深圳大经技术有限公司
Shenzhen Dajtech Co.,Ltd

CES-4418-CORE（PIN）

Product Manual

ARM SOC Module

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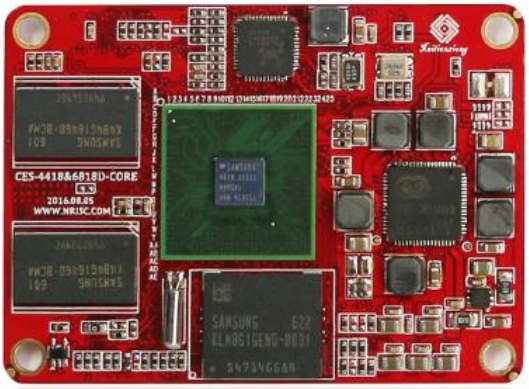

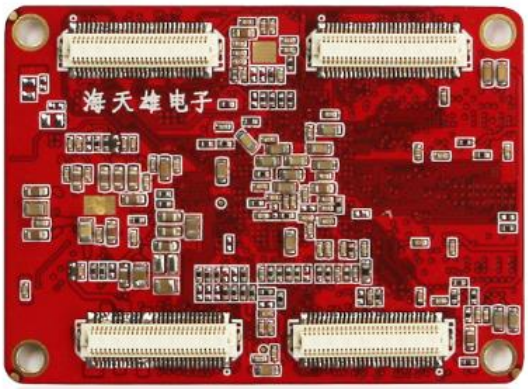

Introduction

CES-4418-CORE is a high-performance, low-power consumption embedded ARM motherboard. Adopt Samsung high-end mainstream ARM processor S5P4418, 64-bit Cortex-A9 CPU, frequency 1.4GHz, with 2 * 512KByte two Level cache, using 28nm production process, equipped with Mali-400GPU, with features of high memory bandwidth, full HD display, 1080P hardware codec, high-speed interface powerful performance and so on. This board integrates the core components such as S5P4418 processor, memory unit, eMMC storage unit, PMU power management unit and Gigabit Ethernet. Provide rich interfaces. Support LVDS and RGB dual display control interfaces, HDMI1.4a and MIPI -DSI interfaces, providing 4xUSB 2.0 HOST, 1xUSB OTG, 4x UART serial port, expanded GPIO and other peripheral interfaces.

CES-4418-CORE suitable for different product applications, including medical equipment, automotive electronic, POS machine, touch control machine, industrial control equipment, self-service refueling equipment, handheld PDA and other industry products.

Features

- Based on Samsung ARM Cortex-A9 S5P4418 High Performance Processor
- Onboard 1GB DDR3 Memory and 8GB eMMC Storage
- Support LVDS、MIPI DSI、RGB、CVBS、HDMI etc.
- Support 1080p 60fps Full HD Video Hardware Codec and 3D Graphic Hardware
- Support Android5.1，Embedded Linux3.4，Ubuntu12.04 Operating System

Specification

Processor	
CPU	Samsung ARM Cortex™ -A9 S5P4418 Quad-Core processor, frequency 1.4GHz
Cache	32KB（Instruction）/32KB（Data）Cache and 1MB L2 Cache
Storage	
Process	32-bit DDR3 800MHz
Memory	1GB DDR3
FLASH	8GB eMMC，optional 16GB/32GB/64GB
Power Management Unit	
Chipset	AXP228
B2B Connector	
Connector Type	4* Precision hirose 0.5mm, double row 2 * 30 Pin connector
PIN Number	240PIN
PIN Function	POWER、GPIO、ADC、MIPI DSI/CSI、LVDS、RGB、HDMI、I2C、I2S、UART、SPI、USB、PWM、RESET etc.
B2B Fixing Hole	
Fixing Hole	4
Operating System	
Operating System	Optional Android 5.1、Embedded Linux 3.4、Ubuntu12.04
Environment	
Working Environment	Temperature：-10~60℃，Humidity：5%~95%RH@31℃ no condensation
Storage Environment	Temperature：-40~85℃，Humidity：5%~95%RH@39℃ no condensation
Size	
Size(mm)	42*58mm

