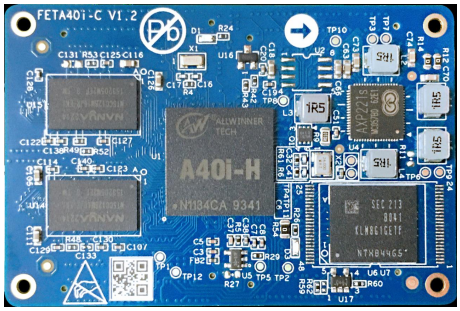
# FETA40i-C SoM

FETA40i-C system on module is based on Allwinner Cortex-A7 quad-core industrial grade processor A40i runs at speed up to 1.2GHz. Mostly popular video and image encode forms are perfectly supported. It is applicable for industrial control vision interactive products, such as smart terminals, industrial control, data collection, machine vision, industrial IoT, portable devices, digital signage, etc.




| | | |
|---|---|---|
| 4x Cortex-A7 | 1.2GHz | Mali-400MP2 |
| Architecture | Clock | GPU |
| Linux/ Android | 2 | 4 |
| OS | Ethernet | TVIN |

## Features:

- Quad-core processor A40i up to 1.2GHz, integrated with Mali400MP2 GPU;
- Dual-screen displaying both sync. and async, various display interfaces;
- One Gigabit Ethernet and one fast Ethernet are supported and available for WIFI/ BT4.0, 4G is also supported;
- Can support multiple camera inputs, 2-ch DVP camera up to 5.0MP, 4-ch TVIN can support NTSC and PAL;
- Integrated with audio codec, can support one differential PHONEOUT, one stereo earphone output, and one microphone input;

## ■ SoM features：

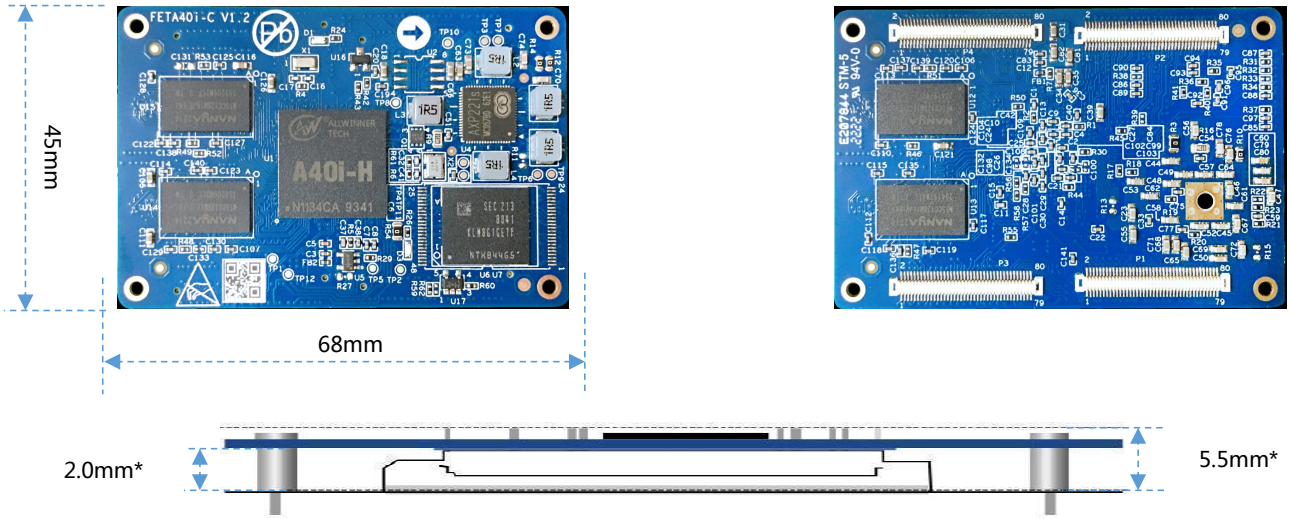
| | |
|---|---|
| **CPU** | Allwinner A40i<br>**CPU:** quad-core Cortex-A7@ 1.2GHz<br>**GPU：**Mali-400 MP2, supports OpenGL ES 2.0,OpenGL ES 1.1,Open VG 1.1<br>**VPU:**<br>Hard decode:<br>• up to 1080p@60fps:<br>• MPEG1,MPEG2,MPEG4,H.263BP,H.264<br>Hard encode:<br>• up to 1080p@45fps:<br>• H.264,JEPG |
| **RAM** | 1GB/ 2GB(standard : 1GB) |
| **ROM** | 8GB eMMC |
| **Power input** | Main power: DC 5V; Li-battery power input: 4.2V |
| **Operating temp** | -25℃~ +85℃/ -40~85℃ |

