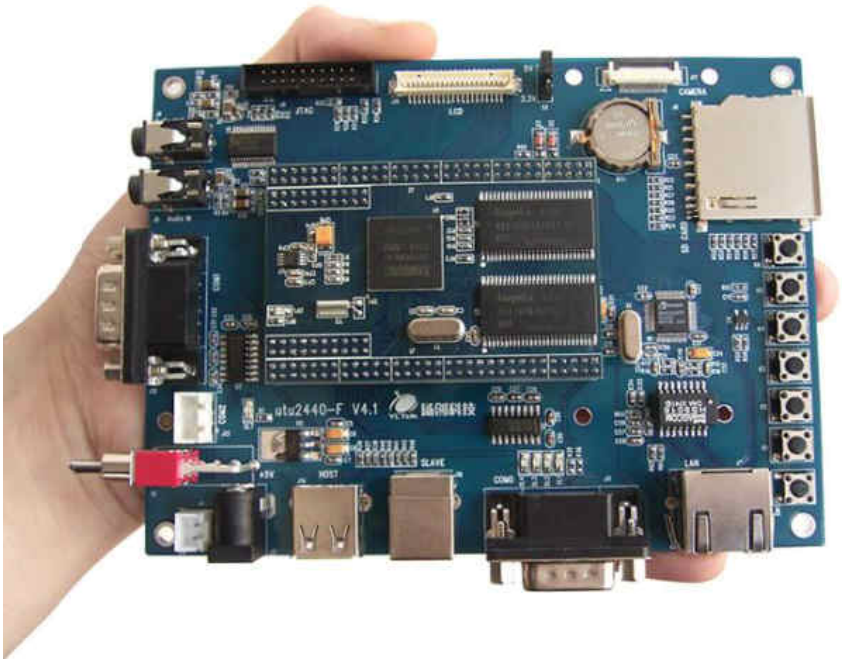
# *Trainer / Development System for Embedded Applications*

## Based on Single Board Computer (SBC-440)


**Features :**

- ARM920T Single-board Computer based upon Samsung S3C2440A
- RS232, USB Host/ Device, Ethernet, LCD, System bus, Camera, SD/ MMC, Jtag…
- Capable of supporting Linux 2.6 or WinCE 4.2/5.0 OS
- Nand Flash & SDRAM



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SBC440-II Single Board Computer

***Description***

The SBC440-II is a single board computer (SBC) powered by Samsung S3C2440 processor operating at 400MHz designed by Samsung. The 16/32-bit RISC microprocessor 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 board takes full advantage of the S3C2440A microcontroller.
Because of its small size and low power consumption, it is well suited for
portable and mobile products. It supports a variety of onboard peripherals such as 64Mbyte Nand Flash, 64Mbyte SDRAM, USB Host and USB Device, serial ports, Ethernet 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, system bus and GPIOs.

