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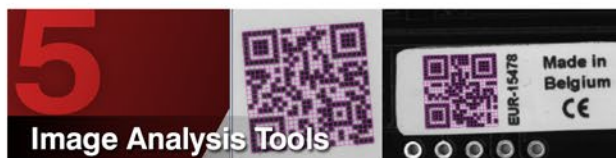
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Advance Technologies; Automate the World

A Global Company

ADLINK, a manufacturer of embedded computing technology, leads the field with integration of x86 computing power, rugged design, high availability, and industrial I/O. Dedicated to test & measurement, industrial automation, defense and aerospace, gaming, communications, medical, and transportation applications, ADLINK has made a name for itself providing reliable products of superior quality for cost-effective solutions, allowing our customers around the world to significantly reduce time-to-market burdens whilst increasing their competitive edge.

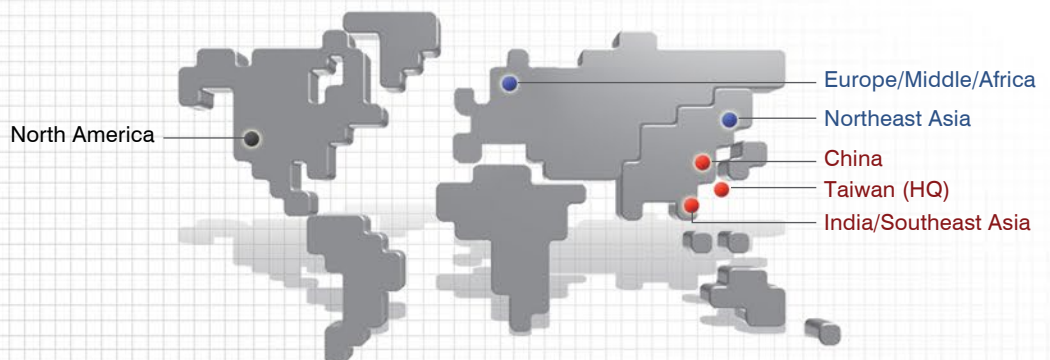
By providing leading-edge application-ready platforms and industrial building blocks, ADLINK empowers our customers, allowing them to minimize TOC (total cost of ownership) with customization and system integration advantages, keeping manufacturing costs low and extending product lifecycles.



ADLINK's advanced testing and manufacturing facilities are ISO 9001, ISO-14001, ISO-13485 and TL9000-certified, ensuring consistency and the highest quality possible in products and services.

Headquartered in Taiwan, ADLINK has operations in America, Singapore, India, China, Japan, Korea, France, and Germany. ADLINK products are currently available in over 40 countries across 5 continents, with worldwide distribution networks and offices and over 1600 employees

No matter where you are, ADLINK is able to support you on a global basis.



Products & Services

In keeping with our firm commitment to an ideal package consisting of both best-value products and effective technical support, ADLINK empowers customers with market-leading computing products backed by professional consulting and OEM services.



Measurement and Automation

ADLINK's measurement and automation product segment (MAPS) is dedicated to providing reliable, top quality products for industrial I/O control, motion control, digital imaging, data acquisition, and modular instrument applications. Our comprehensive portfolio of measurement and automation products, application ready platforms, and easy-to-use software packages, with integrated value-added service, continually meet and exceed customer requirements for industrial automation systems, machine vision systems, and automated test and measurement equipment.

With our customers' requirements in mind, ADLINK continues to develop new PCI Express data acquisition cards and frame grabbers for high bandwidth applications, PXI/PXIe controllers and platforms fitting any profile from entry level to high performance, faster D/IO cards and digitizers with increased resolution, and the industry's most advanced motion controllers.

When you need a measurement and automation solution with long-life, high-performance, and cost-effective products, ADLINK is here for you!

- PXI & Modular Instruments
- Data Acquisition
- GPIB & Bus Expansion
- Machine Vision
- Motion Control
- Distributed I/O
- Intelligent Computing Platforms



Embedded Computing / Module Computing

ADLINK works closely with Intel to ensure that we develop and introduce innovative computing technologies by implementing embedded computing roadmaps and selecting computer solutions that best fit our target markets. This enables ADLINK to provide the highest quality and performance products with the long life cycles required by our embedded and applied computing customers. With the acquisition of Ampro Computers and LiPPERT Embedded Computers, ADLINK also provides a wide range of rugged by design Extreme Rugged™ and industrial product lines including single board computers, COMs and systems. Our range of products includes:

- AdvancedTCA Application Ready Platforms
- 6U/3U CompactPCI Platforms
- Computers-On-Modules
- PC/104 and Small Form Factor Computing Solutions
- Embedded Storage Solutions
- Industrial computers





Advance Technologies; Automate the World

Industrial Mobile Computing

ADLINK's Industrial Mobile Computing Product Sent is committed to offering rugged industrial mobile product solutions, together with mobile operating systems. Applications benefiting from our expertise include logistics management, manufacturing, medical, retail trade, and transportation, especially those requiring use in harsh and demanding environments.

IMPS product lines include:

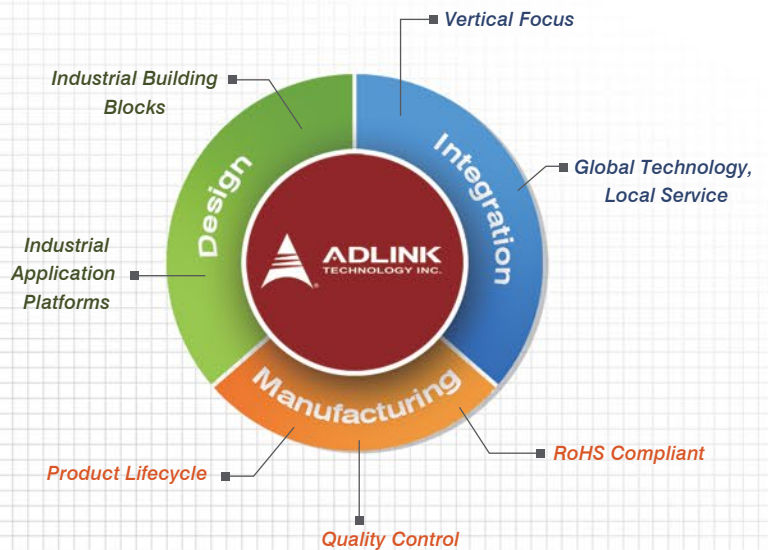
- Handheld Mobile Industrial Devices
- Smart Panels

Design and Manufacturing Services

To fulfill your requirement of high quality, cost-effective products, with quick time to market in product development, ADLINK has established and assembled a Design and Manufacturing Services team to cater to the specific demands that off-the-shelf products could not meet.

From embedded computers, data acquisition cards, and CompactPCI systems to related software packages, our DMS design team has the expertise to rapidly prototype upon the approval of finalized specifications. In addition, the winning of ISO-9001 certification ensures the exactitude of our research and development procedures with the highest product quality.

ADLINK owns and operates the manufacturing facilities in our Asia headquarters. Complete capabilities include our own PCB layout teams, SMT lines, system integration, and test capabilities. In short, ADLINK controls the whole manufacturing process, from layout and design to prototyping and volume production.