Pin Definition

J1				
PIN NO.	Signal Name	CPU Ball Number	CPU Ball Name	Remark
1	GND			Power Ground
2	GND			Power Ground
3	GND			Power Ground
4	GND			Power Ground
5	MCU_CVBS_GND			Reserved
6	MCU_CVBS_GND			Reserved
7	MCU_CVBS_OUT	AE2	NC	Reserved
8	MCU_CVBS_GND			Reserved
9	MCU_CVBS_GND			Reserved
10	MCU_CVBS_GND			Reserved
11	GND			Power Ground
12	GND			Power Ground
13	GND			Power Ground
14	MCU_USB-	J24	USB2.0OTG_DM	USB OTG
15	GND			Power Ground
16	MCU_USB+	J25	USB2.0OTG_DP	USB OTG
17	MCU_USB_HOST_D-	L24	USB2.0HOST_DM	USB HOST
18	MCU_USB_ID	H25	USB2.0OTG_ID	USB OTG
19	MCU_USB_HOST_D+	L25	USB2.0HOST_DP	USB HOST
20	MCU_OTG_PWRON	AB21	GPIOC28/ NSCS1/ UARTnRI1	USB OTG
21	GND			Power Ground
22	GND			Power Ground
23	MCU_SDA_0	AC19	GPIOD3/ SDA0/ ISO7816	I2C
24	MCU_HDMI_CEC	W18	SA3/ GPIOC3/ HDMI_CEC/ SDnRST0	HDMI
25	MCU_SCL_0	AC20	GPIOD2/ SCL0/ ISO7816	I2C
26	MCU_HDMI_HPD	U19	HDMI_HOT5V	HDMI
27	MCU_HDMI_TXCN	A25	HDMI_TXNCLK	HDMI
28	MCU_HDMI_TX0N	A24	HDMI_TXN0	HDMI
29	MCU_HDMI_TXCP	B25	HDMI_TXPCLK	HDMI
30	MCU_HDMI_TX0P	B24	HDMI_TXP0	HDMI
31	MCU_HDMI_TX1N	A23	HDMI_TXN1	HDMI
32	MCU_HDMI_TX2N	A22	HDMI_TXN2	HDMI
33	MCU_HDMI_TX1P	B23	HDMI_TXP1	HDMI
34	MCU_HDMI_TX2P	B22	HDMI_TXP2	HDMI
35	GND			Power Ground

36	GND			Power Ground
37	MCU_LVDS_CLKP	B16	LVDS_TPCLK	LVDS
38	MCU_LVDS_Y3P	B17	LVDS_TP3	LVDS
39	MCU_LVDS_CLKM	A16	LVDS_TNCLK	LVDS
40	MCU_LVDS_Y3M	A17	LVDS_TN3	LVDS
41	MCU_LVDS_Y2P	B15	LVDS_TP2	LVDS
42	MCU_LVDS_Y1P	B14	LVDS_TP1	LVDS
43	MCU_LVDS_Y2M	A15	LVDS_TN2	LVDS
44	MCU_LVDS_Y1M	A14	LVDS_TN1	LVDS
45	MCU_LVDS_Y0P	C15	LVDS_TP0	LVDS
46	GND			Power Ground
47	MCU_LVDS_Y0M	C14	LVDS_TN0	LVDS
48	MIPIDSI_DP3	B11	MIPIDSI_DP3	MIPI DSI
49	GND			Power Ground
50	MIPIDSI_DN3	A11	MIPIDSI_DN3	MIPI DSI
51	MIPIDSI_DP2	B10	MIPIDSI_DP2	MIPI DSI
52	MIPIDSI_DP1	B9	MIPIDSI_DP1	MIPI DSI
53	MIPIDSI_DN2	A10	MIPIDSI_DN2	MIPI DSI
54	MIPIDSI_DN1	A9	MIPIDSI_DN1	MIPI DSI
55	MIPIDSI_DP0	B8	MIPIDSI_DP0	MIPI DSI
56	MIPIDSI_DPCLK	B7	MIPIDSI_DPCLK	MIPI DSI
57	MIPIDSI_DN0	A8	MIPIDSI_DN0	MIPI DSI
58	MIPIDSI_DNCLK	A7	MIPIDSI_DNCLK	MIPI DSI
59	GND			Power Ground
60	GND			Power Ground

