



深圳市海天雄电子有限公司
Shenzhen Haitianxiong Electronic Co., Ltd.

CES-KY5260

Product Manual

Cortex-A15 Research & Development Platform

Rev. V1.0

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Introduction

Cortex-A15 embedded research and development platform using Samsung ARM Cortex-A15 Exynos5260 six-core processor, 28nm low-power SOC, the chip consists of two 1.7GHz ARM Cortex-A15 and four 1.3GHz ARM Cortex-A7, CPU frequency up to 1.7GHz, compared with the previous generation of Cortex-A9, the processing speed increased 40%.

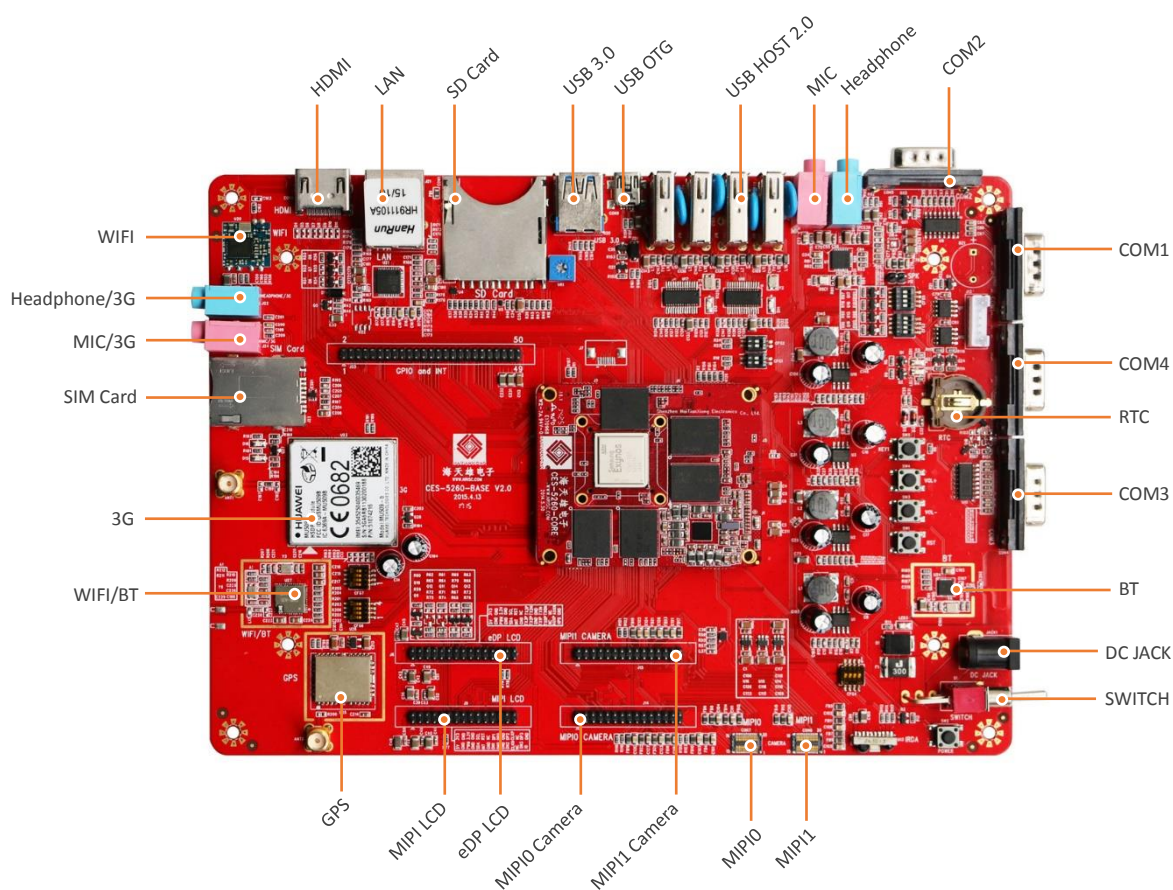
As for the multimedia processing capabilities, the processor configures Mali-T628 graphics processing unit, 2D / 3D graphics engine, supports 1080p 60fps (frames per second) high-definition video hardware codecs and OpenGL ES3.0 / 2.0 / 1.0 and OpenGL1.01 hardware acceleration, provides eMMC5.0 and USB3.0 high-speed interface. Peripheral communication protocols include I2C bus protocol, I2S audio communication protocol, SPI communication protocol, serial communication port data transfer protocol, USB universal serial port data protocol. The application expansion module includes 3G mobile communication module, WiFi wireless network card module, Bluetooth short-range communication module, GPS positioning module and camera module. Modules can be matched according to the actual needs of the function.

