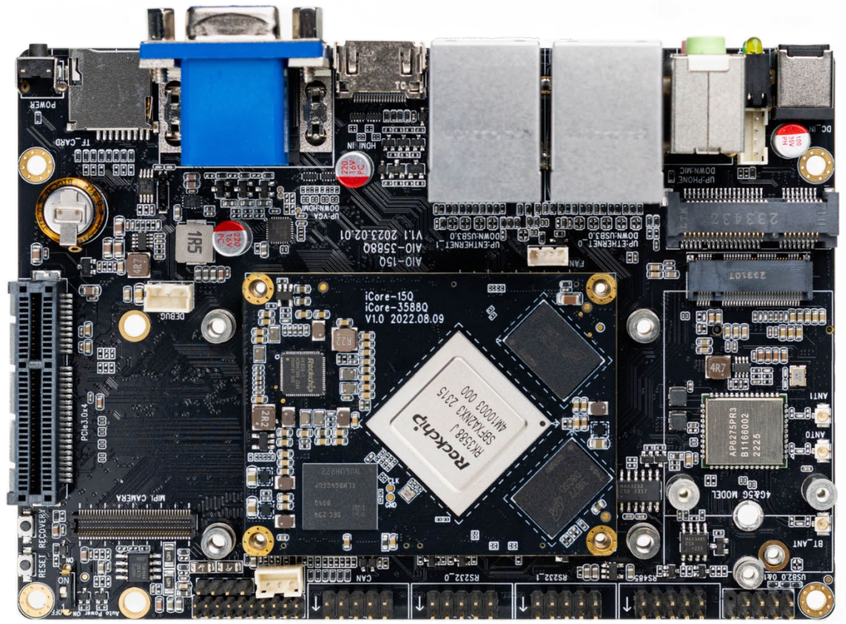
# 8K AI Mainboard

- AIO-3588Q(Commercial)
- AIO-3588JQ(Industrial)
- AIO-3588MQ(Automotive)




V1.1 2025-3-11

T-CHIP INTELLIGENCE TECHNOLOGY

# Product features

## New-gen AIoT SoC RK3588

RK3588 is Rockchip's new-gen flagship high-end processor with 8nm lithography process and frequency of up to 2.4GHz.

## 6TOPS powerful computing power

Built-in powerful NPU, comprehensive computing power up to 6TOPS. It supports INT4/INT8/INT16 hybrid computing, and can realize network model conversion based on TensorFlow, MXNet, PyTorch, Caffe and other series frameworks.

## 8K video encoding and decoding

The computer supports 8K@60fps H.265/VP9 video decoding and 8K@30fps H.265/H.264 video encoding, with simultaneous encoding and decoding capabilities. It can achieve up to 32-channel 1080P@30fps decoding and 16-channel 1080P@30fps encoding.

## Super-large 32GB RAM

Up to 32GB of super-large RAM can be configured, which exceeds the limit of the previous RAM and delivers faster response speed. It is able to meet the application requirements of products with large RAM and large storage.

# Product features

## Strong network communication capability

With on-board dual GbE RJ45, 2.4GHz/5GHz dual-band WiFi6, Bluetooth 5.0, and 5G/4G LTE expansion supported, it makes network communication with higher speed available.

## Support various systems

The computer provides Android 12.0, Ubuntu (Desktop and Server), Debian11, Buildroot. It supports RTLinux, delivering excellent real-time performance. Thanks to these options, a safe and stable system environment for product research and production is available.

## A variety of interfaces

Equipped with PCIe3.0, SATA3.0, RS485, RS232, CAN, MIPI-CSI, MIPI-DSI, USB3.0, USB2.0, LINE-IN, I2C, SPI and other expansion interfaces.

