Integrated Architecture

Integrated control and information helps improve productivity and achieve plant-wide optimization.
Expanding global populations and a growing middle class drive higher levels of consumer spending that, in turn, increase demands on energy, raw materials and the infrastructure to support it. Manufacturing and industrial operations need to innovate and remain agile to keep pace with the increasing demand and remain competitive.

Smarter technology
A truly connected enterprise has real-time control and information available across platforms and devices within the organization.

Enhanced productivity
New technologies, software and information help to increase productivity and improve overall business performance.

Secure environment
Technology that will help customers mitigate their enterprise risk and monetize their Intellectual Property.

A Connected Enterprise with an Integrated Architecture® offers new opportunities for industrial companies to gain real-time and historical insights. These improve performance, uptime and competitiveness, and uncover new possibilities in the value chain. Achieving a truly connected enterprise that captures data and converts it to useful information is far more complex than simply connecting disparate systems. Companies are challenged by isolated production systems and processes throughout entire value chains, inconsistencies in network protocols, legacy and proprietary communications systems, and shortfalls in security maturity and training, which present even more difficulties. As the manufacturing economy grows, so do concerns about the availability of enough people with the skills to support the growth. Today’s leaner staffs are already stretched, monitoring and responding to changing conditions. The result is that data can be difficult to collect, aggregate and analyze. Data can be trapped inside assets connected to the industrial infrastructure, and more data is being generated by a proliferation of new smart sensors and devices, in addition to being being accessed via mobile devices and applications.

Improved connectivity across the enterprise achieves two core objectives:

- Improves decision making by turning data into real-time, insightful, actionable information
- Increases agility and enables a demand-driven supply chain by integrating and sharing information across IT and Operations Technology (OT) control systems, organization-wide

For more information: www.rockwellautomation.com/go/ia

For more information: www.rockwellautomation.com/go/ia
Plant-wide optimization
Integrate industrial and enterprise environments by leveraging standard EtherCAT™ protocol based on standard Ethernet TCP/IP infrastructure.

Intelligence that delivers operational value
Identify, collect, interpret and share the right data with the right people in the right context to drive improvements and deliver additional value.

Security
Create a trusted and secure automation environment through policy, culture, processes and technology.

Safety that helps improve productivity
Taking a holistic approach to safety helps protect people against risk and improves the operation of machinery and equipment, increases efficiency and productivity and reduces waste.

Automation design productivity
Help maximize productivity – reduce design time and costs and create consistent, modular and reusable designs – to improve time to market.

A trusted partner
Work with the world’s largest company dedicated to industrial automation. We have resources to help you to be more productive and to make the world more sustainable.

A common control engine and development environment
Incorporate best practice system design with control capabilities that span all disciplines: Process, Batch, Discrete, Drives, Safety and Motion.

THE CONNECTED ENTERPRISE

Plant-wide optimization
Cultivate innovation, improve productivity, reduce lifecycle costs and achieve success on a global scale.

The power of collaboration
Connecting employees across functions, empowering them to collaborate and work toward one common goal of better meeting customer demand.

Machine and equipment builder performance
Build better machines at a lower total cost and deliver greater business value to customers.

For more information: www.rockwellautomation.com/go/ia

For more information: www.rockwellautomation.com/go/ia
Smarter technology

THE POWER OF MULTIPLE CONTROL DISCIPLINES IN ONE CONTROL SOLUTION

Harness the power of multiple disciplines with the Integrated Architecture system.

As technology continues to drive innovations, your production enterprise must stay ahead to remain competitive. By converging your production disciplines into an integrated plant-wide architecture, you can benefit from a single, future-proof network technology that helps you address production growth, as well as growth of the wider plant.

By integrating process batch, discrete, drives, safety and motion into one connected and segmented plant-wide infrastructure, you increase efficiency and productivity across all layers of your operations. This eliminates the need for multiple, disparate control systems, replacing them with one common framework that’s easier to install, operate and maintain.

Having real-time access to production data enables you to monitor and improve machine performance. Similarly, gaining insight into energy consumption helps you to predict demand and match it with cost-optimized supply, and to better manage peak usage patterns.

