RDK X3 Product Brief
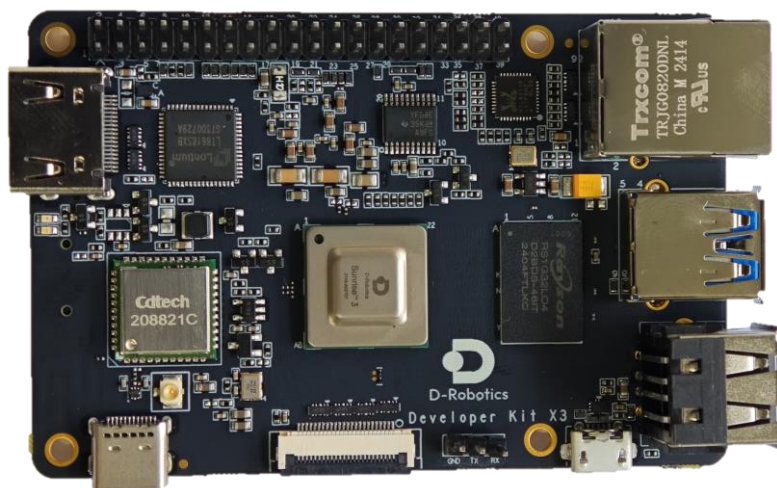
V1.0

RDK X3 is powered by D-Robotics Sunrise®3 series high-performance smart chips, offering robust on-device general-purpose computing and Intelligent capabilities.

Overview

RDK X3 include a quad-core Cortex®-A53 processor, 5Tops BPU computational power, up to 4GB of RAM, and support for 4K@60fps video encoding and decoding. The primary interfaces include HDMI, Gigabit Ethernet, USB 3.0, USB2.0, MIPI CSI, UART Debug, and TF card slots.

The module integrates dual-band 2.4/5.0 GHz Wi-Fi and Bluetooth 4.2 modules, with PCB antennas already present on the board. It can also be used in conjunction with external antenna kits, enabling wireless connectivity, reducing user development and testing costs, and shortening time-to-market.

The RDK X3 offers optional onboard RAM capacities of 2GB or 4GB.

Specifications

Size：   85mm X 56mm x 20mm

CPU：   Quad-core Arm® Cortex® A53 64-bit @ 1.5GHz

BPU：   5Tops

Memory：   2GB or 4GB LPDDR4

Storage：   NA, supports external Micro SD card Peripheral

Peripheral Interfaces:

- 1 x Gigabit Ethernet RJ45 port
- 1 x USB 3.0 HOST interface
- 2 x USB 2.0 HOST interfaces
- 1 x USB 2.0 Device interface
- 28 GPIOs
- 1 x Micro SD card slot

Imaging:

- 2 x 2-lane MIPI CSI interfaces

Display:

- 1 x HDMI Type-A port supporting up to 1080p60

Multimedia:

- Supports H.265/H.264 encoding and decoding, max 4K@60fps
- Supports MJPEG encoding and decoding Power Input: 5V/3A DC Operating
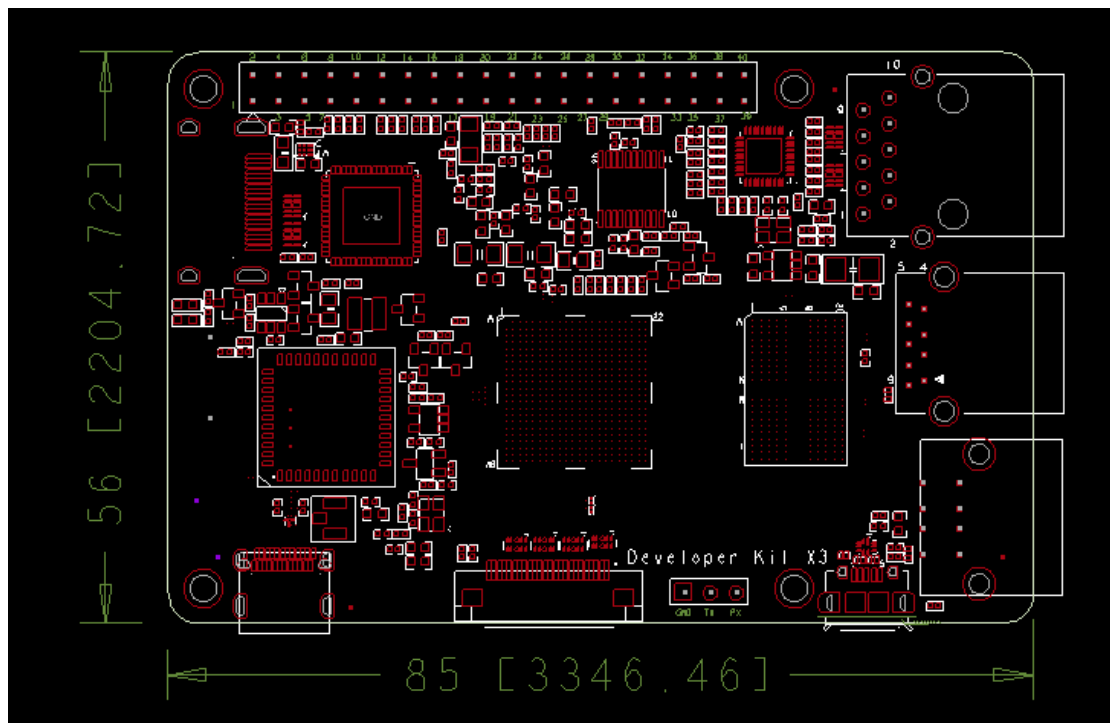
Temperature:

