Freescale Semiconductor
Product Brief

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i.MX31 PDK 1.4 Product Brief

The i.MX31 Product Development Kit (PDK) provides full-scale development implementation for the Freescale Semiconductor multimedia integrated applications processors.

This robust hardware and software platform for the Microsoft® Windows® CE 5.0, Windows Embedded CE 6.0, and Linux® environments is based on the exceptional capability provided by the Freescale i.MX31 applications processor. The development kit offers optimized middleware and codecs, allowing your critical resources to focus on what makes your product unique, because Freescale has already completed the fundamental elements for your design.

The PDK includes an optimized and validated board support package (BSP), which is upgradeable by using additional hardware modules or by accessing key codecs. The BSP is one-half the cost of the original Freescale ADS development kit.

Contents

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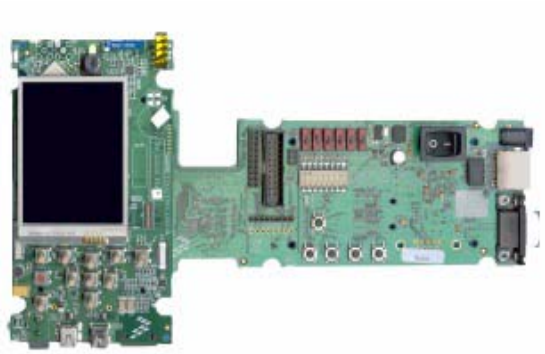
Developers perform design and application work using the i.MX31 PDK, which comprises a "stack" of three separate modules, connected together for software development and debugging purposes, and packaged in a plastic enclosure. The module set, designed for essential re-use, includes the CPU, Debug, and Personality modules. The Debug module provides the common interface for the CPU and Personality modules. It also provides the functions for a software engineer to develop applications and any accompanying software. The Personality module is a peripheral and connectivity board for product development.



1 Benefits

Developers can use this platform as a reference design, and begin immediately on their multimedia projects, with a near-end product platform. Hardware designers can develop a custom product quickly and software designers can begin long in advance of having any custom hardware. The integrated design methodology (hardware and software) greatly reduces your development time.

2 Features

The i.MX31 PDK provides the following features, which support its architecture, design, operation, and functionality:

- Near form-factor demonstration modules and working platforms.
- Solid reference schematics that closely resemble final products to aid customers' designs.
- CPLD Files
- Three-board system:
  - CPU board with i.MX31 ARM11™ MCU, MC13783 Atlas chip
  - Personality board with peripheral components and interface connectors
  - Debug board with two RS-232 interfaces, 10/100 Base-T Ethernet connector, and current measure connectors
- 2.8 inch TFTLCD display panel with touch panel and LED backlight
- 2.4 inch QVGA smart display panel connector
- Image sensor camera connector

- Smart Speed Technology
- 256 MB of NAND Flash Memory
- 128 MB of 32-bit DDR SDRAM memory
- Stereo microphone jack, headphone and video jack, stereo and mono (ear piece) speaker terminals
- One connector to outboard GPS module
- FM Receiver
- TV decoder that supports 8-bit color and NTSC & PAL format
- SD card connectors, with card sense functionality
- One USB OTG high-speed transceiver with miniature USB connector
- One USB high-speed host transceiver, with standard USB host connector
- ATA5 controller with one 44-position dual row 2mm header for small form-factor disk drivers, and one 40 pin ZIF connector for Toshiba HDD
- Onboard accelerometer with sensitivity in three separate axes (X, Y, and Z)
- Two RS-232 interfaces with DB-9 connectors: one is driven by a UART channel internal to the MX31 and supports DCE with optional full modem controls; the other is DTE with optional full modem controls

3 System Requirements

The system requirements are as follows:

- IBM PC or compatible computer with Microsoft Windows 98, Windows ME, Windows 2000, Windows XP, or Windows NT (version 4.0) operating system
- +5VDC, 2.4A power supply with a female (inside positive) power connector (included)

3.1 Block Diagrams

Figure 1, Figure 2, and Figure 3 illustrate the functional modules of the i.MX31 PDK Debug board, CPU board, and Personality board, respectively.