Milestones

2011-2012

- Completed acquisition of LiPPERT Embedded Computers GmbH
- Became an AXIe Consortium Strategic Member
- Built PXI Express Family of Products with Industry-Leading Devices for High-Bandwidth Applications
- Introduces ADLINK's new top-of-the-line advanced motion controller, the PCI-8254/8258



2006-2010

- Became a member of Automated Imaging Association
- Opened ADLINK Technology (Europe) GmbH and sales office in South Korea.
- Opened Shanghai Operations Center
- Completed acquisition of Ampro Computers, Inc.
- Formed a PICMG COM Express Subcommittee with major companies in embedded computing.



2001-2005

- Set up European office in Germany and liaison office in India
- Upgraded to Sponsor Member of PXI System Alliance.
- Listed on TAIEX, Taiwan Stock Exchange (previously listed on the OTC market)
- DAQStreaming won the 2004 National Gold Award of Excellence.
- DAQ-2000 Series, USBDAQ-9100-MS, cPCIS-2551 each won the 10th Symbol of Excellence Awards.
- IPO in Taiwan
- Named Mr. Jeff Munch, current chairman of PICMG 3.0 (AdvancedTCA), as Chief Technology Officer (CTO)
- Successfully implemented 6 Sigma system.




1996-2000

- cPCI-2000, 3U CompactPCI system, won the 8th Symbol of Excellence Award.
- Established ADLINK Beijing and ADLINK Singapore subsidiaries, and ADLINK Technology America, Inc.
- Awarded ISO-14001 and ISO-9001 certification at Taiwan headquarters facility.
- Awarded ISO-9002 certification at Taiwan headquarters facility.
- Released the PCI-9112, the first PCI-based data acquisition card in Asia.

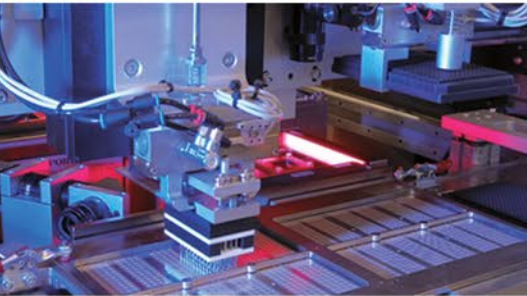
1995

- Founded in Taipei, Taiwan.





Advance Technologies; **Automate the World**



Efficient Management

At ADLINK, we are continuously striving for process improvements. Our goal is to offer our partners the best quality products at the best price to performance ratio, along with the superior service synonymous with the ADLINK name. To further ADLINK's continuous process improvement, we have utilized an enhanced ERP (Enterprise Resource Planning) system to provide direct and immediate online information to the factory and production management. This system has fine-tuned our delivery processes, from manufacturing to the final shipping stage.

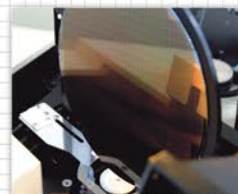
Product Life

At ADLINK, we understand the importance of long product life cycles in the embedded market. Every effort is made to select component manufacturers with predictable component life cycles. We work closely with our key component suppliers to obtain early notifications for end-of-life decisions and we require product life statements for critical components.

Repair and Maintenance

ADLINK insists that product returns/repairs are a fast and convenient experience for our partners, irrespective of time of purchase. All RMAs are processed with top priority.

Our Worldwide Field Application Teams provide responses within 24 hours to Technical Support and customers can view their product repair status through online RMA tracking.



Customer Service

Training

As a company involved in the high-tech industry, training is one of the most important factors for success. ADLINK conducts seminars and training courses regularly on related knowledge and domain expertise in order to assist and elevate the business performance of our partners. Such training sessions are necessary to provide basic technical competence and are vital in successful project implementations when using ADLINK products.

eNewsletter

One of our customer service initiatives is the introduction of ADLINK eNews to our partners—a monthly email newsletter introducing industry trends, technology information, product introduction and updates, and company status, etc. We feel that the sharing of information and open communication are key in fostering a closer business relationship with our partners.

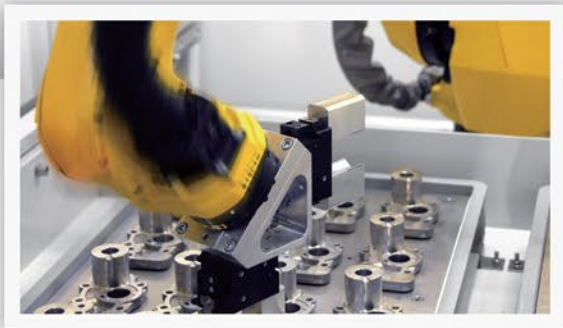
Online Services

Our e-services provide the assistance customers need wherever they are. The services are made available 24 hours daily from Internet, including:



1300 906 911
micromaxtechnology.com
info@micromaxtechnology.com





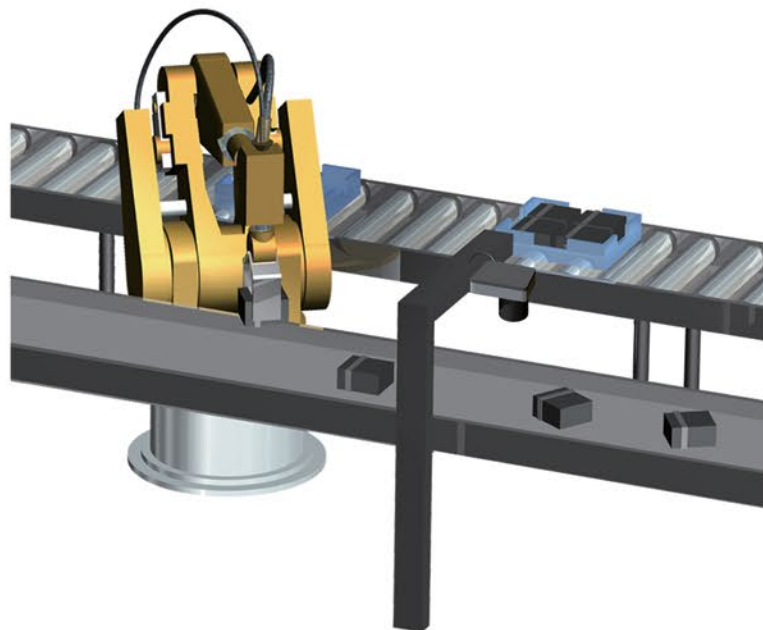
Vision Guidance Robotics

➤ Application

Pick and Place

Robotics have been implemented in factory automation for applications such as assembly and pick/place operations, boosting accuracy, productivity and cost-effectiveness. Without vision guidance, however, considerable teaching time and tooling expense are required to guarantee correct, accurate, and speedy function, but the system can also lack the flexibility to meet a full range of production demands.

High resolution and frame rates delivered by vision guidance systems provide enhanced accuracy and speed. Robotics integrating image processing such as pattern matching can acquire necessary object position and orientation. ADLINK's NEON-1040 x86 smart camera provides high performance imaging capability, global shutter sensor, frame rates up to 60 fps and up to 4 MP resolution with Intel® quad-core Atom processor.