- -20°C to 60°C

Lifecycle:

- Maintained in production status until at least 2028

For detailed specifications, please visit the Horizon Developer Community at https://developer.d-robotics.cc/

Model Specifications

Part Number	RAM Size
RDK X3 2G	2GB
RDK X3 4G	4GB

Shape

40Pinout definition

RDK X3 2.0 40Pin Pinout Diagram									
Function Description	**X3 Pin Number**	**BCM Code**	**CVM Function Name**	**Physical Pin BOARD Code**		**CVM Function Name**	**BCM Code**	**X3 Pin Number**	**Function Description**
3.3V Power Signal			VDD_3V3	1	2	VDD_5V			5V Power Signal
I2C0 Data Signal	9	2	I2C0_SDA	3	4	VDD_5V			5V Power Signal
I2C0 Clock Signal	8	3	I2C0_SCL	5	6	GND			GND Signal
I2S0 MCLK Clock Signal	101	4	I2S0_MCLK	7	8	UART_TXD	14	111	UART3 Transmit Signal
GND Signal			GND	9	10	UART_RXD	15	112	UART3 Receive Signal
GPIO17 Signal	12	17	GPIO17	11	12	I2S0_BCLK	18	102	I2S0 BCLK Clock Signal
GPIO27 Signal	13	27	GPIO27	13	14	GND			GND Signal
GPIO22 Signal	30	22	GPIO22	15	16	GPIO23	23	27	GPIO23 Signal
3.3V Power Signal			VDD_3V3	17	18	GPIO24	24	22	GPIO24 Signal
SPI1 MOSI Signal	6	10	SPI1_MOSI	19	20	GND			GND Signal
SPI1 MISO Signal	7	9	SPI1_MISO	21	22	GPIO25	25	29	GPIO25 Signal
SPI1 CLK Signal	3	11	SPI1_SCLK	23	24	SPI1_CSN	8	5	SPI1 CS Signal
GND Signal			GND	25	26	GPIO7	7	28	GPIO7 Signal
I2C3 Data Signal	15	0	I2C3_SDA	27	28	I2C3_SCL	1	14	I2C3 Clock Signal
GPIO5 Signal	119	5	GPIO5	29	30	GND			GND Signal
GPIO6 Signal	118	6	GPIO6	31	32	PWM4	12	25	PWM4 Signal
PWM0 Signal	4	13	PWM0	33	34	GND			GND Signal
I2S0 LRCK Signal	103	19	I2S0_LRCK	35	36	GPIO16	16	20	GPIO16 Signal
GPIO26 Signal	117	26	GPIO26	37	38	I2S1_SDIO	20	108	I2S1_SDIO Signal
GND Signal			GND	39	40	I2S0_SDIO	21	104	I2S0_SDIO Signal

Warnings

○ The external power supply used for RDK X3 must comply with relevant regulations in the area.

○ This product should be used in a well-ventilated environment. When used in an enclosed space, proper heat dissipation measures must be taken.

○ During use, place the product on a stable, flat, non-conductive surface.

○ In case of connecting incompatible devices to RDK X3 resulting in device damage, repair will not be supported.

○ All peripheral devices used in conjunction with this product should meet the relevant standards of the country where they are used and be appropriately marked to ensure safety and performance requirements. These peripherals include but are not limited to keyboards, displays, and mice when used with RDK X3.

○ Cables and connectors for all peripheral devices used with this product must have sufficient insulation to meet the necessary safety requirements.

Safety Guidelines

To prevent malfunction or damage to this product, observe the following:

○ Avoid contact with water or moisture or placing the device on conductive surfaces during operation.

○ Do not expose the device to any heat sources; RDK X3 operates reliably at normal

ambient temperatures.

○ When assembling, avoid mechanical or electrical damage to the printed circuit board and connectors.

○ While the device is powered on, avoid touching the printed circuit board and edges to minimize the risk of electrostatic discharge damage.

Revision History

Version	Date	Description
v1.0	2023.10.26	Initial Release