# SBC8140 single board computer

Order#: SBC8410 (T6010245 / T6010246)

The SBC8140 is another Single Board Computer designed by Embest using Mini8510 processor card as the CPU core board. The board is specially targeting those applications request high definition video or large-scale data processing *such as* 2D/3D game console products, portable devices, high-end industrial equipment, medical devices, and intelligent home systems and so on.
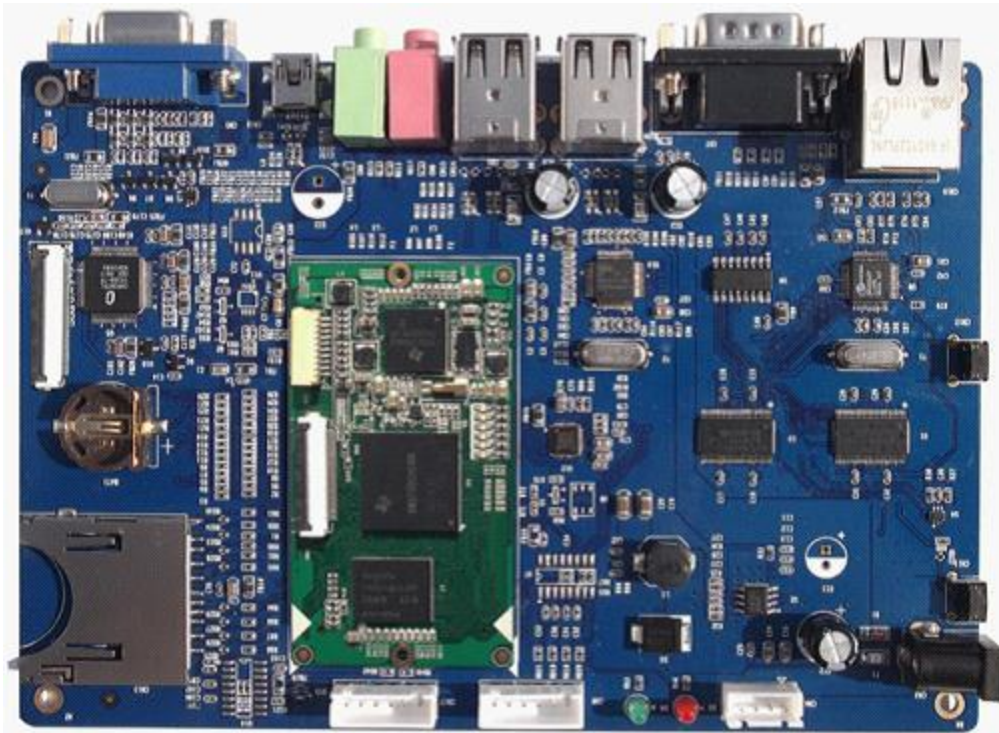
The core board Mini8510 has the DM3730 microcontroller, 256MByte DDR SDRAM, 512MByte NAND Flash, RTC, LEDs, one Camera interface as well as a 10-pin JTAG interface on board. It is connected with the SBC8140 expansion board through two 1.27mm space 2*45-pin dip connectors. The SBC8140 expansion board has exposed many of other features of the DM3730 through headers and connectors including serial ports, USB Host, OTG, Ethernet, Audio In/Out, Keyboard, LCD/Touch Screen interface, VGA, SD card and etc.

Embest offers a complete software development package to customers. The board supports for Linux 2.6.21 and WindowsCE 6.0 operating systems and is provided with complete basic drivers which enable a quick channel to evaluate the TI DM3730 processor and customize application software.

Embest also offers various modules for the SBC8140 which greatly extends the functions of the board and would be flexible for customer selection to meet their own needs.