➤ ADLINK's Solution

NEON-1040 Intel® Atom™ Quad-Core Processor E3845 1.9 GHz-Based Smart Camera with 4MP, 60fps, Global Shutter Sensor

page 1-3

ADLINK's new generation x86 NEON-1040 features 4MP 60fps global shutter sensor and the Intel® Atom™ quad core 1.9 GHz processor, with minimal footprint and rugged IP67-rated construction. The quad core CPU increases computing power and FPGA coprocessors and GPU deliver advanced image processing, both beyond the capabilities of conventional smart cameras. Rich software support and API compatibility enable easy migration from original x86 platforms, eliminating software and development language burdens across the platform, reducing time to market.

Advantages & Features

- 4MP/60 fps
- 1.9 GHz quad-core Intel Atom processor E3845
- x86 open architecture platform
- FPGA imaging coprocessor
- Small form factor
- GenTL supports easy integration with various machine vision applications
- IP67-rated housing

Customer Benefits

- High performance imaging efficiency
- Easy deployment
- Easy development
- Reduced total cost of ownership

Sample Applications



Automotive Electronic



Pharmaceutical Inspection

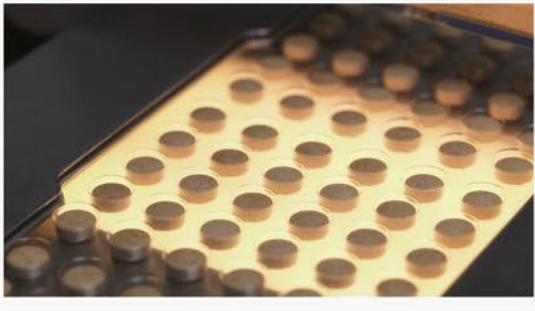


Food Inspection



CNC Machine

➤ Digital Machine Vision Solutions

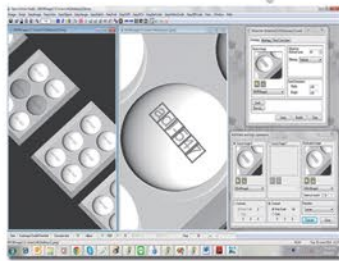


High Speed Pharmaceutical Inspection

➤ Application

Pharmaceutical Manufacturer

Pharmaceutical inspection, including inspection for visual defects, package labels, pattern matching or scanning barcodes on a high-speed folding machine or product line, demands high resolution captures with powerful processing to manage large image data. Global shutter sensors deployed in a fast moving product line provide clear and stable images for image. To manage the variety of inspection methods used, a flexible and programmable inspection platform is ideally suited to pharmaceutical applications.



➤ ADLINK's Solution

NEON-1040: Intel® Atom™ Quad-Core Processor E3845 1.9 GHz-based smart camera with 4MP, 60fps, global shutter sensor

page 1-3

The NEON-1040 features a 4 MP 60 fps, 1-inch global shutter sensor, ideal for precise high-speed moving object inspection, ideal for verification of pill or tablet quality, blister pack contents, and label information and/or bar codes. With IP67-rated housing and M12 connectors, the NEON-1040 resists harsh environments, withstanding damage from moisture and contaminants. With powerful quad core computing and FPGA image pre-processing, the NEON-1040 can process multiple complex inspection tasks simultaneously, and its open architecture x86 based application ready platform simplifies programming of customized inspection applications and use of existing x86 software without requiring new coding language expertise.

Advantages & Features

- 4MP/60 fps
- 1.9 GHz quad-core Intel Atom processor E3845
- x86 open architecture platform
- FPGA imaging coprocessor
- GenTL support easy to integrate with various machine vision software
- Small form factor
- IP67 rated housing

Customer Benefits

- High performance and excellent imaging efficiency
- Easy to deploy
- Easy to development
- Reduced total cost of ownership

Sample Applications



Automotive



Produce



Robot Guidance



Machine Tooling



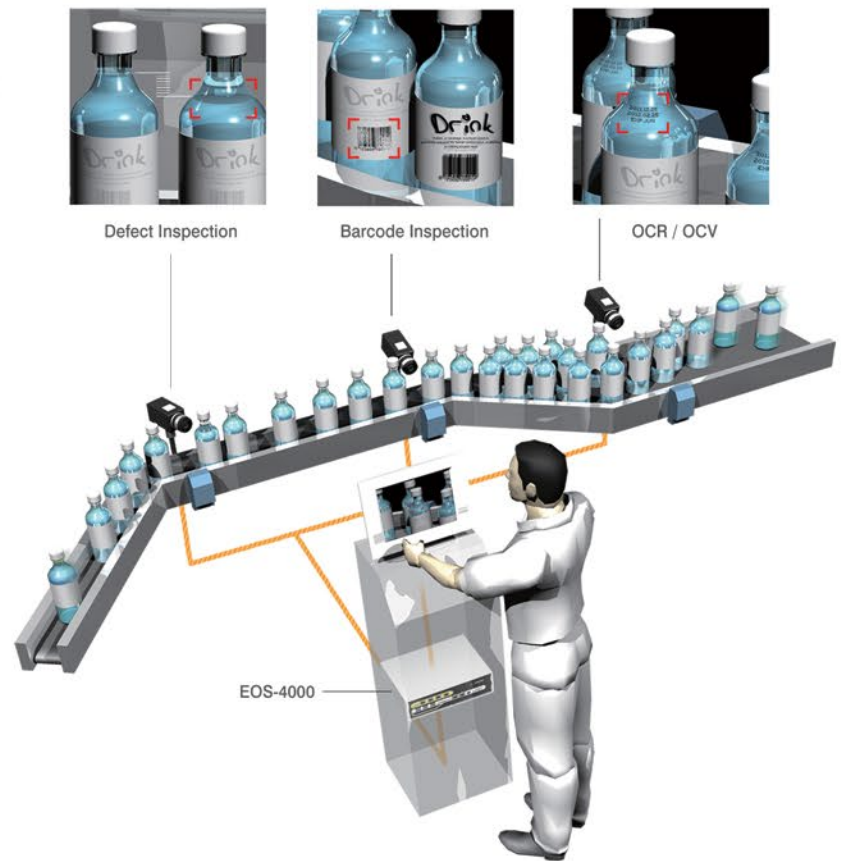
➤ Digital Machine Vision Solutions

Food and Beverage Inspection

➤ Application

Barcode, OCV/OCR and Defect Inspection

Success in the food and beverage industry relies on productivity and quality, and machine vision plays an increasingly important role in increasing productivity and quality assurance. Manufacturing processes utilizing machine vision technology such as 2D code readers, label inspection, OCV (optical character verification), and pattern matching are significantly advantageous, improving production yield and automatic identification and resolution of manufacturing problems on the line. Simultaneous multi-camera execution of these tasks delivers a cost-effective solution, reducing total cost of ownership. As environments grow, effective production and quality control management benefit considerably from ready-to-deploy systems providing quick and worry-free inspection access to all areas, and efficient synchronization of the multi-camera array.



