

## FET7110-C SoM

FET7110-C system on module is powered by StarFive JH7110 quad-core RISC-V processor running at speed up to 1.5GHz and with advanced GPU performance available for multiple video codec. It supports 2x PCIe2.0, 2x Gigabit Ethernet, 2x CAN2.0, etc. Linux5.15.0 could be well supported, which is preferable for machine vision and other intelligent vision processing related applications.

### Highlights:

- RISC-V, open source;
- Quad-core processor up to 1.5GHz;
- Versatile: 2x PCIe2.0, 2x 1GbE, 2x CAN2.0;
- Advanced GPU for multi-media processing;
- Well supported OS Linux5.15.0;
- Dynamic power control



|              |        |           |
|--------------|--------|-----------|
| RISC-V       | 1.5GHz | 4         |
| Architecture | Clock  | Core Num  |
| Dual Gigabit | 600MHz | 64-bit    |
| Ethernet     | GPU    | Processor |



Linux5.15.0

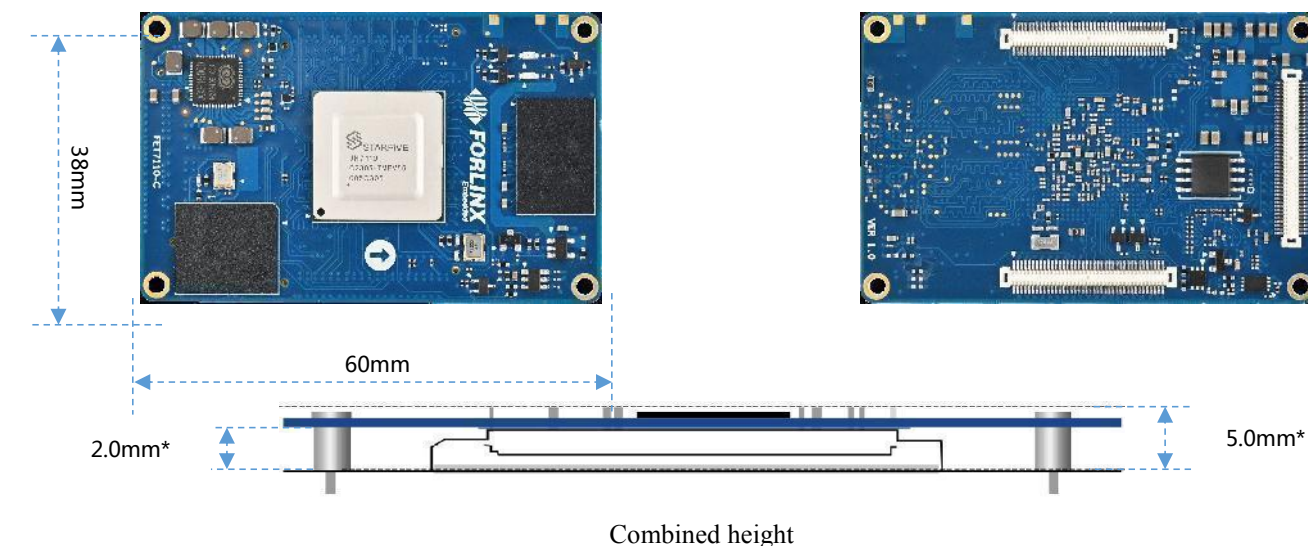
### ■ SoM features :

|                |                                                        |
|----------------|--------------------------------------------------------|
| CPU            | <a href="#">StarFive JH7110</a>                        |
|                | <b>CPU:</b> RISC-V, quad-core, up to 1.5GHz            |
|                | <b>GPU:</b>                                            |
|                | • IMG BXE-4-32 MC1@600MHz                              |
|                | • OpenCL 3.0, OpenGL ES 3.2, Vulkan 1.2                |
|                | <b>VPU:</b>                                            |
|                | • Video Decoding: H.265/H.264, 4K@60fps or 1080p@30fps |
|                | • Video Encoding: H.265, 1080p@30fps                   |
| RAM            | 2/4GB LPDDR4                                           |
| ROM            | 32GB eMMC                                              |
| Voltage input  | DC 5V                                                  |
| Operating temp | 0~+80℃                                                 |
| Package        | Board-to-board connector(3*80-pin, 0.5mm pitch)        |

