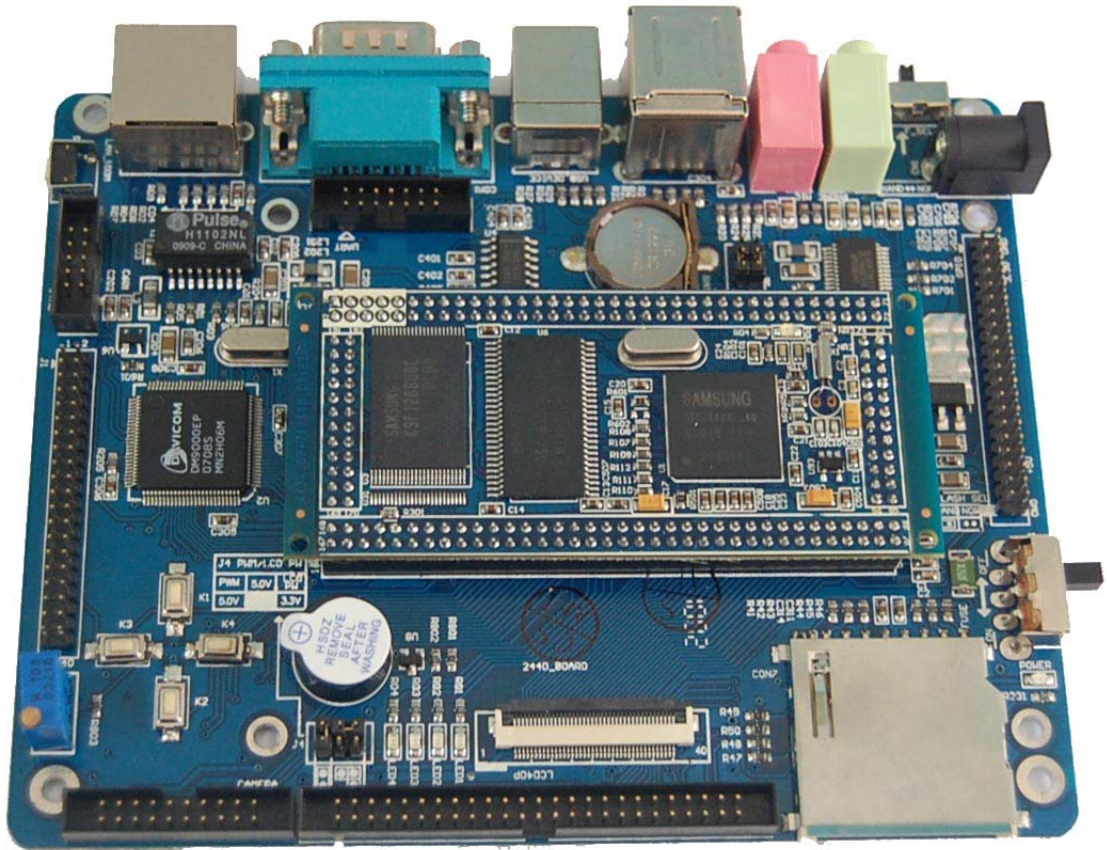# EM2440-III Overview

EM2440-III Overview

EM2440-III offers true rapid development solutions by providing all the necessary ingredients to jump start embedded designs. The board includes the MINI2440 SOM and Carrier Board pre-installed Windows Embedded CE or Linux OS. The mother board integrates a rich set of peripherals and interfaces including Ethernet, USB Host & Device, Camera, Serial ports, Audio, LCD, Keyboard, SD/MMC, Buttons, LEDs and etc.
The board has complete electronic documentation, schematics, demo applications, and third party industry-standard C compilers and embedded development environments for evaluation.

Boardcon also backs up our kits with a Start-Up Guarantee. We invite you to make use of our free technical support until any start-up problem you might encounter is solved. The positive out-of-box experience with the Rapid Development Kit illustrates Boardcon's continuous commitment to providing customers with effective embedded solutions by offering a hands-on, industry-centric entry point for embedded developments, which is a key starting point for OEMs needing to have a complete solution up and running under very short development time constraints.

If somewhere on the board don't meet your specification of your project, we will modify the board for a semi-custom solution. When needed, we will develop a new embedded SBC or peripheral board to meet your requirements. Depending on the design agreement, you might maintain sole ownership of the final product, or we might add the product to our COTS product line.