➤ ADLINK's Solution

EOS-4000: Powerful 2-CH Camera Link (PoCL) Embedded Vision System with 3rd Generation Intel® Core™ i5/i7 Processor

page 2-3

The EOS-4000 is a high performance, Camera Link embedded vision system, streaming raw image data over dedicated point-to-point link topology, with no network latency or protocol overhead, and implementing direct memory access (DMA) solutions and rearranging data for efficiency. Transmission of image data from cameras to the system memory is executed without utilizing any CPU resources, and the EOS-4000 supports 64-bit memory addressing, encoder input, and RAID technology (dual SATA interface), benefiting vision applications with large address space, such as defect inspection and line scan.

The EOS-4000 additionally offers 64 optocoupler isolated digital I/Os, and supports software configurable digital filter function (0.25 μ s-131 ms) securing recognition of input signals carrying noise or chatter, ideally suiting demanding industrial environments.

Advantages & Features

- Compact and rugged system
- Embedded 3rd generation Intel® Core™ i5/i7 Quad Core processors
- 2-CH PoCL, base Camera Link® configuration
- Dual storage capability (two SATA interfaces and CFast slot)

Customer Benefits

- Ready to deploy
- Reduced total cost of ownership

Sample Applications



Fruit Inspection



Beverage Inspection



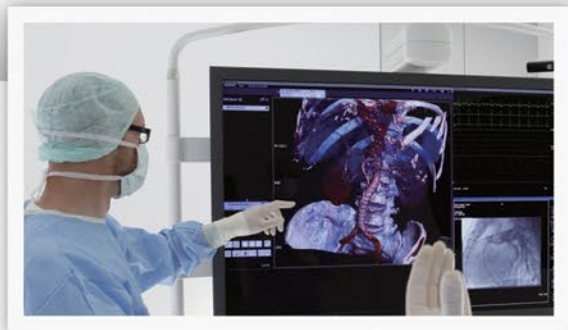
Pharmaceutical Glass Inspection



Food Inspection

➤ Digital Machine Vision Solution

Full HD Medical Imaging



➤ Application

Digital OR

In contemporary operating room environments, medical practitioners require highly accurate video images with low latency during surgical procedures, such as X-ray, ultrasound, and endoscopy. Since the critical video data may be provided in different formats such as DVI, CVBS, and RGB, quick and efficient normalization of the various formats is essential. Digital OR systems are thus not only called upon to integrate the varied video inputs and displays but also record the collected data for future reference. ADLINK's highly integrated HDV62A is fully compatible with multiple video formats in a single unit for fast, efficient reception and archiving, making it a key component in a simple yet effective digital OR system.



➤ ADLINK's Solution

PCIe-HDV62A: 1-CH PCI Express® HDMI Video & Audio Capture Card

page 3-9

ADLINK's PCIe-HDV62A is a PCI Express x4 integrated video frame grabber which supports not only DVI/HDMI but also analog CVBS, S-video, RGB and YPbPr video signals, and delivers raw, 1080P 60fps 10-bit video streaming.

PCIe x4 means the PCIe-HDV62A not only supports up to 1080P FHD @ 60fps but also YUV 4:4:4 color format, delivering high precision lossless data generating accurate color imaging for critical applications.

Advantages & Features

- Up to 1920x1080P, 60 fps, Raw video stream
- Supports Microsoft DirectX SDK
- Supports digital and comprehensive analog video image input

Customer Benefits

The system can integrate many kinds of video input with a single HDV62A unit, which can reduce the total cost of ownership and maintenance.

Sample Applications



MRI



Ultrasound



X-Ray Imaging



Laparoscopy



➤ Digital Machine Vision Solutions

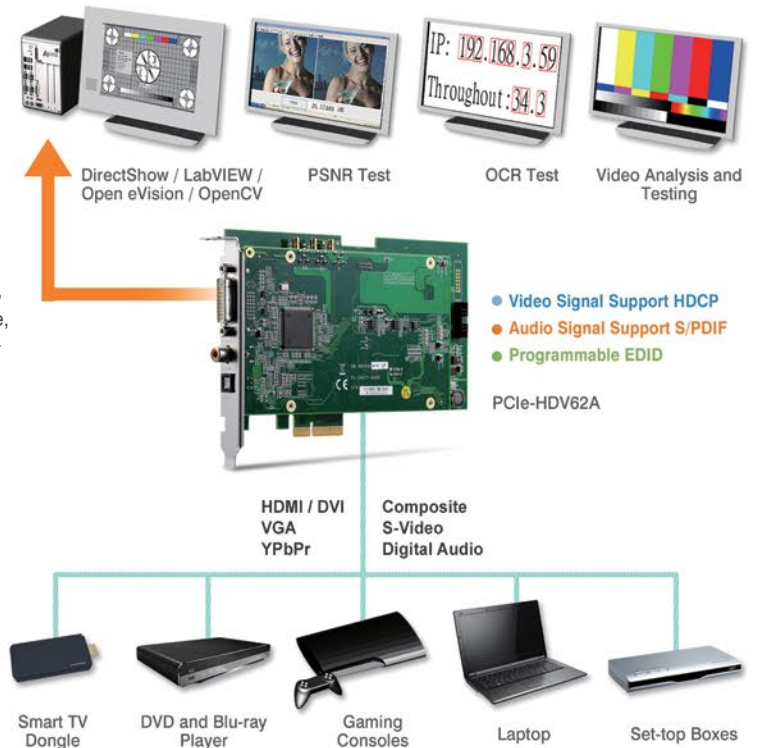
Video QA Testing in Smart Devices

➤ Application

Multimedia Product Markets

Multimedia products must satisfy a full range of testing procedures, including input interface, display resolution, and color space adjustment. The application of automatic testing equipment allows manufacturers to adapt to vast and ever-changing markets with more economical, efficient and accurate testing environments.

The complexity of video and audio testing means that manual testing can lead to inconsistent results due to subjectivity, operator fatigue, and attention deficit, not to mention environments requiring detection too sensitive for the naked eye, like EDID and HDCP. Automating testing of multimedia devices can lower labor costs and reduce testing errors while enhancing efficiency and yield. The ADLINK PCIe-HDV62A features uncompressed 1920x1080p image support, and up to 60 fps streaming data capture, integrated multi-source digital audio data capture, HDMI, D-Sub, YPbPr, CVBS, SVideo, SPDIF, and AV terminal enriched all-in-one input interface, aligned for automatic multimedia testing. Connecting the PCIe-HDV62A to multimedia devices allows the user to utilize algorithms such as Pattern Match, PSNR (peak signal to noise ratio), OCR (optical character recognition) and FFT (fast Fourier Transform) to analyze acquired video and audio data, as well as modify EDID content of the PCIe-HDV62A to ensure the compatibility across multiple platforms, enhancing automation and accuracy.



➤ ADLINK's Solution

PCIe-HDV62A: 1-CH PCI Express® HDMI Video & Audio Capture Card

page 3-9

ADLINK's PCIe-HDV62A enables single-card acquisition of full analog/digital video and digital audio signals. Featuring uncompressed full HD up to 1080p at 60 fps and 10-bit high-resolution ADC and HDCP support, the PCIe-HDV62A reduces TCO for applications requiring simultaneous capture from both video and audio sources, such as multimedia device testing.