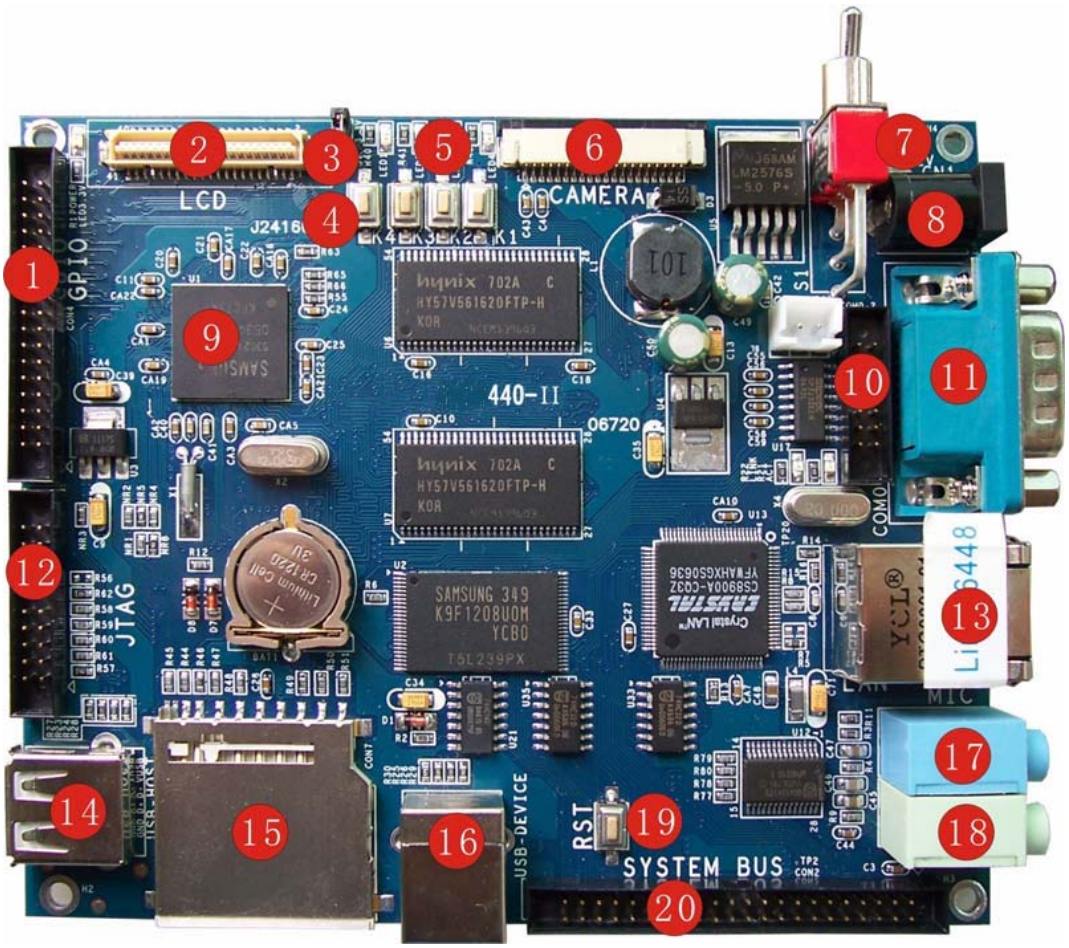
The SBC 440-II is capable of supporting Linux and WinCE OS. Default provided is Linux 2.6.13 source code and WinCE4.2/5.0 BSP with this board, which could help customers better understand the hardware operations and quicken your development steps.

Digitec offers, as 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 SBC 440-II exposes many of these features to the user in support of developing specific solutions. This board is characterized as follows:

- Dimensions: 120x100mm
- Working temperature: 0~70 Celsius
- Power supply: +12V
- Samsung S3C2440A (ARM920T core with MMU capable of 400 MHz operation)
- Flash: 64Mbyte Nand Flash
- SDRAM: 64Mbyte
- LCD Display interface (STN or TFT, support resolution up to 1024x768)
- Touch Screen interface
- 10M Ethernet interface
- Audio in/out (UDA1341)
- 1 RS232 serial port
- 3 serial ports available through 14pin (2.0mm space) interface
- USB Host and USB Device
- RTC (battery backed)
- SD/MMC card socket
- 4 Status LEDs
- 4 User buttons
- 3.3V power indicator
- 1 Reset button
- 1 20pin standard JTAG interface
- 1 Camera interface
- 34pin GPIO expansion connector
- 44pin system bus interface




| No. | Description |
|---|---|
| 1 | GPIO interface |
| 2 | LCD interface |
| 3 | Jumper: J6, LCD voltage selection (5V or 3.3V) |
| 4 | User buttons |
| 5 | User LEDS |
| 6 | Camera interface |
| 7 | Switch of power supply |
| 8 | +12V AC outlet (Inside positive outside negative) |
| 9 | CPU: S3C2440A |
| 10 | COM1, 2,3 extended from CPU, TTL |
| 11 | RS232 serial port 1 |
| 12 | JTAG interface |
| 13 | RJ45 10M Ethernet interface |
| 14 | USB host |

| 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 |
| | | RTC | |
| | | USB Host | |
| | | LEDs | |
| | | Buttons | User buttons |
| | | Language | Multi-language Support |
| | | LCD | |
| | | Frame Buffer | Frame Buffer |
| | | Touch panel | |
| | | SD/MMC card | |
| | | UDA1341 | |
| | Embedded GUI | **Qt/Embedded** | |
| | Network protocol & application | TCP/IP | TCP/IP protocol |
| | | File transfer | (FTP client/server) |
| | | Remote login | |
| **Win CE** | 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 | |
| | | LED | |
| | | RTC | |
| | | EINT | |
| | | LCD | Support 240x320, 640x480 |
| | | Audio | |
| | | SD/MMC card | |

*System Integrator*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