Enabling your
Connected Enterprise
production system with

ASEM 6300

industrial PCs and monitors

Rockwell Automation

Introduction

The need for Windows® based industrial personal computers continues to expand in industries around the world.

The market research firm Omdia estimates the global market for industrial PCs will show a **Compound Annual Growth Rate (CAGR) of just over 8%** in both revenues and unit volumes from 2020 to 2025. It is widely acknowledged that industrial PCs reduce costly downtime that often results when office-grade PCs are deployed in industrial applications.

PCs are highly standardized and industrial PCs are no exception. You can access Microsoft Windows® industrial PCs from a wide variety of vendors and have options on which products you standardize on. You can change your industrial PC standard as the market evolves with minimal redesign and reprogramming. If one industrial PC fails, you can replace it with a unit from another vendor provided it meets the requirements for environmental specs, agency certifications, compute power, connectivity and physical size. That might give you the impression that industrial PCs from different vendors are just commodities; that they are essentially the same. However, the Allen-Bradley® ASEM™ 6300 portfolio of industrial PCs, monitors and thin clients **offers a unique value proposition based on its modular construction, available options and remote management functionality,** helping enable your Connected Enterprise® production system.

Industrial PC hardware construction

By its nature the ecosystem for industrial PC hardware, or PC hardware, encourages commodification.

There are only a few vendors of central processing units (CPUs) and most industrial PCs run Microsoft Windows operating system. Subsystems are standardized, like network interface controllers (NICs) that run Ethernet ports and solid-state hard drives. There are also standards for interface boards, like Peripheral Component Interconnect Express (PCIe) that enable users to configure systems in the field.

The ASEM 6300 portfolio offers the latest in industrial PC technologies in compact yet flexible configurations making Rockwell Automation a leading provider. These products are designed in-house helping ensure:

- The highest standards of quality can be maintained

- Solutions that minimize downtime and maximize productivity

- The longevity to help ensure availability of products throughout your project timeline, and beyond

ASEM 6300 modularity

ASEM 6300 products feature a two-part modular construction, which allows for independent updating and various configurations.

- The **front half** contains the display and touch screen.

- The **back half** houses the CPU, memory, storage and expansion slots.

ASEM 6300 products offer these modular packaging concepts allowing for rapid innovation and greater value to industrial PC customers.

- **ASEM 6300P panel PCs** - back half and the front half merged at the point of manufacture

- **ASEM 6300M industrial monitors** - panel-mounted front half with display and touchscreen

- **ASEM 6300B box PCs** - back half components that can be placed in an enclosure and connected to an industrial monitor

- **ASEM 6300T box thin clients** – offer subminiature packaging with a volume of less than half a liter

ASEM 6300 Modular Construction

ASEM 6300B   ASEM 6300P   ASEM 6300M

Back Half: Processor   Combined: Panel PC   Front Half: Display and Touch Screen

ASEM 6300P Panel PCs

ASEM 6300M Industrial Monitors
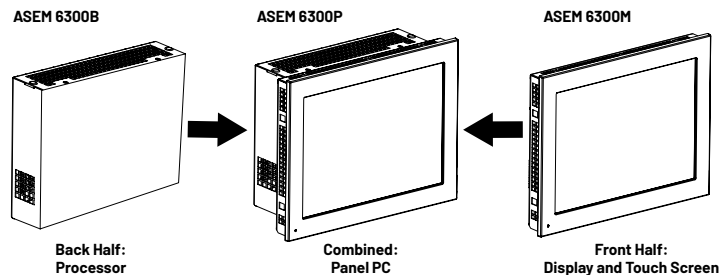
ASEM 6300B Intel Core i Class Wall Mount Box PC

ASEM 6300B Intel Core i Class Book Mount Box PC

ASEM 6300T Intel Atom Class Book Mount Box PC and Thin Client

Front half options

Touch screens

ASEM 6300 industrial PCs are available with two touch screen technologies that both have broad acceptance in industry:

- **Analog resistive –** Optimal for cost-conscious customers, as they are relatively inexpensive, and for those in the food and beverage or life science industries, because their polymer faces do not tend to emit glass shards even when damaged

- **Projected capacitive (PCAP) –** A good choice for customers looking for intuitive multitouch operation, which includes swipe and pinch gestures that can be used on a smart phone, in addition to chemically strengthened glass faces

Displays

The displays in ASEM 6300M monitors and ASEM 6300P panel PCs are LCDs, which offer exceptional clarity and low power consumption. Options range from:

- Standard aspect ratio (4:3) with a 1024x768 resolution

- Widescreen aspect ratio (16:9) with Full High Definition (FHD) 1920x1080 resolution

- Screen sizes from a compact 10.1" diagonal monitor to a 24" diagonal widescreen panel PC

Ingress protection

ASEM 6300M monitors and ASEM 6300P panel PCs are built to survive in harsh industrial environments. They come in a wide array of bezel types, which is the frame around the outside of the touch screen display. Bezels generally determine the level of ingress protection (IP) the unit is rated for.