Module	Description	Interface to Board	Linux	WinCE
WF8000-U	WiFi Module	USB Host	Support*	Support#
LVDS8000	LVDS Module	LCD	Support*	Support*
CAM8100-U	Digital Camera Module	USB Host	Support*	Support#

CDMA8000-U	3G Module (CDMA2000 standard)	USB Host	Support*	Support#
WCDMA8000-U	3G Module (WCDMA standard)	USB Host	Support*	Support#

* = Provided with Source Code

 # = Not Provided with Source Code

The Texas Instruments' DM3730 DaVinci™ digital media processor is powered by up to 1-GHz (also supports 300, 600, and 800-MHz operation) ARM Cortex-A8 and 800-MHz (also supports 250, 520 and 660-MHz operation) C64x+ DSP core, and has integrated 3D graphics processor, imaging and video accelerator (IVA), USB 2.0, MMC/SD memory card, UART and many more. DaVinci DM3730 video processor is pin-to-pin compatible with Sitara AM37x devices and software compatible with the OMAP35x processors. The C64x+ DSP and hardware video accelerator enable audio and HD 720p video decoding and encoding independent of the ARM processor. The programmable DSP engine allows multiple signal processing tasks such as image processing and analysis, digital filtering, and math functions. DaVinci DM3730 video processor is suitable for 720p HD (High Definition) video applications which require large amount of data processing.

The SBC8140 Single Board Computer is based on DM3730 processor and designed with a tiny processor card Mini8510 mounted directly onto an expansion board. The board is characterized as follows:

CPU Board Mini8510

Top View   **Bottom View**

Hardware Features

Mechanical Parameters

- Dimensions: 67 mm x 37 mm

- Power Consumption: 1A @ 3.3V

- Temperature Range: 0 ~ 70 Celsius

- Temperature Range: 20% ~ 90%

Processor

- **TI DM3730** DaVinci Digital Media Processor, 1GHz ARM Cortex-A8 Core, 800-MHz TMS320C64x+™ DSP Core (pin-to-pin compatible with **TI AM3715**)

Memory

- 256MByte DDR SDRAM, 166MHz

- 512MByte NAND Flash, 16bit

Input Interface

- 12-bit Camera interface (30-pin FPC connector, support CCD or CMOS camera)

- 1-channal 4-wire JTAG interface (10-pin 1.0mm pitch connector)

- 6 LEDs (programmable status LEDs)

- 2-channel SPI

- GPMC bus (16-bit data bus, 10-bit address bus, 4 chip-selection signals and several control signals)

- 3-channel 5-wire UARTs

- 1-channel ULPI (USB1 HS)

- Audio in/out

- 1-channel I2C

- 2-channel McBSP (McBSP1 and McBSP3, McBSP3 is multiplex with UART2)

- 2-channel SD/MMC: MMC1 (8-wire), MMC2 (4-wire)

- 24-bit DSS interface

Expansion Board of SBC8140

Mechanical Parameters

- Dimensions: 165.00 mm x 115.00 mm

- Input Voltage: +5V

- Temperature Range: 0 ~ 70 Celsius

- Humidity Range: 20% ~ 90%

Audio/Video Interfaces

- An Audio input interface

- A two-channel Audio output interface

- A TFT LCD interface, resolution supporting up to 2048*2048

- 4 line Touch Screen

- A standard VGA interface, resolution supporting up to 1024*768

Data Transfer Interface

- Serial port:

    o 1 x 5 line Debug serial port, RS232 voltage (UART1, via DB9 connector)

    o 1 x 3 line serial port, TTL voltage (UART2, via 6-pin connector)