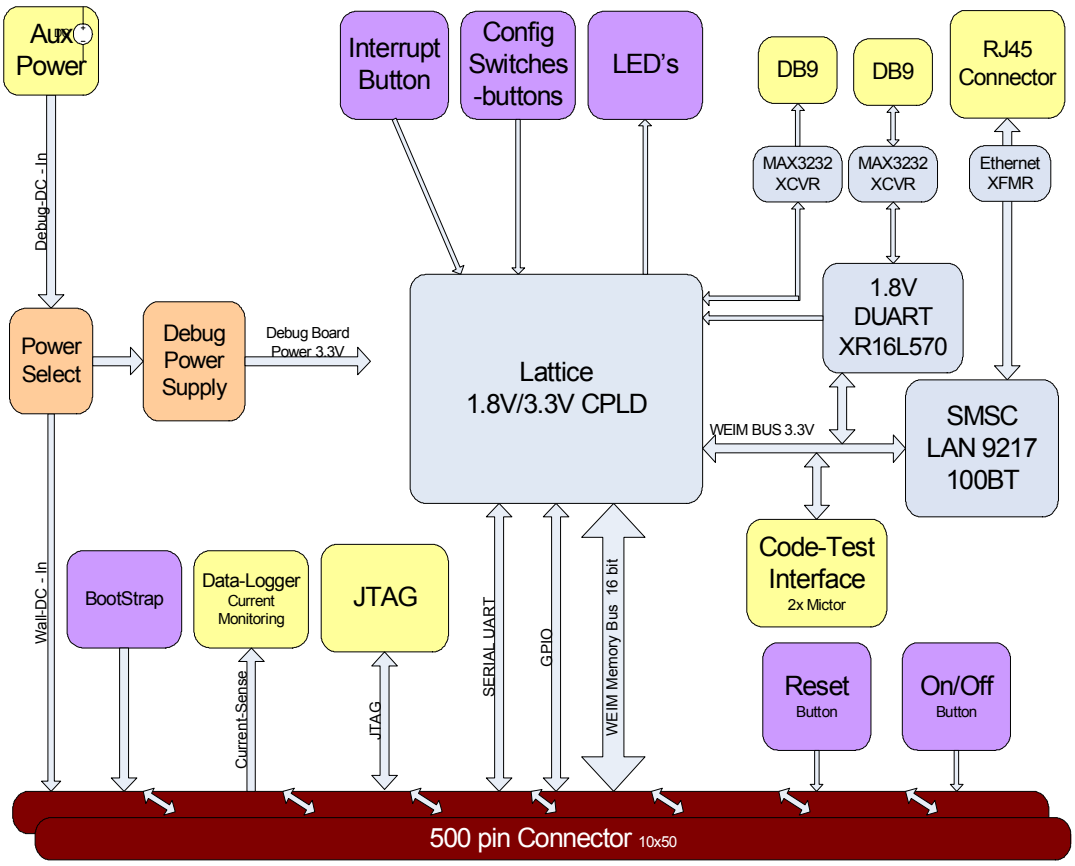


Figure 1 Debug Board Functional Block Diagram

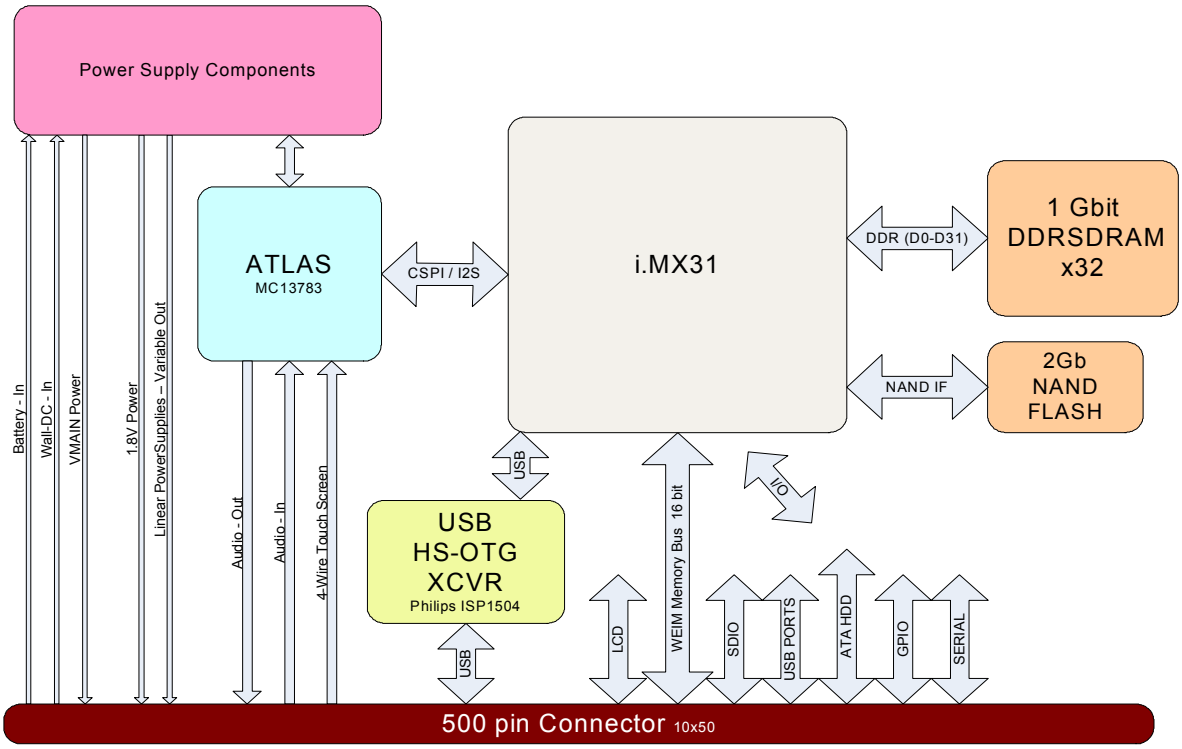


Figure 2 CPU Engine Board Block Diagram

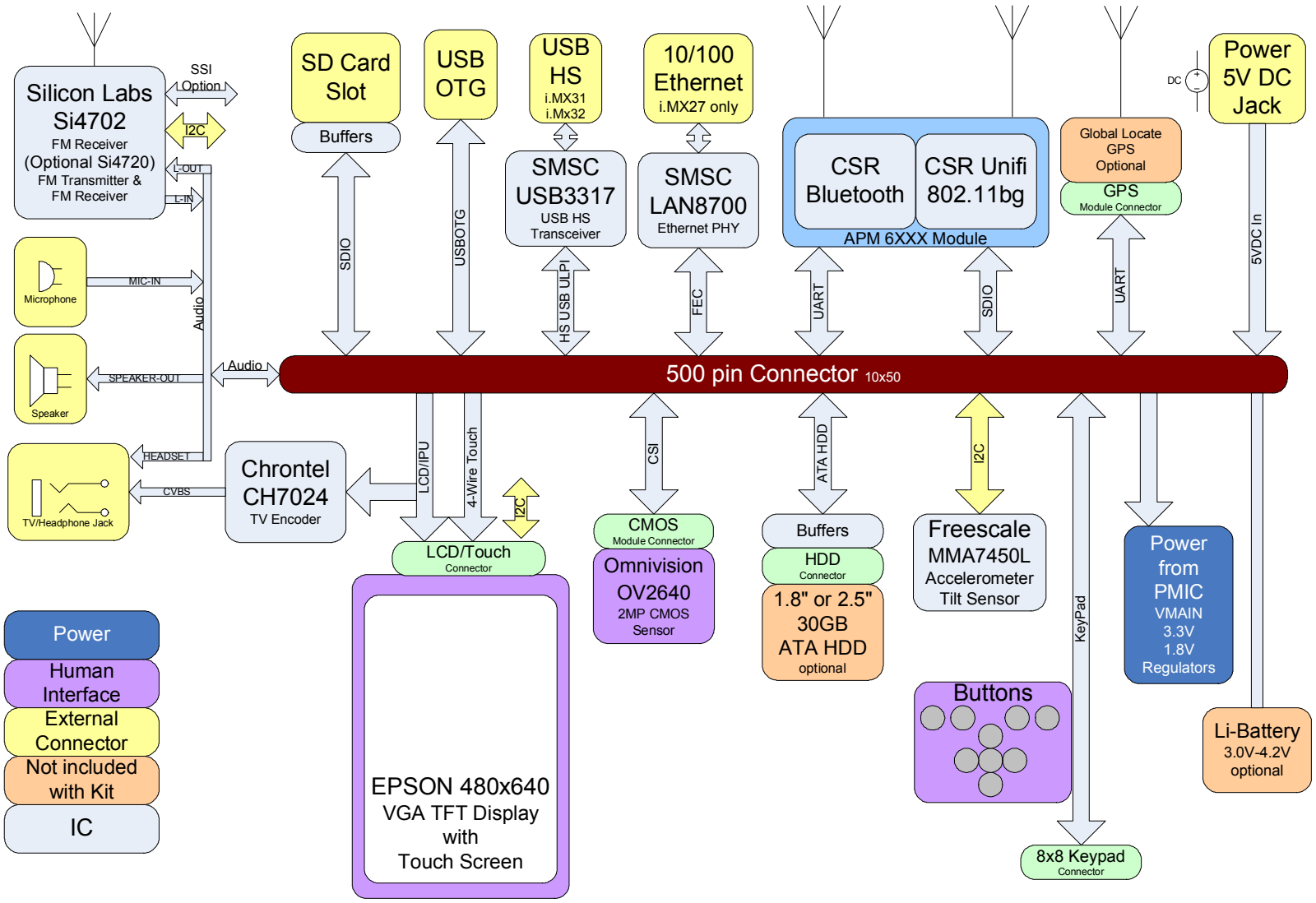


Figure 3 Personality Board Functional Block Diagram

3.2 Physical Connectors

- 10/100 Base-T Ethernet RJ45 connector
- WEIM Data and Address measure connector
- i.MX31 JTAG connector
- Samtec 500 pins board-to- board connector
- UART DB9 male connector and UART DB9 female connector
- 2.0M pixel CMOS sensor connector
- Debug port for Wi-Fi® and Bluetooth™ module
- 40 pin ZIF connector for Toshiba HDD
- Epson VGA LCD connector
- 44-position dual row, 2mm header for HDD
- SD card socket
- Current measure connector
- 2 mini USBOTG connectors, one for HOST connection only
- Giantplus QVGA Smart display connector
- GPS module connector
- Audio and Video connector

4 Product Documentation

The table that follows describes the associated documentation.

	Title	Contents	Document Number
Quick Start Guides			
1	i.MX31 PDK 1.4 Quick Start Guide for Windows CE 5.0/ Windows Embedded CE 6.0	Detailed startup steps, using provided images	926-23574
2	i.MX31 PDK 1.4 Linux Quick Start Guide	Detailed startup steps, using provided images	926-23573
Overview Documentation			
3	i.MX31 PDK 1.4 Product Brief (this document)	PDK benefits and attributes	926-77194
Hardware Documentation			
4	i.MX31 PDK 1.4 Hardware User's Guide	Hardware description and reference	926-77193
