

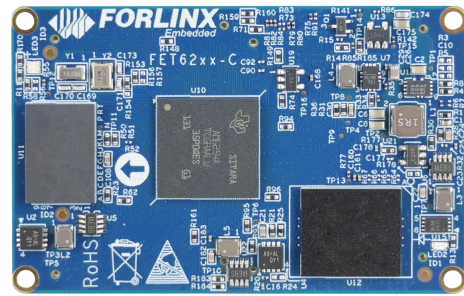
### FET62xx-C SoM

The FET62xx-C SoM is designed based on the TI Sitara™ AM62x series of industrial-grade processors. It features the Arm Cortex A53 architecture, with a maximum main frequency of up to 1.4 GHz. It includes a variety of interfaces, such as 2 x Gigabit Ethernet that support TSN, along with USB 2.0, LVDS, RGB parallel, UART, OSPI, CAN-FD, as well as ports for camera and audio connections.


It is compatible with the entire AM62x series of processors and offers options for single-core, dual-core, and quad-core configurations, all with fully compatible functional pins. This flexibility enables cost-effective combination solutions and is ideal for reducing your product's time to market. It can be utilized in various industrial environments, including HMI, industrial computers, edge computing, retail automation, Charging Pile Control Units (TCUs), medical equipment, and etc.

#### Product Features:

- 10~15 yeas longevity;
- Multi - core heterogeneous architecture, with the MCU capable of independent operation, suitable for functional safety applications in industrial control;
- Supports theIEEE1588PTP for accurate clock synchronization;
- 2 x 1000Mbps Ethernet (GMAC) , supporting TSN;
- Supports RGB 888, dual-channel LVDS, up to 1920 × 1200 @ 60fps.



1/2/4×A53	1.0/1.4GHz	8G FLOPS
Architecture	Clock	GPU
TSN	16nm	64bit
Ethernet	Manufacturing Process Technology	Processor

		
		Linux5.10

#### SoM Parameters:

Processor	<b>TI Sitara™ AM62x</b> <b>CPU:</b> Cortex-A53 @1.0/1.4GHz <b>MCU:</b> Cortex-M4F @400MHz <b>GPU:</b> (AM6231, AM6232, no GPU)
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	<ul style="list-style-type: none"> <li>•AXE1-16M@500MHz</li> <li>•OpenGL 3.x/2.0/1.1 + Extensions, Vulkan 1.2</li> </ul>
RAM	AM6231:1GB DDR4; AM6232:2GB DDR4; AM6254:2GB DDR4
ROM	8GB eMMC
Operating Voltage	DC 5V
Operating Temperature	-40°C~+85°C
Connection	Board-to-board connector (4 × 80 pin, 0.5 mm pin pitch)