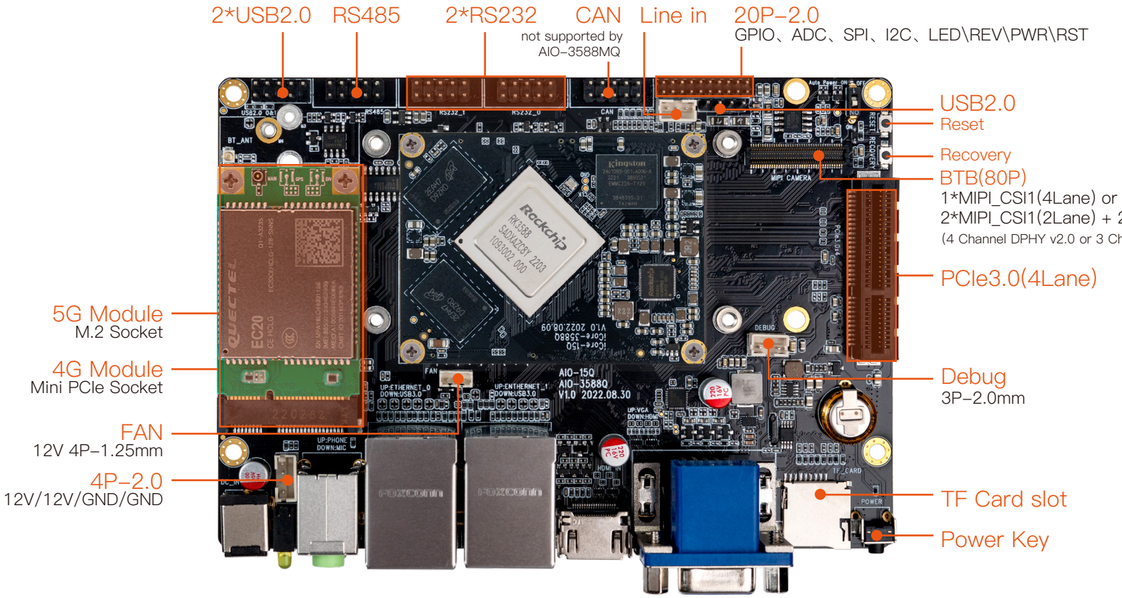
## A wide range of applications

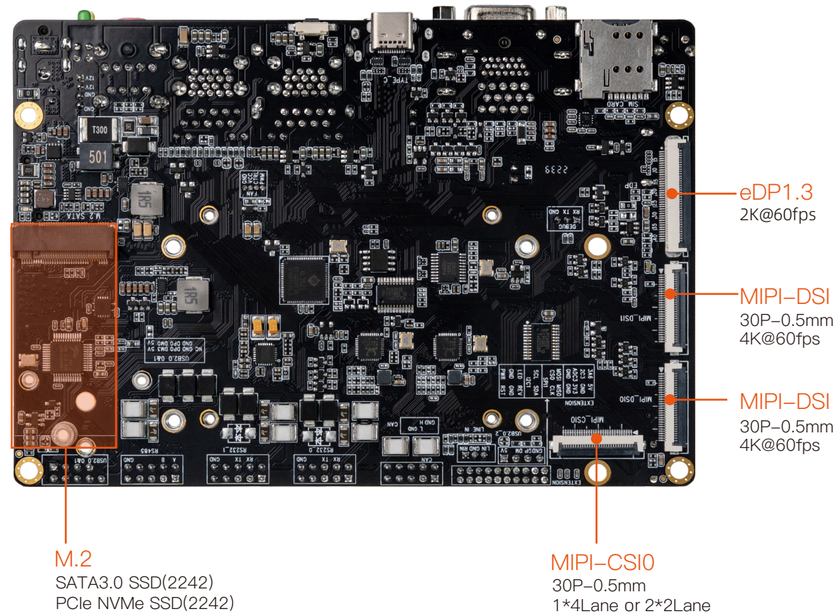
This mainboard can be widely used in ARM PC, edge computing, cloud server, smart NVR, smart video wall, AR/VR, smart car and other fields.

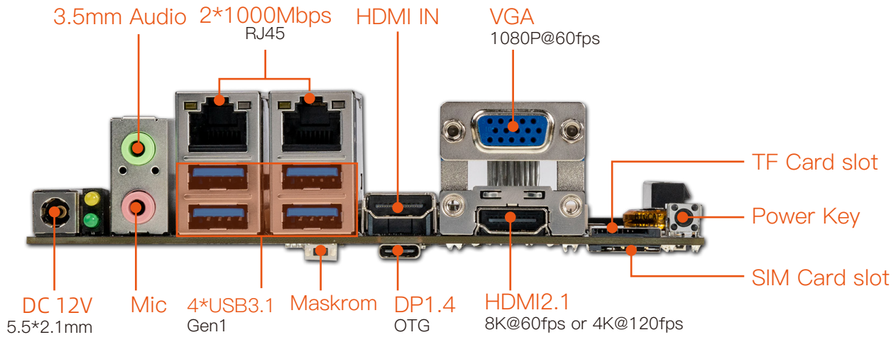
# Specifications

| | | AIO-3588Q (Commercial) | AIO-3588JQ (Industrial) | AIO-3588MQ (Automotive) |
|---|---|---|---|---|
| Basic Specifications | CPU | RK3588<br>Octa-core 64-bit (4×Cortex-A76+4×Cortex-A55)<br>Up to 2.4 GHz | RK3588J<br>Octa-core 64-bit (4×Cortex-A76+4×Cortex-A55)<br>Up to 1.6 GHz | RK3588M<br>Octa-core 64-bit (4×Cortex-A76+4×Cortex-A55)<br>Up to 2.0 GHz |
| | GPU | ARM Mali-G610 MP4 quad-core GPU, support OpenGL ES3.2/OpenCL 2.2/Vulkan1.1, 450 GFLOPS | | |
| | NPU | Up to 6TOPS(INT8)<br>Supports INT4/INT8/INT16 mixed operations, and supports framework switching of TensorFlow/MXNet/PyTorch/Caffe | | |
| | ISP | 48MP ISP with HDR & 3DNR | | |
| | VPU | Hardware decoding: 8K@60fps H.265/VP9/AVS2, 8K@30fps H.264 AVC/MVC, 4K@60fps AV1, 1080P@60fps MPEG-2/-1/VC-1/VP8<br>Hardware encoding: 8K@30fps H.265/H.264 | | |
| | RAM | LPDDR4/LPDDR4x<br>(4GB/8GB/16GB/32GB optional) | LPDDR4/LPDDR4x (industrial)<br>(4GB/8GB/16GB/32GB optional) | LPDDR4/LPDDR4x<br>(4GB/8GB/16GB/32GB optional) |
| | Storage | eMMC (16GB/32GB/64GB/128GB optional) | | |
| | Storage Expansion | 1 × M.2 SATA 3.0 SSD (2242), 1 × TF Card | | |
| | Power | DC 12V (5.5mm×2.1mm, voltage tolerance ± 5%) | | |
| | OS | Android and Linux OS<br>Support Kernel-based Virtual Machine (KVM) and Docker container technology<br>You can run Android, Ubuntu, Debian, and Linux simultaneously and achieve "One Screen for One OS" display | | |
| | Size | 146.0mm × 102.0mm × 37.5mm | | |
| | Power Consumption | Min: ≈0.78W(12.0V/65mA)<br>Normal: ≈2.3W(12.0V/190mA)<br>Max: ≈14.4W(12.0V/1200mA) | Min: ≈0.78W(12.0V/65mA)<br>Normal: ≈2.3W(12.0V/190mA)<br>Max: ≈9.6W(12.0V/800mA) | Min: ≈0.78W(12.0V/65mA)<br>Normal: ≈2.4W(12.0V/200mA)<br>Max: ≈12W(12.0V/1000mA) |
| | Environment | Operating temperature: -20℃ ~ 60℃<br>Operating humidity: 10% ~ 90%RH (non-condensing) | Operating temperature: -40℃ ~ 85℃<br>Operating humidity: 10% ~ 90%RH (non-condensing) | |
| Interface Specifications | Ethernet | 2 × 1000Mbps Ethernet (RJ45) | | |
| | Wireless Network | 2.4GHz/5GHz dual-band WiFi 6 (802.11a/b/g/n/ac/ax), Bluetooth 5.0, scalable 5G/4G LTE | | |
| | Video Input | 1 × HDMI-IN (4K@60fps), support HDCP 2.3<br>1 × MIPI_CSI0 (1×4 lanes or 2 × 2 lanes, 30P-0.5mm)<br>1 × BTB (1×MIPI_CSI1 (4 lanes) or 2×MIPI_CSI1 (2 lanes) + 2×MIPI_D/C (4 lanes DPHY v2.0 or 3-lane CPHY V1.1) ) | | |
| | Video Output | 1 × HDMI2.1 (8K@60fps or 4K@120fps), 1 × DP1.4 (8K@30fps, via USB-C), 1 × VGA (1080P@60fps), 1 × eDP1.3 (2K@60Hz), 2 × MIPI-DSI (4K@60fps)<br>Support six-screen different display | | |
| | USB | 4 × USB 3.1 (Gen1), 3 × USB 2.0(pin), 1 × USB-C (OTG/DP1.4) | | |
| | PCIe | 1 × PCIe 3.0 (4 lanes) | | |
| | SATA | 1 × M.2 SATA 3.0 | | |
| | Other | 2 × RS232, 1 × RS485, 1 × Debug, 1 × 20P-2.0 pin (GPIO, ADC, SPI, I2C, LED\REV\PWR\RST) , 1 × CAN (not supported by AIO-3588MQ) | | |

