VPU accelerated

Debian Desktop
w/ GPU&VPU accelerated

USB-C x1(Power In)
USB-C x1(Debug UART)

M.2 NVMe SSD
1x PCIe 2.1

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Features

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Bottom View

Overview

CPU	Model: Rockchip RK3588S Number of Cores: Quad-core ARM Cortex-A76 & Quad-core Cortex-A55 CPU Frequency: 4 x Cortex-A76 up to 2.4GHz & 4 x Cortex-A55 up to 1.8GHz
GPU	Mali-G610 MP4, compatible with OpenGLES 1.1, 2.0, and 3.2, OpenCL up to 2.2 and Vulkan1.2
VPU	8K@60fps H.265 and VP9 decoder, 8K@30fps H.264 decoder, 4K@60fps AV1 decoder 8K@30fps H.264 and H.265 encoder
NPU	6TOPs, supports INT4/INT8/INT16/FP16
Memory	RAM: 64-bit 4GB/8GB LPDDR4X at 2133MHz
Storage	MicroSD Slot: MicroSD x1, support up to SDR104 mode Flash: 32GB eMMC, at HS400 mode

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	PCIe: M.2 M-Key, PCIe2.1 x1, support NVME, PCIe WiFi etc Onboard M3 PCB nut for mounting M.2 2280 module
Connectivity	Ethernet: Native Gigabit Ethernet x1, RTL8211F-CG chip PCIe 2.5G Ethernet Ethernet x1, RTL8125BG chip
Video Output	HDMI: compatible with HDMI2.1, HDMI2.0, and HDMI1.4 operation support up to 7680x4320@60Hz Support RGB/YUV(up to 10bit) format
USB	USB 3.0 Host x1: USB Type A USB 2.0 Host x1: USB Type A USB-C x1: Power input(5V/9V/12V/20V), support PD
Pin-header	GPIO: 30-pin 2.54mm header connector up to 1x SPI, 3x UARTs, 3x I2Cs, 2x SPDIFs, 1x I2Ss, 3x PWMs, 20x GPIOs Debug: Debug UART x1 via 3 Pin 2.54mm header, or on-board USB-C to UART
LED	SYS LED(Red) x1 WAN LED(Green) x1 LAN LED(Green) x1 LED1(Green) x1
Button	MASK Button x1 for eMMC update User Button x1
Others	RTC Battery: 2 Pin 1.27/1.25mm RTC battery input connector for low power RTC IC HYM8563TS Working Temperature: 0? to 70?
Power	USB-C, support PD, 5V/9V/12V/20V input

– OS/Software

OS Support	FriendlyWrt 21.02 FriendlyWrt 22.03 Android 12 Tablet Android 12 TV FriendlyCore Lite 20.04 Debian 10 Desktop Debian 11 Desktop Ubuntu 22.04 Desktop
Kernel version	Linux-5.10-LTS U-boot-2017.09

– Dimension

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PCB	8 Layer
Weight	53.1g(without Case) / 260g(with Case)
Dimension	62x90x1.6mm (without Case) / 68x94.5x30mm (with Case)

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