Advantages & Features

- Up to 1920 x 1080p, 60 fps, uncompressed image streaming
- Support for comprehensive analog and HDMI/DVI video input
- Support for HDMI and SPDIF audio input
- Support for HDCP (High-Bandwidth Digital Content Protection)
- Support for Microsoft® DirectX SDK

Customer Benefits

The ADLINK PCIe-HDV62A provides a single card capture solution enabling acquisition of raw images and audio sources for analysis and measurement, significantly reducing costs of product line inspection.

Sample Applications



Blu-ray Disc Players



Set-top Boxes



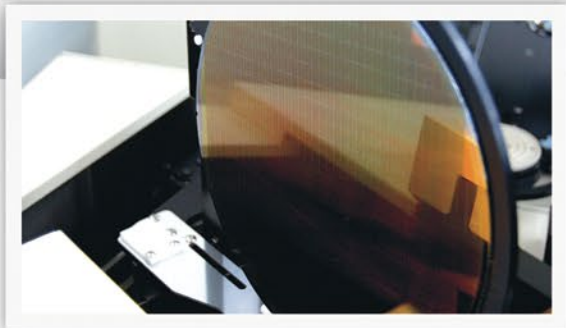
Projectors



Gaming Consoles

➤ Machine Automation Applications

Distributed Real-Time Motion & I/O Control System for Machine Automation

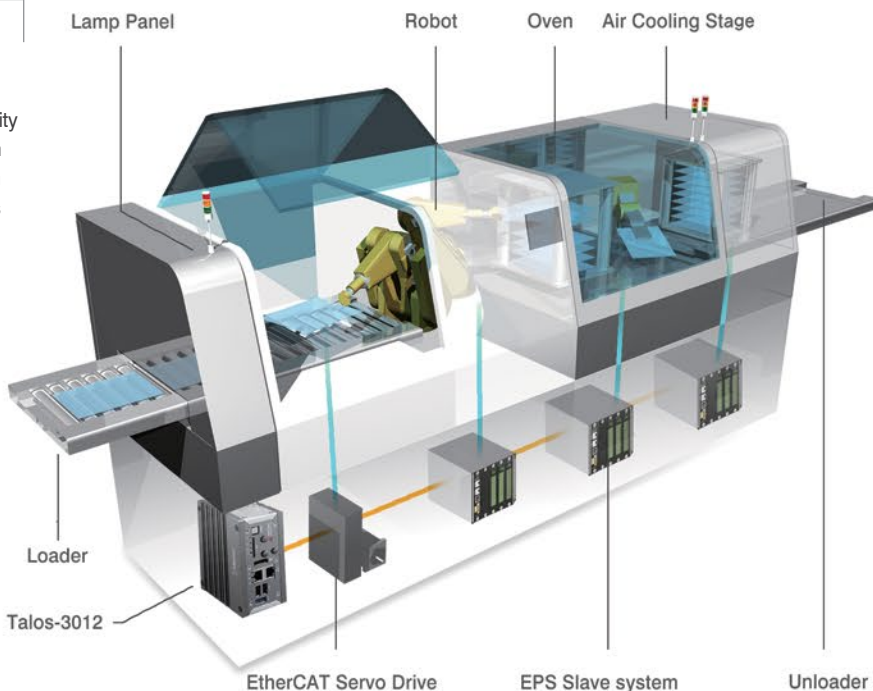


➤ Application

Semiconductor/LCD Equipment

Facing the growth of the LCD production industry, LCD equipment manufacturers need to enhance product functionality to meet increasing process requirements for applications such as a light on tester, laser cutter, cleaner, and macro inspection system. The comprehensive distributed motion & I/O solutions provide the real-time and reliable capabilities for integration in data acquisition and motion control applications.

Dedicated clean ovens are commonly used in sheet-feed processes in LCD production lines to dry LCD glass after cleaning for color-filter burning and to bake after application of resist. For these processes, precise loading and unloading of LCD products plays a vital role.



➤ ADLINK's Solution

EtherCAT Master and Slaves Solution

Chapter 7

High-speed deterministic response time of conveyor sensor signals is required for precise control conveyor control. ADLINK offers a completed EtherCAT solution that the Talos EtherCAT master controller is not only controlling the time-deterministic EPS EtherCAT slaves to control common digital I/O devices, the analog I/O for measurement usage but also connecting the EtherCAT type Servos directly. The ADLINK Softmotion was embedded in Talos controller benefitting user to operate the complicate motion functions by simple and intuited function blocks.

Advantages & Features

- Ease to configuration & operation
- Various & high-density channels slaves modules
- IEC-61131-3compliant
- Up to 64 axes synchronous control
- Intelligent slave design for self-diagnostic & protection on EPS series
- Hot swappable design on EPS series

Customer Benefits

ADLINK offers ease-to-use software tools to install the entire system quickly. The user is able to do programming the application easily with IEC-61131-3 syntaxes, furthermore to shorten the MTTR (mean time to repair) by hot-swap feature of EPS slave system. Time-deterministic synchronous control ability to provide the high control performance for variant automation applications.

Sample Applications



Semiconductor Manufacturing Equipment



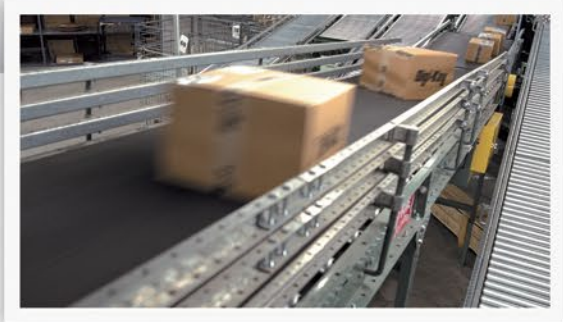
Injection Molding Equipment



Printing Equipment



Electric Discharge Equipment



➤ Factory Automation Applications

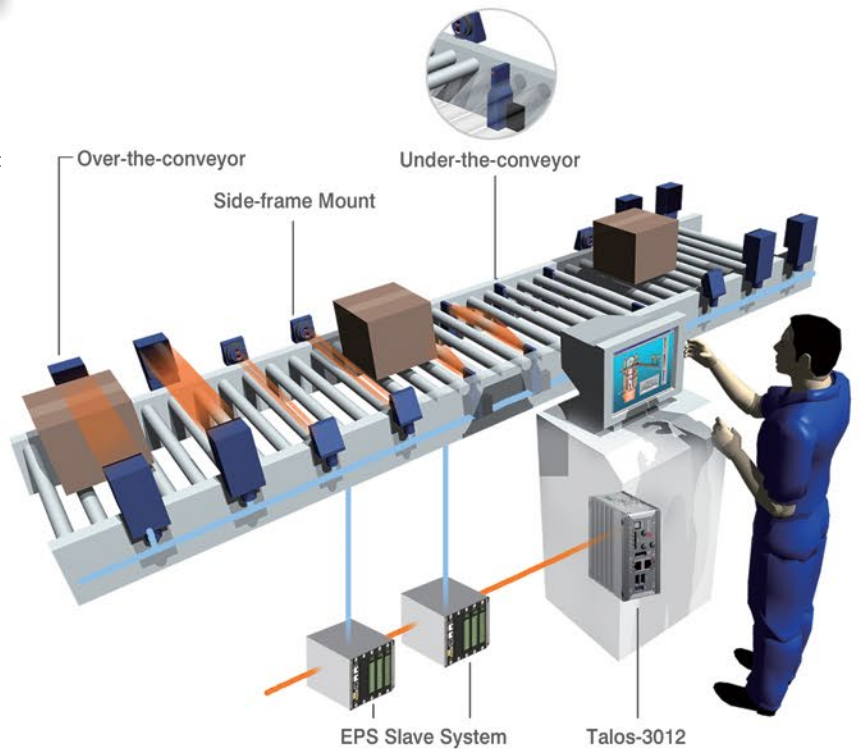
Distributed Real-Time Motion & I/O Control System for Factory Automation