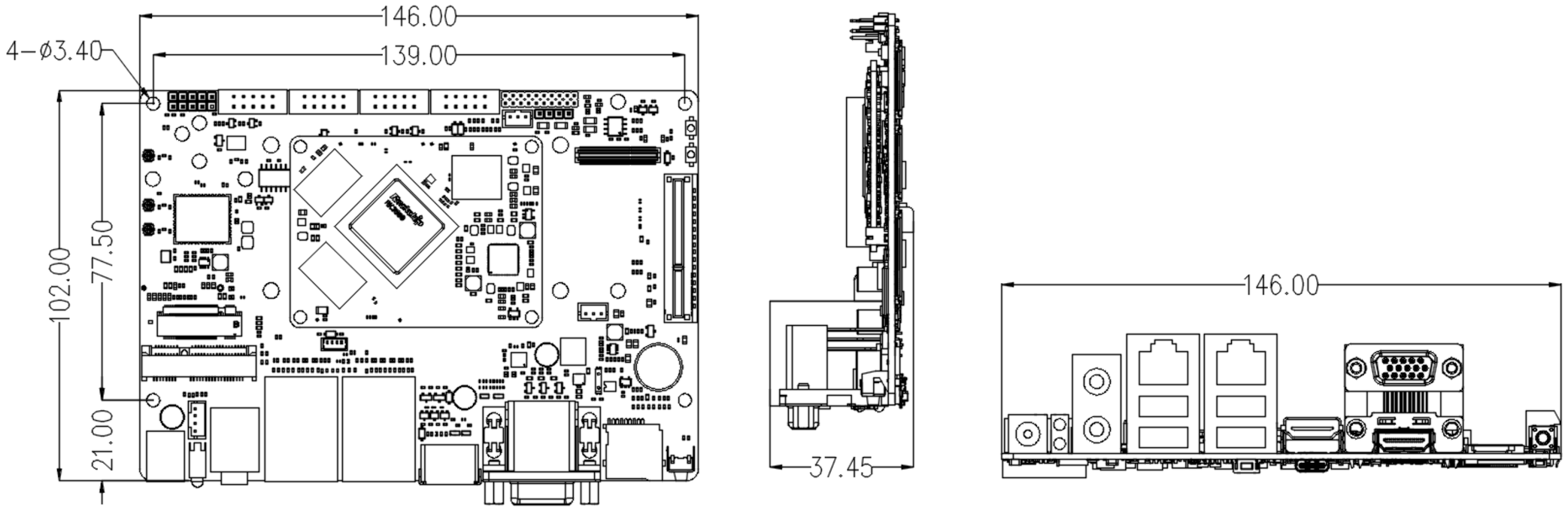
# Interface description



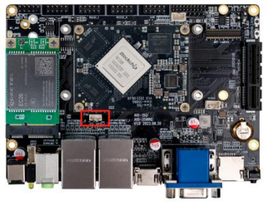



# Dimension



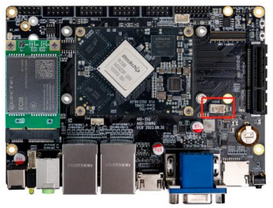
# Interface Definition

**1. (J13)FAN 4PIN 1.25mm wafer (WHITE)**



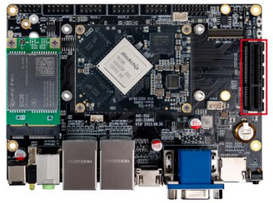
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | GND | | 3 | SARADC_IN6 (pull up resistor 10K) | 1.8V |
| 2 | VCC_FAN(12V Output) | 12V | 4 | PWM1_CONN (pull up resistor 10K) | 3.3V |

**2. (J5)DEBUG 3PIN 2.0mm wafer (WHITE)**



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | DEBUG_RXD (pull up resistor 10K) | 3.3V | 3 | GND | |
| 2 | DEBUG_TXD (pull up resistor 10K) | 3.3V | | | |

