

SBC2410-III Single Board Computer

- ARM920T Single-board Computer based upon Samsung S3C2410A
- IDE, SD, LCD, USB Host/Device, Ethernet, Serial Ports, Jtag...
- Flexible Design with Compact CPU Board Mounted on Expansion Board
- Capable of supporting Linux or WinCE OS



Embest SBC2410-III Single Board Computer
(Shipping without hard disk)

Description

The SBC2410-III is a more cost-effective application-ready board integrating Samsung's ARM9 S3C2410A System on Chip with an ultra-compact kernel board mounted directly on top of a carrier board.

Embest SBC2410-III single board computer is implemented by the CPU board providing most of the functions, and the expansion board providing connectors and several additional functions. The CPU board has S3C2410A CPU, 64Mbyte Nand Flash, and 32Mbyte SDRAM on it. The expansion board has different ports and various peripherals on it, such as USB Host, USB Device, harddisk port, serial ports, Ethernet interface, LCD interface, audio, battery, LEDs, test and reset buttons, etc.

The SBC2410-III is capable of supporting Linux and WinCE OS. The board is preloaded with Linux and provided with compiler, kernel, bootloader, etc. Embest also provides WinCE4.2 BSP for this board. This would better offer users a fast time-to-market and a customizable and flexible reference platform.

Hardware Features

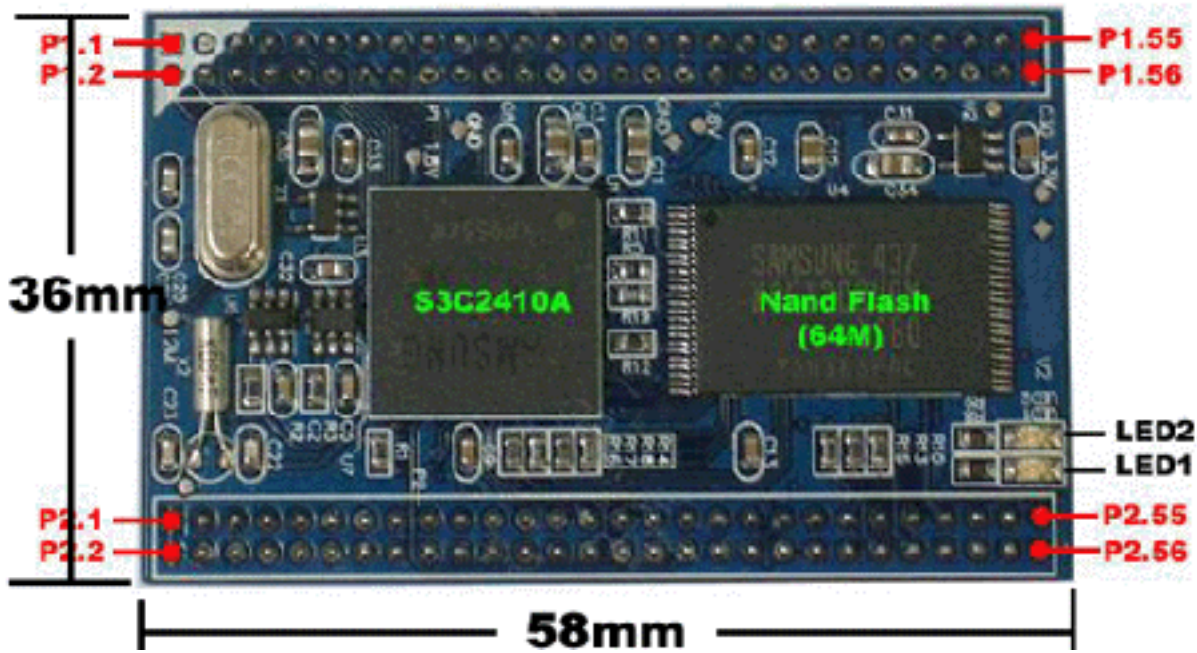
The S3C2410A processor consists of 16/32-bit RISC microprocessor, separate 16KB Instruction and 16KB Data Cache, MMU to handle virtual memory management, LCD controller (STN & TFT), NAND Flash Boot loader, System Manager (chip select logic, SDRAM controller), 3-ch UART with handshake, 4-ch DMA, 4-ch Timers with PWM, I/O Ports, RTC, 8-ch 10-bit ADC and Touch screen interface, IIC-BUS interface, IIS-BUS interface, USB Host, USB Device, SD Host & Multi-Media Card Interface, 2-ch SPI and PLL for clock generation.