IP65 units:

- Offer basic moisture protection

- Include USB ports with rubber covers that allow field users to access the port without opening the enclosure (model dependent)

- Feature Low Profile aluminum, standard aluminum, and aluminum and glass bezels with PCAP screens that deliver a rich, multitouch user experience and give your machine a modern, contemporary appearance

IP66K units:

- Withstand direct, high-pressure washdown

- Contain no harboring points for harmful bacteria

- Have hygienic stainless-steel options that are resistant to high pressure

IP69K units

- Offer the functions of IP66K units, and withstand high temperature caustic detergents

- Feature field-replaceable food-grade gaskets

Cutouts

Rockwell Automation helps protect your investment with the ASEM 6300 product line by standardizing on a fixed set of panel cutouts over several generations of products so you can change over time without the need to redesign your control panel or cut new holes.

Back half options

When it comes to the back half of an industrial PC, there are several common options, like processors, storage, RAM memory, expansion slots and available communication ports.

ASEM 6300B box PCs and ASEM 6300P panel PCs are available in a full range of configurations.

- Processor choices range from cost-effective Intel Atom-class CPUs up to high-powered i7 processors.

- Storage options include one, two or three solid-state drives each with a capacity of up to 1 TB or no drive at all for thin client applications.

- Units offer one or more serial ports and one or more USB ports in addition to Ethernet.

- Some versions can also be expanded by using PCIe slots that accommodate industry-standard modules such as graphics adapters or communication port expanders.

- Most of the units have no cooling fan, but fans are available where thermal characteristics call for them.

- Industrial PCs can come with the Windows operating system installed, or you can purchase them without an operating system.

RAID

There are also less common options available that you might find applicable to your applications, including redundant arrays of independent disks (RAID), which increase the fault-tolerance and decrease the likelihood of data loss.

TPM

Trusted Platform Module (TPM) is also available. An industry standard defined by the Trusted Computing Group, TPMs contain unique encryption keys to keep hackers out. They allow more robust implementation of BitLocker drive encryption that helps protect your data and confirms that your industrial PC has not been tampered with while it was offline.

There are two ways to implement TPM:

- **Discrete** - A separate "discrete" TPM circuit board with the necessary components that could be embedded in industrial PC systems

- **Integrated** - The more contemporary integrated Platform Trust Technology (PTT) from Intel, which has TPM circuitry integrated into their x86 processor chip sets. PTT drives down physical size, cost and heat generation

ASEM 6300 box and panel PCs offer integrated PTT.

Remote Video Link

Another optional feature offered by ASEM 6300 products is called remote video link (RVL). RVL allows you to display video on an RVL-enabled monitor up to 100 meters away from the RVL-enabled industrial PC. RVL is based on HDBaseT technology and can represent a significant cost savings for facilities where operator stations and control enclosures are widely spaced. Cables are available that are tested at the system level for compatibility and reliability.

No moving parts

In industrial PCs, moving parts and cable connections are points of failure. Cooling fans wear out if their bearings fail, which can cause high temperatures and total system failure in some cases. Cables and connectors can tarnish over time due to atmospheric conditions or shake loose due to shock and vibration.

ASEM 6300 products are designed to survive in harsh environments without the need for cooling fans in most configurations. Risks associated with cables and connectors are also reduced since as many components as possible are soldered down tight to a single circuit board. That increases system uptime and your plant's productivity.

Industrial PCs as embedded modules

You can also couple an industrial PC with your real-time control system for local high-speed computations or as gateways to the cloud. When you place the ControlLogix® compute module in the same chassis as your ControlLogix controllers, you can exchange information with them at backplane speeds.

The module offers an embedded Windows 10 or Linux operating system that can run custom applications and access controller data through an application programming interface (API). End Users and OEMs are turning to this powerful combination to closely couple PC compute power with real-time control and turn data from their machines into valuable information right on the plant floor.

Other System Functions

Wake on LAN
ASEM 6300 products also offer unique capabilities for edge computing. Wake on LAN functionality enables you to keep the system in a sleep state until you need it, then send it a command over Ethernet to boot it remotely. That can extend the life of your systems, simplify system maintenance and save energy for greater sustainability.

Jumbo frame
Jumbo frame compatibility allows you to optimize forwarding of data to local servers or storage area networks (SANs). Jumbo frames increase the "payload" of each network packet by a factor of six, reducing communication overhead and increasing the performance of the entire network.