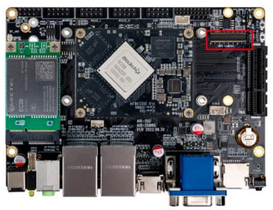
### 3. (J100)PCIe3.0x4 64PIN



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| B1 | VCC12V_PCIE30 (12V Output) | 12V | A1 | GND | |
| B2 | VCC12V_PCIE30 (12V Output) | 12V | A2 | VCC12V_PCIE30 (12V Output) | 12V |
| B3 | VCC12V_PCIE30 (12V Output) | 12V | A3 | VCC12V_PCIE30 (12V Output) | 12V |
| B4 | GND | | A4 | GND | |
| B5 | NC | | A5 | NC | |
| B6 | NC | | A6 | NC | |
| B7 | GND | | A7 | NC | |
| B8 | VCC3V3_PCIE30 (3.3V Output) | 3.3V | A8 | NC | |
| B9 | NC | | A9 | VCC3V3_PCIE30 (3.3V Output) | 3.3V |
| B10 | VCC3V3_PCIE30 (3.3V Output) | 3.3V | A10 | VCC3V3_PCIE30 (3.3V Output) | 3.3V |
| B11 | PCIE30X4_WAKEn (GPIO4_B5_d) | 3.3V | A11 | PCIE30X4_PERSTn(GPIO4_B6_d) | 3.3V |
| B12 | PCIE30X4_CLKREQn (GPIO4_B4_u) | 3.3V | A12 | GND | |
| B13 | GND | | A13 | PCIE30_REFCLKP_SLOT | - |
| B14 | PCIE30_PORT0_TX0P | - | A14 | PCIE30_REFCLKN_SLOT | - |
| B15 | PCIE30_PORT0_TX0N | - | A15 | GND | |
| B16 | GND | | A16 | PCIE30_PORT0_RX0P | - |
| B17 | PCIE30X4_PRSNT_L (From PCA9555)[pull down resistor 10K] | 3.3V | A17 | PCIE30_PORT0_RX0N | - |
| B18 | GND | | A18 | GND | |
| B19 | PCIE30_PORT0_TX1P | - | A19 | NC | |

| | | | | | |
|---|---|---|---|---|---|
| B20 | PCIE30_PORT0_TX1N | - | A20 | GND | |
| B21 | GND | | A21 | PCIE30_PORT0_RX1P | - |
| B22 | GND | | A22 | PCIE30_PORT0_RX1N | - |
| B23 | PCIE30_PORT1_TX2P | - | A23 | GND | |
| B24 | PCIE30_PORT1_TX2N | - | A24 | GND | |
| B25 | GND | | A25 | PCIE30_PORT1_RX2P | - |
| B26 | GND | | A26 | PCIE30_PORT1_RX2N | - |
| B27 | PCIE30_PORT1_TX3P | - | A27 | GND | |
| B28 | PCIE30_PORT1_TX3N | - | A28 | GND | |
| B29 | GND | | A29 | PCIE30_PORT1_RX3P | - |
| B30 | NC | | A30 | PCIE30_PORT1_RX3N | - |
| B31 | PCIE30X4_PRSNT_L (From PCA9555) [pull down resistor 10K] | 3.3V | A31 | GND | |
| B32 | GND | | A32 | NC | |

**4. (U22)MIPI CAMERA 80PIN --- This interface is only for expansion, not debugged.**

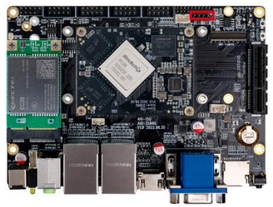


| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | GND | | 2 | VCC5V0_SYS (5V Output) | 5.0V |
| 3 | GND | | 4 | VCC5V0_SYS (5V Output) | 5.0V |
| 5 | GND | | 6 | VCC5V0_SYS (5V Output) | 5.0V |
| 7 | GND | | 8 | VCC5V0_SYS (5V Output) | 5.0V |
| 9 | GND | | 10 | VCC3V3_SYS (3.3V Output) | 3.3V |

| | | | | | |
|---|---|---|---|---|---|
| 11 | GND | | 12 | VCC3V3_SYS (3.3V Output) | 3.3V |
| 13 | GND | | 14 | VCC3V3_SYS (3.3V Output) | 3.3V |
| 15 | MIPI_DPHY1_RX_D3N | - | 16 | VCC3V3_SYS (3.3V Output) | 3.3V |
| 17 | MIPI_DPHY1_RX_D3P | - | 18 | GND | |
| 19 | GND | | 20 | I2C6_SDA_M0 (GPIO0_C7_d) [pull up resistor 2.2K] | 1.8V |
| 21 | MIPI_DPHY1_RX_D2N | - | 22 | I2C6_SCL_M0 (GPIO0_D0_d) [pull up resistor 2.2K] | 1.8V |
| 23 | MIPI_DPHY1_RX_D2P | - | 24 | I2C3_SDA_M0_MIPI (GPIO1_C0_z) [pull up resistor 2.2K] | 1.8V |
| 25 | GND | | 26 | I2C3_SCL_M0_MIPI (GPIO1_C1_z) [pull up resistor 2.2K] | 1.8V |
| 27 | MIPI_DPHY1_RX_CLKN | - | 28 | MIPI_CAM1_Power_EN (From PCA9555) | 3.3V |
| 29 | MIPI_DPHY1_RX_CLKP | - | 30 | MIPI_CAM2_ Power_EN (From PCA9555) | 3.3V |
| 31 | GND | | 32 | MIPI_CAM3_ Power_EN (From PCA9555) | 3.3V |
| 33 | MIPI_DPHY1_RX_D1N | - | 34 | MIPI_RESET1 (From PCA9555) | 3.3V |
| 35 | MIPI_DPHY1_RX_D1P | - | 36 | MIPI_RESET2 (From PCA9555) | 3.3V |
| 37 | GND | | 38 | MIPI_RESET3 (From PCA9555) | 3.3V |
| 39 | MIPI_DPHY1_RX_D0N | - | 40 | GND | |
| 41 | MIPI_DPHY1_RX_D0P | - | 42 | MIPI_CAM4_CLKOUT [GPIO1_D7_u] | 1.8V |
| 43 | GND | | 44 | GPIO1(From PCA9555) | 3.3V |
| 45 | MIPI_CSI1_RX_D0N | - | 46 | GPIO2(From PCA9555) | 3.3V |
| 47 | MIPI_CSI1_RX_D0P | - | 48 | GPIO2_C4 [GPIO2_C4_d] | 1.8V |
| 49 | GND | | 50 | GND | |
| 51 | MIPI_CSI1_RX_D1N | - | 52 | MIPI_DPHY0_RX_D3P | - |
| 53 | MIPI_CSI1_RX_D1P | - | 54 | MIPI_DPHY0_RX_D3N | - |
| 55 | GND | | 56 | GND | |
| 57 | MIPI_CSI1_RX_CLK0N | - | 58 | MIPI_DPHY0_RX_D2P | - |
| 59 | MIPI_CSI1_RX_CLK0P | - | 60 | MIPI_DPHY0_RX_D2N | - |
| 61 | GND | | 62 | GND | |
| 63 | MIPI_CSI1_RX_D2N | - | 64 | MIPI_DPHY0_RX_CLKP | - |
| 65 | MIPI_CSI1_RX_D2P | - | 66 | MIPI_DPHY0_RX_CLKN | - |

