RISC-based Embedded Solutions

Intelligent Panel Ready Intel XScale Based Solutions

Welcome ODM design projects for embedded system application product
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Intel XScale Technology

High performance, ultra low power, lower cost, faster time-to-market, ARM V5TE compliant and robust tool chains make Intel XScale technology a compelling choice for applications ranging from smaller multimedia portable devices to high performance I/O or network applications. (from Intel Corporation)
IEI also provides several panel ready Intel® XScale® PXA270 RISC based platforms for a variety of embedded computing and embedded communication target devices.
The IOVU series Open HMI

Main Features

- The IOVU series is an Open HMI design to provide both open architectures for hardware and software.
- High durability, due to rugged, compact, wide-temperature and low power consumption embedded hardware design without failure-prone hard disk and fan.
- Fancy PC-style peripherals including Ethernet ports, serial ports, USB ports, Compact Flash memory, audio, and touch input.
- Open architecture to run your own or third party application software.
- Thin client device application in a remote terminal environment.
- Dual Ethernet ports help system administrators to secure and separate their network segments by field applications as well as communications to back-end legacy systems and central databases.
- Powered by popular open Windows CE. NET embedded hard real-time operating system provides rich Windows-based functions and application software development support.
- IOVU HMI utilities and Remote Management Tools make it easy to manage IOVU HMIs centrally and remotely.

Target Applications of the IOVU series

The IOVU series HMIs are widely adopted in diversified applications which require:

- Display variety with touch
- Fanless and diskless
- High durability in harsh environments
- Flexible installation

- Compact size
- Ultra low power consumption
- Rich functionalities and connectivity
Application Example:
Commercial Graphical Terminals

Data Input ..
Connecting your IOVU to I/O devices like barcode scanner, RFID reader, and touch screen to get data.

Running Your Application Software ..
Running your commercial application software in IOVU HMI. Customers can also develop their own OEM application software with supports from application development supports of Windows CE 5.0, SDK (Software Development Kits) of IOVU, and IIEI utilities for Windows CE devices.

Data Exchange ..
Windows CE 5.0 supports new communication technologies, such as web services, XML, Compact Framework, and SQL Server CE to make it easy to connect to a back-office or a central database.
Open HMI design

- New design concepts for an HMI product emphasize that both open architectures for hardware and software. And any modern HMI product developed based on these design concepts is called an Open HMI product.
- An Open HMI is designed to fill the gap between traditional HMI products and industrial PCs to offer traditional HMI reliability and PC flexibility.
- Open HMIs offer increased functionality and flexibility over traditional HMIs at a lower cost than industrial PCs.
- Open HMIs enable users to configure the product for a particular application by accessing the operating system and scaling it to meet their needs.
- IMS Research forecasts open HMI hardware will be the fastest growing HMI hardware product.
- The IEI IOVU series HMIs are developed based on the Open HMI design concepts.

Thin Client Technology

Thin client technology enables IOVU HMIs to access Microsoft Windows-based applications, such as word processors, spreadsheets, accounting programs, or SCADA (Supervisory Control and Data Acquisition) applications, from web browser or Microsoft RDP (Remote Desktop Protocol) over Internet/Intranet without having to install these applications on every IOVU HMI.

The applications actually live and run on Microsoft Terminal Services servers, not on IOVU HMIs. Applications are installed on Microsoft Terminal Services servers and all application processing is performed on the Terminal Services server.

And only the screen, keyboard, and mouse information are passed to the IOVU HMIs, as if you were remotely controlling Windows sessions on the Microsoft Terminal Services server.
Application Example:
Thick Client Open HMIs for Industrial Automation

Machine Operators

PLC
OPC Server

Distributed Monitoring

Thin Client in office

Web-based terminal

Internet/Intranet

SCADA Server
Terminal Server
IEI offers a Custom Design and Build service using existing designs, such as IOVU series open HMIs and KAMIO series embedded SBC boards, to create cost effective OEM/ODM products. IEI also offers software configuration and integration services for Intel XScale PXA270 RISC-based hardware running Windows CE embedded OS.
The KAMIO series Embedded SBC

Target Applications of the KAMIO series

- Ruggedized Industrial Handheld Devices
- Telematics
- POS/KIOSK
- Embedded Medical Devices
- Gaming Machine
- Internet Appliances
- Intelligent PDAs.
- Thin Clients
- Intelligent STBs
- Video Processing
- Digital signage
- Instrumentation
- Industrial Automations
- Human Machine Interface (HMI)

Product Design
- modularization

Design Validation
- ICP experience involved

Product Validation
- ICP in-house lab + Customer experience

Pilot Run Production
- quick prototyping/flexible pilot run

Product Service
- in charge by account manager + technical support team
Application Development Support

All our XScale based solutions are powered by Windows CE 5.0, and provide SDK (Software Development Kits) to support application programming in Microsoft eMbedded Visual C++R, Microsoft Visual Studio® .NET, and Microsoft .NET Compact Framework.

