



## CORE4418-II(S5P4418 CPU Board) Overview

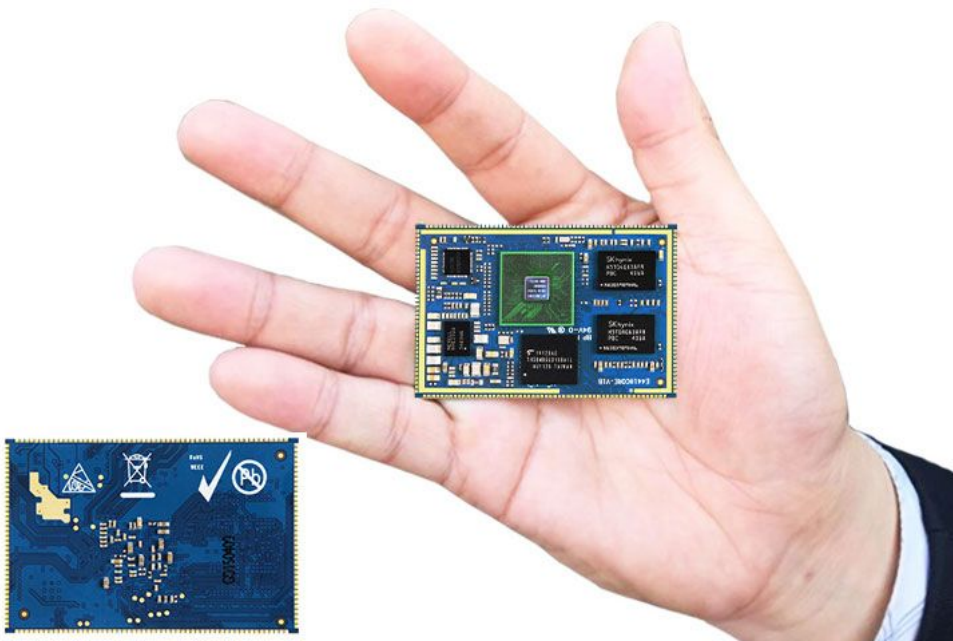
The CORE4418-II is a high-performance quad-core Cortex-A9 core board, from CoreWind design, production and distribution sales. It uses Samsung S5P4418 as the main processor, running with 1GB DDR3 SDRAM and 8GB eMMC.

It use the QFP188 package with 188Pin expand out and 60\*40mm mini size, which was designed for Industrial, POS, Card and so on.

Small Size

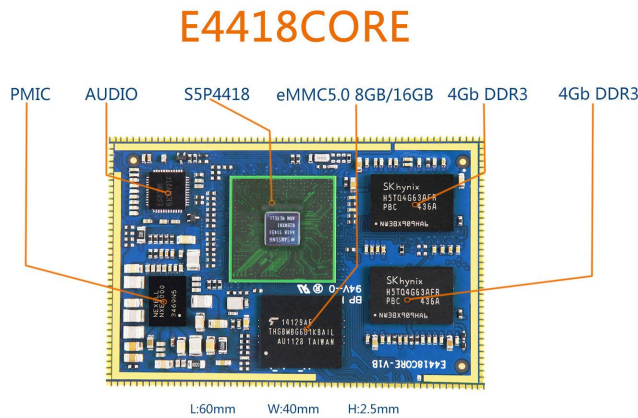
Cortex-A9

Android





## CORE4418-II Feature



### Main Feature

- 1.6GHz Quad Cortex A9
- 1GB/2GB DDR3-1600
- 3D Hardware Graphics
- Hardware Video Codec
- 2ch SDIO for WIFI and SD
- eMMC 5.0 8GB/16GB
- Audio with PCM
- LVDS/RGB/HDMI up to 1920\*1080
- 1000M Ethernet MAC
- MAX 800M Pixel Camera
- 6ch Uart/3ch IIC/2ch SPI
- USB Host/OTG
- Up to 53 ch GPIO with Interrupt
- 2A Charge
- 60\*40\*2.5mm