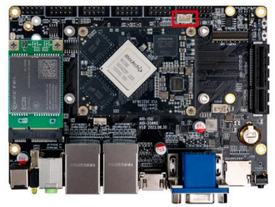
| | | | | | |
|---|---|---|---|---|---|
| 67 | GND | | 68 | GND | |
| 69 | MIPI_CSI1_RX_D3N | - | 70 | MIPI_DPHY0_RX_D1P | - |
| 71 | MIPI_CSI1_RX_D3P | - | 72 | MIPI_DPHY0_RX_D1N | - |
| 73 | GND | | 74 | GND | |
| 75 | MIPI_CSI1_RX_CLK1N | - | 76 | MIPI_DPHY0_RX_D0P | - |
| 77 | MIPI_CSI1_RX_CLK1P | - | 78 | MIPI_DPHY0_RX_D0N | - |
| 79 | GND | | 80 | GND | |

**5. (JUSB2)USB2.0_2 4PIN 2.0mm**



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | VCC5V0_USB20_HOST2(5V Output) | 5V | 3 | DP2 | - |
| 2 | DM2 | - | 4 | GND | |

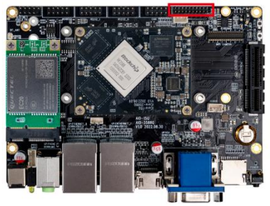
**6. (J17)LINE_IN 3 PIN 2.0mm wafer (WHITE)**



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | Line_in1_R | 3.3V | 3 | Line_in1_L | 3.3V |

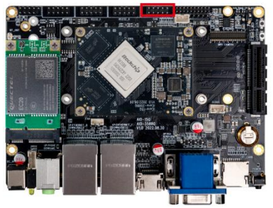
| | | | | | |
|---|---|---|---|---|---|
| 2 | GND | | | | |

## 7. (J10)EXTENSION PIN 2.0mm



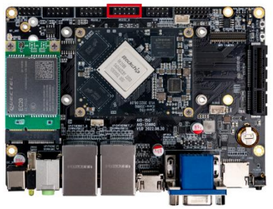
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | VCC5V0_SYS (5V Output) | 5.0V | 2 | GPIO3_A6_EXT (GPIO3_A6_d) | 1.8V |
| 3 | GND | | 4 | NC | |
| 5 | VCC3V3_SYS (3.3V Output) | 3.3V | 6 | ADC3 Input [pull up resistor 10K] | 1.8V |
| 7 | GND | | 8 | GND | |
| 9 | SPI1_MISO_M2 (GPIO1_D0_d) | 1.8V | 10 | SPI1_MOSI_M2 (GPIO1_D1_d) | 1.8V |
| 11 | SPI1_CLK_M2 (GPIO1_D2_d) | 1.8V | 12 | SPI1_CS0_M2 (GPIO1_D3_d) | 1.8V |
| 13 | I2C1_SDA_M2 [pull up resistor 2.2K] | 3.3V | 14 | I2C1_SCL_M2 [pull up resistor 2.2K] | 3.3V |
| 15 | RECOVERY_KEY [pull up resistor 10K] | 1.8V | 16 | SATA0_LED_M1 (GPIO1_B3_d) | 1.8V |
| 17 | GND | | 18 | GND | |
| 19 | RESET_KEY | 1.8V | 20 | PWRON_KEY | 5.0V |

## 8. (J7)CAN 10 PIN 2.5mm(not supported by AIO-3588MQ)



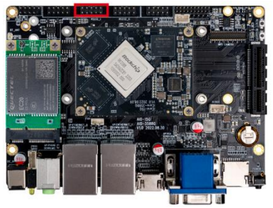
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 6 | CAN_VSS_1 | 5.0V |
| 2 | CANL1 | 5.0V | 7 | CANH1 | 5.0V |
| 3 | CAN_VSS_1 | 5.0V | 8 | NC | |
| 4 | NC | | 9 | NC | |
| 5 | NC | | 10 | NC | |

## 9. (J31)RS232_0 10 PIN 2.5mm



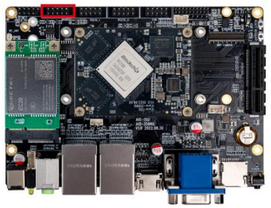
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 6 | NC | |
| 2 | RS232_RXD0 (GPIO4_A4_d) | +/-10V | 7 | NC | |
| 3 | RS232_TXD0 (GPIO4_A3_d) | +/-10V | 8 | NC | |
| 4 | NC | | 9 | NC | |
| 5 | GND | | 10 | NC | |