Certifications

Certifications, such as UL/cUL CE and KCC give you confidence that products have been tested successfully by third parties for compliance with local and regional regulations. Some regional vendors of industrial PCs subject their products to that testing, but only for the geographies where they choose to operate. That can cause problems if you want to deploy those products in another region or if you must standardize industrial PCs for deployment across multiple countries or regions.

ASEM 6300 products are certified across many countries and regions. **Check with your account manager, your authorized distributor or on the product label to confirm that the products you need carry the necessary certifications.**

Managing installed industrial PC systems

ASEM 6300 industrial PCs have several important features that make them easier to manage – on-site or remotely.

If you run PCs in your facilities but have not made the switch to industrial PCs, consider that the true cost of a PC system extends beyond the purchase price of the system itself to include the cost of downtime. We have already seen how ASEM 6300 products are engineered for reliability in harsh industrial environments, but the story does not end there. In the event of a hardware problem, they are also easier to repair or replace.

If a PC in your production system has issues or fails, your operations are at risk. You may not be able to operate your process or bring it to a controlled stop and you may lose critical process data forever. Replacing the PC, reloading the applications, migrating the process data collected previously, then putting the new system in service can take hours or even days.

- **Preboot execution environment (PXE) capability** allows ASEM 6300 products to start up using executables or entire operating systems served by other computers on the network.

- **Compatibility with ThinManager® software** is useful when using PXE to boot the industrial PC as a thin client with nothing stored locally. When combined, it enables you to administer applications and security from centralized servers. Some benefits include:

  - Quickly replacing failed hardware since the software, configuration and data are restored from the ThinManager server to the local PC

  - Deploying redundant configurations – client, server or both — for greater fault tolerance and system resilience

  - Avoid triggering some regulatory requirements since nothing is stored locally, like revalidation in life sciences applications

- **Integration with the FactoryTalk® Remote Access™ solution** enabling VPN connectivity to remote machines

  - The FactoryTalk® Remote Access™ Runtime application for Windows can be installed on an ASEM 6300 industrial PC at the remote site to establish a secure connection to the industrial PC allowing access to troubleshoot and configure as necessary.

  - It enables you to use the remote industrial PC as a gateway and access other Rockwell Automation devices such as controllers and drives for monitoring and management purposes.

  - The Stratix® 4300 Remote Access™ Router hardware can be used at sites without industrial PCs and gives you the same access to as many as four Ethernet networks at the remote location.

The importance of application software

You get more business value out of industrial PC systems when you combine them with application software. In addition to ASEM 6300 industrial PCs and ThinManager software, Rockwell Automation offers an industry-leading suite of software applications. Cloud-based offerings, like Plex Smart Manufacturing Platform™ software and Fiix® Computerized Maintenance Management System™ software, require industrial PCs on plant networks. ASEM 6300 products play an essential role in the total solution no matter what form it takes or how it evolves in the future.

FactoryTalk® Linx software: Included with most FactoryTalk software. Functions as the premier data server to deliver information from Allen Bradley control products to your supervisory systems.

FactoryTalk View Machine Edition (ME) software: A versatile HMI that provides a powerful solution for a machine-level operator interface. It runs on industrial PCs, PanelView™ Plus 7, MobileView™ and ArmorView™ HMI terminals.

FactoryTalk View Site Edition (SE) software: Lets you monitor and control manufacturing at all levels, from a single operator station up to distributed server/client, multi-user applications. It provides an accurate real-time view of operations, while meeting the demands of multiple stakeholders, including engineering, maintenance, operations and IT.

FactoryTalk ViewPoint software: Included with both FactoryTalk View SE and the PanelView Plus, FactoryTalk ViewPoint enables users to view and interact with HMI graphics, trending and alarming applications securely through an HTML5-compatible web browser or on a mobile device.

FactoryTalk Historian SE software: Provides data capture, management and analytical capabilities, including archiving with optimized data store and upgraded system-wide transport security. Its built-in redundancy, simplified calculation engines and totalizers complete the solution.

FactoryTalk® Edge Gateway™ software: Simplifies edge-to-cloud IT/OT convergence by automating collection, contextualization and organization of industrial equipment data at the source.

FactoryTalk® Analytics™ software: A complete spectrum of descriptive to prescriptive analytics solutions for achieving business outcomes such as overall equipment effectiveness (OEE) improvement, downtime reduction, and quality or process improvement.

PlantPAx® Distributed Control System (DCS): A modern DCS built on standard Rockwell Automation control technologies to reduce overhead while delivering improved diagnostics and analytics.

Pavilion8® Model Predictive Control software: Continuously assesses current and predicted operational data, compares them to desired results, and drives new control targets to reduce process variability, operate within equipment constraints and improve performance.