1. EM2440-Ⅲ Highlights

- **Nand Flash** can be updated into **1GB** and **SDRAM** can be updated into **128MB** immediately according to the customer requirement.
- Providing original **schematic drawing** and **PCB**, no PDF format.
- One Key to update Boot-loader, Kernel, Yaffs, NK.bin and one Key to configure parameters of Linux.
- Supporting GPRS, CDMA, Printer, USB WIFI Module
- Modular Design: Carrier board-128mm x 105mm; **CPU board**- 74mm x 37mm
- Samsung ARM9 S3C2440A ARM920T, up to 400MHz.
- 2mm pitch 20 pins Camera interface with driver
- Supporting Cramfs/ramfs/etx2/fat32/nfs/yaffs
- System parameters can be saved in REGEDIT, and residual Flash can be read and written
- The system can be updated via USB interface.
- Supporting Windows CE 5.0 and Linux 2.6.25

EM2440-III Overview

2. EM2440-Ⅲ Features

2.1. CPU, Memory and Busses

Feature	Specifications
CPU	Samsung S3C2440A ARM920T core,0.13um CMOS Standard cells, around 1.2V internal ,1.8V/2.5V/3/3V memory,3.3V external I/O microprocessor with 16KB I-Cache/16kb D-Cache/MMU, UP to 400 MHz. Interrupt controllers, Timers
SDRAM	32bit,100MHz, default mounted 64MB SDRAM, it can be replaced into 128MB
NAND Flash	Default mounted 64MB, it can be replaced into 128MB to 1GB
NOR Flash	2 Mbytes, bootable. It can be replaced into 8MB
Core-Power	1.25V Kernel Voltage
Power	3.3V power supply for CPU board
Connector	DC-2.0mm pitch board-to-board connectors
Dimension	37mmx74mm

2.2. Peripherals

Feature	Specifications
Serial Ports (UARTs)	COM-0 - RS232, five-wire DB9 RS232 serial port, also available via 2mm pitch pin header COM-1 - RS232, three-wire available via 2mm pitch 3 pins COM-2 - RS232, three-wire available via 2mm pitch 3 pins
LCD	The LCD port integrated 4-wire resistor touch screen port. The board comes with driver for 3.5inch,4.3inch, 7inch and 10.4inch TFT LCD (the resolution is 800x600)
Ethernet	Davicom DM9000A MAC & PHY, 10/100BaseT, Activity LED's
USB	USB1 Host, 12 Mbps ,USB2 Device,12 Mbps
Camera	2mm pitch 20 pins Camera interface
JTAG	1 X 2mm pitch 20 pins JTAG Port
Keyboard & mouse	USB, keypad or redirection from COM port
Audio codec	Adopt UDA1341 Audio chip, Audio input and output slot

ADC	Adjustable resistor is connected with pins of ADC to check analog/digital change
RTC	Real Time Clock, powered by external lithium battery
Speaker	Test for PWM
Device support	1 x SD/MMC card socket, Supports Multimedia Card, Secure Digital and Secure Digital I/O communications protocols up to 2GB
General Purpose I/O	GPIO Expansion Connector
LEDs	4 x Status LEDs
Buttons	4 Programmable User Buttons
Dimension	105x128mm