J2

PIN NO.	Signal Name	CPU Ball Number	CPU Ball Name	Remark
1	MIPICSI_DN3	A5	MIPICSI_DN3	MIPI CSI
2	MIPICSI_DN2	A4	MIPICSI_DN2	MIPI CSI
3	MIPICSI_DP3	B5	MIPICSI_DP3	MIPI CSI
4	MIPICSI_DP2	B4	MIPICSI_DP2	MIPI CSI
5	MIPICSI_DN1	A3	MIPICSI_DN1	MIPI CSI
6	MIPICSI_DN0	A2	MIPICSI_DN0	MIPI CSI
7	MIPICSI_DP1	B3	MIPICSI_DP1	MIPI CSI
8	MIPICSI_DP0	B2	MIPICSI_DP0	MIPI CSI
9	MIPICSI_DNCLK	A1	MIPICSI_DNCLK	MIPI CSI
10	GND			Power Ground

11	MIPICSI_DPCLK	B1	MIPICSI_DPCLK	MIPI CSI
12	SPEED_LED			Ethernet LED
13	GND			Power Ground
14	LINK_LED			Ethernet LED
15	MDI0_P			Ethernet Signal
16	MDI1_P			Ethernet Signal
17	MDI0_N			Ethernet Signal
18	MDI1_N			Ethernet Signal
19	MDI2_P			Ethernet Signal
20	MDI3_P			Ethernet Signal
21	MDI2_N			Ethernet Signal
22	MDI3_N			Ethernet Signal
23	GND			Power Ground
24	GND			Power Ground
25	MCU_CAM1_D7	V19	GPIOB10/VID1[7]/SDEX7/I2SDIN2	CAMERA/GPIO
26	GPIOB8	V20	GPIOB8/VID1[5]/SDEX5/I2SDOUT2	GPIO/CAMERA
27	MCU_CAM1_D4	R19	GPIOB6/VID1[4]/SDEX4/I2SDOUT1	CAMERA/GPIO
28	MCU_CAM1_D3	R20	GPIOB4/VID1[3]/SDEX3/I2SLRCK2	CAMERA/GPIO
29	MCU_CAM1_D2	P19	GPIOB2/VID1[2]/SDEX2/I2SBCLK2	CAMERA/GPIO
30	MCU_CAM1_D1	P20	GPIOB0/VID1[1]/SDEX1/I2SLRCK1	CAMERA/GPIO
31	MCU_CAM1_D0	N19	GPIOA30/VID1[0]/SDEX0/I2SBCLK1	CAMERA/GPIO
32	MCU_CAM0_D7	AE11	GPIOE3/VID0[7]/TSIDATA1[7]	CAMERA
33	MCU_CAM0_D6	AD10	GPIOE2/VID0[6]/TSIDATA1[6]	CAMERA
34	MCU_CAM0_D5	AE9	GPIOE1/VID0[5]/TSIDATA1[5]	CAMERA
35	MCU_CAM0_D4	AB9	GPIOE0/VID0[4]/TSIDATA1[4]	CAMERA
36	MCU_CAM0_D3	AC11	GPIOD31/VID0[3]/TSIDATA1[3]	CAMERA
37	MCU_CAM0_D2	AD9	GPIOD30/VID0[2]/TSIDATA1[2]	CAMERA
38	MCU_CAM0_D1	AC9	GPIOD29/VID0[1]/TSIDATA1[1]	CAMERA
39	MCU_CAM0_D0	AA9	GPIOD28/VID0[0]/TSIDATA1[0]/SA24	CAMERA
40	MCU_CAM0_HSYNC	AA11	GPIOE5/VIHSYNC0/TSISYNC1	CAMERA
41	MCU_CAM0_VSYNC	AD11	GPIOE6/VIVSYNC0/TSIDP1	CAMERA
42	MCU_CAM0_PCLK	AE10	GPIOE4/VICLK0/TSICLK1	CAMERA
43	MCU_CAMERA_MCLK	W13	SA13/GPIOC13/PWM1/SDnINT2	CAMERA
44	MCU_CAMERA_PN	AC22	SA4/GPIOC4/UARTnDCD1/SDnINT0	CAMERA
45	MCU_CAMERA_RST	AD22	SA5/GPIOC5/UARTnCTS1/SDWP0	CAMERA
46	MCU_CAMERA_PD	AE22	SA6/GPIOC6/UARTnRTS1/SDnCD0	CAMERA
47	GND			Power Ground
48	GND			Power Ground