Cortex-A15 embedded scientific research and teaching platform, with the features of excellent platform performance, open software resources, streamlined experimental routines, is a leading of the embedded system research teaching experimental equipment.

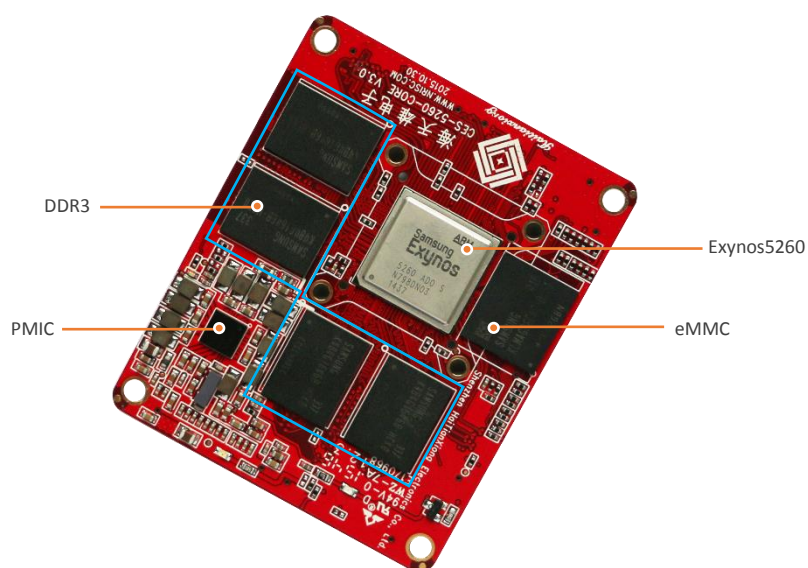
Features

- ◆ Embedded ARM Cortex-A15 Exynos5260, six-core processor
- ◆ Onboard 2GB DDR3 and 16GB eMMC
- ◆ Support 9.7 inch eDP interface display and 10.1 inch MIPI interface display
- ◆ Support 3G communication module, WiFi wireless module, Bluetooth module, GPS module and Camera module
- ◆ Provide Android4.4 and Linux3.4 operating system package
- ◆ Provide experimental routines and program analysis under this system

Function Interfaces



SOC Module



Hardware Parameters

CPU	Samsung Exynos5260, six-core: dual-core Cortex-A15 + quad-core Cortex-A7, frequency up to 1.7GHz, on-chip 32KB instruction / data cache, 1MB L2 cache
RAM	2GByte DDR3, dual channels 32-bit storage bandwidth, storage rate up to 800MHz
Built-in3D Accelerator	ARM Mali-T628 MP3 Core
eMMC	16GB eMMC
PMIC Power Circuit	Samsung's S2MPA01, with 10*DC / DC and 26* LDO output power to achieve intelligent, low power consumption
Precision Interface	Motherboard adopts the flexible organization form of SOC module plus base board. SOC module is Molex's 0.635mm chip with high precision, high contact, high stability socket which leads 360 pieces of function pins including I2C bus, I2S bus, SPI bus, USB, HDMI, UART, LCD, etc.
Embedded Universal Function and Interface Unit	Onboard 1*USB HOST3.0 bidirectional communication port with master and slave communication capabilities
	Onboard 1*USB HSIC port
	Onboard 4* USB HOST 2.0 host device interface, you can access a variety of USB devices such as keyboard, mouse, etc.
	1*SDIO3.0 , 2*SD 2.0 for EMMC、MMC/SD. The board leads to a SD / MMC card slot

	4* RS232 UART port and 2*RS485 serial communication port, baud rate up to 115200bps. Be used for GPS, print debugging information
	Onboard 1*10M / 100M RJ45 Ethernet interface
	Onboard volume up / down buttons, reset button, power button and reset button
	Onboard 2*GPIO controllable LED lights
	Onboard accelerometer: $\pm 2g$ to $\pm 16g$, I2C interface
	Onboard 1*infrared sensor: serial data communication interface
	Onboard 1*lithium battery button for RTC use
	On-board DC JACK power socket, 12V / 5A DC power supply with power switch and indicator
Embedded Audio / Video Display Interface Unit	Onboard eDP, LCD display interface, standard 9.7-inch high-definition LCD screen with a resolution of 2048 * 1536
	Onboard 1*MIPI display interface, support 10.1-inch capacitive touch screen display with a resolution of 1920 * 1200
	Onboard 1*HDMI 1.4 (1080P / 60Hz) video output interface
	Audio circuit: IIS signal, Wolf WM8976, audio input / output, onboard microphone input port and left and right stereo output port, with audio output amplifier circuit, reserve 2Pin speaker signal pin
3G Module	Huawei MU509B mobile communication module, Mini-PCIE slot with SIM card slot
WiFi Wireless Module	USB data interface, support for 802.11b / g / n full system
GPS Module	Tracking sensitivity of -165dBm, capture -148dBm
BT Module	Serial communication interface, support for Bluetooth 2.1 + EDR protocol
Camera Module	8 million pixel camera, Samsung S5K3H7 camera module