| Package | Board-to-board connector(4*80-pin, 0.5mm pitch) |
|---|---|

## SoM peripherals

| Interface | QTY | Spec. |
|---|---|---|
| CAMERA | ≤2 | CSI0: one 8/ 16-bit DVP, up to 5.0MP, 1080P@ 30FPS<br>CSI1: one 8/ 16/ 24-bit DVP, up to 5.0MP, 720P@ 30FPS |
| TVIN | 4 | 4 CVBS input channels, supports NTSC and PAL |
| LCD | ≤2 | RGB888, up to 1920x 1080@ 60FPS |
| HDMI | 1 | • HDMI1.4<br>• up to 1080P@60FPS, support HDCP1.2 |
| LVDS | 1 | 1080P@60FPS |
| MIPI-DSI | 1 | MIPI DSI V1.01&MIPI D-PHY V1.0;<br>4-lane, up to 1080P@60FPS |
| TVOUT | 4 | 4-lane CVBS, supports NTSC and PAL |
| SD/MMC/SDIO | ≤4 | • SD/MMC/SDIO0: 4-bit data bus(for firmware flashing); SD/MMC/SDIO1: 4-bit data bus;<br>• SD/MMC/SDIO2: 8-bit data bus(for eMMC on SoM); SD/MMC/SDIO3: 4-bit data bus; |
| USB HOST | 2 | USB2.0, up to 480Mbps |
| USB OTG | 1 | USB2.0, up to 480Mbps |
| I2S/PCM | ≤2 | Host/ slave mode configurable, compatible with left-aligned, right-aligned, PCM and TDM;<br>Support 8~32-bit audio resolution and 8~192kHz sampling rate |
| Audio Codec | 1 | • Supports 1x differential PHONEOUT, 1x stereo earphone output, 1x MIC< 1x LINEIN |
| UART | ≤8 | Each UART baud rate 115200;<br>UART0: 3-wire, debug port; UART1: 8-wire; UART2/UART3: 5-wire,<br>UART4/UART5/UART6/UART7: 3-wire |
| SPI | ≤4 | Full-duplex, clock is configurable, up to 100MHz;<br>4x SPI controller with host/ slave mode configurable, each SPI controller supports 2x chip select |
| I2C | ≤5 | Up to 400Kbps |
| Ethernet | ≤2 | 1x 10/ 100Mbps negotiable; 1x 10/ 100/ 1000Mbps negotiable |
| PWM | ≤8 | Supports interrupt PWM output and capturing input, supports 3 output wave forms |
| JTAG | supported | |
| Keyboard | supported | Up to 8x 8 |
| KEYADC | ≤2 | 6-bit, 2-lane, input power 0~2V, for analog key detecting, converting rate up to 250Hz |
| SMC | ≤2 | Complies with ISO/IEC 7816-3:1997(E)及 EMV2000(4.0) |
| CIR | ≤2 | FIFO |
| SATA | 1 | Up to 3.0Gbps, eSATA is supported |

## Exterior and dimensions:




Height diagram after installation

* Note: tolerance ±0.2mm

## OS:

| | |
|---|---|
| **OS** | Linux3.10, Linux5.310, Android7.1, Forlinx Desktop |
| **OS image flashing** | •SD card<br>•USB OTG |