**Software** • Linux SDK • Android SDK

CPU processor	Samsung S5P4418, Cortex-A9 Quad-Core, 1.4GHz
Memory	RAM: 1GB DDR3 RAM, 32bit data bus Flash: 8GB eMMC Flash(Optional 8GB/16GB eMMC Flash)
On Board resource	Audio Chips: Use Audio chips on board, Audio In/Out Power IC: Using power IC
Expand interface	TFT LCD : Support RGB TFT LCD output, upto 1920*1080 LVDS: Support LVDS LCD output, upto 1920*1080 HDMI: HD Video/Audio output interface, HDMI1.4a Camera: One Camera interface Touch: Support Capacitive touch screen Ethernet: Support Gigabit Ethernet expand USB Host: One USB HOST 2.0, One USB HSIC USB OTG: One OTG 2.0 UART: Support six UART interface, support RTS/CTS serial port Audio: One MIC, One Speaker, support earphone SD Card: Two SDIO interface, One for SDIO WiFi, One for SD card RTC Backup: Support RTC battle input Two PWM, Three IIC, two SPI, Two ADC, One PCM, One PDM GPIO: Upto 53 GPIO with interrupt
Structure parameters	8 layer, 60 x 40 x 2.5(mm), 188Pin QFP expand interface
Electrical Characteristics	Power in: Supply Voltage 5V, Support Li-battle Power out: 3.3V(power for base board or charge the Li-battle) Two Alive GPIO Work Temperature range: -10 to 70 ° C



## Android System Support

**Bootloader:u-boot-2014-07**

- support cramfs/yaffs mirror programming
- support usb Start/download system
- Support emmc start
- Support SD start
- Support SD card update system
- support fastboot protocol to download programming system

**Linux: linux3.4.39**

- LCD Driver
- LCD backlight driver
- Capacitive touchscreen driver
- HDMI driver
- HSMHC/SD/MMC/SDIO Driver
- IIC, SPI driver
- Watchdog driver
- Key Driver
- MIC/Speaker/airphone driver
- DMA driver
- RTC driver
- USB OTG driver
- USB Host driver, support USB disk and mouse
- CMOS Camera driver
- AV IN camera driver
- 10M/100M Ethernet driver
- SD card driver, support 32GB
- UART driver
- 4G Modem driver
- 3G Modem WCDMA driver
- RS485 driver
- CAN Bus driver

**Android: Android 4.4.2 (Kitkat)**

- Support BT
- WiFi surf net
- 100M ethernet
- Capacitive touchscreen
- Support 1024\*600 LCD
- HDMI output
- PAL NTSC AV Camera capture or video
- GPS and map
- LCD backlight debug
- Earphone and speaker, MIC support
- Audio "+", Audio "-"
- G sensor
- USB Mouse and USB Disk
- USB ADB
- Battle support
- SD card expand
- APP for CAN bus
- APP for RS485
- App FOR UARTs
- APP for LED control
- APP for 4G
- APP Market support
- SDIO WiFi driver
- Bluetooth driver
- Sensor driver
- USB ADB debug



## CORE4418-II Pin define

PIN	FUNC1	FUNC2	Details
1	GMAC_MDIO	GPIOE21	For PHY Chips data signal
2	PHY_INTn	GPIOE23	PHY Chips interrupt
3	GMAC_TXCLK	GPIOE24	GMAC tansmit signal
4	GMAC_TXEn	GPIOE11	
5	GMAC_TXD3	GPIOE10	
6	GMAC_TXD2	GPIOE9	
7	GMAC_TXD1	GPIOE8	
8	GMAC_TXD0	GPIOE7	
9	GMAC_TXER		
10	VDD_RTC		1.8V RTC back up battle
11	GPIOE26		GPIO with Interrupt
12	GPIOE27		GPIO with Interrupt
13	GPIOE28		GPIO with Interrupt
14	GPIOE29		GPIO with Interrupt
15	GPIOC17		GPIO with Interrupt
16	GPIOC4		GPIO with Interrupt
17	ALIVE_GPIO5		GPIO with Interrupt(SLEEP)
18	CAM0_D0	GPIOD28	CMOS CAMERA
19	CAM0_D1	GPIOD29	
20	CAM0_D2	GPIOD30	
21	CAM0_D3	GPIOD31	
22	CAM0_D4	GPIOE0	
23	CAM0_D5	GPIOE1	
24	CAM0_D6	GPIOE2	
25	CAM0_D7	GPIOE3	
26	CAM0_PCLK	GPIOE4	
27	CAM0_HSYNC	GPIOE5	
28	CAM0_VSYNC	GPIOE6	
29	CAM0_RST	GPIOA28	
30	CAM0_MCLK	GPIOC13	
31	GND		SDIO2, for SD Card
32	SD2_D0		
33	SD2_D0		
34	SD2_D0		
35	SD2_D0		
36	SD2_CMD		
37	SD2_CLK		
38	SD2_CD		SDIO 2 chips select signal