## SoM specifications:

| JH7110   | QTY | Spec.                                                                                                        |
|----------|-----|--------------------------------------------------------------------------------------------------------------|
| HDMI     | 1   | HDMI2.0, up to 4K@30fps                                                                                      |
| MIPI-DSI | 1   | 4-lane MIPI DSI, up to 2K@30fps                                                                              |
| MIPI-CSI | 1   | 4-lane, works with 1-lane/ 2-lane/ 3-lane/ 4-lane, each lane up to 2.5Gbps                                   |
| DVP      | 1   | 12-bit                                                                                                       |
| Audio    | 1   | 8-lane I2S PCM/ TDM<br>Supports MIC and phone, one is for headphone, and the other is for 1W 8Ω mono speaker |
| SDIO     | 1   | For TF card                                                                                                  |
| Ethernet | 2   | GMAC, available for RMII/RGMII 10/100/1000 Mbps                                                              |
| PCIe2.0  | 1   | PCIe2.0x1, 2 PCIe2.0 controllers integrated with PHY                                                         |
| USB2.0   | 1   | Master/ slave mode, supports both HS mode and FS mode                                                        |
| USB3.0   | 1   | Multiplexed with PCIe2.0                                                                                     |
| UART     | ≤6  | Maybe multiplexed with GPIO                                                                                  |
| CAN2.0B  | 2   | Up to 5Mbps                                                                                                  |
| SPI      | ≤7  | Maybe multiplexed with GPIO                                                                                  |
| IIC      | ≤7  | Maybe multiplexed with GPIO                                                                                  |
| PWM      | ≤8  | Maybe multiplexed with GPIO                                                                                  |
| GPIO     | ≤64 | maximum                                                                                                      |

## Exterior and dimensions:



## OS:

|                       |             |
|-----------------------|-------------|
| OS version            | Linux5.15.0 |
| Firmware installation | • TF card   |

## Driver list:

| Linux5.15 | Peripheral | Function            | Chipset                                     |
|-----------|------------|---------------------|---------------------------------------------|
|           | IIC        | Capacitive touching | GT911                                       |
|           | IIC        | Capacitive touching | GT928                                       |
|           | IIC        | Capacitive touching | FT5316                                      |
|           | IIC        | RTC                 | PCF8563T                                    |
|           | IIC        | Audio codec         | NAU88C22YG                                  |
|           | PCIe       | WiFi                | RTL8822CE , RTL8862BE                       |
|           | USB        | UVC camera          | C270                                        |
|           | USB        | 4G modem            | EM05                                        |
|           | USB        | 5G modem            | RM500Q                                      |
|           | USB        | USB HUB             | CYUSB3304-68LTXI                            |
|           | MIPI-DSI   | 7''                 | FIT-LCD7.0V2.1 with resolution of 1024x 600 |
|           | HDMI       | output              | 1920x 1080                                  |
|           | RGMII      | Gigabit Ethernet    | YT8521SH                                    |
|           | PWM        | LCD backlight       | /                                           |
|           | MIPI-CSI   | Camera              | OV5645                                      |

## Provided technical files

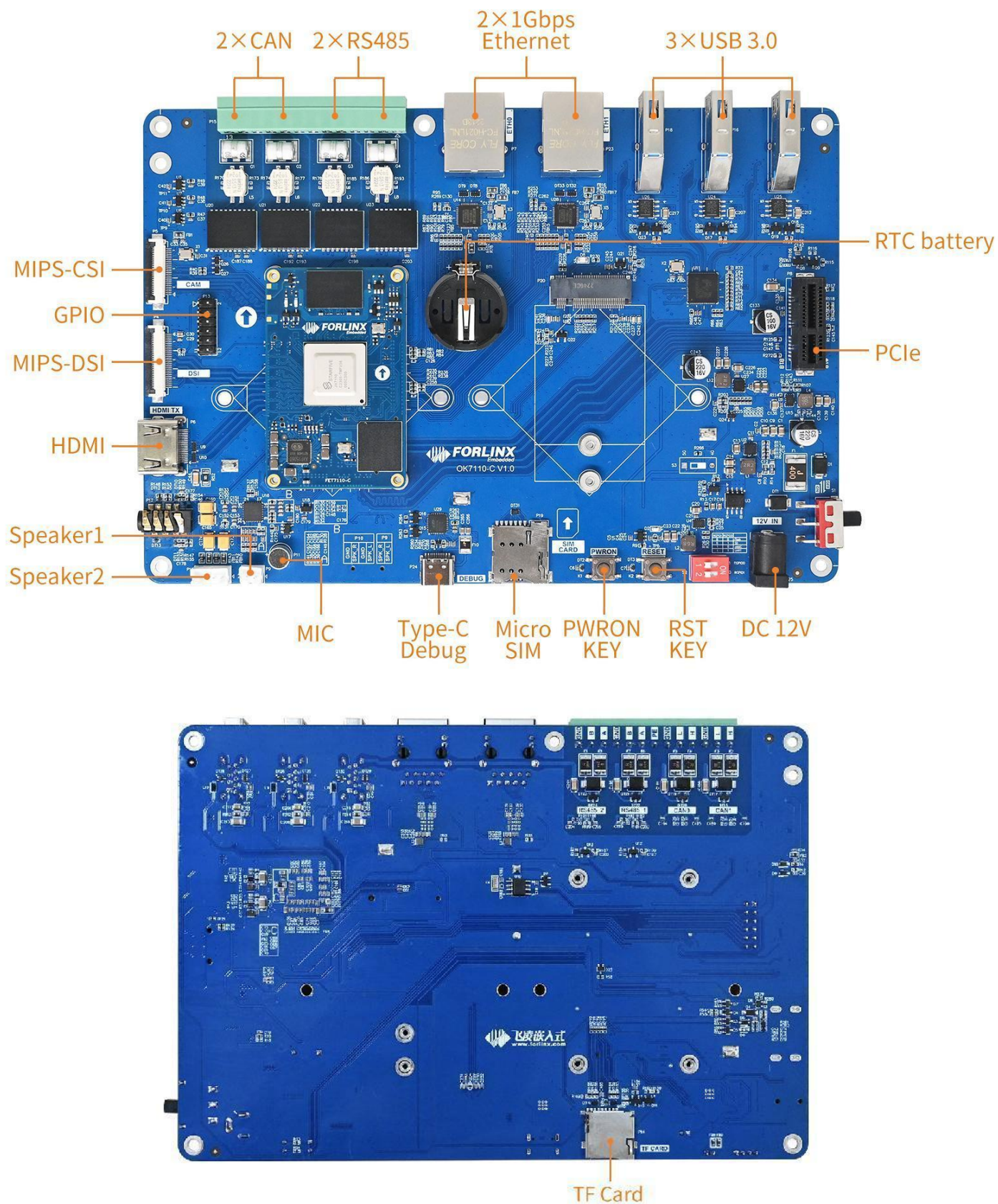
|           |                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Linux5.15 | User manual, compiling guideline, GIT source, 3P tool and lib, reference files from StarFive, kernel source code, file system, OS image, VM ubuntu image, SD card making tool |
| Hardware  | User manual, carrier board schematic, carrier board PCB(AD), datasheet, carrier board and SoM DXF files, pinmux sheet                                                         |