2.3. Software:

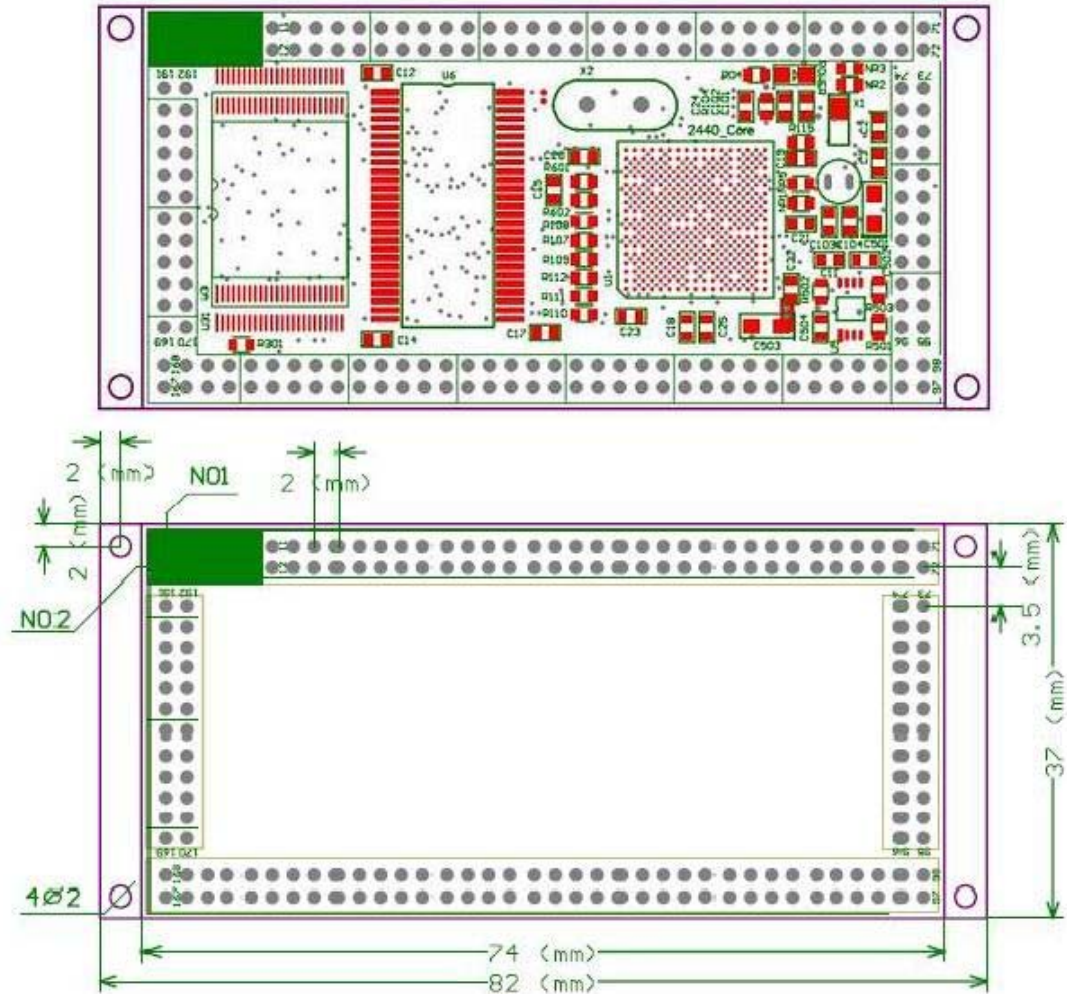| OS	Item	Feature	Description
Linux2.6.28	boot	Boot	Start up system, supporting one Key to update Bootloader, Kernel, Yaffs, NK.bin and one Key to configure parameters of Linux. Also can be configured the board booting from Yaffs or NFS
		Tftp	Support tftp transmitting protocol
		File system	Yaffs
		Kernel	Support writing kernel image into nand flash and kernel parameter setting
		Etc.	Support via USB and Serial Interface to download application to flash debug
	Kernel	Version	Linux kernel 2.6.25.8
		File system	CRAMFS/RAMFS/EXT2/FAT32/NFS/YAFFS/YAFFS2
		Serial device	Three serial ports
		10/100M Ethernet	DM9000
		RTC	RTC driver
		USB Host	USB Host ,USB Slave driver
		LEDs	Four LEDs driver
		Buttons	User buttons
		Language	Multi-language Support
		LCD	Coming with driver for 3.5inch,4.3inch,7inch and 10.4inch TFT LCD (resolution 800*600)
		Touch panel	Touch panel driver