➤ Application

Logistics/Conveyor System

Traditional logistics systems use a PLC to process a large amount of acquired data, which is then stored in a PC. However, as IT technology has progressed, more and more logistics system integrators have used a PC-based central controller to build the whole system.

Distributed control is needed in this kind of logistic & conveyor system to support huge axes and I/O points simultaneously. Unlike conventional field buses technology, EtherCAT protocol provides high synchronous motion & I/O control. ADLINK EtherCAT solution offers more than 32 axes and many thousand I/O points control within a few ms.



➤ ADLINK's Solution

EtherCAT Master and Slaves Solution

Chapter 7

There are various types of sensors used in the conveyors of logistics systems. No matter which sensor is used, ADLINK's EtherCAT distributed motion & I/O control solutions can meet the requirements of the entire system. The dedicated motion and I/O control can be extended over many hundred meters for users who require longer distance.

Advantages & Features

- IEC-61131-3 compliant for familiar programming
- Intelligent slave design for self-diagnostic & protection on EPS series
- Hot swappable design to shorten the maintenance time
- Numerous of I/O points
- Deterministic Motion & I/O Control

Customer Benefits

ADLINK offers ease-to-use software tools to install the entire system quickly. The user is able to do programming the application easily with IEC-61131-3 syntaxes, furthermore to shorten the MTTR (mean time to repair) by hot-swap feature of EPS slave system. Time-deterministic synchronous control ability to provide the high control performance for variant automation applications.

Sample Applications



Store Management Systems



Intelligent Building Management



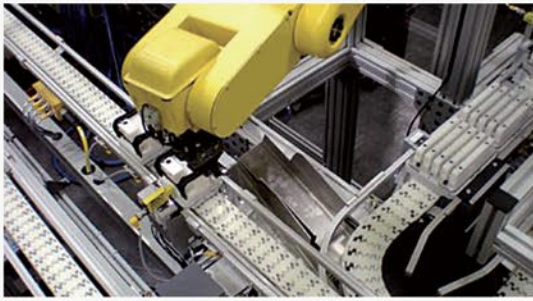
Intelligent Transportation Systems



Good Conveyor Management

➤ Machine Automation Applications

Gantry Automation

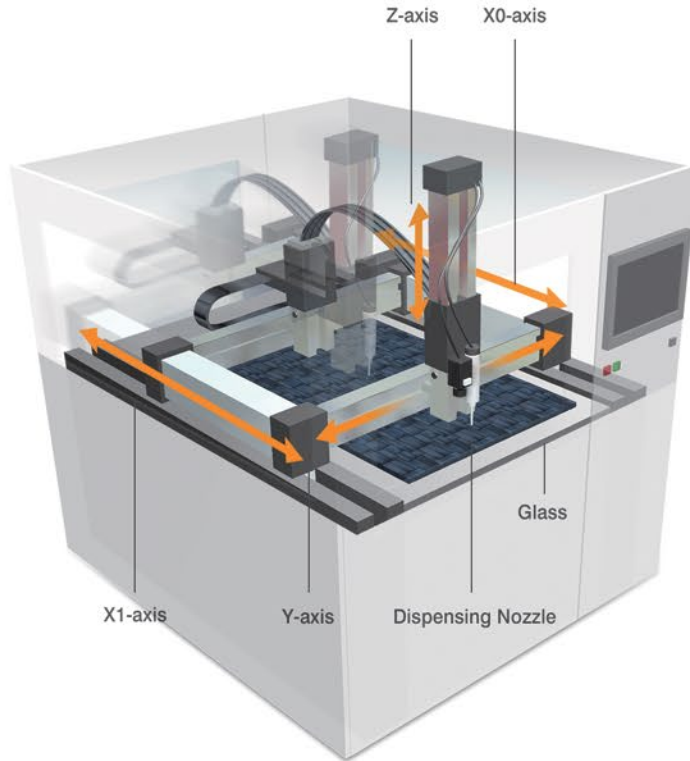


➤ Application

TFT/LCD Dispensing Machine

The explosion of the TFT/LCD industry has led to a dramatic increase in the demand for parallel moving patterns on gantry machines. A gantry stage typically carries multiple line scan CCD sensors, and, in some applications, also carries heavy glass for transportation.

For this application, system designers need motion controllers to achieve parallel movement patterns with linear motors or servo motors. ADLINK's DSP-based analog motion controller can realize gantry control with closed-loop and error handling between X0 and X1. X0 and X1 can also perform interpolated moves with Y dynamic gantry error compensation.



➤ ADLINK's Solution

PCI-8254/8258: DSP-based 4/8-axis Advanced Motion Controllers

page 6-11

The PCI-8254/8258 provides synchronous motion control function, suitable for gantry application. The PCI-8254/8258 also supports comprehensive safety functions to prevent gantry mechanism crash. When the PCI-8254/8258 detects any deviation between two parallel axes (gantry axes), motion is halted and the servo turned off to avoid damage to mechanism and motors

Advantages & Features

- The softmotion DSP provides the best real-time and closed-loop control performance
- Feed-forward control in the PCI-8254/8258 increases capabilities
- Real-time synchronous motion control capability

Customer Benefits

- Ready-to-use solution for gantry automation
- Reduction of integration cost
- Softmotion DSP provides fast-response control