An Integrated Architecture can help you enhance your connected enterprise with:

- Increased productivity with continuous improvements that provide better asset utilization and system performance
- Improved business agility through rapid and cost-effective response to changing markets
- Security risk mitigation to help protect important assets such as people, information and equipment
- Improved time to market through system design efficiencies and rapid asset integration
- Supported sustainability with extended product lifecycles, safer environments and reduced energy usage

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Smarter technology

The power of one
With Logix technology, you can integrate discrete, motor, motion, safety, process and batch control into one infrastructure by using one control engine and one network technology across applications, operations and environments plant-wide.

Discrete control
Logix provides exceptional reliability and performance for discrete applications. Tight integration between the programming software, controller and I/O modules reduces development time and cost at commissioning and during normal operation.

Motor control
Configuring motor control devices in the Logix environment lets you consolidate controller programming and drive system configuration, operation and maintenance, reducing programming time, easing startup and commissioning and streamlining access to diagnostics.

Motion control
Logix provides complete support for motion control, from configuration, programming and commissioning to diagnostics and maintenance. True integration simplifies commissioning and data collection, speeding time to market and maximizing uptime.

Integrated safety
Focused on overall machine performance, integrated safety solutions use efficiency and design productivity to help machine builders deliver flexible, high-performance equipment at a more competitive price. Solutions now include new technologies like safe-speed and safe-direction that can help to significantly reduce development time, maintenance costs and time-consuming, expensive shutdowns.

Continuous process control
PlantPAx process automation combines plant-wide control and unmatched scalability of the Integrated Architecture system with the core capabilities of a world-class distributed control system (DCS) to help you gain a competitive advantage.

Batch process control
Logix provides the flexibility you need to deliver your product to market faster with efficient, predictable batch processing. Consistency between batches, event information during batch runs, along with the ability to reuse code, recipes, phases and logic.

Integrated power and energy management
By integrating power and energy management, you can leverage existing investments to visualize and actively manage energy consumption without having to invest in or configure a stand-alone energy management solution.

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SCALABLE HARDWARE

You need to make equipment for differing applications at the most competitive cost, offering the greatest degree of flexibility in the smallest possible footprint.

Delivering on these goals is a challenge, particularly when you’re building a range of machines for a variety of customer requirements. Hardware solutions from a given automation vendor can appear to be scalable. In reality, they often use different networks and programming tools, making machine design and development more complex.

Our approach incorporates common automation components and tools across the spectrum of applications, regardless of size and complexity. Having this sort of scalability enables you to reduce total costs of ownership because you need to buy only what you need. This aids agility and helps to keep learning and deployment investments low.

Save time and money during your development cycle
The ability to reuse control and visualization designs and practices helps you achieve faster startups, improves integration and optimizes your productivity.

Improve your flexibility
By using common components and tools, you can scale your hardware and software to the needs of your application.

Reduce maintenance costs and downtime
System components help reduce your maintenance costs by lowering your training requirements, spare parts inventory, and Mean Time to Repair, all helping to increase your uptime.

Challenge
What appears to be scalable, integrated hardware operating smoothly on multiple networks by using different programming tools can actually be unnecessarily complex.

Solution
One design environment with a scalable network technology and control platform, fully integrated for the application in question.

Case study
CKC Engineering
One of the world’s largest medical device companies asked medical original equipment manufacturer CKC Engineering to design and develop a custom microbore tubing spooler machine for a new extrusion plant. The Rockwell Automation solution reduced programming and commissioning time by 25 percent.
Right-sized control and intelligence
From large control systems to small, we’ve developed a unique range of controller types and sizes to suit specific application needs – all with the same Logix control engine – all delivering world-leading performance and flexibility. Leaner production and greater return on investment.

One design environment
This simple approach can accommodate every application from small machines to an entire plant. It can be specified with ‘just enough’ functionality for applications, while offering flexibility and scalability as required.

Single, scalable network
Our network solutions connect your automation control systems to each other and to the rest of your enterprise. We do this via a standard Ethernet network that scales from the simplest applications through to a plant-wide deployment.

Industrial safety expertise
Our expertise, experience and technologies have established us as the world leader in industrial safety. Our functional safety solutions for machine, process and electrical safety applications can be tailored to the required safety performance level (PL) and help to reduce injuries and costs, while they improve productivity.

A better view of actionable information
Our visualization products provide windows into critical production and process information and enterprise data. Across every type of industry, application and manufacturing environment, these products help to enhance decision-making and operational efficiency.

