

Visionscape® 4000 Vision Processors

High-Performance Processors for Machine Vision Inspection

Product Summary

Visionscape 4000 vision processor is a high-performance vision system in a single PCI slot, featuring three times the processing speed of previous generations. This platform is ideal for OEMs, system integrators, and end users seeking a powerful, high-speed inspection system that addresses a wide range of applications in the automotive, electronics, packaging, pharmaceutical and semiconductor industries. The key to the board's high performance is RVSI's vision processing acceleration ASIC specifically designed for machine vision.

The ASIC allows Visionscape 4000 to completely off-load the host PC and PCI-bus from all vision-related tasks and enables full-frame image processing/analysis operations to be performed in only a fraction of a frame time. Multiple boards, each dedicated to different or cooperating tasks, can be used inside a single host PC to provide a true multiprocessing configuration. Visionscape 4000 supports a variety of machine vision

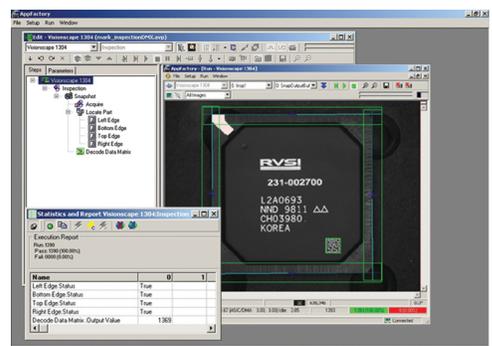
cameras and offers on-board accelerated vision processing, I/O communications, networking, and display. The Visionscape platform is scalable, allowing users to leverage their application development investment when moving from one configuration to another within the product line.

Features and Benefits

- High-performance vision engine off-loads vision tasks from host PC
- ASIC accelerates all vision processing for speed and robustness
- Supports multiple asynchronous inspections per board and multiple boards
- On-board real-time multi-tasking O/S for deterministic response
- Supports a variety of analog and digital cameras
- On-board digital I/O for triggering, strobe control, and other interfacing
- On-board analog outputs for light control
- On-board serial ports
- Built-in networking for seamless integration with factory network/intranets
- Direct SVGA and host PC image display
- Windows® NT/2000/XP support

Applications

- Inspection
- Assembly verification
- Gauging
- Part location
- Alignment/robot guidance
- Automatic identification and verification
 - Data Matrix reading
 - Bar code reading
 - Optical character recognition
 - Optical character verification



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On-board Processing Completely Off-loads Host PC

The vision engine configuration completely off-loads the host CPU and PCI bus from all vision-related operations including image acquisition, vision processing, I/O communications, and display, allowing the host PC to be dedicated to other tasks. The vision board fits inside the host PC to provide a zero footprint solution — a key consideration in OEM applications. Multiple boards, each dedicated to different inspection tasks, can be used inside a single host PC providing a true multiprocessing configuration.

Real-time O/S Ensures Deterministic Operation

The real-time multi-tasking operating system running on the on-board CPU allows fully deterministic response in all vision related operations. This is critical in many industrial control applications and has been difficult to achieve in conventional PC-based vision systems running on a non real-time operating system.

Interchangeable Camera & I/O Interface Modules for Flexibility

The board design is modular with interchangeable plug-in camera and I/O interface daughtercards:

- CAMI/O 300 analog camera interface supporting four RS-170/CCIR cameras
- CAMI/O 400 digital camera interface supporting many digital cameras including high-resolution, line-scan and TDI cameras
- CAMI/O 740 enhanced analog camera interface supporting four independent channels, high- or standard-resolution, progressive or partial scan, asynchronous reset, shuttered, etc.

In contrast to multimedia or scientific frame grabbers, the CAM I/O modules offer a variety of machine vision features such as integrated trigger/strobe support and fast camera switching, which allows images to be acquired from different channels on successive frames. The CAMI/O 300 board supports both synchronous acquisition on all four channels as well as fully asynchronous acquisition with RVSI cameras. The CAM I/O 740 board supports fully asynchronous acquisition on four independent channels with a variety of cameras. The on-board real-time multi-tasking O/S allows a variety of pipeline acquisition/processing modes.

On-board I/O, Communications, & Display

All CAMI/O modules feature extensive on-board I/O capability including four dedicated triggers, four dedicated strobe outputs, sixteen user programmable opto-isolated field I/O points, and eight analog outputs. Two on-board serial communication ports allow direct connection to other equipment and communications under the control of the on-board CPU and real-time multi-tasking O/S. The Visionscape 4000 processor board also features an on-board integrated graphics/video accelerator. This allows separate image display on an optional SVGA monitor directly connected to the vision processor board in addition to the default picture-in-picture image display on host PC Windows® display. Both displays allow full graphics overlay for results or other operator feedback.

Built-in Networking

Most communications between the boards and the host PC are implemented over a patented TCP/IP network connection through the PCI bus. This enables the use of a wide variety of popular network services (such as Telnet, FTP, NFS, HTTP, etc.) for host/target communications and for accessing a board from other PCs in the network. In addition to simplifying application development and deployment, such network connectivity ensures readiness to transparently participate in manufacturing floor networks/intranets and supports innovative remote monitoring/diagnostics options such as through a web browser.

Visionscape® Software

Visionscape software for RVSI's entire series of vision processors encompasses proven solutions for many applications and vertical markets, as well as intuitive point-and-click graphical environments for vision application development and deployment.

Host PC Requirements

Pentium class CPU, one open full length PCI slot, Microsoft Windows® NT 4.0, 2000 or XP operating system.

Specifications subject to change without notice.

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