5	i.MX31 PDK 1.4 GPS-B User's Guide	Description, connection, and procedures	926-77613
Application Notes			
6	i.MX31 PDK 1.4 Power Measurement Application Note	How to take application power measurements	926-77273
7	i.MX31 PDK 1.4 Enclosure Assembly Application Note	Enclosure kit contents and assembly	926-77673
8	i.MX31 PDK 1.4 Enclosure Kit Field Assembly Application Note	Building a PDK development platform	924-76240
9	i.MX31 PDK 1.4 Windows Revision Changes Application Note	Windows platform revision changes	926-77735
10	i.MX31 PDK 1.4 Linux Revision Changes Application Note	Linux platform revision changes	926-77774
ATK Documentation			
11	i.MX31 Platform PDK 1.4 Advanced ToolKit User's Guide	Installation, setup, operation	926-77203
12	i.MX Platform PDK 1.4 Advanced ToolKit Reference Manual	Driver and software reference	926-77994
13	i.MX Platform PDK 1.4 Advanced ToolKit Release Notes	Release contents, requirements, features, issues	926-77993
Windows CE 5.0 Documentation			
14	i.MX31 PDK 1.4 Windows CE 5.0 Hello World Application Note	Hello World demo and new demo instructions	926-77196
15	i.MX31 PDK 1.4 Windows CE 5.0 Demo Image Readme	Release contents, installation, setup, requirements, features, issues	DOC-01618

	Title	Contents	Document Number
16	i.MX31 PDK 1.4 Windows CE 5.0 Release Notes	Release contents, requirements, features, issues	926-77195