Increased I/O flexibility
Whether chassis-based or distributed, in-cabinet, on-machine or embedded, our I/O solutions help increase flexibility and reduce wiring and costs. For safety solutions, our Guard I/O™ products are TÜV-certified up to SIL 3, Cat. 4, PLe.

Motor and motion control
Our portfolio extends from fixed speed starters, through compact standard drives for simple applications, to high-performance, multi-axis servo drives for the most demanding applications.

Integrated Architecture tools
We can help you to plan and configure an Integrated Architecture system, from the ability to create a simple bill of material to get started, to more advanced accelerator toolkits that maximize the time spent to create machine differentiation.

For more information: www.rockwellautomation.com/go/ia
Solution

A single design environment that helps to drive down the time and cost to design, develop and deliver machines and equipment.

Challenge

The design environment can be made complicated by using different tools for each task.

Case study

R&B Plastics

R&B Plastics company works with plastics industry customers to produce machine, mold, trimming and tooling systems. Its Parison control system used the Rockwell Automation Integrated Architecture platform to streamline the design time, reduce the time to program and increase flexibility for future upgrades.

AUTOMATION DESIGN PRODUCTIVITY

Our Studio 5000 Automation Engineering & Design Environment™ helps design engineers to develop elements of their control system to reduce cost to engineer, time to market and risk on projects.

As one of the core technologies of the Rockwell Automation Integrated Architecture platform, Logix offers a unique approach to automation. It provides a single control platform with a common control engine and development environment designed to deliver world-class capabilities for any automation discipline.

The Studio 5000® environment combines engineering and design elements into one standard framework that enables optimized productivity and reduced time to commission.

With the Studio 5000 environment, you can respond more quickly to market changes and business needs, while reducing the total costs of ownership:

- Use one intuitive design and configuration software package
- Simplify development of complex control solutions
- Develop localized applications in a single control platform, in a collaborative engineering environment

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Enhanced productivity

For more information: www.rockwellautomation.com/go/ia
Enhanced productivity

**System organization**
Design and organize your system in the way that’s best for you to develop, operate and maintain. Multiple capabilities in one common design system enable engineers, operators and technicians to access data easily across the system. This improves development efficiency and reduces programming errors.

**Modular automation**
Enables design engineers to break complex processes into manageable tasks and logical groupings of functionality. This makes code easier to reuse and helps with troubleshooting.

**Library management**
Simplifies the organization, accessibility and reuse of code, according to best practices and standards management. Efficiently managing reusable content speeds design time while helping to protect Intellectual Property.

**Virtual design and engineering**
Our technologies combine engineering and design elements into one standard framework that enables optimized productivity and reduced commissioning time. Respond more quickly to changing market and business needs, while reducing total costs of ownership, including maintenance and training.

**Information-enabled**
Connect data from devices and systems across the enterprise to transform data into actionable information and make it available to the right person at the right time. This supports better decision making, improved overall performance and greater customer satisfaction.

**Intellectual Property management**
Peace-of-mind security against potential threats to Intellectual Property and manufacturing assets is crucial to business success.

**Device management**
Providing a common user experience for all device types makes it simpler to design applications, reuse code and replace faulty or aging devices quickly. This improves productivity and reduces design cycles for faster time to market.

**Collaborative engineering**
Speed development time by seamlessly sharing data between systems. This allows multiple people to work on the same project simultaneously anywhere in the world.

For more information: www.rockwellautomation.com/go/ia
Industrial enterprises worldwide are beginning to utilize emerging technologies to make sense of production data and turn it into actionable information that creates new business value. Seamless and secure connectivity between disparate production systems and processes throughout the entire enterprise is achievable and highly beneficial.

Modern operations management aims to enhance performance by making better use of data that already exists, using a combination of tools designed to deliver contextual, role-based information that can be acted on to improve systems or processes. Our visualization, reporting and analytics solutions help to monitor the key factors affecting performance, efficiency, quality and energy management, made visible throughout the enterprise on easy-to-read dashboards.

Our solutions can be deployed individually at a machine or line level to solve specific needs, and then scaled across multiple lines or plants to achieve enterprise-wide business objectives.

Enhanced productivity

OPERATIONS MANAGEMENT

Challenge
There are numerous information systems available that gather production data, but is it actionable information that drives an increase in business value?

Solution
Enabling real-time access to critical production information for better and faster decision making, business agility and improved performance and productivity.