### 10. (J15) RS232_1 10 PIN 2.5mm



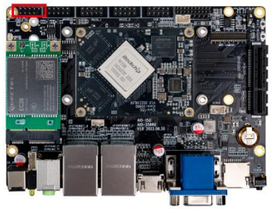
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 6 | NC | |
| 2 | RS232_RXD1 [pull up resistor 10K] | +/-10V | 7 | NC | |
| 3 | RS232_TXD1 [pull up resistor 10K] | +/-10V | 8 | NC | |
| 4 | NC | | 9 | NC | |
| 5 | GND | | 10 | NC | |

### 11. (J32) RS485 10 PIN 2.5mm



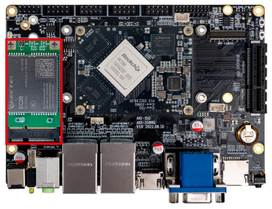
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | RS485_A | 3.3V | 6 | NC | |
| 2 | RS485_B | 3.3V | 7 | NC | |
| 3 | NC | | 8 | NC | |
| 4 | NC | | 9 | NC | |
| 5 | GND | | 10 | NC | |

## 12. (JUSB1)USB2.0 0&1 10 PIN 2.5mm



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | VCC5V0_USB20_HOST1 (5V Output) | 5V | 2 | VCC5V0_USB20_HOST1 (5V Output) | 5V |
| 3 | USB20_HOST0_DM | - | 4 | HUB_HOST20_DP3 | - |
| 5 | USB20_HOST0_DP | - | 6 | HUB_HOST20_DM3 | - |
| 7 | GND | | 8 | GND | |
| | | | 10 | NC | |

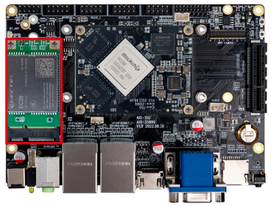
## 13. (U38) MINI_PCIE_52P_9H (4G MOUDEL) 52PIN



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 2 | VCC3V8_4G | 3.8V |
| 3 | NC | | 4 | GND | |
| 5 | NC | | 6 | NC | |
| 7 | NC | | 8 | UIM_PWR | 1.8V/3.0V |
| 9 | GND | | 10 | UIM_DAT | 1.8V/3.0V |
| 11 | NC | | 12 | UIM_CLK | 1.8V/3.0V |

| | | | | | |
|---|---|---|---|---|---|
| 13 | NC | | 14 | UIM_RST | 1.8V/3.0V |
| 15 | GND | | 16 | NC | |
| 17 | NC | | 18 | GND | |
| 19 | NC | | 20 | NC | |
| 21 | GND | | 22 | 4G_RESET[pull up resistor10K] | 3.8V |
| 23 | NC | | 24 | NC | |
| 25 | NC | | 26 | GND | |
| 27 | GND | | 28 | NC | |
| 29 | GND | | 30 | NC | |
| 31 | NC | | 32 | NC | |
| 33 | NC | | 34 | GND | |
| 35 | GND | | 36 | HUB_HOST20_DM4 | - |
| 37 | GND | | 38 | HUB_HOST20_DP4 | - |
| 39 | VCC3V8_4G | 3.8V | 40 | GND | |
| 41 | VCC3V8_4G | 3.8V | 42 | NC | |
| 43 | GND | | 44 | SIM_DET | 1.8 V |
| 45 | NC | | 46 | NC | |
| 47 | NC | | 48 | NC | |
| 49 | NC | | 50 | GND | |
| 51 | NC | | 52 | VCC3V8_4G | 3.8V |

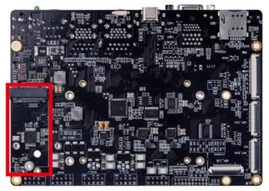
## 14. (U37)M2_NGFF-4G/5G (5G MOUDEL) 75 PIN



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 2 | VCC3V8_4G | 3.8V |
| 3 | GND | | 4 | VCC3V8_4G | 3.8V |
| 5 | GND | | 6 | FULL_CARD/Power_OFF# | 3.8V |
| 7 | HUB_HOST20_DP4 | - | 8 | NC | |
| 9 | HUB_HOST20_DM4 | - | 10 | NC | |
| 11 | GND | | 20 | NC | |
| 21 | NC | | 22 | NC | |
| 23 | NC | | 24 | NC | |
| 25 | NC | | 26 | NC | |
| 27 | GND | | 28 | NC | |
| 29 | USB30_2_SSRXN PCIE20_2_RXN/SATA30_2_RXN | - | 30 | UIM_RST | 1.8V/3.0V |
| 31 | USB30_2_SSRXP<br>PCIE20_2_RXP/SATA30_2_RXP | - | 32 | UIM_CLK | 1.8V/3.0V |
| 33 | GND | | 34 | UIM_DAT | 1.8V/3.0V |
| 35 | USB30_2_SSTXN PCIE20_2_TXN/SATA30_2_TXN | - | 36 | UIM_PWR | 1.8V/3.0V |
| 37 | USB30_2_SSTXP PCIE20_2_TXP/SATA30_2_TXP | - | 38 | NC | |
| 39 | GND | | 40 | NC | |
| 41 | NC | | 42 | NC | |
| 43 | NC | | 44 | NC | |
| 45 | GND | | 46 | NC | |

| | | | | | |
|---|---|---|---|---|---|
| 47 | NC | | 48 | NC | |
| 49 | NC | | 50 | NC | |
| 51 | GND | | 52 | NC | |
| 53 | NC | | 54 | NC | |
| 55 | NC | | 56 | NC | |
| 57 | GND | | 58 | NC | |
| 59 | NC | | 60 | NC | |
| 61 | NC | | 62 | NC | |
| 63 | NC | | 64 | NC | |
| 65 | NC | | 66 | SIM_DET | 1.8V |
| 67 | 4G_RESET | 3.8V | 68 | NC | |
| 69 | NC | | 70 | VCC3V8_4G | 3.8V |
| 71 | GND | | 72 | VCC3V8_4G | 3.8V |
| 73 | GND | | 74 | VCC3V8_4G | 3.8V |
| 75 | NC | | | | |