    o 1 x 5 line serial port, RS232 voltage (UART3, via 6-pin connector)
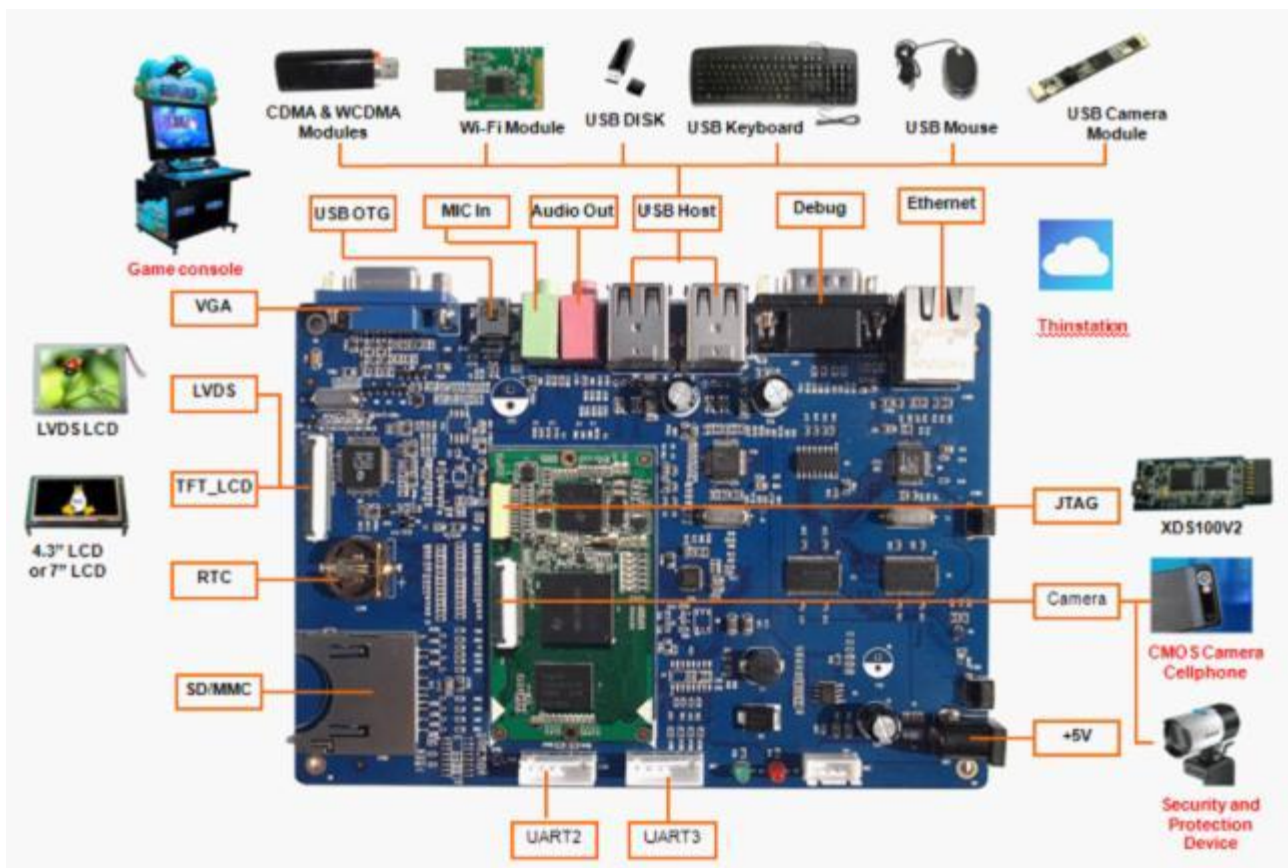
- USB port:

- o 1 x USB2.0 OTG, High-speed, 480Mbps (Mini-USB connector)

- o 4 x USB2.0 Host, High-speed, 480Mbps (USB A Type)