39	ADC1		ADC 1, up to 1.8V
40	ADC0		ADC 0, up to 1.8V
41	SPI0_CLK	GPIOC29	SPI 0
42	SPI0_CS	GPIOC30	
43	SPI0_MOSI	GPIOC31	
44	SPI0_MISO	GPIOD0	
45	IIC1_SCL	GPIOD4	IIC 1
46	IIC1_SDA	GPIOD5	
47	IIC2_SCL	GPIOD6	IIC 2
48	IIC2_SDA	GPIOD7	
49	IIC0_SCL	GPIOD2	IIC 0
50	IIC0_SDA	GPIOD3	
51	CVBS		Resever
52	TXD3		UART3
53	RXD3		
54	TXD2		UART2
55	RXD2		
56	TXD1		UART1
57	RXD1		
58	TXD0		UART0
59	RXD0		
60	SD1_D3		SDIO 1, for WiFi Module
61	SD1_D2		
62	SD1_D1		
63	SD1_D0		
64	SD1_CLK		
65	SD1_CMD		
66	GND		
67	CTS1		UAT1 CTS
68	RTS1		UART1 RTS
69	TXD4		UART4
70	RXD4		
71	PWM0	GPIOD1	PWM 0
72	IR_INT	GPIOD8	IR input PPM
73	TXD5		UART5
74	RXD5		
75	GPIOB24		GPIO with Interrupt
76	GPIOB25		GPIO with Interrupt
77	GPIOB26		GPIO with Interrupt
78	GPIOB27		GPIO with Interrupt
79	GPIOC24		GPIO with Interrupt
80	Force_USB_BOOT		Low level for USB boot



82	Force_SD2_BOOT		Low level for SD2 boot
83	HP_DET		Speaker check, low for Speaker in
84	PCM_SYNC		Audio PCMfunction, conenct BT or Modem
85	PCM_CLK		
85	PCM_OUT		
86	PCM_IN		
87	AGND		Audio GND, conenct to GND with beads
88	SPK+		For Speaker, support 1.8W/8ohm
89	SPK-		
90	MONO+		Audio LINE IN signal
91	MONO-		
92	MIC_BIAS		MIC Bias voltage
93	HPR		Earphone signal
94	HPL		
95	DMIC_CLK		Digital MIC clock signal
96	MIC1+		Analog MIC singal +
97	MIC1-	DMIC_DATA	Analog MIC singal -/Digital MIC DATA singal
98	GPIOC11	SPI2_MISO	GPIO with Interrupt
99	GPIOC12	SPI2_MOSI	GPIO with Interrupt
100	GPIOC10	SPI2_CS	GPIO with Interrupt
101	GPIOC9	SPI2_CLK	GPIO with Interrupt
102	VDEn	GPIOA27	LCD DE
103	HSYNC	GPIOA26	LCD Horizontal synchronization signals
104	VSYNC	GPIOA25	LCD Vertical sync signal
105	VCLK	GPIOA0	LCD Clock signal
106	VD0	GPIOA1	LCD B signal
107	VD1	GPIOA2	
108	VD2	GPIOA3	
109	VD3	GPIOA4	
110	VD4	GPIOA5	
111	VD5	GPIOA6	
112	VD6	GPIOA7	
113	VD7	GPIOA8	
114	VD8	GPIOA9	LCD G Signal
115	VD9	GPIOA10	
116	VD10	GPIOA11	
117	VD11	GPIOA12	
118	VD12	GPIOA13	
119	VD13	GPIOA14	
120	VD14	GPIOA15	
121	VD15	GPIOA16	