EM2440-III Overview

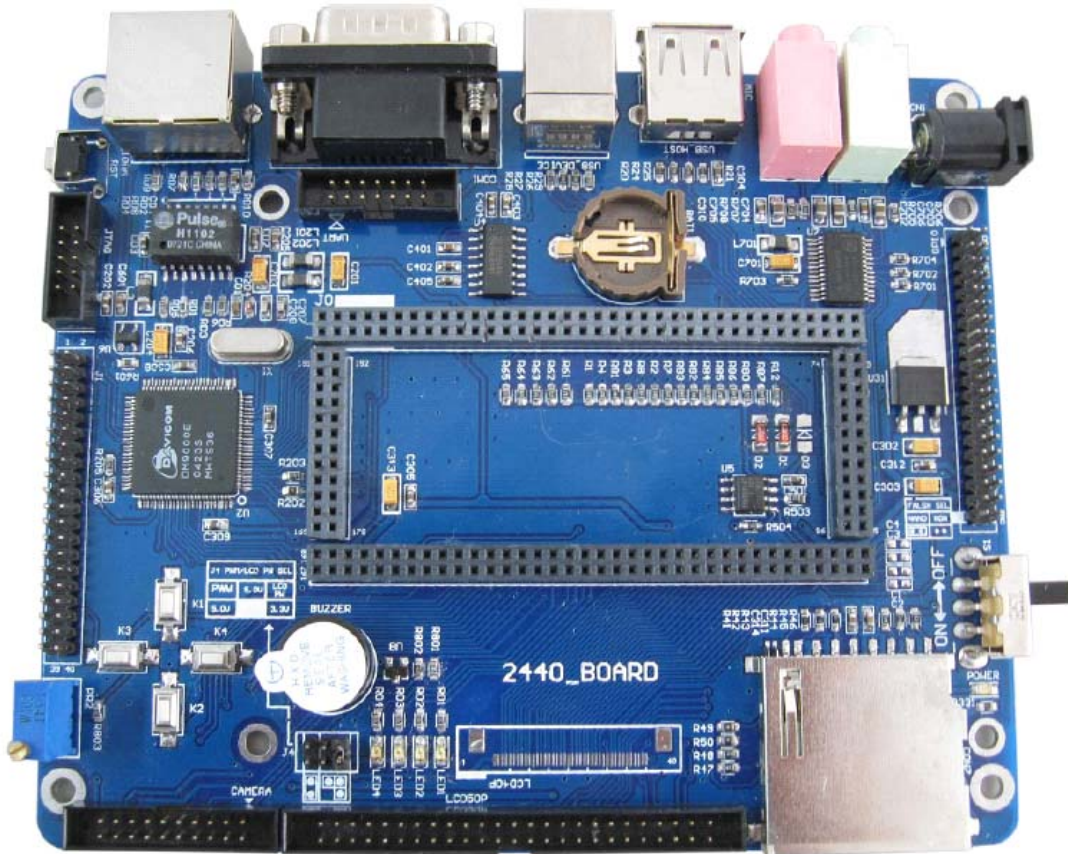|			
		SD/MMC card	SD/MMC card driver
		Sound	UDA1341
		CMOS Camera	CMOS Camera driver
		USB Camera	The chip of USB Camera is Vimicro 301p, the USB Camera is collecting dynamic picture and showing on the LCD
		USB WIFI	Supporting VIA VT6656, TL-WN321G+
		GPRS Module	Using GPRS Module to dial-up to Ethernet, the speed is up to 90Kbit/s
		CDMA Module	Using CDMA Module to dial-up to Ethernet, the speed is up to 90Kbit/s
		Printer	Thermal Printer GP-586OIII
	Embedded GUI	Qt/Embedded	Qtopia 1.7.0 and Qtopia 2.2.0
	Application	Servfox	The application is running under Console platform, it controls the USB Camera by internet and displays the picture taken by camera on the LCD. It can be taken as net monitor when the application works with USB Camera.
		Spcacat	It is a camera picture capture application under Console platform
		Snapshot	It is a LCD picture capture application under Console platform
		Rz and sz	It is a application that transfer and receive file by serial port
		Madplay	It is a MP3 player
	Network protocol	TCP/IP	TCP/IP protocol
		Telnet	Telnet server, telnet remote login
		File transfer	FTP Client/server
		Web server	boa web server
	USB port supported Devices		U-disk, portable hard-disk, USB mouse, USB Keyboard, USB HUB, USB Camera and so on.
	Command commands		cat，chmod，discard，echo，flashfsd，flashwrite， free， genhtml， hostname， init， kill， loader， ls， mkdir， mount， ps， reboot， rm， smanaged， sysconf， yes， insmod， lsmod， rmmod
	Tools		Busybox1.2.0 and busybox1.13 (provided in the CD-ROM)

