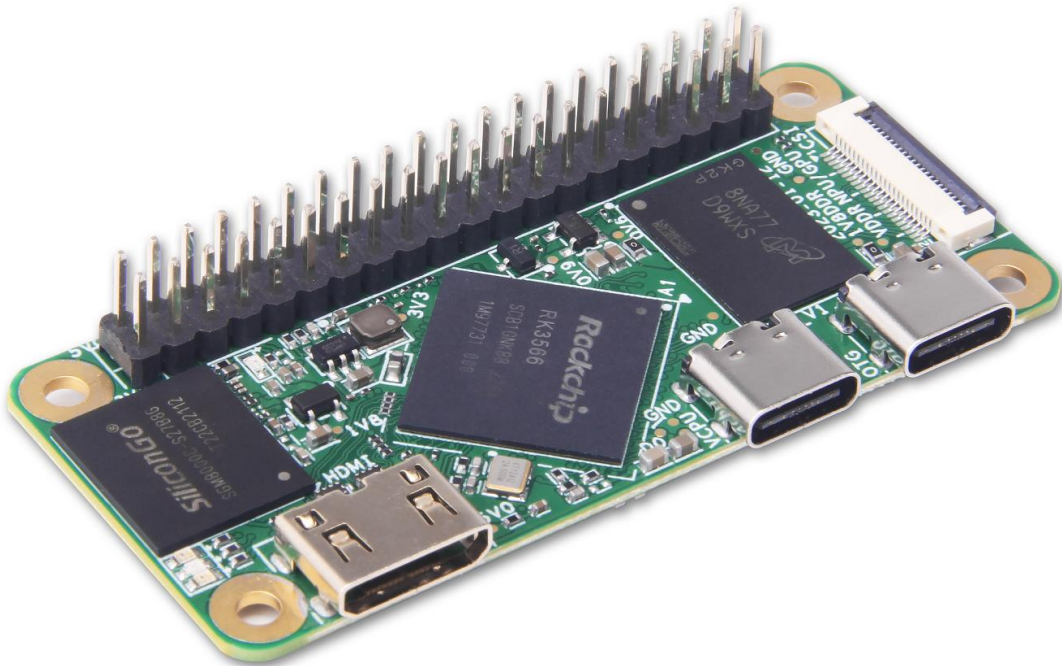


深圳金亚太科技有限公司

Shenzhen Geniatech Co.,Ltd.

SPECIFICATION

MODEL:XPI-3566-ZERO



Confirmation

APPROVED BY GENIATECH		
PREPARED BY 编写	CHECKED BY 审核	APPROVED BY 批准

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Revision History

VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V1.0	20230325			Initial Version	

1. GENERAL DESCRIPTION

The XPI-3566-ZERO is a microcomputer product developed by Geniatech based on the Rock-Chip 3566 platform, and XPI-3566-ZERO has the same form factor of Raspberry Pi Zero & Zero 2 W. According to the definition of Raspberry Pi Zero, this is suitable for the field of smart home applications, programming education for teenagers and other IoT projects.

