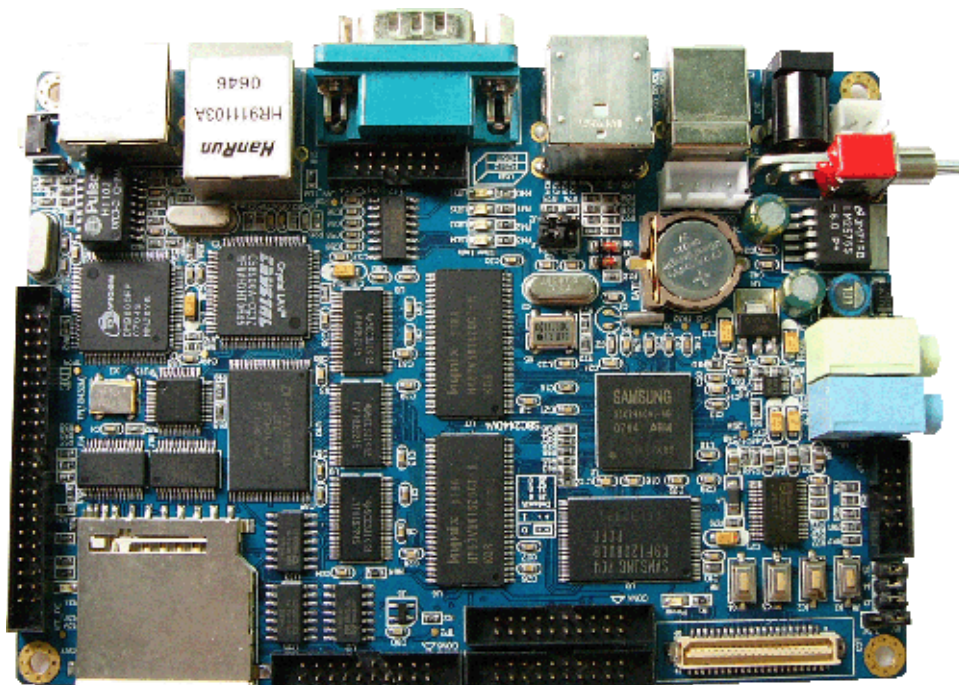# SBC2440-I Single Board Computer

- ARM920T Single-board Computer based upon Samsung S3C2440A
- 5 serial ports, USB Host/Device, Dual Ethernet, LCD, Audio, IDE, SD/MMC, Jtag…
- Capable of supporting Linux 2.6 or WinCE 4.2 OS

Embest SBC2440-I Single Board Computer

Description

The SBC2440-I is a ready-to-use single board computer (SBC) using the Samsung S3C2440A processor, which is designed by Samsung to provide hand-held devices, and general applications with low-power, and high-performance microcontroller solution in small die size. The 16/32-bit S3C2440 processor is based upon the ARM920T architecture and can operate at 400MHz. It supports major operating systems including Microsoft Windows CE, Palm OS, Symbian and Linux. The device also offers the advantages of a built-in NAND flash boot loader so that high-density NAND flash memory can be used without having to install an additional support chip.

Embest SBC2440-I single board computer takes advantage of the S3C2440A ARM920T microcontroller, supporting a variety of onboard peripherals such as 1Mbyte Nor Flash, 64Mbyte Nand Flash, 64Mbyte SDRAM, USB Host and USB Device, RS232 and TTL, 1 10M Ethernet interface and 1 10/100M Ethernet interface, IDE interface, camera interface, battery backed RTC, LEDs, reset buttons. In addition to this, expansion connections are made available via a number of header connectors and support peripheral LCD hardware, touch screen, SD card, JTAG and 16 GPIOs.

The SBC2440-I is capable of supporting Linux and WinCE OS. Linux 2.6.13 source code and WindowsCE4.2.net BSP are provided with this board. We provide drivers with this board including serial port, CS8900A, DM9000, RTC, USB Host, User LEDs, LCD, Touch panel, ADC,

USB camera/mouse/keyboard/U-disk etc. And many are in source code and this would greatly help you with your system design.

Embest offers, as an option, a full-featured Integrated Development Environment (IDE) that can be used to develop applications, download binaries to the target and debug applications. The IDE runs from a PC and can be ordered with either a high-speed JTAG interface (up to 800kbps) or standard interface (120kbps). Optional LCD display hardware is also available for this development board and can be easily connected to an existing header.

Hardware Features

The S3C2440A processor features an ARM920T core, a 16/32-bit RISC microprocessor for high performance in a small form-factor and a low core voltage of 1.3V with a typical power usage of 0.2W at 400MHz operating speeds. In addition, it is developed using 0.13um CMOS standard cell and a memory compiler and adopts Advanced Microcontroller Bus Architecture (AMBA). It has additional a complete set of common system peripherals including LCD controller (STN & TFT), System Manager (chip select logic and SDRAM controller), 3-ch UART, 4-ch DMA, 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 & Camera interface, 2-ch SPI and PLL for clock generation.