**Note: This processor does not have a VPU and cannot perform hardware encoding and decoding of video.**

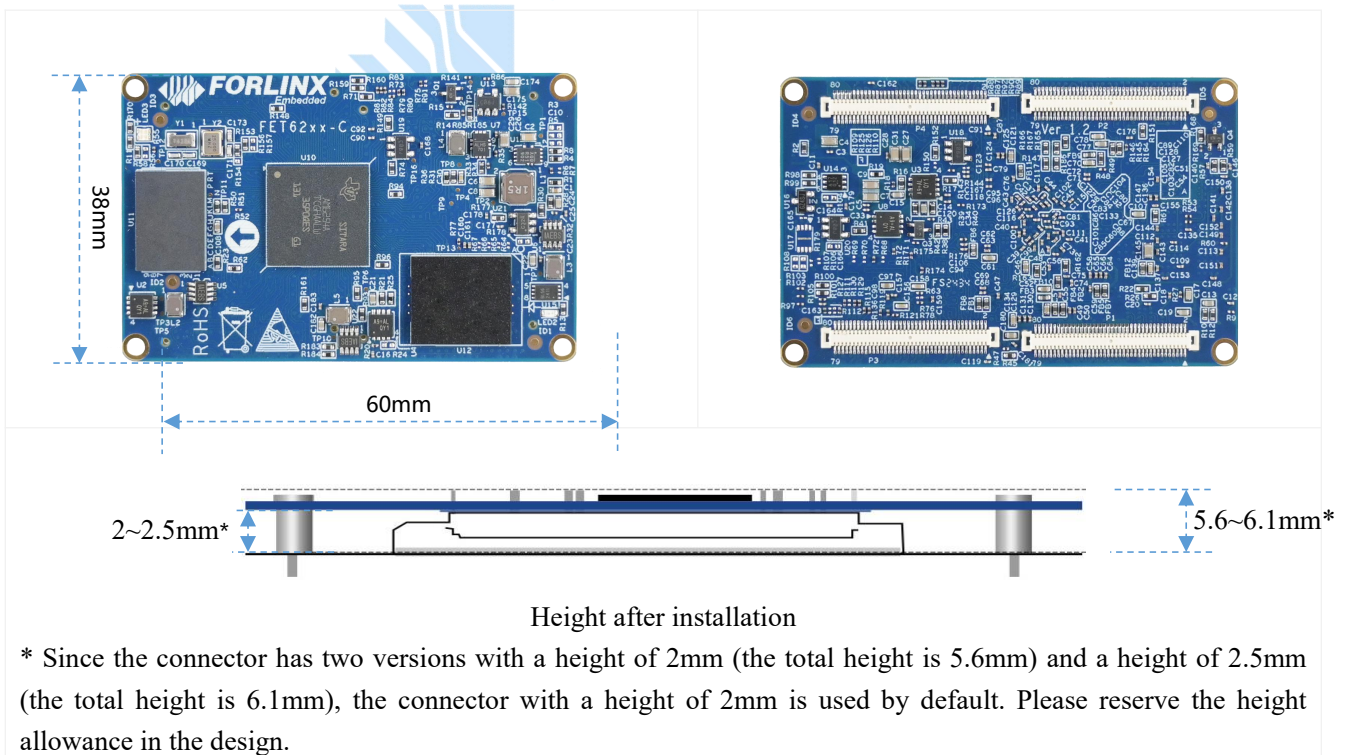
## ■ SoM Function Parameters:

A53 function	Quantity	Parameter
LVDS <sup>*a</sup>	2	<p>2 x 4 - lane LVDS display serial interfaces (8 data, 2 clocks), with a maximum data rate of 1.19 Gbps per lane</p> <p>The highest supported resolution for a single LVDS interface is WUXGA(1920x1200 at 60fps, 162MHz pixel clock).</p> <p>Output Modes:</p> <ul style="list-style-type: none"> <li>• Single - LVDS output mode: Only 1 x LVDS interface is used for display output</li> <li>• 2×Single - LVDS (duplicate) output mode: Both LVDS interfaces display the same content</li> <li>• 1×Dual - LVDS output mode: 8 - lane data and 2 - lane clock form the same display output channel</li> </ul>
RGB Parallel <sup>*a</sup>	1	<p>1 x 24 - bit RGB parallel display interface</p> <p>Supports a maximum resolution of WUXGA (1920 x 1200@60fps, 165MHz pixel clock).</p>
MIPI CSI	1	<p>1 x 4 - lane MIPI camera serial interface</p> <p>Supports 1, 2, 3, or 4 - lane modes, with a maximum data rate of 2.5Gbps per lane</p>
Audio	≤3	<p>Supports sending and receiving clocks up to 50Mhz; Supports Time - Division Multiplexing (TDM), Inter - IC Sound (I2S), and similar formats; Supports digital audio interface transmission (SPDIF, IEC60958 - 1, and AES - 3 formats).</p>
SD	≤2	<p>Supports 2 x 4 - bit SD/SDIO interfaces, up to UHS - I</p> <p>Complies with eMMC 5.1, SD 3.0, and SDIO version 3.0</p>
Ethernet	2	<p>Supports RMII (10/100) or RGMII (10/100/1000); Supports IEEE1588, TSN, and hardware IP/UDP/TCP checksum offloading</p>
USB	2	<p>Supports USB 2.0 (up to 480 Mbps). Ports can be configured as USB hosts, USB slave devices, or USB dual - role devices (DRD mode).</p>
UART	≤9	<p>Compatible with 16C750, supporting automatic flow control for RS485 external transceivers. Supports parity checking, with a baud rate up to 3.6Mbps</p>