Sample Applications



Water Jet Equipment



TFT/LCD Laser Cutting



Large-size & Multiple Camera AOI for TFTs/LCDs



Gantry Milling Machine



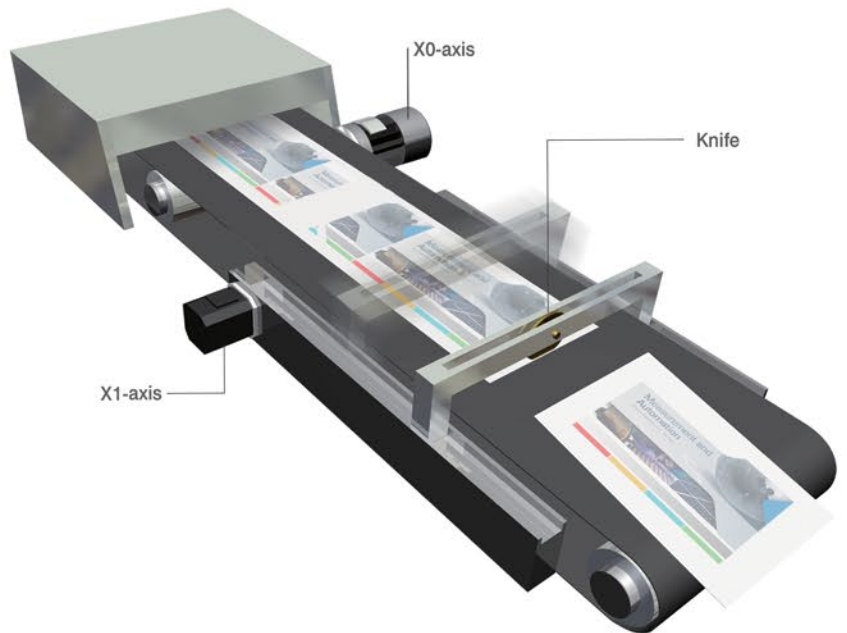
Flying Shear

➤ Application

Printing

Flying shear is typically used to cut a specific length from media moving through a high speed continuous and feed system. The procedure is often implemented in textile, printing, medical and food packaging applications. Flying shear can effectively cut material on the fly without stopping, vastly improving throughput over conventional means in which material must be immobilized for cutting.

In principle, the flying shear comprises a carriage supporting the cutting tool (shear) which must be accelerated to match the speed of the media, typically on a conveyor, before the cut occurs. Solutions to this type of application can include electronic cam or other precision functions to synchronize the shear action with the motion of the conveyor in the required location. When the cut is complete, the shear rapidly decelerates and reverts to the starting position to initiate the subsequent cutting cycle.



➤ ADLINK's Solution

PCI-8254/8258: DSP-based 4/8-axis Advanced Motion Controllers

page 6-11

To ensure the precision of each workpiece during flying shear operation, ADLINK's PCI-8254/8258 offers multi-axis synchronization and program download functions to provide real-time cycle control levels within 1 mS. As well, the PCI-8254/8258 supports high performance PID closed-loop control to instantaneously compensate any errors by both carriage and conveyor. Program downloads feature exact real-time control grade and conserve host CPU resources, while simultaneously providing not only programming capability, but also motion and I/O control and Boolean function.

Advantages & Features

- PID-FF control of superior servo update rate, as high as 50 μ s per axis
- Motion synchronization implemented by dedicated Master-Slave motion functions
- Program download functions support Boolean, motion, and I/O control within 1ms cycle to guarantee real-time control

Customer Benefits

- Ready-to-use functions to shorten development times
- Program download to local DSP to conserve host CPU resources and ensure real-time control performance

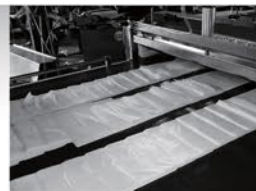
Sample Applications



Steel



Printing



Food Package



Textile

➤ Machine Automation Applications

Laser Cutting and Engraving Application



➤ Application

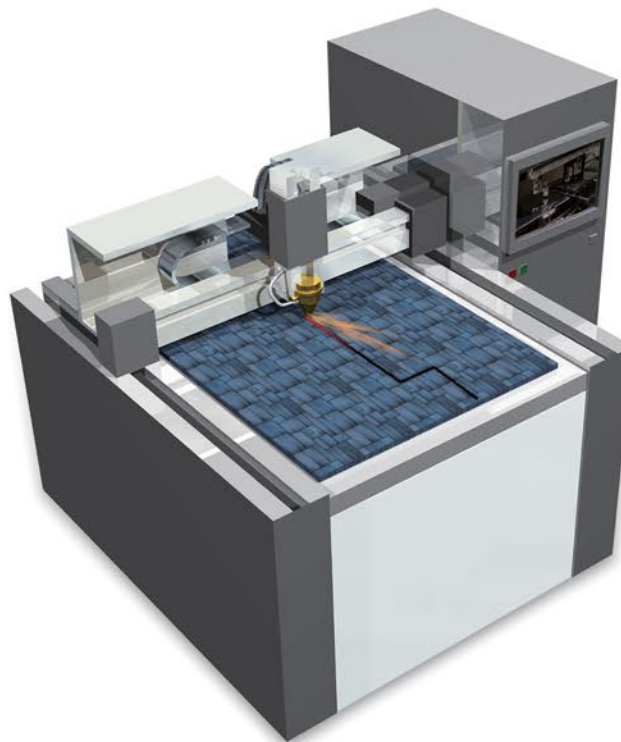
Laser Cutting Machine

Laser cutting and engraving techniques use a laser to process materials which are commonly used for industrial manufacturing applications, such as cutting plastic, metal, coated metal, stone, and glass. The laser engraving process leaves a clean edge for a high-quality surface finish. Industrial laser cutters are used to cut flat sheet-like materials as well as structural and piping materials.

Laser cutting and engraving equipment compose of a laser generator, a controller, and a work piece (surface). Normally, the laser beam has a focused spot of 0.2 mm diameter at the cutting surface and is emitted from the laser generator which allows the controller to trace patterns onto the surface. The controller masters the direction, the intensity, the speed of movement, and the spread of the laser beam aimed at the surface. The surface is picked to match what the laser can act on.

Compared with mechanical surface finishing processes, laser cutting offers advantages over mechanical cutting processes, including being easier to work with, reducing contamination of work-piece, and a cleaner surface finish.

To complete CNC processes, laser cutting and engraving processes are applied to make the molding, work the surface, cut the material, drill PCB holes, and cut electrodes. The laser cutting takes direct input in the form of electronic data from a CAD drawing to produce flat form parts of great complexity. By using laser technology, accuracy and precision can be easily reached.



➤ ADLINK's Solution

PCI-8254/8258: DSP-based 4/8-axis Advanced Motion Controllers

page 6-11

One challenge equipment manufacturers face is how to control the intensity of the laser with synchronous positioning and speed movements. To improve the smooth path of a uniform laser process, the ADLINK PCI-8254/8258 utilizes a look-up table to ensure accurate variability of intensity and speed of movement. In addition, the PCI-8254/8258 provides both PWM and analog signals to control the intensity of the laser precisely by separately changing the frequency or period of PWM signals. The PCI-8254/8258 also features a point-table function to simultaneously perform a particular path and control on-board I/O based on the electronic data. Through DSP technology integration, the PCI-8254/8258 further provides velocity planning, trajectory smoothing, and automatic point-feeding to perform 2D laser-table (X-Y table) movement precisely and smoothly.

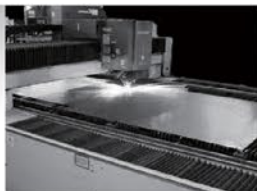
Advantages & Features

- On-line PID tuning to offer excellent closed-loop control capability with 50 μ s servo update rate
- Both hardware-based PWM and analog modes support various laser generators with 0.5% resolution
- Velocity planning and trajectory smoothing functions optimize separated line movement performance

Customer Benefits

- Ready-to-use solution for laser cutting and engraving applications
- Easily upgrade equipment performance which uses a DSP-based closed-loop controller instead of an opened-loop controller.
- Available to process more various materials such as polymers, multi-layer plastics, etc.