The SBC2440-I exposes many of these features to the user in support of developing specific solutions. This board is characterized as follows:

- Dimensions: 134 x 93.5 mm
- Working temperature: 0~70 Celsius
- Power supply: +12V
- Samsung S3C2440A (ARM920T core with MMU capable of 400 MHz operation)
- Flash: 1Mbyte Nor Flash (support 2M for option), 64Mbyte Nand Flash
- SDRAM: 64Mbyte
- LCD Display interface (STN or TFT, support resolution up to 1024x768)
- Touch Screen interface
- 10M Ethernet interface
- 10/100M Ethernet interface
- Mic (Audio input)
- Phone (Audio output)
- 1 RS232 serial port
- 3 serial ports available through 14pin (2.0mm space) interface
- 2 serial ports available through ST16C2550 chip extension
- USB host and USB device
- RTC (battery backed)
- SD/MMC card socket
- 4 Status LEDs
- 1 Power switch
- 1 Reset button
- 1 10pin JTAG interface
- GPIO expansion connector
- 44pin standard IDE interface

Interface Introduction
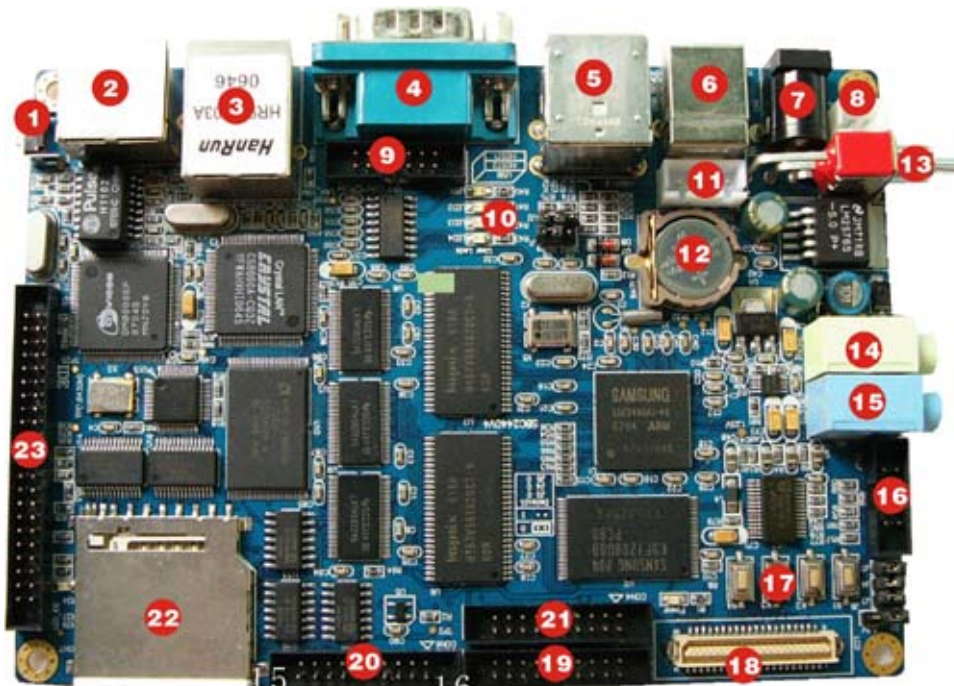
No.	Description
1	Reset button
2	LAN_10M/100M Ethernet Interface (DM9000)
3	LAN_10M: 10M Ethernet Interface (CS8900)
4	COM0: UART0 (RS232)
5	USB1-2: USB Host (2 USB Host or 1USB Host and 1 USB Device)
6	USB Device (used in reinstall or update system)
7	CN1: 12V Power socket (Inside positive outside negative)
8	BL: 12V needle type Power socket, communicated with "7" and can be used for 12V external power supply
9	CON1 COM0-2 (TTL level)
10	Jumper J1-J2 (selection of USB Host2/Slave)
11	CON3: Power interface (DC 5V ,DC 12V)
12	RTC (battery backed)
13	S1: Power switch
14	MIC: Audio input
15	PHONE: Audio output
16	JTAG: 10 pin JTAG interface
17	LED1-4 User Leds
18	LCD Interface
19	CON2: 16 channel GPIOs
20	CON6: Full-function dual serial port extension
21	Camera interface
22	SD/MMC Card
23	IDE: 44 pin standard IDE interface

Note: The two Ethernet ports can not be used at the same time at present.

Software

The board is provided with ARM Embedded Linux 2.6.13 and WINCE.net 4.2 BSP.

Please make the following software modules we provided with the board for your references:

Software			
OS	**Item**	**Feature**	**Description**
Linux	sbc_vivi (Do not provide source code)	Boot	Start up system
		Xmodem	Support Xmodem transmit protocol
		USB	**Add USB downloading function in vivi, supporting downloading/ updating image with USB**
		Kernel Parameter	Support kernel parameter setting
		Partition	Support partition setting
	Kernel	Version	Linux kernel 2.6.13
		File system	ROM/CRAM/EXT2/FAT32/NFS/YAFFS
	Drivers	Interrupt & Timer	System Interrupt & Timer
		Serial device	Three serial ports
		10M Ethernet	CS8900
		10M/100M Ethernet	**DM9000**
		RTC	
		USB Host	USB mouse, USB keyboard, U-disk
		USB Slave	
		LEDS	
		Buttons	User buttons
		Language	Multi-language Support
		LCD	
		Frame Buffer	Frame Buffer
		Touch pannel	
		SD/MMC card	
		UDA1341	
		IDE	Do not provide source code
	Embedded GUI	**Qt/Embedded**	
	Network protocol & application	TCP/IP	TCP/IP protocal
		File transfer	(FTPclient/server)
		Remote login	
WinCE	Bootloader	sbc_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	Serial port 0
		Flash memory	Nand Flash driver
		10M Ethernet	CS8900
		USB Host	Support USB keyboard and USB mouse

		USB device	
		RTC	
		EINT	
		LCD	Support 240x320, 640x480
		Audio	
		SD/MMC card	

Order Information

Order No.	MH6
Item	Embest SBC2440-I Single Board Computer
Price	Please contact us for detailed information.
CD-ROM	● software ● user manual ● circuit schematic drawing ● parts datasheet ● Embest products reference
Optional hardware	MITSUBISHI 8.4" TFT LCD or Samsung 3.5" TFT LCD
Optional Tools	Embest IDE for ARM Development Tools Suite I or II, include: ● 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 (SBC2440-I-EVAL Kit)	● SBC2440-I 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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