## Driver list:

**Android7.1**

| Interface | Function | Chipset/ module |
|---|---|---|
| USB | WiFi/BT | BL-M8723DU1 |
| USB | 4G | EC20/ EC25 |
| USB | camera | C270(UVC) |
| I2C | RTC | RX8010 |
| I2C | Camera | OV5640 |
| TVIN | Analog input | FIT-ACAM-A V1.0 |
| TTL | TTL to RS232 | FIT-RS232-II V1.1 |
| RS232 | GPS | FIT-GPS&BD-UM220 V1.0 |

**Linux3.10**

| Interface | Function | Chipset |
|---|---|---|
| USB | WiFi-BT | RL-UM02WBS-8723BU-V1.2 |
| USB | 4G | EC20/ EC25 |
| USB | USB to 4x UART | FIT-USB-TO-4-UARTS |
| USB | camera | C270(UVC) |
| USB | USB to fast Ethernet | AX88179 |
| MIPI_CSI | Camera | OV5640 |

| | | | |
|---|---|---|---|
| | SDIO | WiFi | FIT-WIFI-II_RTL8189ES(210\335x) |
| | TTL | TTL to RS232 | FIT-RS232-II V1.1 |
| | LVDS | 10.1’’ | FIT_LVDS10.1C_V2.0 2380x800, capacitive TP: GT928 |
| | RGB | 7’’ | FIT-LCD7.0, 1024x600, capacitive TP: GT911 |
| | MIPI-DSI | 7’’ | FIT-LCD7.0MIPI, 1024x600, capacitive TP: GT911, FT5x0x |
| | RGB | 7’’ | FIT-LCD7.0, 800x 480, resistive TP |

| | Interface | Function | Chipset |
|---|---|---|---|
| **Forlinx Desktop 16.04** | USB | WiFi-BT | RL-UM02WBS-8723BU-V1.2 |
| | USB | 4G | EC20/ EC25 |
| | USB | USB to 4x UART | FIT-USB-TO-4-UARTS |
| | USB | camera | C270(UVC) |
| | USB | USB to fast Ethernet | AX88179 |
| | SDIO | WiFi | FIT-WIFI-II_RTL8189ES(210\335x) |
| | TTL | TTL to RS232 | FIT-RS232-II V1.1 |
| | LVDS | 10.1’’ | FIT_LVDS10.1C_V2.0 2380x800, capacitive TP: GT928 |
| | RGB | 7’’ | FIT-LCD7.0, 1024x600, capacitive TP: GT911 |
| | MIPI-DSI | 7’’ | FIT-LCD7.0MIPI, 1024x600, capacitive TP: GT911, FT5x0x |
| | RGB | 7’’ | FIT-LCD7.0, 800x 480, resistive TP |