CAN-FD	∞	Complies with CAN2.0A, B, or ISO 11898 - 1 protocols; Supports message RAM parity checking/ECC checking; Transmission rate up to 5Mbps.
SPI	∞	Each channel has a programmable serial clock frequency, polarity, and phase. The MCSPI controller clock rate is up to 50MHz.
I2C	∞	Supports standard mode (up to 100Kbps) and fast mode (up to 400Kbps)
PWM	∞	Each set of PWMs supports two PWM outputs (EPWMxA and EPWMxB)
eQEP	∞	Enhanced quadrature encoder pulse input. Supports input synchronization, quadrature decoder units, position counters and control units for position measurement, and quadrature edge capture units for low - speed measurement.
eCAP	∞	Enhanced capture module, which can be used for applications such as audio input sampling rate measurement, rotating machinery speed measurement, positioning sensor pulse time measurement, pulse sequence signal period and duty - cycle measurement, and decoding current or voltage amplitudes from duty - cycle - encoded current/voltage sensors.
GPMC	1	Clock rate up to 133MHz; Flexible 8 - bit and 16 - bit asynchronous memory interfaces, can connect up to 4 chips (22 - bit address), and can connect to NAND, NOR, Muxed - NOR, and SRAM.
OSPI/QSPI	1	Supports 166MHz DDR/200MHz SDR
JTAG	1	Supports JTAG

**Note: The interface number listed in the table is the hardware design or CPU theoretical maximum quantity, and most of the function pins are multiplexed. Please refer to the PinMux table for easy configuration; supports 1×2048×1080+1×1280×720.**

### ■ Appearance & Dimension:



\* Since the connector has two versions with a height of 2mm (the total height is 5.6mm) and a height of 2.5mm (the total height is 6.1mm), the connector with a height of 2mm is used by default. Please reserve the height allowance in the design.

**Note: The dimensional tolerance is  $\pm 0.2\text{mm}$ .**

## ■ Software Support:

OS	Linux5.10.87+Qt5.14.2
Flashing	•SD / TF •U disk

## ■ AM62x Processor Differences and Forlinx Products:

Function	AM6254	AM6252	AM6251	AM6234	AM6232	AM6231
CPU core number	4	2	1	4	2	1
3D Graphics engine	√	√	√	×	×	×
Does Forlinx have?	√	×	×	×	√	√

## ■ Peripheral Support List:

Linux5.10 Drive Support List	Interface	Function	Plan
	IIC	Capacitive touch	GT911
	IIC	Capacitive touch	GT928
	IIC	Resistive touch	TSC2007
	IIC	RTC	PCF8563T
	IIC	Audio chip	ES8388
	SDIO	Wi-Fi	AW-CM358SM
	UART	BT	AW-CM358SM
	USB	UVC camera	Logitech C270
	USB	4G	Quectel EM05-CE R2.0 (driver compatible with EC20-CEHDLG)
	USB	5G	Quectel RM500U, RM500Q
	USB	USB HUB	FE1.1s-BQFN24BT
	RGB	7-inch LCD	1024×600, 800×480
	LVDS	10.1-inch LCD	1280×800
	RGMII	Gigabit Ethernet	YT8521SH
	PWM	LCD Backlight	/
	SPI	FLASH	W25Q128JV

## ■ Product Materials:

<b>Linux5.10 Materials List:</b>	User Manual, Compilation Guide Manual, Linux Kernel Source Code, File System, Factory Image, VM Ubuntu Image for Development Environment, SD Card Burning Tool, Source Code of QT Test Routine*, Application Notes*, Docker Deployment Package for Development Environment*
<b>Hardware Documentation List</b>	Hardware Manual, Source File of Carrier Board Schematic Diagram (in AD format), Source File of Carrier Board PCB (in AD format), PDF of Carrier Board Schematic Diagram, Chip Data Sheet, 2D CAD Drawing of SoM, 2D CAD Drawing of Carrier Board, Pin Function Multiplexing Table*, Design Guide*