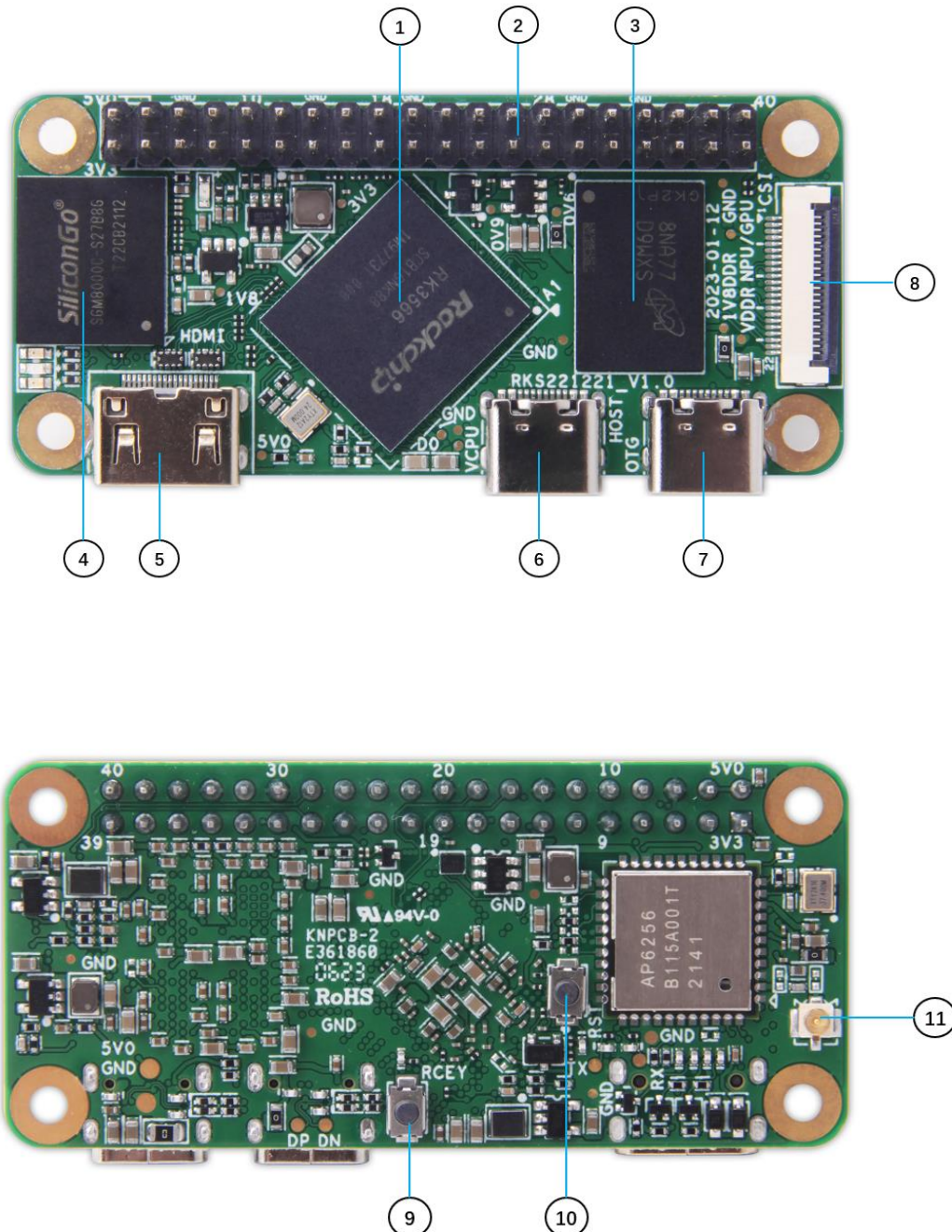
This product's key features including a Rock-Chip RK3566 high-performance and low power 64-bit quad-core processor, HDMI display support at resolutions up to 4KP60, hardware video decode at up to 4KP60, hardware video encode at up to 1080P60, 512MB LPDDR, up to 8GB, Type-C for USB OTG, Bluetooth 5.0, dual-band 2.4/5 GHz wireless LAN.

Below is the detailed specification

- (I) 65mm*30mm, less than the half size of a bank card
- (II) Rockchip RK3566 with Quad-core Cortex-A55 up to 1.8GHz
- (III) 512MB LPDDR RAM (up to 8GB) , 8GB eMMC flash (up to 128GB)
- (IV) 1 *Type-C for USB Host with 5VDC input, 1 *Type-C for USB OTG, 1*MIPI-CSI, 1* Extension GPIO interface
- (V) Support Linux (Debian 11) or Raspberry PI OS.
- (VI) 2.4GHz&5GHz Wi-Fi WLAN & Blue tooth 5.0

2. PRODUCT OVERVIEW

Below picture is for reference only, please prevail in kind.