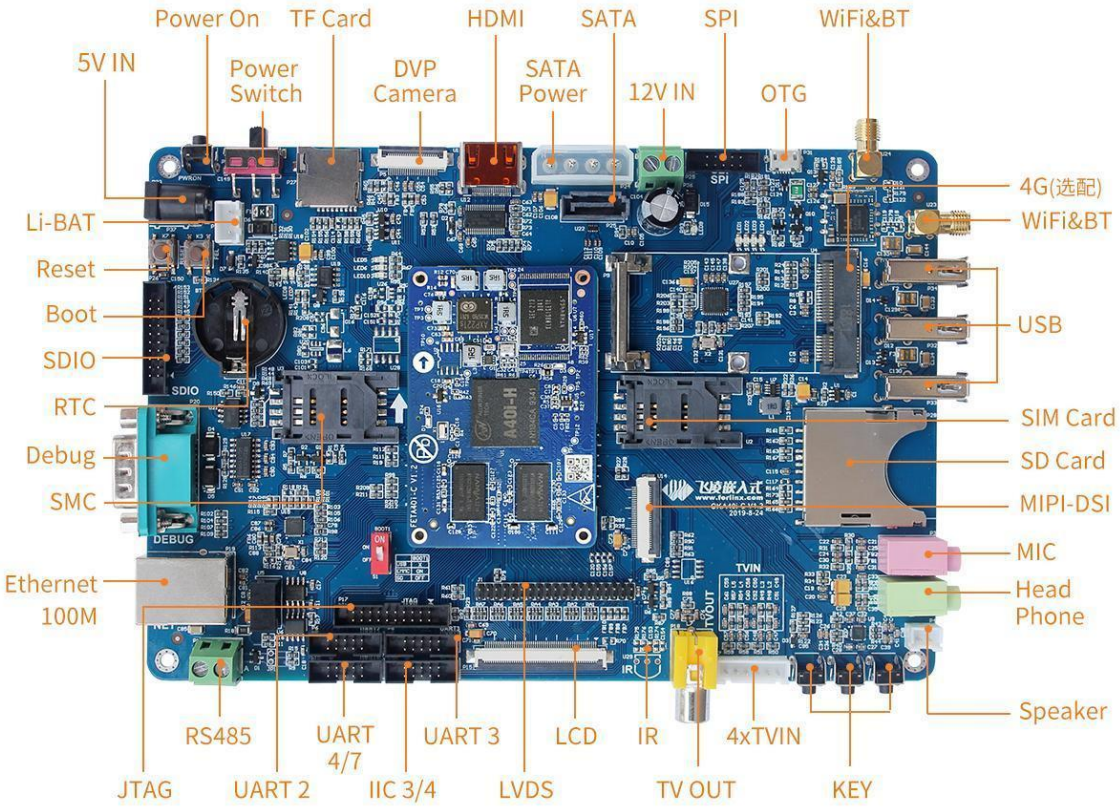
## ■ Provided technical files

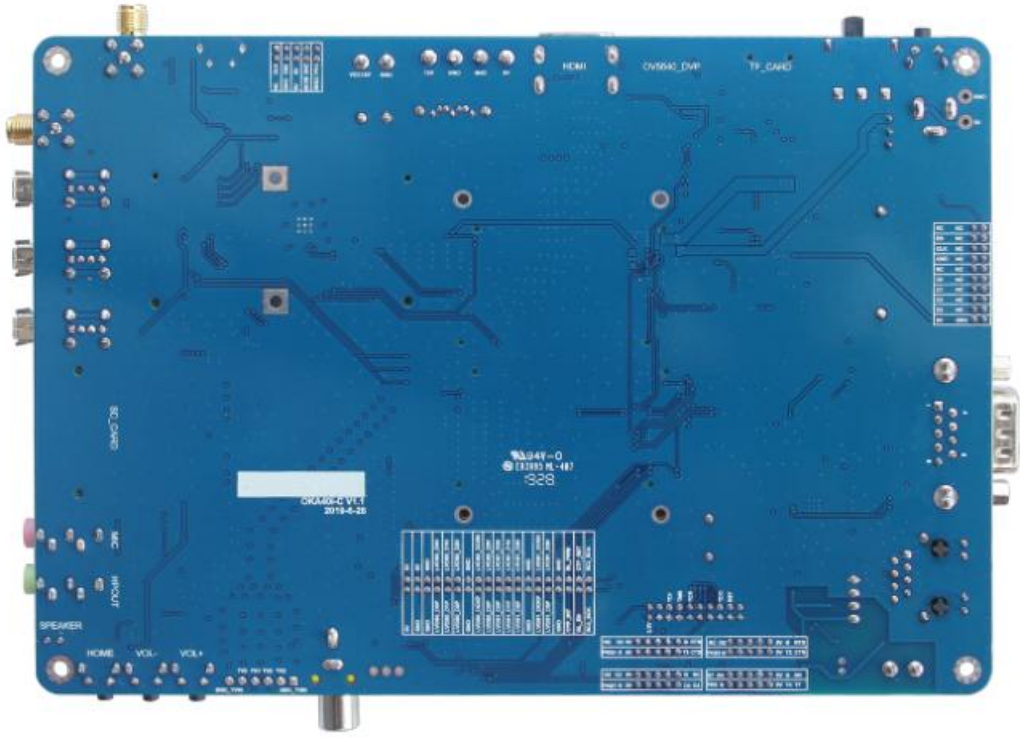
| | |
|---|---|
| **Firmware** | User manual, compiling guideline, kernel source code, file system, OS image, VM ubuntu image, SD card tool, USB OTG tool, QT demos and source code |
| **Hardware** | User manual, carrier board schematic, carrier board PCB(AD), datasheet, carrier board and SoM DXF files, pinmux sheet |