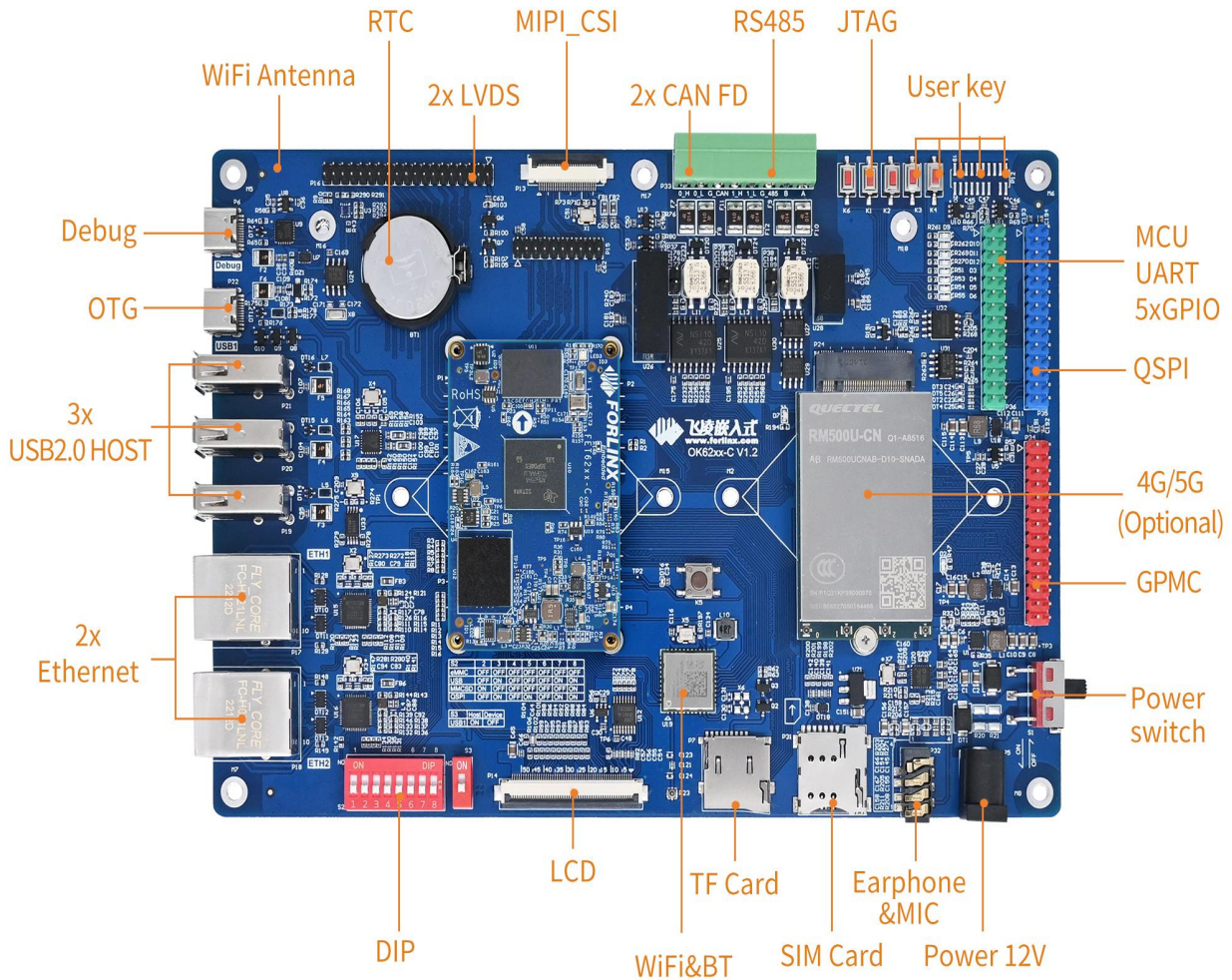
**\*: The documentation will be gradually provided and enriched after the product is released.**

## ■ Order Model List:

Specification Model	Core	CPU Clock	RAM	ROM	Operating Temperature	Supply
FET6231-C+101GSE8GIA 12:A1-PC	1×A53	1.0GHz	1GB	8GB	-40~+85°C	Samples:
FET6232-C+142GSE8GIA 12:A1-PC	2×A53	1.4GHz	2GB	8GB	-40~+85°C	Samples:
FET6254-C+141GSE8GIA 11:xx	4×A53	1.4GHz	1GB	8GB	-40~+85°C	Batch
FET6254-C+142GSE8GIB 11:xx	4×A53	1.4GHz	2GB	8GB	-40~+85°C	Batch

**Note: The final release of product specifications, models and configurations may change during the planning and sampling phase.**