The SBC2410-III has a super tiny kernel board with CPU, Flash and SDRAM on it, which exposes many of these features to the user in support of developing specific solutions. The kernel board can be mounted directly onto the expansion board through a 112pin (2.0mm space) connector. This board is characterized as follows:

- Dimensions: 135x169mm (carrier board), 58x36mm (kernel board)
- Working temperature: -20~70 Celsius
- Power supply: +12V
- Samsung S3C2410A (ARM920T core with MMU capable of 266⁺ MHz operation)
- 64Mbyte Nand Flash, 64Mbyte SDRAM
- 1 LCD interface (STN or TFT, support resolution up to 1024x768)
- 1 10M Ethernet interface
- 3 serial ports (can be extended to 485 interface)
- 1 USB host and 1 USB device
- Audio Input/Output
- RTC (battery backed)
- 1 20pin (2.0mm space) standard JTAG interface
- SD / MMC card interface
- 4 Status LEDs
- 4 Test buttons
- 1 Power switch
- 1 Reset button
- 1 20pin standard JTAG interface
- IDE44 port: for 2.5" hard disk
- System interfaces:
 - SPI x 1
 - I2C x 1
 - I2S x 1 (generally for extension audio in/out, can also be used as GPIO)
 - AD x 2 (10 bit precision)
 - PWM x 1
 - External interrupt x 8

SBC2410-III CPU Board

The SBC2410-III CPU board is a super tiny board and has S3C2410A CPU, 64Mbyte Nand Flash, and 32Mbyte SDRAM on it.



Below table indicates the definition of default port pins and the introduction of configurable ports.

Pin No.	Default Func.	Re-use Func.	CPU I/O	Remark
P1 port pins definition				
P1.1	VD23	GPD15	P4	
P1.2	VD22	GPD14	T4	
P1.3	VD21	GPD13	U3	
P1.4	VD20	GPD12	T3	
P1.5	VD19	GPD11	U2	
P1.6	VD18	GPD10	R4	
P1.7	VD15	GPD7	U1	
P1.8	VD14	GPD6	R2	
P1.9	VD13	GPD5	T1	
P1.10	VD12	GPD4	P2	
P1.11	VD11	GPD3	P3	
P1.12	VD10	GPD2	P1	
P1.13	VD7	GPC15	N3	
P1.14	VD6	GPC14	N1	
P1.15	VD5	GPC13	M2	
P1.16	VD4	GPC12	M4	
P1.17	VD3	GPC11	M3	
P1.18	VD2	GPC10	L4	
P1.19	VD1	GPC9	L2	
P1.20	VD0	GPC8	L1	
P1.21	VFRAME	GPC3	K4	
P1.22	VLINE	GPC2	J6	
P1.23	VCLK	GPC1	J2	
P1.24	VM	GPC4	K2	
P1.25	TDI	-	J1	
P1.26	TMS	-	J3	
P1.27	TDO	-	J5	

P1.28	nTRST	-	H5	
P1.29	TCK	-	H6	
P1.30	nReset	-	J12	
P1.31	SDCLK	GPE5	T6	
P1.32	SDCMD	GPE6	P6	
P1.33	SDDATA3	GPE10	R7	
P1.34	SDDATA2	GPE9	P7	
P1.35	SDDATA1	GPE8	N7	
P1.36	SDDATA0	GPE7	R6	
P1.37	PWM	GPE0	F2	
P1.38	nCD-SD	EINT18/GPG10	P10	
P1.39	LDATA0	-	B8	
P1.40	LDATA1	-	A8	
P1.41	LDATA2	-	D7	
P1.42	LDATA3	-	E7	
P1.43	LDATA4	-	C7	
P1.44	LDATA5	-	B7	
P1.45	LDATA6	-	A7	
P1.46	LDATA7	-	C6	
P1.47	LDATA8	-	F7	
P1.48	LDATA9	-	B6	
P1.49	LDATA10	-	D6	
P1.50	LDATA11	-	A5	
P1.51	LDATA12	-	C5	
P1.52	LDATA13	-	B5	
P1.53	LDATA14	-	D5	
P1.54	LDATA15	-	A4	
P1.55	VDD3.3V	-	-	
P1.56	VDD3.3V	-	-	
P2 port pins definition				
P2.1	GND	-	-	
P2.2	GND	-	-	
P2.3	TSXP	-	-	
P2.4	TSXM	-	-	
P2.5	TSYP	-	-	
P2.6	TSYM	-	-	
P2.7	AIN0	-	U16	
P2.8	AIN1	-	T15	
P2.9	L3DATA	TOUT3/GPB3	G3	
P2.10	L3MODE	TOUT2/GPB2	F4	
P2.11	I2SLRCK	GPE0	T5	
P2.12	L3CLOCK	TCLK0/GPB4	G4	
P2.13	I2SSDO	GPE4	U6	
P2.14	I2SSDI	GPE3	U5	
P2.15	CDCLK	GPE2	N6	
P2.16	I2SSCLK	GPE1	P5	
P2.17	SPIMOSI	GPE12	U7	
P2.18	SPIMISO	GPE11	T7	
P2.19	SPICLK	GPE13	P8	
P2.20	nSS_SPI	EINT10/GPG2	T8	