## ■ Order options:

| Model | Core number | Clock | RAM | Flash | Working temp | Status | DDR |
|---|---|---|---|---|---|---|---|
| FETA40i-C+121GSE8GIB12:H1 | 4x A7 | A7@1.2GHz | 1GB | 8GB | -40~85℃ | Mass production | Nanya |
| FETA40i-C+121GSE8GIB12:I1 | 4x A7 | A7@1.2GHz | 1GB | 8GB | -40~85℃ | Mass production | Hakatronics |
| FETA40i-C+122GSE8GIC12:D1 | 4x A7 | A7@1.2GHz | 2GB | 8GB | -40~85℃ | Mass production | Nanya |
| FETA40i-C+122GSE8GIC12:E1 | 4x A7 | A7@1.2GHz | 2GB | 8GB | -40~85℃ | Mass production | Hakatronics |
| FETA40i-C+121GSE8GEA12:C1 | 4x A7 | A7@1.2GHz | 1GB | 8GB | -25~+85℃ | Mass production | Nanya |
| FETA40i-C+121GSE8GEA12:D1 | 4x A7 | A7@1.2GHz | 1GB | 8GB | -25~+85℃ | Mass production | Hakatronics |

## Development board/ kit



## Carrier board features:

| Interface | QTY | Spec. |
|---|---|---|
| LCD | 1 | RGB888, 24-bit, up to 1920*1080@60FPS |
| LVDS | 1 | Supports single/ dual LVDS, up to 1920*1080@60FPS, multiplex with RGB |
| MIPI-DSI | 1 | 4-lane, up to 1080P@60FPS |
| HDMI | 1 | HDCP 1.2, up to 1080P@60FPS |
| TVOUT | 1 | 4x TVOUT from SoM with 1 available on carrier board, supports NTSC and PAL |
| CAMERA | 1 | 8-bit DVP, up to 5.0MP, 1080P@ 30FPS, recommended model: OV5640 |
| TVIN | 4 | 4 CVBS input |
| Audio | 1 | 1x MIC, 1x Phone, 1x Speaker |
| USB HOST | 3 | USB2.0, the processor is with 1 USB, and another 2 are expanded by HUB, up to 480Mbps |
| USB OTG | 1 | micro USB connector, USB2.0, up to 480Mbps |
| Ethernet | 1 | RJ45, 10/ 100Mbps negotiable |
| WiFi | 1 | IEEE 802.11b/g/n 2.4GHz |
| BT | 1 | BT V2.1/BT V3.0/BT V4.0 |
| SD card slot | 2 | 1 for SD card, for OS image flashing, 1 for TF card, for data storage<br>Compatible with SD, SDHC and SDXC |
| SDIO | 1 | 20-pin header with pitch of 2.0mm |
| LED | 2 | For user's definition |
| PWM | 1 | For backlight |
| RTP TBD | 4 | For resistive TP |
| TWI | 4 | Available for standard mode 100kbit/s or fast mode 400kbit/s |
| UART | 4 | UART2 and UART3 are 5-wire serial ports, UART4 and UART7 are 3-wire serial ports, 3.3V |
| SMART_CARD TBD | 1 | Complies with ISO/IEC 7816-3:1997(E) and EMV2000(4.0) |
| UART Debug | 1 | RS232, DB9 connector |
| JTAG Debug | 1 | / |
| KEY | 3 | VOL+, VOL- and HOME three keys are expanded by one KEYADC on carrier board |
| RS485 | 1 | isolated |
| SPI | 1 | SPI2 |
| SATA | 1 | Up to 3.0Gbps |
| RTC | 1 | RX8010SJ |
| 4G | 1 | Mini PCIe slot |