122	VD16	GPIOA17	LCD R Signal
123	VD17	GPIOA18	
124	VD18	GPIOA19	
125	VD19	GPIOA20	
126	VD20	GPIOA21	
127	VD21	GPIOA22	
128	VD22	GPIOA23	
129	VD23	GPIOA24	
130	BAT-		Battle -
131	BAT+		Battle +
132	GND		
133	nRESET		Reset output
134	CHG_LED		Charging Battle status, High is Valid
135	BAT_NTC		Charging temperature check
136	PWR_KEY		Boot key for Battle power in
137	VDD33		3.3V Power in, upto 600mA
138	VSYS		System Power out. Up to 5V/A
139	VDD_USB		USB power in, up to 5V
140	DC5V		5V Power in, up to 1.5A
141	DC5V		
142	GPIOB16		GPIO with Interrupt
143	GPIOB11		GPIO with Interrupt
144	PWM2	GPIOC14	PWM 2
145	GPIOB9		GPIO with Interrupt
146	GPIOB8		GPIO with Interrupt
147	GPIOC28		GPIO with Interrupt
148	GPIOC8		GPIO with Interrupt
149	GPIOC2		GPIO with Interrupt
150	GPIOC1		GPIO with Interrupt
151	GPIOC0		GPIO with Interrupt
152	USBH_D+		USB HOST 2.0
153	USBH_D-		
154	OTG_VBUS		OTG Power in pin
155	OTG_D-		OTG data
156	OTG_D+		
157	OTG_ID		
158	OTG_DRVBUS		Enable OTG Power out signal
159	HDMI_HPD		HDMI insert check signal pin
160	HDMI_CEC		HDMI CEC signal
161	HDMI_TXCLKN		HDMI signal
162	HDMI_TXCLKP		
163	HDMI_TXN0		



164	HDMI_TXP0		HDMI signal
165	HDMI_TXN1		
166	HDMI_TXP1		
167	HDMI_TXN2		
168	HDMI_TXP2		
169	GND		
170	LVDS_TXP3		LVDS Signal
171	LVDS_TXN3		
172	LVDS_TXCLKP		
173	LVDS_TXCLKN		
174	LVDS_TXP2		
175	LVDS_TXN2		
176	LVDS_TXP1		
177	LVDS_TXN1		
178	LVDS_TXP0		
179	LVDS_TXN0		
180	GND		
181	GMAC_RXD3	GPIOE17	GMAC Data receiver signal
182	GMAC_RXD2	GPIOE16	
183	GMAC_RXD1	GPIOE15	
184	GMAC_RXD0	GPIOE14	
185	GMAC_RXCLK	GPIOE18	
186	GMAC_RXDV	GPIOE19	
187	PHY_nRST	GPIOE21	PHY Reset signal
188	GMAC_MDC	GPIOE20	Configure PHY chips Clock signal

## Different between S5P4418 and Exynos4412

Function	Exynos4412	S5P4418	Superiority for S5P4412
<b>IO Voltage</b>	1.8V	3.3V	3.3V is standard for Peripherals, not need to Conversion level
<b>UART</b>	4	6	More Uart
<b>Memory</b>	Four DDR3 chips	Two DDR3 chips	Esay to design
<b>USB HOST</b>	Need PHY	USB 2.0 HOST	Not need expand PHY
<b>Display</b>	RGB/MIPI	RGB/MIPI/LVDS	Support LVDS LCD
<b>IO</b>	Some IO have interrupt	All IO have interrupt	
<b>Ethernet</b>	Need DM9000 expand	Only need PHY	Low value





## Real4418(Core4418-II Development Kits)

The Real4418 Kits is the development kits for CORE4418-II CPU board, it comes with a variety of common standard interfaces, such as HDMI output, LVDS, USB Host, SD card, DB9 serial port, G-bit Ethernet port, audio input and output ports, RS485, CAN Bus, GPS, 3G/4G modem, WiFi/Bluetooth as well as some of the on-board resources testing devices such as buzzer, keypad, GPIO ports, SDIO ports, etc.



**REAL4418**  
Cortex-A9 • Android

**Industrial Android PAD**

CPU	Cortex-A9 Quad-Core, 1.6GHz
RAM	1GB DDR3
EMMC	8GB
Display	7inch 1024*600 IPS LCD
Touch	Capacitive touch sreen
Camera	500W Piex OV5642
AV Camera	Support PAL and NTSC Camera
Speaker	1.5W Speaker and MIC
USB HOST	Two USB2.0 USB-A
USB OTG	MicroUSB OTG2.0
UART	Two RS232 DB9, Two TTL Uart
CAN	One CAN2.0B
RS485	One RS485 interface
IIC	One IIC
Net	1000M Ethernet
GPS	Standard 1612 GPS or Beidou GPS
MODEM	Standard MiniPCI-E, 4G/3G support
WIFI/BT	802.11bgn , BT4.0