Software Parameters—Android 4.4.2

Operating system	Android 4.4.2
Kernel	Linux 3.4.39
Bootloader	U-boot2012.07

Serial Debugging	DNW V1.01 (XP) 、 Minicom (Ubuntu)
Cross Compiler	Arm-2009q3 (gcc4.4.1)
File System	Ramdisk , Ext4
GUI	Android 4.4.2
3G Module	Provide driver, achieving web browsing, sending and receiving messages
WiFi Module	Support 802.11b/g/n to achieve internet access
Bluetooth Module	Support serial Bluetooth driver (RDA) to achieve Bluetooth data communication and file transfer
Camera Module	Provide MIPI Camera Driver. Support preview, camera, video functions
USB Camera	To realize USB camera display function, support UVC Camera type
GPS Module	Support SIF III global positioning, UART serial data interface
Ethernet Unit	10M / 100M adaptive network port driver, support for ethernet function. Provide source code
HDMI	Support HDMI output, images and sound, provide the source code
AUDIO Driver	I2S communication protocol, support for audio playback, provide the source code
LCD	Support 9.7-inch eDP interface display (pixel 2048 * 1536) and 10.1-inch MIPI interface display (pixel 1920 * 1200)
TOUCH Driver	I2S communication protocol, multi-point capacitive touch, provide source code
I2C Driver	Audio、 Camera、 HDMI、 PMIC all are driving by I2CDriver
USB HOST 2.0 Driver	Support mouse, keyboard, U disk. Provide source code
USB OTG Driver	Support ADB and MTP function, provide source code
USB HOST 3.0 Driver	Two channels communication, with master and slave functions
Keypad Driver	Support volume up and down buttons (2* buttons), reset button (1* button), interrupt button (1*button), provide the source code
SD/MMC Driver	Software max support 32GB, provide source code
UART Driver	4*UART port, support for debugging serial and communication serial port
MFC Driver	Provide MFC multimedia video format codec driver







JPEG Driver	JPEG CODEC
2D Driver	2D hardware acceleration
3D Driver	3D hardware acceleration (Mali-T628 MP3)
FIMC Driver	Support V4L2 video image processing
GPIO Driver	Provide interface to connect external GPIOs and interrupts
IRDA Driver	Support serial infrared
RTC Driver	Support RTC
G-Sensor Driver	Support gravity sensor driver
SPI Driver	Support SPI protocol

Software Parameters——Linux 3.4.39

Operating system	Linux 3.4.39
Kernel	Linux 3.4.39
Cross Compiler	Arm-2009q3 (gcc4.4.1)
Bootloader	U-boot2012.07
Serial Debugging Tools	DNW V1.01 (XP) , Minicom (Ubuntu)
File System	Ext4
GUI	QT4.8.5
WiFi Module	Support 802.11b / g / n to achieve internet access. Driver programs are provided
GPS Module	Support SIF III global positioning
LAN Module	10M/100M adaptive network port driver, support ethernet function
Audio Driver	Support audio display
LCD	Support 9.7-inch eDP interface display (pixel 2048 * 1536) and 10.1-inch MIPI interface display (pixel 1920 * 1200)

TOUCH Driver	Single-point capacitive touch
USB HSIC Driver	HOST Driver, support for external mouse, keyboard, u disk, Bluetooth and other USB peripherals
USB OTG Driver	Host / Device Driver, host function supports external USB mouse. device function supports ADB and MTP
USB 3.0 Driver	Host/Device Driver
MMC Driver	Support high-speed SD / MMC card and SDIO
MFC Driver	Multi-Format Video Codec
UART Driver	Serial communication driver,
JPEG Driver	JPEG CODEC
2D Driver	2D hardware acceleration
3D Driver	3D hardware acceleration (Mali-T628 MP3)

Product Configuration List

	User CD		Touch pen
	Serial line		Camera
	LAN cable		4G Module (optional)
	USB cable		Experimental tutorial (optional)
	Power adapter		Aluminum Case (optional)
	SD card (optional)		10.1" Capacitive touch screen (optional)

Service Support

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Disclaimer

This manual information is for reference only, and is subject to change without notice.

For more product information, please visit www.nrisc.com

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