49	SPDIF_TX	AC21	nSWAIT/GPIOC25/SPDIFTX	SPDIF
50	SPDIF_RX	AE12	LATADDR/GPIOC24/SPDIFRX/VID2[7]	SPDIF
51	MCU_NRESETIN	AE3	nRESET	nRESET
52	IR	Y12	GPIOD8/PPM	GPIO/PPM
53	MCU_NRESETOUT	AB7	nGRESETOUT	NGRESETOUT
54	GND			Power Ground
55	GND			Power Ground
56	ADC0	AD2	ADC0	ADC
57	ADC1	AB5	ADC1	ADC
58	ADC3	AD6	ADC3	ADC
59	ADC4	Y9	ADC4	ADC
60	ADC5	W9	ADC5	ADC

J3

PIN NO.	Signal Name	CPU Ball Number	CPU Ball Name	Remark
1	MCU_I2S_SDIN	AC15	GPIOD11/I2SDIN0/AC97_DIN	I2S AUDIO
2	MCU_I2S_SDOUT	AD15	GPIOD9/I2SDOUT0/AC97_DOUT	I2S AUDIO
3	MCU_I2S_MCLK	AA15	GPIOD13/I2SMCLK0/AC97_nRST	I2S AUDIO
4	MCU_I2S_BCK	AB15	GPIOD10/I2SBCLK0/AC97_BCLK	I2S AUDIO
5	MCU_I2S_LRCK	AC17	GPIOD12/I2SLRCK0/AC97_SYNC	I2S AUDIO
6	GND			Power Ground
7	MCU_SCL_1	AB17	GPIOD4/SCL1	I2C
8	MCU_SCL_2	AC18	GPIOD6/SCL2	I2C
9	MCU_SDA_1	AB18	GPIOD5/SDA1	I2C
10	MCU_SDA_2	AB19	GPIOD7/SDA2	I2C
11	GND			Power Ground
12	GND			Power Ground
13	MCU_KEY_VOLDN	AC24	SD15/GPIOB31/TSIDATA0[7]	Button (volume -)
14	MCU_KEY_VOLUP	AD24	SD14/GPIOB30/TSIDATA0[6]	Button (volume +)
15	MCU_PWRKEY	AE6	nVDDPWRTOGGLE	Button (power)
16	MCU_TOUCH_INT	AE24	SD13/GPIOB29/TSIDATA0[5]/UARTTXD4	Interrupt（TOUCH）
17	MCU_SEN0_INT	AE25	SD12/GPIOB28/TSIDATA0[4]/UARTRXD4	Interrupt (SENSOR)
18	MCU_HP_DET	AD25	SD11/GPIOB27/TSIDATA0[3]	Interrupt（AUDIO）
19	MCU_VG_EN	W16	SA10/GPIOC10/SPIFRM2	Control pin（LCD）
20	GPIOB25	AB25	SD9/GPIOB25/TSIDATA0[1]	GPIO
21	GND			Power Ground
22	GND			Power Ground
23	MCU_SD1_CLK	AA20	GPIOD22/SDCLK1	SD/MMC