- SD card slot

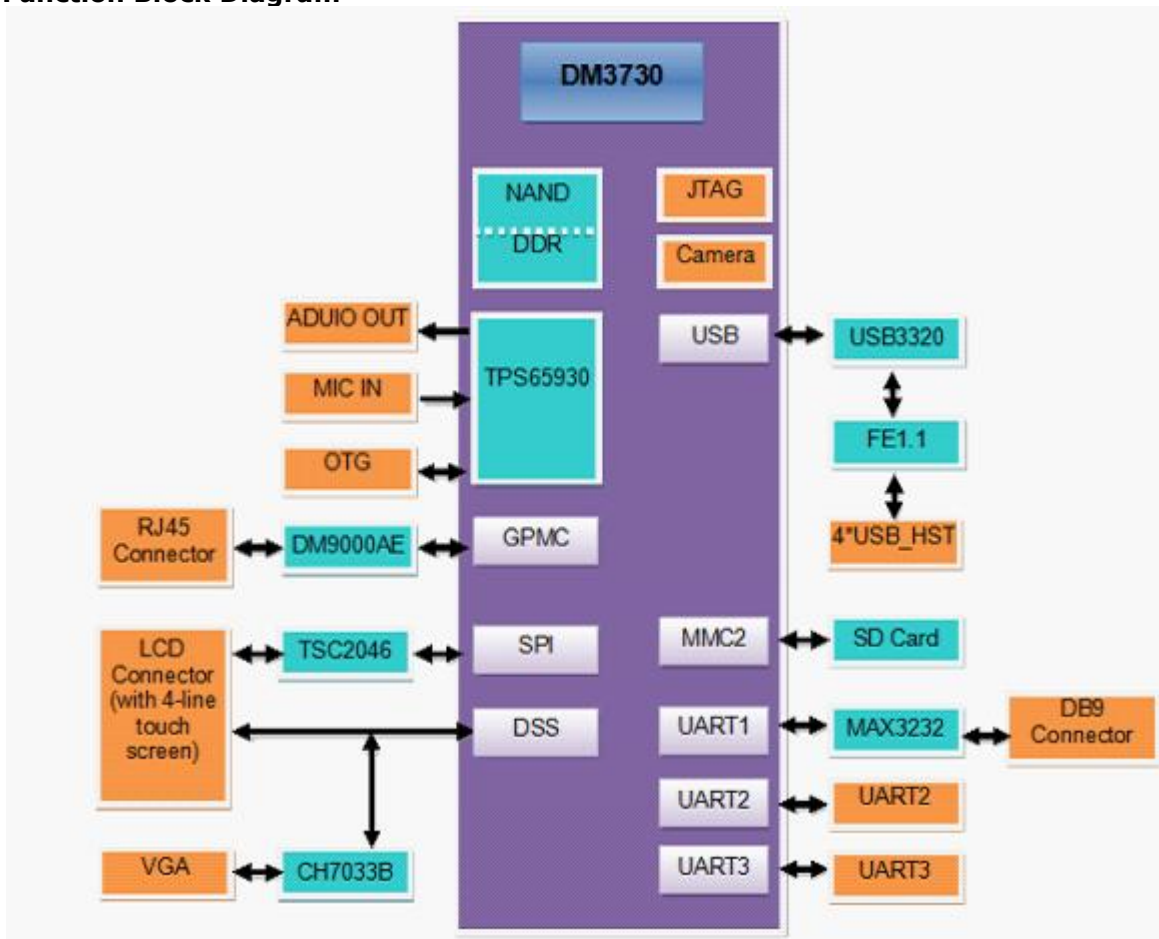- Ethernet: 10/100Mbps, RJ45 connector

Input Interface

- One BOOT button

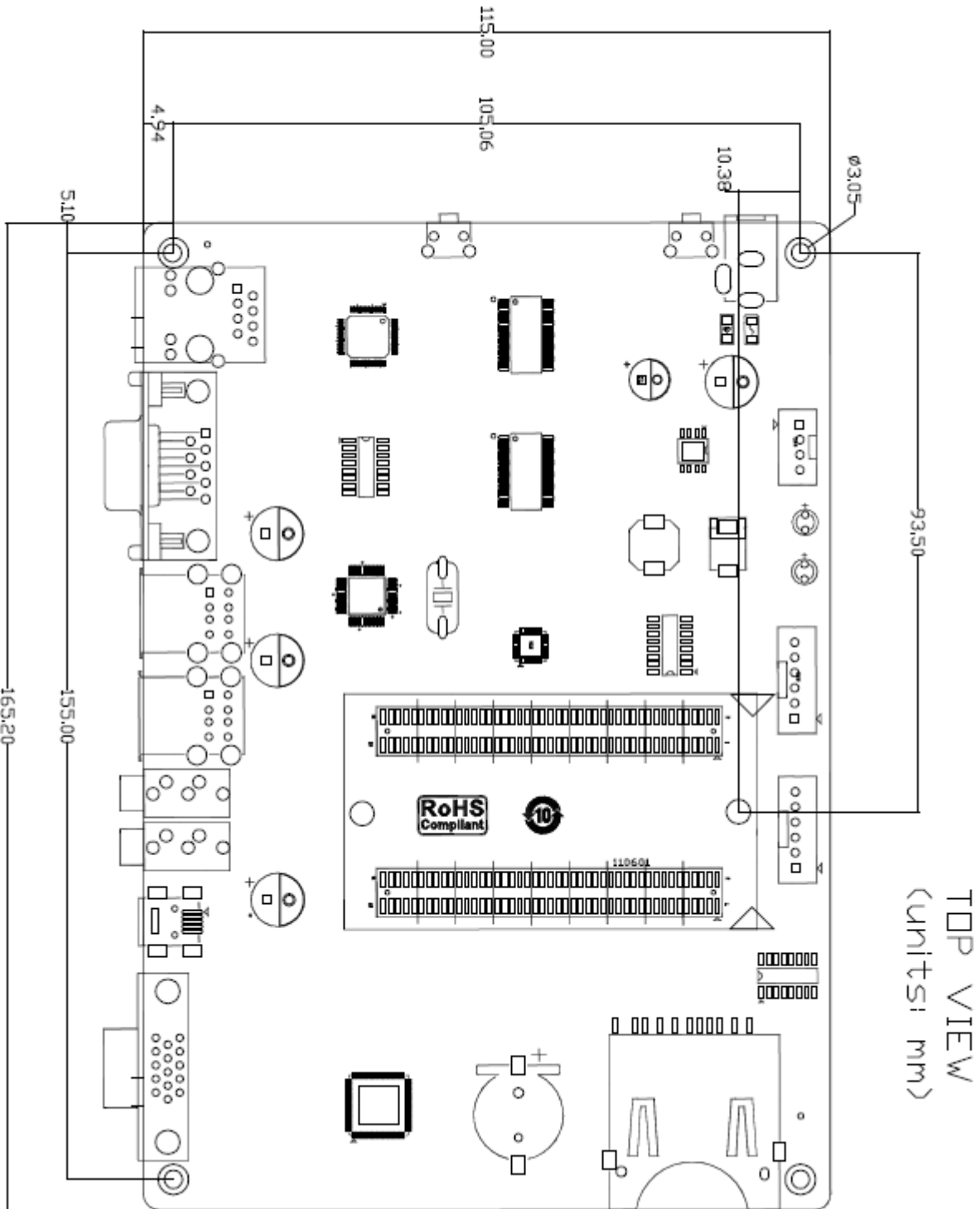- One RESET button

- Two USER buttons

- One Power indicator

Interface Introduction

Function Block Diagram

Dimensions

TOP VIEW
(units: mm)

Software

The SBC8140 Single Board Computer is provided with Window CE 6.0.net BSP and Linux 2.6.32 BSP with steady-going drivers, many of which are all in source code. Please refer to below table.

OS	Item	Feature	Description
Linux	Boot	Version	X-loader-1.41 U-boot 1.3.3
		Boot Mode	Boot Linux from SD card, NAND Flash or Ethernet
		Image update	Support updating image from SD card or Ethernet
		Logo update	Support updating logo
	Kernel and drivers	Version	Linux 2.6.32
		File System Format	ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/UBIFS
		Driver	Serial, RTC, Net, Flash, LCD, Touch screen, VGA, Audio In/Out, SD, USB Host, USB OTG, Key, LED, 2D/3D, Power Management (backlight)
	File System	File System Format	Ramdisk File System, UBI File System
		function	Provided Lib (ALSA -lib, tslib, glibc), udev support
WinCE	Boot	Version	x-load-1.41, eboot
		Boot Mode	Boot WINCE from SD card or NAND Flash or Ethernet
		Image update	Support updating image from SD card or Ethernet
	System	Characteristics	KITL kernel debug, Reboot, Watchdog, RTC
		Driver	Serial, RTC, Net, Flash, LCD, Touch screen, VGA, Audio In/Out, SD, USB Host, USB OTG, Key, LED, 2D/3D, Power Management (backlight, PWM, ADC)
		Application module	Flash Player plug-in and Flash player
			MP3/MPEG4/H264 DSP hardware decoder