## Ordering options:

| Model                      | Core number  | CPU speed | RAM | Flash | Working temp | Phase     |
|----------------------------|--------------|-----------|-----|-------|--------------|-----------|
| FET7110-C+152GSE32GCE11:A1 | 4×RISC-V U74 | 1.5GHz    | 2GB | 32GB  | 0~+80℃       | sampling  |
| FET7110-C+154GSE32GCF11:A1 | 4×RISC-V U74 | 1.5GHz    | 4GB | 32GB  | 0~+80℃       | sampling  |
| TBD*                       | 4×RISC-V U74 | 1.5GHz    | 2GB | 32GB  | -40~85℃      | scheduled |
| TBD*                       | 4×RISC-V U74 | 1.5GHz    | 4GB | 32GB  | -40~85℃      | scheduled |



## Development board/ kit



## Carrier board features

| Peripheral     | QTY | Spec.                                                                                                                                                      |
|----------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HDMI           | 1   | up to 1080p@30fps                                                                                                                                          |
| MIPI-DSI       | 1   | 4-lane MIPI DSI, fits with Forlinx 7” MIPI-DSI module with resolution of 1024×600                                                                          |
| Camera         | 1   | One FPC is available on carrier board for 1x 4-lane MIPI-CSI , supports Forlinx 5.0MP MIPI-CSI module OV5645                                               |
| Ethernet       | 2   | RJ45, 10/100/1000Mbps adaptive                                                                                                                             |
| USB3.0         | 1   | 3x USB3.0-A from USB_HUB                                                                                                                                   |
| PCIe2.0        | 1   | 1x PCIe2.0x1 lane slot is available on carrier board                                                                                                       |
| UART           | 1   | Pin headers                                                                                                                                                |
| UART for debug | 1   | 1x debug converted to USB, it is available on carrier board by Type-C                                                                                      |
| RS485          | 2   | isolated                                                                                                                                                   |
| CAN2.0         | 2   | isolated                                                                                                                                                   |
| SPI            | 1   | Pin headers with pitch of 2.54mm                                                                                                                           |
| Audio          | 1   | Input: 1x MIC, 3.5mm jack;<br>Output: 1x Phone, 1x mono speaker(1W 8Ω)                                                                                     |
| TF card slot   | 1   | USH-I, up to 104MB/s                                                                                                                                       |
| 4G/ 5G         | 1   | Alternative<br>4G: M.2 Key B slot, recommended model EM05, EC20/ EC25<br>5G: M.2 Key B slot, recommended model RM500U-CN, RM500Q-GL<br>Micro-SIM card slot |
| KEY            | 2   | 1x power on/ off, 1x reset                                                                                                                                 |
| RTC            | 1   |                                                                                                                                                            |