17	i.MX31 PDK 1.4 Windows CE 5.0 User's Guide	Application description and procedures, including ATK download	926-77197
18	i.MX31 PDK 1.4 Windows CE 5.0 Reference Manual	Driver and software reference	926-77198
Windows Embedded CE 6.0 Documentation			
19	i.MX31 PDK 1.4 Windows Embedded CE 6.0 Hello World Application Note	Hello World demo and new demo instructions	926-77199
20	i.MX31 PDK 1.4 Windows Embedded CE 6.0 Demo Image Readme	Release contents, installation, setup, requirements, features, issues	DOC-01617
21	i.MX31 PDK 1.4 Windows Embedded CE 6.0 Release Notes	Release contents, requirements, features, issues	926-77202
22	i.MX31 PDK 1.4 Windows Embedded CE 6.0 User's Guide	Application description and procedures, including ATK download	926-77200
23	i.MX31 PDK 1.4 Windows Embedded CE 6.0 Reference Manual	Driver and software reference	926-77201
Linux Documentation			
24	i.MX31 PDK 1.4 Linux Hello World Application Note	Hello World demo and new demo instructions	926-77204
25	i.MX31 PDK 1.4 Linux Demo Image Readme	Release contents, installation, setup, requirements, features, issues	926-77205
26	i.MX31 PDK 1.4 Linux Standard Package Release Notes	Release contents, requirements, features, issues	926-77206
27	i.MX31 PDK1.4 Linux Standard User's Guide	Application description and procedures, including ATK download	926-77208
28	i.MX Platform PDK 1.4 Linux Reference Manual	Driver and software reference	926-77210

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