24	MCU_SD1_CMD	AA19	GPIOD23/SDCMD1	SD/MMC
25	MCU_SD1_D0	AA18	GPIOD24/SDDAT1[0]	SD/MMC
26	MCU_SD1_D1	AA17	GPIOD25/SDDAT1[1]	SD/MMC
27	MCU_SD1_D2	Y15	GPIOD26/SDDAT1[2]	SD/MMC
28	MCU_SD1_D3	Y14	GPIOD27/SDDAT1[3]	SD/MMC
29	GND			Power Ground
30	GND			Power Ground
31	MCU_SD0_CD	AA8	AliveGPIO1	SD/MMC
32	MCU_SD0_CLK	T24	GPIOA29/SDCLK0	SD/MMC
33	MCU_SD0_CMD	U23	GPIOA31/SDCMD0	SD/MMC
34	MCU_SD0_D0	T25	GPIOB1/SDDAT0[0]	SD/MMC
35	MCU_SD0_D1	U24	GPIOB3/SDDAT0[1]	SD/MMC
36	MCU_SD0_D2	U25	GPIOB5/SDDAT0[2]	SD/MMC
37	MCU_SD0_D3	V24	GPIOB7/SDDAT0[3]	SD/MMC
38	GND			Power Ground
39	GND			Power Ground
40	MCU_SPI0_RXD	AD16	GPIOD0/SPIRXD0/PWM3	SPI
41	MCU_SPI0_TXD	AE16	GPIOC31/SPITXD0	SPI
42	MCU_SPI0_FRM	AD17	GPIOC30/SPIFRM0	SPI
43	MCU_SPI0_CLK	AE17	GPIOC29/SPICLK0	SPI
44	MCU_SPI_WP	AC25	SD10/GPIOB26/TSIDATA0[2]	SPI
45	GND			Power Ground
46	GND			Power Ground
47	GPIOE13	E14	GPIOE13/GMAC_COL/VIHSYNC1	GPIO
48	GPIOC11	W14	SA11/GPIOC11/SPIRXD2/USB2.0OTG_Drv VBUS	GPIO
49	GPIOC7	AE21	SA7/GPIOC7/UARTnDSR1/SDnRST1	GPIO
50	GPIOC12	W15	SA12/GPIOC12/SPITXD2/SDnRST2	GPIO
51	PWM2	AD12	SA14/GPIOC14/PWM2/VICLK2	PWM
52	GND			Power Ground
53	MCU_UART0_TX	AD19	GPIOD18/UARTTXD0/ISO7816/SDWP2	UART
54	MCU_UART1_TX	AD18	GPIOD19/UARTTXD1/ISO7816/SDnCD2	UART
55	MCU_UART0_RX	AE19	GPIOD14/UARTRXD0/ISO7816	UART
56	MCU_UART1_RX	AE18	GPIOD15/UARTRXD1/ISO7816	UART
57	MCU_UART2_TX	Y18	GPIOD20/UARTTXD2/RESERVED/SDWP 1	UART
58	MCU_UART3_TX	W17	GPIOD21/UARTTXD3/RESERVED/SDnC D1	UART
59	MCU_UART2_RX	Y19	GPIOD16/UARTRXD2/RESERVED	UART
60	MCU_UART3_RX	Y17	GPIOD17/UARTRXD3/RESERVED	UART