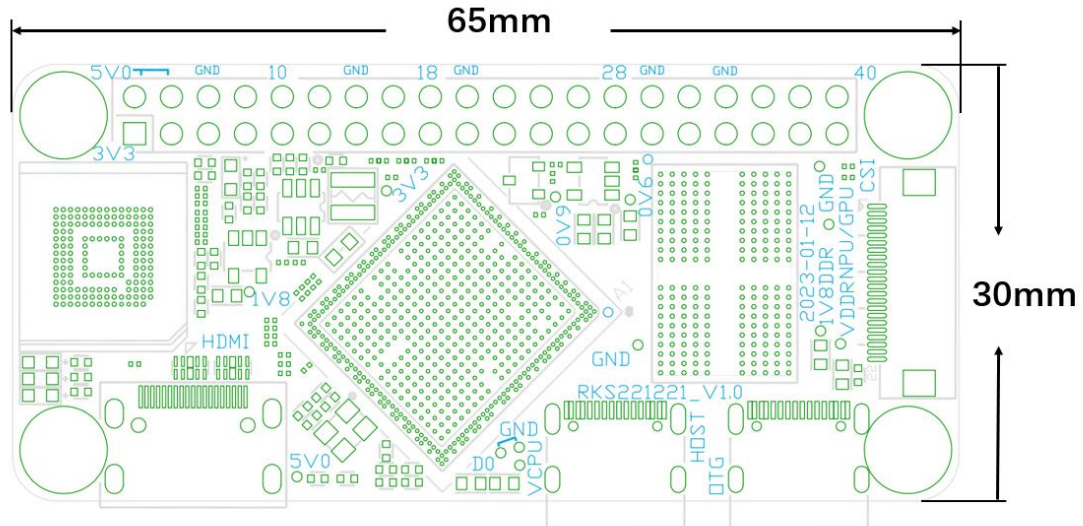
No.	Name	Description
1	RK3566 SOC	*1
2	40 Pin GPIO header	*1
3	LPDDR4	*1
4	eMMC Flash	*1
5	HDMI Connector	*1 Mini HDMI
6	DC IN &Type-C connector	*1 Type-C/ DC IN (5V 2A)
7	DC IN &Type-C connector	*1 Type-C supports USB 3.0 OTG function/ DC IN (5V 2A)
8	MIPI CSI Connector	*1
9	SW1	*1(Power on key)
10	SW2	*1(Rest on key)
11	Antenna port	*1 IPEX port

NOTE:

USB (OTG) interface is configured as ADB by default, OTG port does not support the connection of mouse and keyboard, and requires input command switching:

- (1) Execute `echo host > /sys/devices/platform/fe8a0000.usb2-phy/otg_mode`, the OTG port serves as HOST, which can be connected to the keyboard and mouse
- (2) Remove the # in front of `echo host > /sys/devices/platform/fe8a0000.usb2-phy/otg_mode` in `vi /etc/rc.local`, every time to boot is not supported ADB function