And related utilities and management tools are released to our XScale based target devices for ease of device diagnostics, software update, configuring devices, and managing devices remotely.

<table>
<thead>
<tr>
<th></th>
<th>IOVU-1000</th>
<th>KAMIO-2701</th>
<th>IPXA270-DK01</th>
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<tbody>
<tr>
<td>OS</td>
<td>Windows CE 5.0</td>
<td></td>
<td></td>
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<tr>
<td>OS Services</td>
<td>FTP server, web server, telnet service, VNC server, DOS prompt</td>
<td></td>
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<tr>
<td>User Applications</td>
<td>IE, Pocket Office (Word, Excel, Power Point viewer)</td>
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<tr>
<td>SDK</td>
<td>Support programming in Microsoft Embedded Visual C++ and Microsoft Visual Studio .NET,.NET Compact Framework, Active Template Library (ATL), C Libraries and Run-times, Component Services (COM and DCOM), Microsoft Foundation Classes (MFC), Standard Win32 SDK for CE, WinSocket 2.0, Windows Networking API, File system and data store registry settings</td>
<td></td>
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</tr>
<tr>
<td>CE Utilities</td>
<td>Watch Dog Timer API, Touch calibration, soft keyboard, Registry settings saving utility, Self-diagnostic tools, Software update utilities, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSP</td>
<td>N/A</td>
<td>N/A</td>
<td>Windows CE 5.0</td>
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<tr>
<td>RMT</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
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Specifications

**System**
- Intel XScale PXA270 520MHz processor
- 2 MB boot flash
- 128 MB SDRAM
- 128 MB Compact Flash
  (38 MB reserved for Windows CE 5.0, 90 MB for user data and programs)
- Battery-backup RTC
- Watch Dog Timer
- Reset button

**Display**
- Type: Color Active Matrix TFT
- Size: 10.4"
- Resolution: 800 x 600, 16 bit color graphics
- Brightness: 230 cd/m²
- Input: 4-wired resistive touch panel

**I/O and Communication**
- Ethernet: 10/100 Mbps x 2
- Serial port: RS-232 x 1, RS-485/422/232 x 1
- USB: Host (Rev. 1.1) x 2
- Audio: Mic-in x 1, Line-out x 1

**Power**
- Power Supply: AC 100-240V power input
- Power Consumption: 15W

**Environmental**
- Operation Temperature: 0 – 50°C
- Humidity: 5%RH to 90%RH (non-condensing)
- Vibration: 5~17Hz, 0.1" double amplitude displacement; 17~640Hz, 1.5G acceleration peak to peak
- Shock: 10G acceleration peak to peak
- Front panel meet IP65 standard

**Color:** Cool Gray (Pantone: 2C)

### Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOVU-1000-R10</td>
<td>10.4&quot; TFT, SVGA, 16-bit color, touch screen open HMI with built-in Windows CE 5.0.</td>
</tr>
<tr>
<td>KAMIO-2701-R10</td>
<td>Intel XScale PXA270 RISC-based Embedded SBC board with 128Mbyte Compact Flash memory card and built-in Windows CE 5.0 OS.</td>
</tr>
<tr>
<td>IPXA270-DK01-R10</td>
<td>Starter Kit for KAMIO series board, including hardware, built-in Windows CE 5.0, and BSP (Board Support Package) for KAMIO.</td>
</tr>
</tbody>
</table>

**Packing List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOVU-1000-R10</td>
<td>1 x IOVU-1000&lt;br&gt;1 x Utility CD including SDK, utilities, and user manuals&lt;br&gt;1 x Power cable&lt;br&gt;1 x Null modem cable&lt;br&gt;1 x Touch pen&lt;br&gt;1 x Screw kit</td>
</tr>
<tr>
<td>KAMIO-2701-R10</td>
<td>1 x KAMIO-2701 SBC board&lt;br&gt;1 x Utility CD including utilities, SDK, and user manuals</td>
</tr>
<tr>
<td>IPXA270-DK01-R10</td>
<td>1 x IPXA270-DK01&lt;br&gt;1 x Utility CD including SDK, utilities, and user manuals&lt;br&gt;1 x BSP CD including BSP for KAMIO and BSP user manuals&lt;br&gt;1 x Power cable&lt;br&gt;1 x Null modem cable&lt;br&gt;1 x Touch pen&lt;br&gt;1 x Screw kit</td>
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