P2.21	DP0	-	P13	
P2.22	DN0	-	T12	
P2.23	DP1	-	M10	
P2.24	DN1	-	N11	
P2.25	I2CSCL	GPE14	L7	
P2.26	I2CSDA	GPE15	M8	
P2.27	RXD0	GPH3	K17	
P2.28	TXD0	GPH2	K15	
P2.29	RXD1	GPH5	K14	
P2.30	TXD1	GPH4	K16	
P2.31	RXD2	GPH7	K12	
P2.32	TXD2	GPH6	K13	
P2.33	EINT0	GPF0	N14	
P2.34	EINT1	GPF1	N17	
P2.35	EINT2	GPF2	M16	
P2.36	EINT3	GPF3	M17	
P2.37	EINT4	GPF4	M15	
P2.38	EINT19	GPG11	R11	
P2.39	EINT9	GPG1	U8	
P2.40	EINT11	GPG3	L9	
P2.41	VDDRTC	-	M12	
P2.42	nWAIT	-	G13	
P2.43	nGCS1	GPA12	E15	
P2.44	nGCS2	GPA13	E16	
P2.45	nGCS3	GPA14	E14	
P2.46	LnWBE1	-	B16	
P2.47	LnOE	-	C16	
P2.48	LnWE	-	E13	
P2.49	LADDR24	-	B9	
P2.50	LADDR4	-	B13	
P2.51	LADDR3	-	C13	
P2.52	LADDR2	-	A14	
P2.53	LADDR1	-	D14	
P2.54	LADDR0	GPA0	B14	
P2.55	nXDACK0	GPB9	H2	
P2.56	nXDREQ0	GPB10	H3	

Software

The board is able to support Linux and WinCE OS. We preloaded Linux as the default OS onto the board. Compiler, kernel source code, bootloader source code and example software are all provided along with this board. So the board is all ready for using. Embest also provides WinCE 4.2 BSP for this board including drivers listed in below driver.

Software

OS	Item	Feature	Description	
Linux	vivi (bootloader source code)	Xmodem	Support Xmodem transmit protocol	
		USB (Do not provide source code)	Add USB downloading function in vivi, supporting downloading/ updating image with USB	
		Kernel Parameter	Support kernel parameter setting	
		Set Partation etc.	Support partition setting	
	Kernel	Version	Linux kernel 2.4.18	
		File system	ROM/CRAM/EXT2/FAT32/NFS/YAFFS	
	Driver	Interrupt & Timer Serial device 10M Ethernet USB Host USB Slave RTC ADC Audio LEDs Buttons Language LCD IDE	System Interrupt & Timer	System Interrupt & Timer
			Three serial ports	Three serial ports
			CS8900	CS8900
			USB camera driver	USB camera driver
			UDA1341	UDA1341
			User buttons	User buttons
			Multi-language Support	Multi-language Support
		Do not provide source code		
	Embedded GUI	Qt/Embedded		
	Network protocol & application	TCP/IP		
		NFS		
Telnet Server				
File transfer		(FTPclient/server)		
Remote login				
Web server		Web server (HTTP v1.1, boa)		
Web based management suite		(Sample only)		
WinCE	Bootloader	vivi (Do not provide source code)	Add USB downloading function in vivi, supporting downloading/ updating image with USB	
		Eboot	Ethernet bootloader for wince	
Driver	Serial device Flash memory 10M Ethernet USB Host USB device LED RTC	Serial port 0	Serial port 0	
		Nand Flash driver	Nand Flash driver	
		CS8900	CS8900	

	EINT	
	LCD	
	Audio	
	SD/MMC card	

Order Information

Order No.	MH4
Item	Embest SBC2410-III Single Board Computer
Price	Please contact us for detailed information.
CD-ROM	<ul style="list-style-type: none"> ● software ● user manual ● circuit schematic drawing ● parts datasheet ● Embest products reference
Option hardware	Sharp 8" TFT LCD
Option Tools	Embest IDE for ARM Development Tools Suite I or II, include: <ul style="list-style-type: none"> ● IDE, editor, GNU ARM Compiler and Linker, debugger, full registered version ● Embest PowerICE or Embest UnetICE ● Embest Flash Programmer
Available contents if ordered in kits (SBC2410-II-EVAL Kit)	<ul style="list-style-type: none"> ● SBC2410-III board (Preload with Linux) ● 1 serial cable ● 1 net cable ● 1 USB cable ● 12V power adapter ● 1 CD with product reference



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