3. BOARD DIMENSIONS



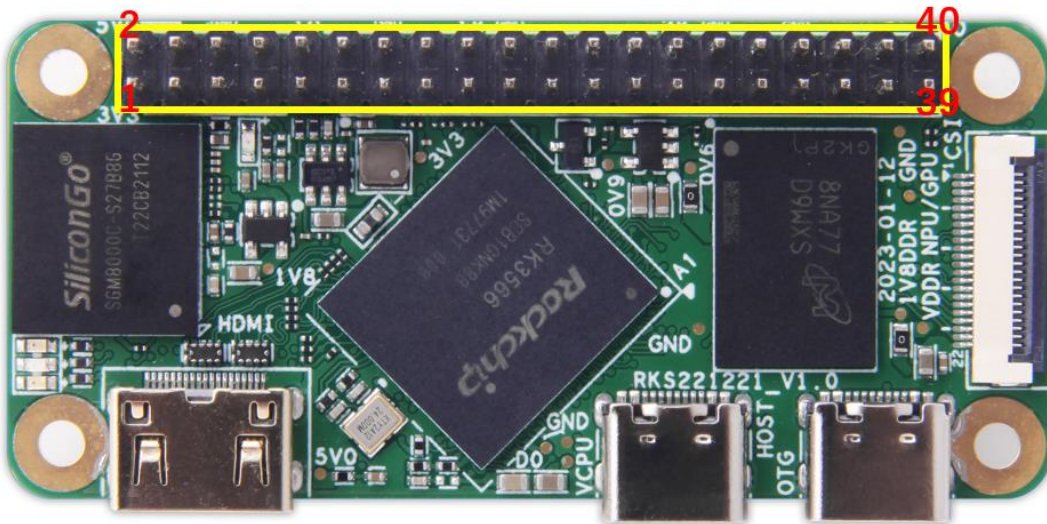
4. SPECIFICATIONS

CHIPSET	RK 3566	
MARKET AREA	Global	
Processor	OS	Debian 11 /Raspberry PI OS
	CPU	Quad-core ARM Cortex-A55 CPU up to 1.8GHz
	GPU	ARM G52 2EE GPU; Supports OpenGL ES 1.1/2.0/3.2. OpenCL 2.0. Vulkan 1.1 Embedded high-performance 2D acceleration hardware
	NPU	Integrated RKNN NPU AI accelerator, 1Tops@INT8 Supports one-click switching of Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet
	LPDDR4	512MB (up to 8GB optional)
	EMMC FLASH	8GB eMMC (up to 128GB Optional)
NETWORK	WiFi	WiFi Module 2.4G/5.8G
	Bluetooth	BT5.0(integrated in the WiFi module)
Interface	HDMI Out	*1 Mini HDMI
	Type-C &DC IN	*1 (5VDC/2A &USB 2.0 OTG)
	Type-C &DC IN	*1 (5VDC/2A & USB 2.0 Host)
	MIPI-CSI	*1

	GPIO	*1 Standard 40-pin GPIO header Can be expanded to UART, SPI, I2C, PWM function
Adapter	DC 5V / 2A	
Dimensions	65*30mm	

5. Connectors Definition

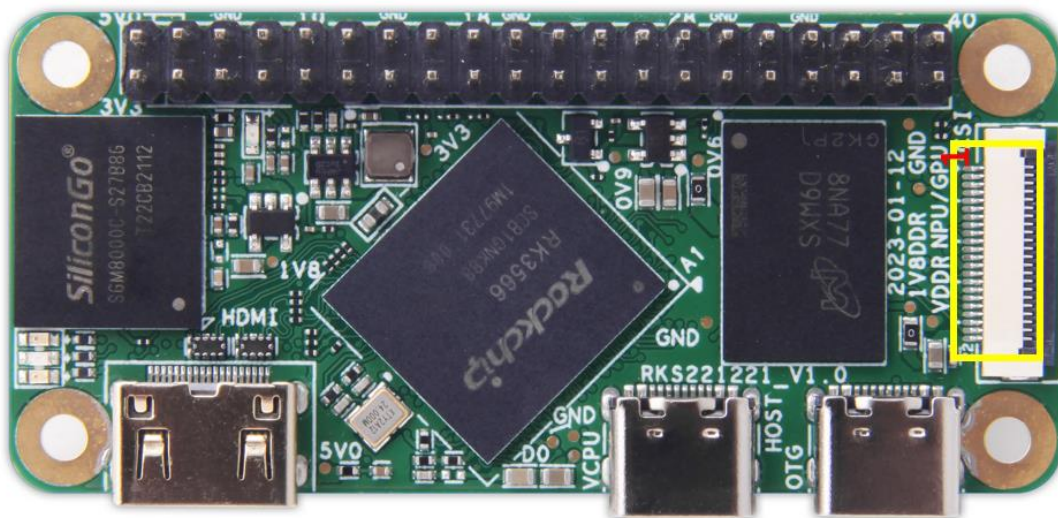
5.1 40 Pin GPIO header(J1)



Pin	Definition	Pin	Definition
1	VCC_3V3	2	VCC5V0_SYS
3	I2C1_SDA/ GPIO0_B4_u	4	VCC5V0_SYS
5	I2C1_SCL/ GPIO0_B3_u	6	GND
7	REFCLK_OUT/ GPIO0_A0_d	8	UART1_TX_M1/ GPIO3_D6_d
9	GND	10	UART1_RX_M1/ GPIO3_D7_d
11	SPI0_CLK_M0/ UART4_CTSn_M0	12	I2S1_SCLK_TX_M1/ GPIO3_C7_d
13	SPI0_MOSI_M0/ UART4_TX_M0	14	GND
15	SPI0_MISO_M0/ UART4_RX_M0	16	UART1_CTSn_M1/ GPIO4_C1_d
17	VCC3V3	18	UART1_RTSn_M1/ GPIO4_B6_d
19	SPI3_MOSI_M0/ GPIO4_B2_d	20	GND
21	SPI3_MISO_M0/ GPIO4_B0_d	22	GPIO4_C4_D
23	SPI3_CLK_M0/ GPIO4_B3_d	24	SPI3_CS0_M0/ GPIO4_A6_d
25	GND	26	SPI3_CS1_M0/ GPIO4_A7_d
27	I2C3_SDA_M0/ GPIO1_A0_u	28	I2C3_SCL_M0/ GPIO1_A1_u
29	SPI0_CS0_M0/UART4_RTSn_M0	30	GND

