InHand Networks

Embrace Edge AI,

Empower Industrial Digitalization.

EC3588-C Series AI System on Module

· RK3588 ARM SoC · 4 x A76 + 4 x A55 · 6TOPs NPU · 8K video codec, 8K@60fps display out

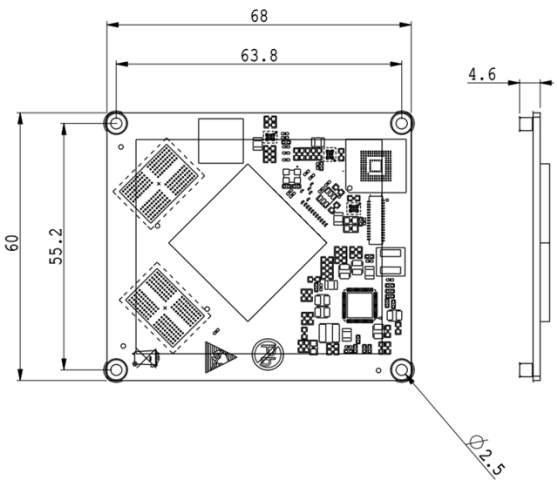
The EC3588-C System on Module（SoM） is developed based on the Rockchip RK3588 flagship ARM SoC processor. It adopts advanced 8nm process technology and integrates a 4×Cortex-A76 + 4×Cortex-A55 architecture, with the A76 cores clocked up to 2.4GHz and the A55 cores up to 1.8GHz, delivering powerful performance. It supports 8K ultra-high-definition display and quad-screen independent output, and is equipped with a wide range of high-speed data communication interfaces to meet diverse user needs. The EC3588-C SoM offers robust capabilities in performance, multimedia processing, AI acceleration, and peripheral interfaces, making it ideal for high-end embedded applications such as industrial IoT, edge AI, in-vehicle systems, smart displays, and AIoT.

Feature and Advantage

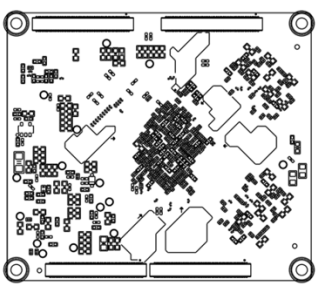
- 8nm process, quad-core Cortex-A76 + quad-core Cortex-A55
- ARM Mali-G610 MC4 GPU, embedded high performance 2D image acceleration module
- 6.0 TOPs NPU, enable various AI applications
- 8K video codec, can support various codec forms, 8K@60fps display out
- 4 PCIe3.0 and 3 PCIe2.1, up to 8Gbps;
- Multiple USB3.1 Type-C, can support SATA3.1;
- The SoM designed with 4x100-pin ultra thin connectors, combined connector height is only 1.5mm;

Dimensions (mm)

TOP



BOTTOM



Product Specifications

Hardware Specifications	
Item	EC3588-C
Basic Specifications	
Processor	Rockchip RK3588 RK3588 CPU：4×Cortex-A76@2.4GHz+4×Cortex-A55@1.8GHz NPU：6 TOPS，Triple core, support int4/int8/int16/FP16/BF16/TF32 acceleration GPU：Mali-G610 MP4、OpenGLES 1.1, 2.0, 3.2、OpenCL 2.2、Vulkan1.2 VPU: Decode: ·H.265、VP9：up to 8K@60fps ·H.264：up to 8K@30fps ·AV1：up to 4K@60fps Encode: ·H.265/HEVC、H.264/AVC：up to 8K@30fps
RAM	16GB（2*8GB）LPDDR4
ROM	64GB eMMC
Power Input	DC 4V
Operating Temperature	0℃ ~ +80℃
Package	Board to board connector(4*100pin, 0.4mm pitch, combined height 1.5mm)

Software Specifications	
Item	EC3588-C
OS	
OS	Linux
OS flashing method	USB OTG
Data Acquisition Protocol(*DSA)	
Industrial Protocol	Modbus RTU Master/Slave, Modbus TCP Master/Slave, EtherNet/IP, ISO on TCP, OPC UA Client/Server, Mitsubishi MC 3C/3E/3C OverTCP, Mitsubishi CPU Port, FINS UDP, HostLink, PPI
Electricity Protocol	DLT645-2007, IEC101/104, DNP3.0
Other Protocol	BACnet, CNC
Maintenance and Management	
Upgrade Method	Supports patent upgrade mechanism, local or remote firmware upgrade
Log	Support local system logs, remote logs, and important log power-off preservation
Remote Management	InHand DeviceLive, HTTP, HTTPS, SSH, etc.
DeviceLive Cloud	Supports cloud-based parameter configuration, container management, application and firmware management

*DSA: The DeviceSupervisor Agent (DSA), developed by InHand Networks, is a cutting-edge intelligence software designed to operate on Edge Computer products. It enables clients to quickly implement data collection, processing, protocol conversion, and cloud connectivity through a "zero code/low code" approach. If you need the DSA application on the EdgeComputer product, please contact us to obtain the DSA software package.