Plex Smart Manufacturing Platform: The only single-instance, multi-tenant software as a service (SaaS) manufacturing platform operating at scale, including advanced manufacturing execution systems, quality and supply chain management capabilities.

ThingWorx® IoT: Leverages OPC and IT-centric communication protocols to provide data access for client applications such as MES, SCADA, IoT and big data analytics.

Fiix Maintenance Management: Cloud-based, AI-powered computerized maintenance management system (CMMS™) which helps companies manage all their maintenance, including thousands of assets, work orders and parts, in one place with just a few clicks.

Why ASEM 6300 products?

The ASEM 6300 portfolio of industrial PCs offer a unique value proposition based on their modular construction, available options and remote management functionality. With the wide variety of available hardware configurations, you can satisfy all your diverse requirements, maximizing the value you receive from your industrial PC investment. By combining them with our control products, application software and Lifecycle Services, you can build a fully integrated solution for your toughest production control challenges.
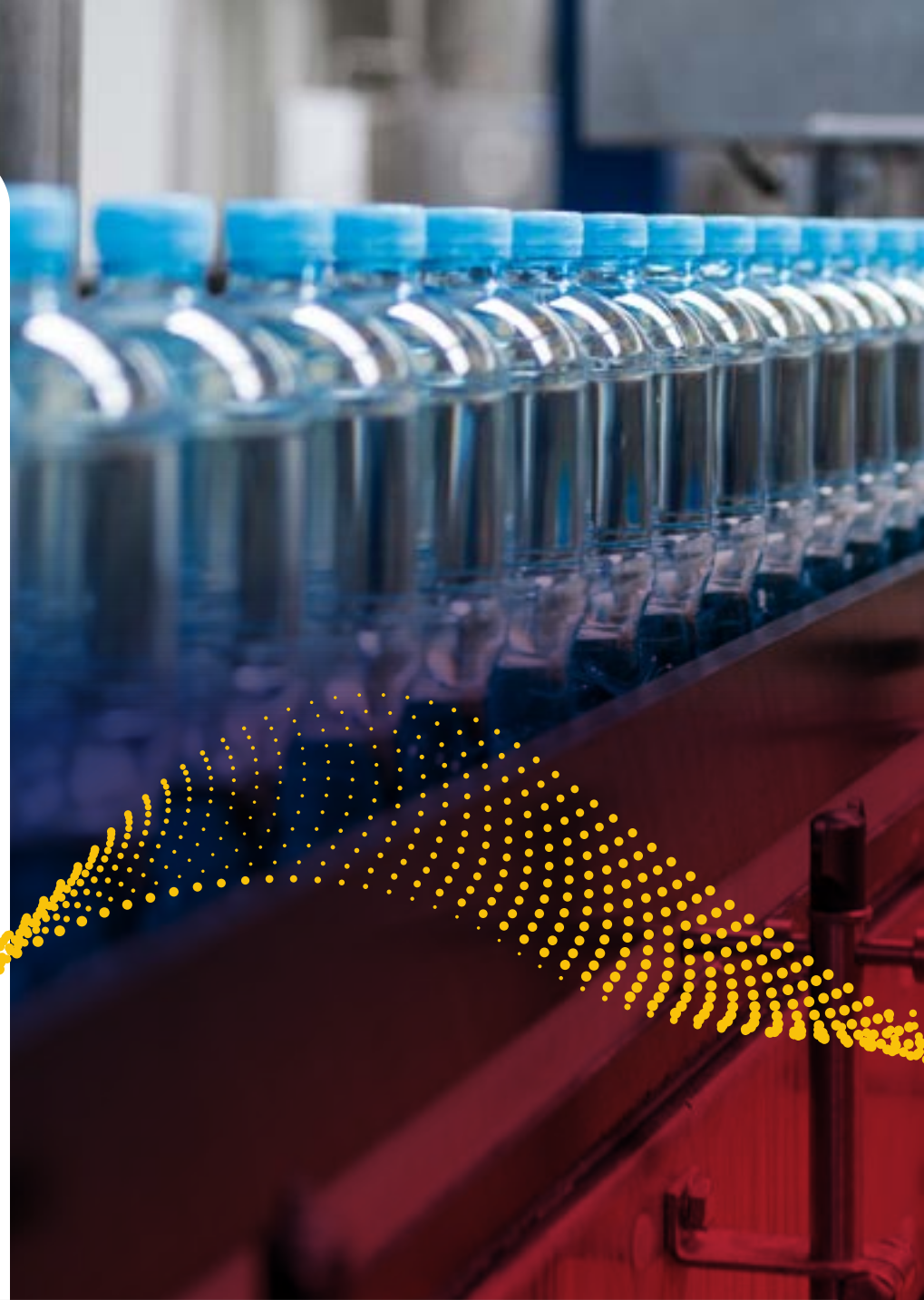
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