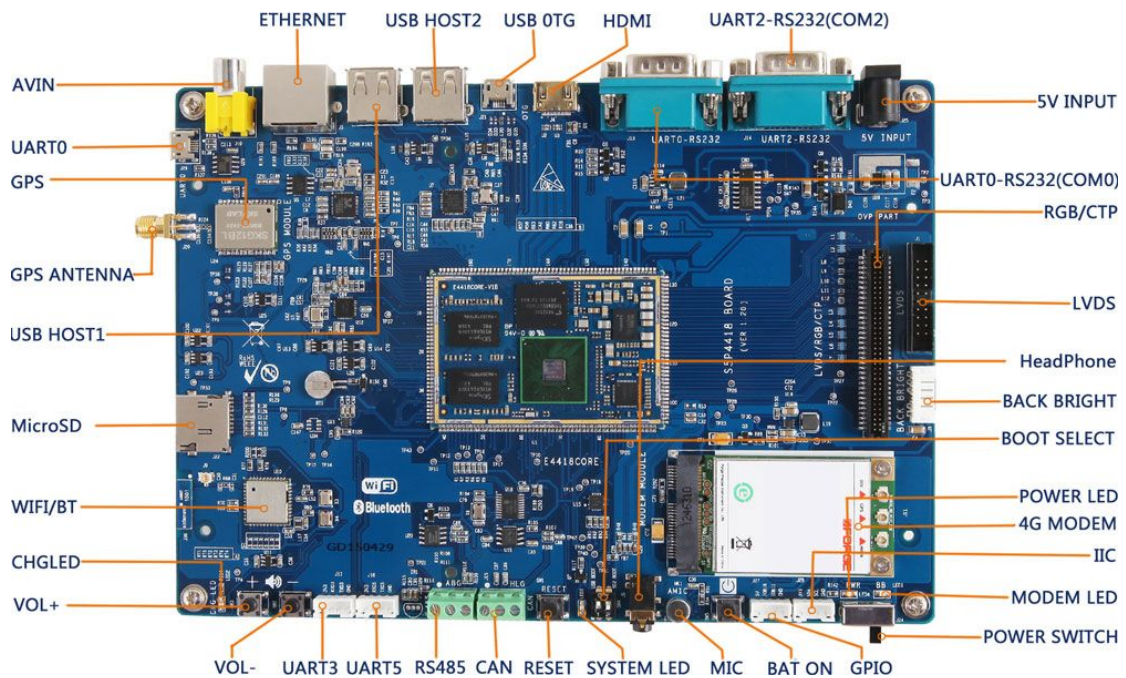


Front



Back

## Real4418 Hardware info



- **UART:** Two RS232 Serial port in DB9 interface, Two TTL Serial in 4Pin Header
- **RS485:** One RS485 interface
- **CAN Bus:** One CAN Bus, Support CAN 2.0B
- **USB:** Two USB Host and one USB OTG
- **Audio:** One MIC on board, One Speaker interface and one earphone interface
- **HDMI:** One HDMI interface, 1.4a HDMI
- **LCD:** One TFT LCD interface with Capacitive touchscreen
- **LVDS:** One 2.0mm pitch 2\*10P Standard LVDS interface
- **Ethernet:** One Ethernet interface
- **Camera interface:** Support CMOS Camera and AV In Camera
- **IIC interface:** One Standard I2C interface, 2.0mm pitch 4Pin Header
- **GPIO interface:** Two GPIO, 2.0mm pitch 4Pin header
- **SD card:** Standard TF card slot
- **Sensor:** Support Acceleration of gravity
- **Key:** Audio +, Audio -, Reset button, Power up/down key
- **Expand Module Support:**
  - WiFi module: Use SDIO intreface
  - Bluetooth Module: User Uart interface
  - GPS Module: Support GPS module
  - Camera Module: Support 500M CMOS camera
  - AV Camera Module: Support AV In Camera
  - 3G/4G modem: Standard Minipci-E interface
  - Li-Battle: provide LI-Battle box, support 3.7V Li-Battle
- **RTC back up battle**



- Sleep and wakeup
- 5V Power in interface

## Real4418 Development Kits Package Contents

- Real4418 Development Kit(Contain CORE4418-II CPU board)
- 5V/3A Power Adapter, Serial Cable, USB Cable, net cable
- One 7" TFT LCD with Capacitive touch
- WiFi/Bluetooth module on board
- One 4G TF card
- Battle box(Not contain the Battle)
- DVD-ROM with source code, system image, manual, schematics)

Notice: The Real4418 have GPS/3G/4G modem/Li-battle/Camera module, if you need it, Contact us.



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