Case study
Forres Engineering Srl
When the joint venture company, Edina, needed a new control system to meet safety regulations and improve performance, it called on systems integrator Forres Engineering Srl. Forres delivered a solution by using the PlantPAx system that increased availability and reliability while reducing maintenance and operational costs.

For more information: www.rockwellautomation.com/go/ia
**Performance management with enterprise manufacturing intelligence**

Our performance management solutions intuitively connect to your plant automation systems and easily present information on how your equipment is performing. Find out important Key Performance Indicators (KPIs) such as OEE (overall equipment effectiveness), MTTR (mean time to repair) and many more.

**Manufacturing execution systems**

A range of solutions that enables you to better provide standardized workflows, and manage procedures and execution to optimize production operations.

**Put your information to work**

Our systems make it easier to gather, analyze, contextualize and share intelligence. Using flexible, open-standard-supporting software tools, you can connect and organize your data into actionable information. Gain wisdom and insight from your manufacturing data.

**Collaboration**

Use your information to make better decisions and to interact with others. Our solutions allow you to tailor the data from your control systems to meet your needs, and allow you to use today’s most prevalent technologies to share that information with others.

**Mobile solutions**

Use your information to make better decisions by getting the right information to the right people at the right time on the right device. We have solutions for customers on all major mobile platforms. We focus on user enablement with intuitive workflows that aren’t tied to desktop computers.

**Visibility is everything**

With the right information software in place you can increase your visibility into your operations. Our software helps you optimize your operations by allowing you to measure and see what is actually happening. From panel to desktop to big screens to small mobile screens, having the right information infrastructure is vital to helping you see your data how you want it.

Choose a control architecture that gives integrated control and information

Having a solid foundation is the key to building great solutions. Powering FactoryTalk® information software with Logix controllers connected with Stratix™ switches helps to build more productive, more secure and more informed systems.

**OPERATIONS MANAGEMENT**

For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
INDUSTRIAL AUTOMATION SECURITY

Control systems, networks, and software can all help defend against security threats and risks. It’s time to manage your risks and build the secure industrial control system that meets your needs.

Rockwell Automation recommends deploying a defense in depth approach to help protect against both internal and external security threats. This approach suggests the utilization of multiple layers of defense - physical, procedural and electronic - at separate levels of the architecture and plant.

The objectives of defense in depth include reducing the risk of an attack, identifying a potential attack as it tries to penetrate your assets, delaying the attack to increase the time you have to react and take action through appropriate counter measures. Rockwell Automation offers products and services to help build a defense in depth strategy. These solutions include:

- **Securing the network infrastructure**
  - Creating a control system network resistant to outside attacks

- **Content protection**
  - Protect valuable control system content from unauthorized use and copying

- **Tamper detection**
  - Detect, document and provide notification for attacks on the control system

- **Access control and policy management**
  - Create a trusted environment by controlling who, what, where and when access is allowed

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Defense-in-Depth approach
A multi-layer approach for helping to protect industrial assets, at different levels, from security threats by applying the appropriate controls to address different types of risks.

Content protection
Protecting valuable intellectual property such as production data, recipes, code from access and viewing by utilizing Logix data protection services.

Securing the network infrastructure
Providing the ability to control access to the network and controlling unwanted activity relative to devices on your plant floor network.

Tamper detection
Detect changes using digitally signed firmware, Logix controller change detection and event logging features in Studio 5000 and FactoryTalk AssetCentre.

Access control and policy management
Authentication and authorization of software and specific user roles and privileges can be controlled with FactoryTalk Security and further restricted using Security Authority Binding and Data Access Control.

Network and security services
Rockwell Automation Network and Security Services can help you assess, design, implement and audit your security program and architectures to align with global security standards.
INVESTMENT RETURN

The continual rise in global demand places more pressure on the global manufacturing industry to avoid downtime and improve productivity and delivery. As the world’s largest company dedicated to industrial automation, we are able to help you meet this demand and optimize business profitability.

To achieve your defined goals, you have to assess, analyze and adapt production to overcome a number of challenges, including the increasing cost per hour of downtime and the ongoing challenge of finding skilled workers. In a sector where technology is constantly moving, you need to be able to trust in business partners who provide the solutions, services and support to help you stay ahead.

We understand that a profitable, safe and sustainable operation that minimizes downtime is your goal. To this end, we’ve developed a unique resource of industry and technology-specific expertise to help reduce project risk and provide solutions specific to your needs, executed globally and supported locally.