**Development Board:**



**Development Board Function Parameters:**

Function	Quantity	Parameter
LVDS	2	<p>Dual asynchronous channels (8 data, 2clocks) supporting 1920× 1200p60, with all signals led out</p> <p>Output Modes:</p> <ul style="list-style-type: none"> <li>• Single - LVDS output mode: Only 1 x LVDS interface is used for display output.</li> <li>• 2×Single - LVDS (duplicate) output mode: Both LVDS interfaces display the same content.</li> <li>• 1×Dual - LVDS output mode: 8 - lane data and 2 - lane clock form the same display output channel</li> </ul> <p>By default, it supports Forlinx 10.1-inch LVDS screen with a resolution of 1280</p>

		× 800 @ 60fps
<b>RGB Parallel</b>	1	A 16 - bit (RGB565) data interface is led out from the carrier board through the FPC socket It is default - compatible with Forlinx's 7 - inch resistive and capacitive touchscreens with a resolution of 1024×600@ 60fps.
<b>Camera</b>	1	The MIPI CSI signal is led out from the carrier board through the FPC. It supports the Forlinx OV5645 camera, and the camera can support a maximum resolution of 2592×1944.
<b>Ethernet</b>	2	Supports 10/100/1000Mbps self-adaption, which is led out through RJ45,
<b>USB2.0</b>	4	3×USB HOST+1×USB OTG
<b>Debug UART</b>	3	The UART0 in the A53 domain and the WKUP_UART0 in the R5 domain are converted into USB signals and led out through the Type - C interface. The MCU_UART0 in the M4F domain is led out through a pin header with a 2.54mm pitch.
<b>RS 485</b>	1	Electrical isolation, automatic control of the transceiver direction, and a reference design for level 3 protection against static electricity, surges, and group pulses.
<b>CAN-FD</b>	2	Electrical isolation, supports CAN - FD with a maximum rate of 5Mbps, and a reference design for level 3 protection against static electricity, surges, and group pulses.
<b>SPI</b>	1	The MCU_SPI0 is led out through a pin header with a 2.54mm pitch, and the clock rate is up to 50 MHz.
<b>I2C</b>	2	MCU _ I2C0 and WKUP _ I2C0 are led out through a 2.54 mm pitch header
<b>GPMC</b>	1	GPMC _ AD0 ~ AD15 , 16-bit data/address signals and corresponding control signals are led out from the carrier board through the 2.54 mm pitch pin header.
<b>Audio</b>	1	Supports 1 x headphone output and 1 x MIC input
<b>TF card</b>	1	Supports 1 x TF for UHS - I TF cards, up to 104MB/s.
<b>4G/5G</b>	1	You can choose either the 4G or 5G function. The 4G supports 4G modules with an M.2 Key B socket. By default, it supports Quectel EM05 and is compatible with the EC20 driver. The 5G supports 5G modules with an M.2 Key B socket. By default, it supports Quectel RM500U - CN. The SIM card uses a MicroSIM card slot.
<b>Wi-Fi</b>	1	On-board AW-CM358M Supports IEEE 802.11 a/b/g/n/ac dual - band WIFI with a transceiver rate of up to 433.3Mbps.
<b>Bluetooth</b>	1	Supports Bluetooth 5 with a rate of up to 3Mbps.
<b>KEY</b>	5	A53 core 4 key inputs, M4F core 1 key input
<b>LED</b>	8	A53 and 4 LED outputs, M4F Core 4 LED outputs
<b>RTC</b>	1	On-board independent RTC chip, which can record time via a button battery when the carrier board is powered off

<b>EEPROM</b>	1	2K bit capacity, which can be mounted to MCU _ I2C0 or WKUP _ I2C0 optionally
<b>QSPI Flash</b>	1	128M bit capacity, which can be mounted to A53 domain QSPIor MCU or SPI0
<b>JTAG</b>	1	Led out via 2×10Pin double row 1.27 mm pitch socket

## ■ Applications:

The FET62xx-C SoM is a highly versatile product designed for use in various industries, including industrial, medical, power, vehicle transportation, security, energy and chemicals, communication, and military applications. It offers significant advantages such as high performance, low cost, extensive functional support, industrial-grade quality, and a long lifecycle.