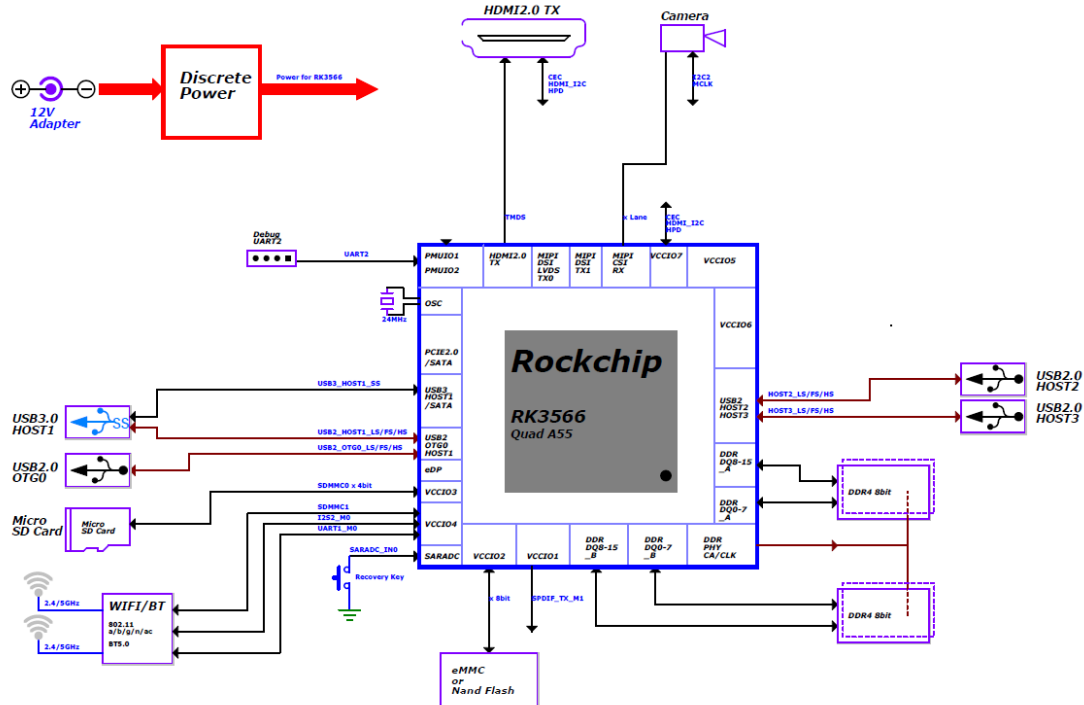
31	SPIO_CS1_M0/ GPIO0_C4_d	32	UART9_TX_M1-PWM12_M1/ GPIO4_C5_d
33	UART9_RX_M1-PWM13_M1/ GPIO4_C6_d	34	GND
35	I2S1_LRCK_TX_M1/ GPIO3_D0_d	36	UART7_RX_M2/ GPIO4_A3_d
37	UART7_TX_M2/ GPIO4_A2_d	38	I2S1_SDI0_M1/ GPIO3_D2_d
39	GND	40	I2S1_SDO0_M1/ GPIO3_D1_d

5.2 MIPI CSI Connector (LCD1)



Pin	Definition	Pin	Definition
1	GND	2	MIPI_CSI_RX_D0N
3	MIPI_CSI_RX_D0P	4	GND
5	MIPI_CSI_RX_D1N	6	MIPI_CSI_RX_D1P
7	GND	8	MIPI_CSI_RX_CLK0N
9	MIPI_CSI_RX_CLK0P	10	GND
11	MIPI_CSI_RX_D2N	12	MIPI_CSI_RX_D2P
13	GND	14	MIPI_CSI_RX_D3N
15	MIPI_CSI_RX_D3P	16	GND
17	MIPI_CAM_PDNO_L_GPIO4_B2	18	MIPI_CAM_RST0_L_GPIO3_D5
19	GND	20	I2C2_SCL_M1
21	I2C2_SDA_M1	22	VCC_3V3