EM2440-III Overview

		stepldr	Copy Eboot to SDRAM to jump to Eboot
WinCE5.0/ **WinCE6.0**	Bootloader	Eboot	Ethernet bootloader for wince, support downloading image through USB device port. supporting one Key to update Bootloader, Kernel, Yaffs, NK.bin and one Key to configure parameters of Linux
	Driver (source Code)	Serial device	Three serial ports
		10M/100M Ethernet	DM9000
		USB Host	USB Host driver, supporting USB ActiveSync
		USB Device	USB Device driver
		RTC	Real time keeping
		Buttons	User buttons
		LCD	Coming with driver for 3.5inch,4.3inch,7inch and 10.4inch TFT LCD (resolution 800x600)
		USB Camera	The chip of USB Camera is Vimicro 301p, the USB Camera is collecting dynamic picture and showing on the LCD
		USB WIFI	Supporting VIA VT6656, TL-WN321G+
		ADC	ADC driver
		Touch Screen	Touch Screen driver
		Audio	UDA1341
		SD/MMC card	Block devices drivers
		Others	Support Media-Player, IE browser, saving Register change, MFC ,NET2.0 and so on.

EM2440-III Overview

3. CPU Board Connector Mechanical Dimensions

EM2440-III Overview

4. External expansion module

- **Carrier Board**

- **3.5Inch TFT LCD Module**

EM2440-III Overview

● **7Inch TFT LCD Module**

● **Camera Module**

● **AV Monitor Module**

EM2440-III Overview

● **VGA Module**

EM2440-III Overview
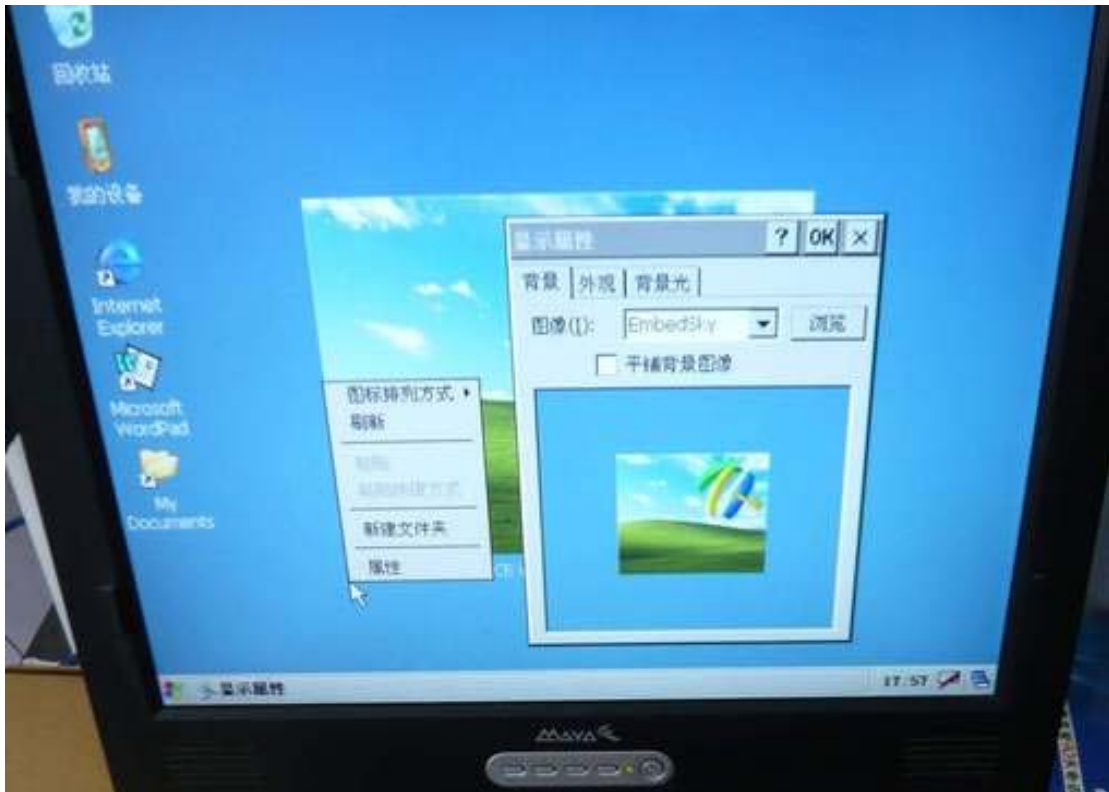
● **GPS module** (optional, providing schematic drawing ,source code driver and Chinese Map for the Module)

● **3 x USB Host + 2 x RS232 Serial Port + USB Converted SD Card Module**

EM2440-III Overview

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EM2440-III Overview