## 15. (U2)M.2 SATA 75 PIN

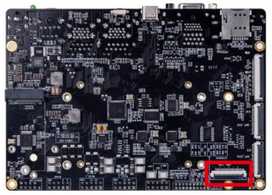


| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | GND | | 2 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 3 | GND | | 4 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 5 | NC | | 6 | NC | |
| 7 | NC | | 8 | NC | |

| | | | | | |
|---|---|---|---|---|---|
| 9 | GND | | 10 | DAS/DSS [pull up resistor10K] | 3.3V |
| 11 | NC | | 12 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 13 | NC | | 14 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 15 | NC | | 16 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 17 | NC | | 18 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 19 | NC | | 20 | NC | |
| 21 | GND | | 22 | NC | |
| 23 | NC | | 24 | NC | |
| 25 | NC | | 26 | NC | |
| 27 | GND | | 28 | NC | |
| 29 | NC | | 30 | NC | |
| 31 | NC | | 32 | NC | |
| 33 | GND | | 34 | NC | |
| 35 | NC | | 36 | NC | |
| 37 | NC | | 38 | SATA_DEVSLP (From PCA9555) [pull up resistor10K] | 3.3V |
| 39 | GND | | 40 | NC | |
| 41 | PCIE20_0_RXP/SATA30_0_RXP | - | 42 | NC | |
| 43 | PCIE20_0_RXN/SATA30_0_RXN | - | 44 | NC | |
| 45 | GND | | 46 | NC | |
| 47 | PCIE20_0_TXN/SATA30_0_TXN | - | 48 | NC | |
| 49 | PCIE20_0_TXP/SATA30_0_TXP | - | 50 | PCIE30X2_PERSTn_M1 (From PCA9555) | 3.3V |
| 51 | GND | | 52 | PCIE30X2_CLKREQN_M1 (GPIO4_A6_d) | 3.3V |
| 53 | PCIE20_0_TXN | - | 54 | PCIE30X2_WAKEN_M1 (GPIO4_A7_d) | 3.3V |
| 55 | PCIE20_0_TXP | - | 56 | NC | |
| 57 | GND | | 58 | NC | |
| 67 | NC | | 68 | NC | |
| 69 | GND | | 70 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 71 | GND | | 72 | VCC3V3_SATA (3.3V Output) | 3.3V |

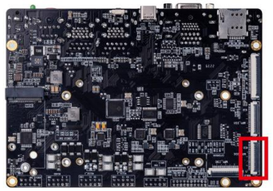
| | | | | | |
|---|---|---|---|---|---|
| 73 | GND | | 74 | VCC3V3_SATA (3.3V Output) | 3.3V |
| 75 | GND | | | | |

### 16. (J8) MIPI_CSI0 30 PIN



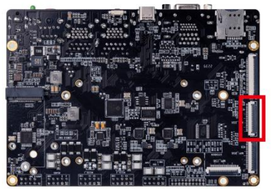
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | I2C3_SDA_M0_MIPI (GPIO1_C0_z) [pull up resistor 2.2K] | 1.8V | 16 | GND | |
| 2 | I2C3_SCL_M0_MIPI (GPIO1_C1_z) [pull up resistor 2.2K] | 1.8V | 17 | MIPI_CSI0_RX_CLK0P | - |
| 3 | MIPI_CAM3_PDN_L (GPIO1_A6_d) | 1.8V | 18 | MIPI_CSI0_RX_CLK0N | - |
| 4 | RESET0_CAM (GPIO1_B0_u) | 1.8V | 19 | GND | |
| 5 | GND | | 20 | MIPI_CSI0_RX_D2P | - |
| 6 | MIPI_CAM3_CLKOUT (GPIO1_D6_u) | 1.8V | 21 | MIPI_CSI0_RX_D2N | - |
| 7 | MIPI_CAM4_PWREN_H (GPIO1_B1_d) | 1.8V | 22 | GND | |
| 8 | MIPI_CAM3_PWREN_H (GPIO1_B2_d) | 1.8V | 23 | MIPI_CSI0_RX_D3P | - |
| 9 | MIPI_CAM3_CLKOUT (GPIO1_D6_u) | 1.8V | 24 | MIPI_CSI0_RX_D3N | - |
| 10 | GND | | 25 | GND | |
| 11 | MIPI_CSI0_RX_D0P | - | 26 | MIPI_CSI0_RX_CLK1P | - |
| 12 | MIPI_CSI0_RX_D0N | - | 27 | MIPI_CSI0_RX_CLK1N | - |
| 13 | GND | | 28 | GND | |
| 14 | MIPI_CSI0_RX_D1P | - | 29 | VCC5V0_SYS (5V Output) | 5.0V |
| 15 | MIPI_CSI0_RX_D1N | - | 30 | VCC5V0_SYS (5V Output) | 5.0V |