Hardware Specifications				
Item	EC3588-C			
Functional Specifications				
Interface	**Type**	**QTY**	**Spec**	
Video Input	MIPI DC PHY(DPHY/CPHY)	2	· Supports DPHY or CPHY; · 4-lane MIPI DPHY V2.0m, each line up to 4.5Gbps; · 3-lane MIPI CPHY V1.1, each line up to 2.5Gsps	Supported MIPI-CSI combo: 2 MIPI DCPHY + 4 x 2 lanes MIPI CSI DPHY 2 MIPI DCPHY + 1 x 4 lanes MIPI CSI DPHY 2 MIPI DCPHY + 2 x 4 lanes MIPI CSI DPHY
	MIPI CSI DPHY	4	· 2-lane MIPI DPHY V1.2, each line up to 2.5Gsps; · two 2-lane DPHY can be combined to a 4-lane DPHY	
	DVP	1	· 8/10/12/16-bit standard DVP up to 150MHz input; · Supports BT.601/BT.656 and BT.1120 V1	
	HDMI RX	1	· Supports 3.4Gbps~6Gbps HDMI 2.0; · Supports 250Mbps~3.4Gbps HDMI 1.4b; · Supports HDCP2.3 and HDCP1.4;	
Video Output	HDMI/ eDP TX	≤ 2	· HDMI/eDP TX are multiplexed, each interface supports x1, x2 and x4; · HDMI up to 7680x4320@60Hz, supports 3, 6, 8, 10, 12Gbps band widths, supports HDCP2.3; · eDP is up to 4K@60Hz, supports 1.62Gbps, 2.7Gbps and 5.4Gbps band widths, supports HDCP1.3.	
	DP TX	2	· Supports 2 DP TX1.4a, which is available for USB3.1 Gen1, supports 1/ 2/ 4 lanes; · Up to 8192x4320@30Hz; · Supports HDCP2.3, HDCP 1.3.	
	MIPI DSI	2	· Supports 2 MIPI DPHY 2.0 or CPHY 1.1, up to 4K@60Hz; · Supports left/ right mode dual MIPI-DSI, available for RGB/YUV up to 10-bit;	
	BT.1120	1	· Supports RGB up to 8-bit and rating up to 150MHz; · Up to 1920x1080@60Hz;	
Audio	I2S	≤ 4	· 8 lanes I2S0/I2S1: supports both TX and RX, audio resolution 16~32 bits, sampling rate up to 192KHz; · 2 lanes I2S2/I2S3: supports both TX and RX, audio resolution 16~32 bits, sampling rate up to 192KHz.	
	SPDIF	2	· Supports 2x 16-bit data storing; · Supports biphasic stereo output.	
	PDM	2	· Up to 8 channels, resolution 16~24 bits, sampling rate up to 192KHz; · Supports PDM primary receive mode.	
	DSM PWM	1	Convert PCM data to bitstream digital directly to 1-bit data output, the output digital signal will be filtered to audio signal.	
Network	Ethernet	2	2x GMAC by RGMII / RMII, 10/100/1000Mbps.	
Others	USB3.1 Gen1	3x	· USB3.1 Gen1 up to 5Gbps; · 2 USB3.1 OTG, multiplexed with DP TX(USB3OTG_0 and USB3OTG_1), USB3OTG_0 and USB3OTG_1 support USB Type-C and DP Alt; · 1 USB3.1 Host, multiplexed with PIPEPHY2(USB3OTG_2).	
	USB 2.0 Host	2	2x USB 2.0 Host	
	PCIe 2.0	≤3	Each PCIe2.1 can support 1 lane, up to 5Gbps	
	PCIe 3.0	2	· Supports RC and EP, up to 8Gbps; · Support 4 combinations: 1x4, 2x2, 4x1, 1x2+2x1	
	SPI	≤5	· Each controller supports two chip select output; · Serial master mode and serial slave mode are configurable	
	I2C	≤9	· Support 7-bit and 10-bit address mode; · Standard mode data transferring rate up to 100K bits/s, and high-speed mode up to 400K bits/s.	
	UART	≤10	· Built-in 2 64-bit FIFO, can be used for TX and RX respectively; · Supports 5-bit, 6-bit, 7-bit and 8-bit serial data transceiving, baud rate up to 4Mbps; · All 10 UART can support autoflow control	
	SATA	≤3	· 3 SATA3.0 controllers, PIPEPHY0/1/2 is multiplexed by PCIe and USB_HOST2; · Supports eSATA up to 6Gbps.	
	PWM	≤16	Up to 16 on-chip PWM, supports capturing mode.	
	ADC	≤8	8x 12-bit single-end input SAR-ADC, sampling rate up to 1MS/s.	

Ordering Guide

Model	CPU	CPU Clock Speed	RAM	ROM	Operating Temperature
EC3588-C	4 x A76 + 4 x A55	A76@2.4GHz A55@1.8GHz	16 GB	64 GB	0℃ ~ +80℃

About Us

InHand Networks is a leading IoT solutions provider founded in 2001, dedicated to driving digital transformation across industries and empowering customers to unlock their full potential and achieve accelerated growth.

We specialize in delivering industrial-grade connectivity solutions for diverse sectors, such as enterprise networks, industrial and building IoT, digital energy, smart commerce, and mobility. Our comprehensive product portfolio and services cater to various applications worldwide, including smart manufacturing, smart grid, intelligent transportation, smart retail, etc. With a global footprint spanning over 60 countries, we serve customers in China, the United States, France, Germany, the United Kingdom, Italy, and beyond.

InHand Networks

3650 Concorde Pkwy, Suite 200
Chantilly, VA 20151, USA
T: +1 (703) 348-2988
E: info@inhand.com
www.inhand.com