Maximizing productivity
If you’re not successful, we’re not successful. Our singular goal is to help you drive productivity year after year. Our specific, experience-tested services are designed to help you maximize your automation investment.

Meeting your needs
Every industrial production facility requires its basic needs to be met on a daily basis: local availability of parts, on-site support, training and world-class expertise in local languages. Our global reach meets these needs for you.

Defining strategies for improvement
While meeting your everyday needs is important, you also need consistent access to experts to uncover business improvement opportunities with an actionable improvement plan to deliver results.

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Secure environment

Optimize your operation
Across industries and processes, Rockwell Automation understands that a profitable, safe and sustainable operation is your goal. We offer you industry and technology-specific expertise to meet these goals and your unique challenges.

Protect your investment
Beyond our solution delivery capabilities, our global infrastructure of support centers and subject matter experts all help protect your automation investment, optimize plant assets, increase productivity and improve your overall financial performance.

INVESTMENT RETURN

The support you need, when you need it
Guaranteed response for remote support, replacement parts and on-site services in one integrated support agreement for one flat fee that gives you one point of contact for all your equipment and repair needs.

Scalable solutions
While we develop solutions to meet your needs today, we constantly have an eye on tomorrow. We take a collaborative approach to understanding your current state and how to design a solution that weighs scalability as a major factor.

Migration support
As products age, we provide options to help you extend their life as long as possible, and give you enough advance notification to allow you to transition as seamlessly as possible to the next generation.

Strategic alliances
Our alliance partners work with us and you to develop capabilities and provide seamless solutions, giving you the strongest technological, competitive and strategic advantages within your enterprise and across your supply chain.

PartnerNetwork
Our PartnerNetwork framework comprises an integrated team of engineering specialists and best-in-class suppliers who work collaboratively to solve your manufacturing and automation challenges by streamlining your supply chain and simplifying project implementation.

For more information: www.rockwellautomation.com/go/ia
As the world’s largest company dedicated to industrial automation, we’re at the forefront of equipment design and development, with integration at the heart of everything we do. Our extensive product portfolio, services and support capabilities are designed to improve your processes through every stage of your manufacturing cycle – from design and installation through operation and maintenance.

**Input/Output devices**
- Chassis-based, local, family-specific, distributed via communication networks
- Distributed, in-cabinet modular – flexible, customizable
- On-Machine™ modular – direct mount, reduced wiring costs, easy maintenance
- Distributed, in-cabinet block – includes network adaptation, analog, digital and specialty

**Motor control devices**
- PowerFlex® AC Drives
  - Designed for application flexibility
  - Real-time information access for your power and control system
  - Premise integration with Studio 5000 software for seamless control system integration
  - PowerFlex Medium Voltage Drives
  - Enable soft-starting and variable-speed control of processes with high power demands

**Logix programmable automation controllers**
- Modular and scalable systems
- Process, batch, discrete, drives, safety and motion control
- High-availability
- Sk. 2 and Sk. 3 safety-certified
- Embedded and Distributed I/O
- Extreme Environment (XT) and Conformal Coating

**Software**
- Design and Configuration
  - Studio 5000 Automation Engineering & Design Environment software combines engineering and design elements into one standard framework
  - Motion Analyzer software helps you size, select and configure your Kinetix motion control and PowerFlex AC drive systems
  - FactoryTalk AssetCentre software securely and centrally manage your factory assets

**Human Machine Interface (HMI)**
- FactoryTalk View software helps speed HMI application development and training time

**Manufacturing Intelligence**
- Provide actionable information that can help improve plant productivity and Overall Equipment Effectiveness

**Manufacturing Execution Systems**
- Provides standardized workflows to operators to ensure the highest possible production quality as well as regulatory compliance. It offers standard application library suites for common functions in the pharmaceutical, consumer packaged goods, and automotive industries

**Stratix industrial networks infrastructure and Ethernet media**
- Stratix Switches
  - Modular managed Ethernet switches use the Cisco® Catalyst® Operating System
  - Variety of features for both IT and manufacturing environments
  - Unmanaged Ethernet switches are ideal for small, isolated networks
- Stratix Services Routers
  - Combine several modern security functions into a single appliance
  - Fully integrated with Cisco IOS

**Stratix Wireless Access Points**
- Provides connectivity in hard-to-wire and remotely accessible areas
- Can be used as a Wireless Access Point or WorkGroup Bridge