6.HARDWARE BLOCK



7.SUPPORT FORMATS

Audio

- I2S0 with 8 channels
 - Up to 8 channels TX and 8 channels RX path
 - Audio resolution from 16bits to 32bits
 - Sample rate up to 192KHz
 - Provides master and slave work mode, software configurable
 - Support 3 I2S formats (normal, left-justified, right-justified)
 - Only for HDMI inside
- I2S1 with 8 channels
 - Up to 8 channels TX and 8 channels RX path
 - Audio resolution from 16bits to 32bits
 - Sample rate up to 192KHz
 - Provides master and slave work mode, software configurable
 - Support 3 I2S formats (normal, left-justified, right-justified)
 - Support 4 PCM formats (early, late1, late2, late3)
 - I2S and PCM mode cannot be used at the same time

- I2S2/I2S3 with 2 channels
 - Up to 2 channels TX and 2 channels RX path
 - Audio resolution from 16bits to 32bits
 - Sample rate up to 192KHz
 - Provides master and slave work mode, software configurable
 - Support 3 I2S formats (normal, left-justified, right-justified)
 - Support 4 PCM formats (early, late1, late2, late3)
 - I2S and PCM mode cannot be used at the same time
- PDM
 - Up to 8 channels
 - Audio resolution from 16bits to 24bits
 - Sample rate up to 192KHz
 - Support PDM master receive mode
- TDM
 - supports up to 8 channels for TX and 8 channels RX path
 - Audio resolution from 16bits to 32bits
 - Sample rate up to 192KHz v Provides master and slave work mode, software configurable
 - Support 3 I2S formats (normal, left-justified, right-justified)
 - Support 4 PCM formats (early, late1, late2, late3)
- Voice Activity Detection (VAD)
 - Support read voice data from I2S/PDM
 - Support voice amplitude detection v Support Multi-Mic array data storing
 - Support a level combined interrupt

Video Codec

- Video Decoder
 - H.265 HEVC/MVC Main10 Profile yuv420@L5.1 up to 4096x2304@60fps
 - H.264 AVC/MVC Main10 Profile yuv400/yuv420/yuv422/@L5.1 up to 4096x2304@60fps
 - VP9 Profile0/2 yuv420@L5.1 up to 4096x2304@60fps
 - VP8 version2, up to 1920x1088@60fps
 - VC1 Simple Profile@low, medium, high levels, Main Profile@low, medium, high levels, Advanced Profile@level0~3, up to 1920x1088@60fps
 - MPEG-4 Simple Profile@L0~6, Advanced Simple Profile@L0~5, up to 1920x1088@60fps
 - MPEG-2 Main Profile, low, medium and high levels, up to 1920x1088@60fps
 - MPEG-1 Main Profile, low, medium and high levels, up to 1920x1088@60fps
 - H.263 Profile0, levels 10-70, up to 720x576@60fps
- Video Encoder
 - H.264/AVC BP/MP/HP@level4.2, up to 1920x1080@60fps
 - H.265/HEVC MP@level4.1, up to 1920x1080@60fps (4096x4096@10fps with TILE)
 - Support YUV/RGB video source with rotation and mirror

JPEG CODEC

- JPEG decoder
 - Decoder size is from 48x48 to 65536x65536
 - Support YUV400/YUV411/YUV420/YUV422/YUV440/YUV444
 - Support 1920x1080@120fps
 - Support MJPEG
- JPEG encoder
 - Baseline Non-progressive
 - up to 8192x8192
 - up to 90 million pixels per second

8. PRECAUTIONS FOR USE

1. Relative humidity: 10% ~ 90%.
2. Storage temperature: 0 ~ 85°C
3. Operation temperature: commercial (0 °C ~60 °C)
4. Do not squeeze、 distort or disassemble the board.
5. Keep the board away from static electricity.
6. Keep the board away from water and other liquid.
7. Clean the board with soft and clean dry cloth when it's dirty.
8. Don't use long connect wires which may affect performance and image quality.