J4				
PIN NO.	Signal Name	CPU Ball Number	CPU Ball Name	Remark
1	GPIOA28	U21	GPIOA28/VICLK1/I2SMCLK2/I2SMCLK1	GPIO
2	GPIOB9	U20	GPIOB9/VID1[6]/SDEX6/I2SDIN1	GPIO
3	MCU_BACKLIGHT_PWM	AE15	GPIOD1/PWM0/SA25	PWM（LCD）
4	LCD_R7	R22	GPIOA24/DISD23	LCD（Digital RGB）
5	LCD_R6	M20	GPIOA23/DISD22	LCD（Digital RGB）
6	LCD_R5	R21	GPIOA22/DISD21	LCD（Digital RGB）
7	LCD_R4	R24	GPIOA21/DISD20	LCD（Digital RGB）
8	LCD_R3	P21	GPIOA20/DISD19	LCD（Digital RGB）
9	LCD_R2	R23	GPIOA19/DISD18	LCD（Digital RGB）
10	LCD_R1	P22	GPIOA18/DISD17	LCD（Digital RGB）
11	LCD_R0	M21	GPIOA17/DISD16	LCD（Digital RGB）
12	LCD_G7	L23	GPIOA16/DISD15	LCD（Digital RGB）
13	LCD_G6	M22	GPIOA15/DISD14	LCD（Digital RGB）
14	LCD_G5	G22	GPIOA14/DISD13	LCD（Digital RGB）
15	LCD_G4	K19	GPIOA13/DISD12	LCD（Digital RGB）
16	LCD_G3	L21	GPIOA12/DISD11	LCD（Digital RGB）
17	LCD_G2	L22	GPIOA11/DISD10	LCD（Digital RGB）
18	LCD_G1	M19	GPIOA10/DISD9	LCD（Digital RGB）
19	LCD_G0	J22	GPIOA9/DISD8	LCD（Digital RGB）
20	LCD_B7	J19	GPIOA8/DISD7	LCD（Digital RGB）
21	LCD_B6	L20	GPIOA7/DISD6	LCD（Digital RGB）
22	LCD_B5	F21	GPIOA6/DISD5	LCD（Digital RGB）
23	LCD_B4	L19	GPIOA5/DISD4	LCD（Digital RGB）
24	LCD_B3	H20	GPIOA4/DISD3	LCD（Digital RGB）
25	LCD_B2	H21	GPIOA3/DISD2	LCD（Digital RGB）
26	LCD_B1	G21	GPIOA2/DISD1	LCD（Digital RGB）
27	LCD_B0	J23	GPIOA1/DISD0	LCD（Digital RGB）
28	LCD_CLK	R25	GPIOA0/DISCLK	LCD（Digital RGB）
29	LCD_DE	H22	GPIOA27/DISDE	LCD（Digital RGB）
30	LCD_HSYNC	J20	GPIOA26/DISHSYNC	LCD（Digital RGB）
31	LCD_VSYNC	J21	GPIOA25/DISVSYNC	LCD（Digital RGB）
32	GND			Power Ground
33	GND			Power Ground
34	DC5V_OTG			USB power supply (input)
35	VCC3P3_SYS			Power 3V3 (Output)
36	DC5V_OTG			USB power supply (input)
37	VCC3P3_SYS			Power 3V3 (Output)

38	DC5V_OTG			USB power supply (input)
39	VCC3P3_SYS			Power 3V3 (Output)
40	GND			Power Ground
41	GND			Power Ground
42	GND			Power Ground
43	GND			Power Ground
44	VDD_RTC			RTC power (input)
45	VBAT			Single lithium battery powered (input)
46	VDD_RTC			RTC power (input)
47	VBAT			Single lithium battery powered (input)
48	GND			Power Ground
49	VBAT			Single lithium battery powered (input)
50	GND			Power Ground
51	GND			Power Ground
52	DCIN			DC power supply (3.8 ~ 6.3V, input)
53	GND			Power Ground
54	DCIN			DC power supply (3.8 ~ 6.3V, input)
55	VBAT_SYS			IPSOUT（Output）
56	DCIN			DC power supply (3.8 ~ 6.3V, input)
57	VBAT_SYS			IPSOUT（Output）
58	GND			Power Ground
59	VBAT_SYS			IPSOUT（Output）
60	GND			Power Ground

Service Support

Technical Support Mailbox：

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Technical Support Service Hours：

Monday to Friday：9：00～12：00，13：30～18：00

Statement

The information in this manual is for reference only and is subject to change without notice.

For more product information, visit www.nrisc.cn

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