**Media and Connectors**
- Complete portfolio of industrial-grade Ethernet physical media
- In-Cabinet (RJ45) Network Media
- On-Machine (M12 and Variant 1) Ethernet Media

**Stratix Wireless Access Points**
- Provides wireless capabilities in hard-to-wire and remote environments
- Can be used as a Wireless Access Point or WorkGroup Bridge

For more information: www.rockwellautomation.com/go/ia
Software At-A-Glance

FactoryTalk View

FactoryTalk View performance and visibility software is part of the scalable and unified suite of monitoring and control solutions. It includes:
• FactoryTalk View Site Edition (SE) for large, supervisory-level, multi-server, multi-client and multi-user HMI applications
• FactoryTalk View Machine Edition (ME) for small, standalone, machine-level applications
• Both are designed with common look, feel and navigation and offer premier integration with Logix controllers, and provide faster and more accurate system implementation

FactoryTalk Historian

FactoryTalk Historian is a multi-tiered solution for machine, plant and enterprise-wide data collection and analysis:
• Helps increase quality, reduce waste and improve control by harnessing volumes of control data and presenting it in a usable format
• Eases regulatory compliance by enabling quick access to online production records
• Simple data configuration and analysis to help ensure the right people receive the information needed to make the best business decisions

FactoryTalk AssetCentre

FactoryTalk AssetCentre provides a single point of access to gather, analyze and manage maintenance information across an enterprise:
• Enables staff to proactively and centrally manage asset-based business environments
• Provides the basis to understand the root causes of downtime, waste, scrap and lost capacity through simple drill-down reports and dashboards:
  - Creates a window into production processes to help improve efficiencies, decrease cycle time and increase Overall Equipment Effectiveness (OEE)
  - Provides baseline information to help you make continuous decisions

FactoryTalk VantagePoint EMI

FactoryTalk VantagePoint EMI enables Enterprise Manufacturing Intelligence. It enables access to database and transaction systems that provide business context for manufacturing data:
• Provides direct connectivity to FactoryTalk Live Data sources and FactoryTalk Historian, plus third-party sources via OPC DA and HDA connectors
• Additional connectivity available to databases (for example MS SQL, ORACLE) and transaction systems (for example SAP, via Netweaver or R3 connectors)

FactoryTalk Metrics

Provides the basis to understand the root causes of downtime, waste, scrap and lost capacity through simple drill-down reports and dashboards:
• Helps increase quality, reduce waste and improve control by harnessing volumes of control data and presenting it in a usable format
• Eases regulatory compliance by enabling quick access to online production records
• Simple data configuration and analysis to help ensure the right people receive the information needed to make the best business decisions

FactoryTalk ViewPoint

FactoryTalk ViewPoint is a thin client solution for FactoryTalk View SE and PanelView™ Plus, which adds the ability for FactoryTalk View projects to be used in a web browser:
• Enables managers, OEMs and system integrators to view and control real-time plant floor operations data
• Connects to customer sites, performs diagnostics or provides remote support without having to actually be at the end user’s site
• Users can activate push buttons and enter values from a remote browser – user access control settings to enable appropriate levels of access to view and control operations

ProductionCentre

ProductionCentre provides Manufacturing Operations Management (MOM) that integrates quality management and business analytics with paperless shop floor and repair execution. Industry solutions are available for:
• Automotive
• Consumer Packaged Goods (CPG)
• Life Sciences

PlantPAx

PlantPAx is the process automation system from Rockwell Automation with all the core capabilities expected in a world-class distributed control system (DCS). The system is built on a standard-based architecture using integrated Architecture components that enable multi-disciplined control and Premier Integration with the Rockwell Automation Intelligent Motor Control portfolio.

Studio 5000 Automation Engineering & Design Environment

Studio 5000 is used to program and configure your Logix automation system for process, batch, discrete, drives, safety and motion-based applications. Maximize productivity, reduce training and maintenance costs and respond more quickly to market and business needs:
• Use one intuitive design and configuration software package
• Simplify development of complex control solutions
• Have greater access to real-time information
• Develop localized applications in a single control platform
• Develop applications in a collaborative engineering environment

For more information: www.rockwellautomation.com/go/ia
### Logix Programmable Automation Controllers At-A-Glance