## 17. (J16)MIPI _DSI0 30 PIN



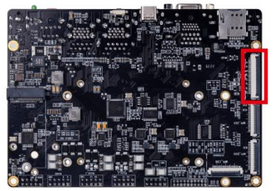
| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | VCC5V0_SYS (5V Output) | 5.0V | 16 | MIPI_DPHY0_TX_D0P | - |
| 2 | VCC5V0_SYS (5V Output) | 5.0V | 17 | MIPI_DPHY0_TX_D0N | - |
| 3 | VCC5V0_SYS (5V Output) | 5.0V | 18 | GND | |
| 4 | GND | | 19 | MIPI_DPHY0_TX_D1P | - |
| 5 | I2C_ID1 | 3.3V | 20 | MIPI_DPHY0_TX_D1N | - |
| 6 | VCC3V3_SYS (3.3V Output) | 3.3V | 21 | GND | |
| 7 | I2C1_SDA_M2 [pull up resistor 2.2K] | 3.3V | 22 | MIPI_DPHY0_TX_CLKP | - |
| 8 | I2C1_SCL_M2 [pull up resistor 2.2K] | 3.3V | 23 | MIPI_DPHY0_TX_CLKN | - |
| 9 | LCD0_PWR_EN (From PCA9555) | 3.3V | 24 | GND | |
| 10 | TP0_INT [pull up resistor 10K] | 3.3V | 25 | MIPI_DPHY0_TX_D2P | - |
| 11 | LCD0_BL_EN [pull up resistor 10K] | 1.8V | 26 | MIPI_DPHY0_TX_D2N | - |
| 12 | PWM12_M1 (GPIO4_B5_d) | 3.3V | 27 | GND | |
| 13 | LCD0_RESET [pull up resistor 10K] | 3.3V | 28 | MIPI_DPHY0_TX_D3P | - |
| 14 | TP0_RST [pull up resistor 10K] | 3.3V | 29 | MIPI_DPHY0_TX_D3N | - |
| 15 | GND | | 30 | GND | |

## 18. (J9)MIPI _DSI1 30 PIN



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | VCC5V0_SYS (5V Output) | 5V | 16 | MIPI_DPHY1_TX_D0P | - |
| 2 | VCC5V0_SYS (5V Output) | 5V | 17 | MIPI_DPHY1_TX_D0N | - |
| 3 | VCC5V0_SYS (5V Output) | 5V | 18 | GND | |
| 4 | GND | | 19 | MIPI_DPHY1_TX_D1P | - |
| 5 | I2C_ID2 [pull down resistor 10K] | 3.3V | 20 | MIPI_DPHY1_TX_D1N | - |
| 6 | VCC3V3_SYS (3.3V Output) | 3.3V | 21 | GND | |
| 7 | I2C6_SDA_M0 [pull up resistor 2.2K] | 3.3V | 22 | MIPI_DPHY1_TX_CLKP | - |
| 8 | I2C6_SCL_M0 [pull up resistor 2.2K] | 3.3V | 23 | MIPI_DPHY1_TX_CLKN | - |
| 9 | LCD1_PWR_EN (From PCA9555) | 3.3V | 24 | GND | |
| 10 | TP1_INT (From PCA9555) | 3.3V | 25 | MIPI_DPHY1_TX_D2P | - |
| 11 | LCD1_BL_EN (From PCA9555) | 3.3V | 26 | MIPI_DPHY1_TX_D2N | - |
| 12 | LCD1_BL_PWM [pull up resistor 10K] | 3.3V | 27 | GND | |
| 13 | LCD1_RESET_L (From PCA9555)[pull up resistor 10K] | 3.3V | 28 | MIPI_DPHY1_TX_D3P | - |
| 14 | TP1_RST_L (From PCA9555)[pull up resistor 10K] | 3.3V | 29 | MIPI_DPHY1_TX_D3N | - |
| 15 | GND | | 30 | GND | |

## 19. (J25)EDP 40 PIN



| NO. | Definition | Level/V | NO. | Definition | Level/V |
|---|---|---|---|---|---|
| 1 | NC | | 21 | GND | |
| 2 | GND | | 22 | EDP_BL_EN_H (From PCA9555) | 3.3V |
| 3 | eDP1_TX_D1N | - | 23 | EDP_BL_PWM [pull up resistor 10K] | 3.3V |
| 4 | eDP1_TX_D1P | - | 24 | NC | |
| 5 | GND | | 25 | NC | |
| 6 | eDP1_TX_D0N | - | 26 | VCC_EDP (12V Output) | 12V |
| 7 | eDP1_TX_D0P | - | 27 | VCC_EDP (12V Output) | 12V |
| 8 | GND | | 28 | VCC_EDP (12V Output) | 12V |
| 9 | EDP_AUXP | 1.8V | 29 | VCC_EDP (12V Output) | 12V |
| 10 | EDP_AUXN | 1.8V | 30 | NC | |
| 11 | GND | | 31 | HUB_HOST20_DM1 | - |
| 12 | VCC3V3_EDP (3.3V Output) | 3.3V | 32 | HUB_HOST20_DP1 | - |
| 13 | VCC3V3_EDP (3.3V Output) | 3.3V | 33 | GND | |
| 14 | NC | | 34 | VCC3V3_EDP (3.3V Output) | 3.3V |
| 15 | GND | | 35 | VCC3V3_EDP (3.3V Output) | 3.3V |
| 16 | GND | | 36 | TP_EN_EDP (From PCA9555) | 3.3V |
| 17 | EDP_HPD [pull up resistor 10K] | 3.3V | 37 | I2C1_SCL_M2 [pull up resistor 2.2K] | 3.3V |
| 18 | GND | | 38 | I2C1_SDA_M2 [pull up resistor 2.2K] | 3.3V |
| 19 | GND | | 39 | TP_INT_EDP [pull up resistor 10K] | 3.3V |
| 20 | GND | | 40 | TP_RST_EDP (From PCA9555) [pull up resistor 10K] | 3.3V |


# T-CHIP INTELLIGENCE TECHNOLOGY

Contact Us
(+86)18688117175

E-mail
global@t-firefly.com

Website
www.t-firefly.com

Address
Room 2101, Hongyu Building, #57 Zhongshan 4Rd, East District, Zhongshan, Guangdong, China.