Sample Applications



CNC Laser Cutting Machine



TFT/LCD Laser Cutting

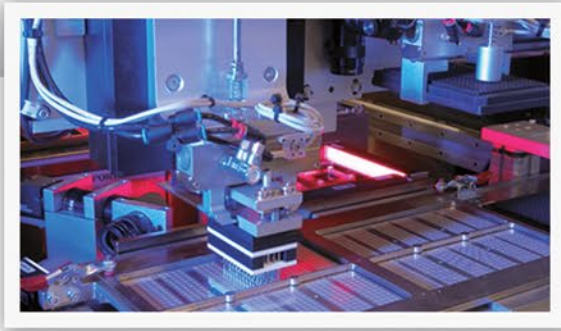


Laser Engraving Machine



Glass Laser Cutting Machine

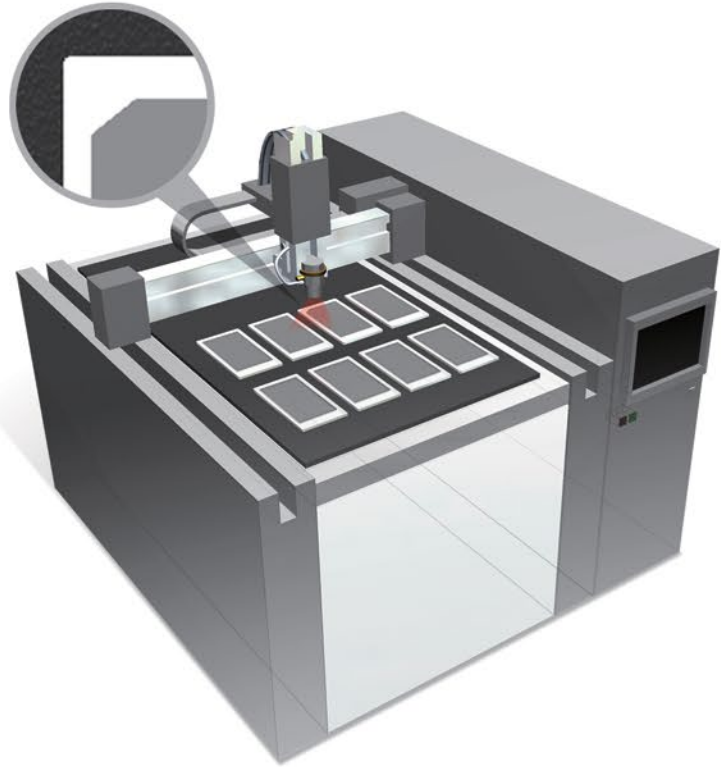
2D Position Comparison and Trigger



➤ Application

Smart Phone/Tablet AOI Machine

Automated optical inspection (AOI) systems are implemented in motion controller and vision platforms. It is often employed in large scale inspection of components such as panels, PCBs, and others. In automated inspection of smart phones or tablets, however, external appearance is a major priority, calling for a vision system with maximum magnification capabilities. Even so, increased magnification lowers FOV (field of view), requiring the vision system to capture multiple images continuously over the entire exterior of the device. In operation, the motion controller performs not only contouring motions but also position comparisons and triggering along the trajectory, referred to as 2D position comparison and triggering. Unlike 1D position comparison and triggering, X and Y axes are both continually compared, demanding increased precision of trajectory.



➤ ADLINK's Solution

AMP-204C/208C DSP-Based 4/8-Axis Advanced Pulse-Train Motion Controllers

page 6-13

One challenge in this application is to maintain precision through contouring motions while simultaneously comparing a requisite position. ADLINK's DSP based motion controller, the AMP-204C/208C provides velocity planning and automatic point-feeding to perform precise high speed contouring motion. The AMP-204C/208C also supports high speed 2D position comparison and triggering up to 1MHz. Further, while in some systems, relocation to a specific point for comparison may not be supported, the AMP-204C/208C allows pre-setting of tolerance to perform the desired comparison even if the system doesn't relocate to the specific desired point.

Advantages & Features

- Velocity planning optimizes movement performance
- High speed 2D position comparison and triggering up to 1MHz
- Synchronous motion control on multiple axes

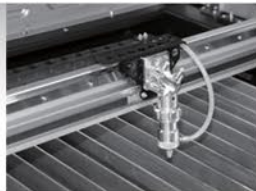
Customer Benefits

- Ready-to-use solution for contouring motion and position comparison
- High speed control capability improves productivity
- Softmotion DSP provides versatile functionality

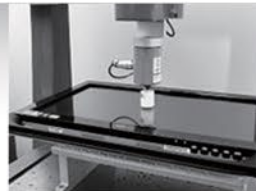
Sample Applications



Smartphone AOI Machine



Laster Engraving



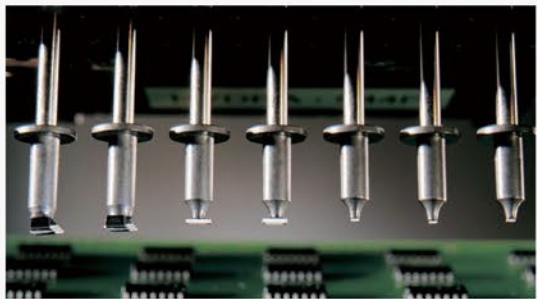
Touch pannel Inspection



LCD AOI Machine

Machine Automation Applications

Positioning and Synchronizing



Application

Compact Camera Module Dispenser

Most smart phones, tablets, and notebooks carry a compact camera module (CCM). From component stage to completion considerable assembly is required, among which focus and dispensing are final processes. In focus process, focal length of the CCM is adjusted to a specific value. Motion controllers can be used to rotate the focusing ring and torque sensor to provide necessary detection of focus status. Subsequently, the final process is dispensing. For this type of microminiaturized device, automated dispensing requires precise positioning and synchronization capability of a motion controller. ADLINK provides an integrated solution with its PCI-9112 and PCI-8154/8158, to guarantee success in these operations.



ADLINK's Solution

PCI-8154/8158 Advanced 4/8-Axis Servo & Stepper Motion Controllers with Modular Design

page 6-15

ADLINK provide total solutions, with not only DAQ cards (PCI-9112) to acquire torque sensor data, but also motion cards (PCI-8154/8158) to control the entire system. The PCI-8154/8158 advanced pulse train motion controllers can generate high frequency pulses to drive stepper or servo motors up to 6.55MHz. A 4/8 axes controller, it provides simultaneous motion, such that all axes in waiting synchronous mode will start at the same time.

Advantages & Features

- High frequency pulse output up to 6.55MHz
- Simultaneous start/stop motion on multiple axes
- 28-bit up/down counter for encoder feedback

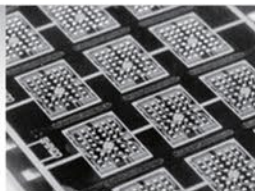
Customer Benefits

- Total integrated solution provided by ADLINK
- Ready-to-use utility MotionCreatorPro reduces development time

Sample Applications



Die Bonder



BGA Packaging



LED Dispenser



Die/LED Sorter