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<tr>
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<th>ControlLogix 5570</th>
<th>GuardLogix 5570</th>
<th>Armor GuardLogix and ControlLogix</th>
<th>CompactLogix 5370 L3</th>
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<tbody>
<tr>
<td><strong>Disciplines</strong></td>
<td>Process, batch, discrete, drive, safety and motion</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Safety Level</strong></td>
<td>SIL 2, PLe when following ControlLogix® SIL 2.1 Safety Reference Manual</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>SIL 3, PLe, CAT 4</td>
<td>+</td>
<td>N/A</td>
<td>+</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Hardware Redundancy</strong></td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Maximum Memory</strong></td>
<td>32 MB</td>
<td>8 MB or 1.75 MB Safety</td>
<td>4 KB or 2 MB Safety</td>
<td>1 MB</td>
<td>1 MB</td>
<td>0.5 MB</td>
</tr>
<tr>
<td><strong>Non-Volatile Memory</strong></td>
<td>Industrially rated and certified Secure Digital (SD) memory card (1 and 2 GB options); all controllers shipped with 1 GB card</td>
<td>-</td>
<td>Industrially rated and certified Secure Digital (SD) memory card (1 and 2 GB options); all controllers shipped with 1 GB card</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>EtherNet/IP network, ControlNet™ network, DeviceNet network, Foundation Fieldbus network, HART protocol, Third-party process and device networks</td>
<td>EtherNet/IP network, ControlNet™ network, DeviceNet network, Foundation Fieldbus network, HART protocol, Third-party process and device networks</td>
<td>EtherNet/IP network, ControlNet™ network, DeviceNet network, Foundation Fieldbus network, HART protocol, Third-party process and device networks</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Built-in Comm Ports</strong></td>
<td>USB, 2 Device Level Ring (DLR)</td>
<td>USB</td>
<td>USB</td>
<td>USB</td>
<td>USB</td>
<td>USB</td>
</tr>
<tr>
<td><strong>Language Support</strong></td>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>0-60 °C (32-140 °F)</td>
<td>0-60 °C (32-140 °F)</td>
<td>0-60 °C (32-140 °F)</td>
<td>-20-60 °C (-4-140 °F)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Technical Documentation</strong></td>
<td>1756-SG001</td>
<td>-</td>
<td>1769-SG001</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
### Input/Output Devices At-A-Glance

<table>
<thead>
<tr>
<th>ControlLogix 1756 I/O</th>
<th>CompactLogix 1769 I/O</th>
<th>ArmorBlock 1732</th>
<th>ArmorBlock Guard 1732</th>
<th>FLEX 1794</th>
<th>POINT I/O 1734</th>
<th>CompactLogix Guard I/O 1791 DUS/E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I/O Type</strong></td>
<td>• TTL, 24, 48, 125V</td>
<td>• 24V DC, dual points, quick connect, digital, relay, analog, temperature, SOE</td>
<td>• 24V DC, digital, safety</td>
<td>• 24/48V DC, 12V/24V AC extreme temperature, relay, digital, analog, temperature, thermocouple, speciality, counter/encoders</td>
<td>• 24V DC, 12V/24V AC, relay, digital, analog, temperature, RTS</td>
<td>• 24 DC, 12V/24V AC, digital, relay, analog, temperature, RTS</td>
</tr>
<tr>
<td></td>
<td>• DC 24, 12V, 230V AC, relay, digital, analog, temperature, combo, specialty</td>
<td>• 24V DC, 120V AC, relay, digital, analog, temperature, combo, specialty</td>
<td>• 1756, 3, CAT 4 Safety</td>
<td>• PLe, SIL 3, CAT 4 Safety</td>
<td>• PLe, SIL 3, CAT 4 Safety</td>
<td>• PLe, SIL 3, CAT 4 Safety</td>
</tr>
</tbody>
</table>

| **Channel Density**  | • 4-32                 | • 2-32, 16 points, (WeldBlock 16 points only) | • 8-16 points | • 4-32 points | • 8-16 points, self configurable | • 8-16 points |

| **Network**          | • Distributed EtherNet/IP and ControlNet networks from ControlLogix controller | • Distributed I/O on DeviceNet and EtherNet/IP networks | • EtherNet/IP network | • DeviceNet network | • EtherNet/IP network | • EtherNet/IP network |
|                      | • Distributed I/O on DeviceNet and EtherNet/IP networks | • EtherNet/IP network | • DeviceNet network | • ControlNet network | • EtherNet/IP network | • DeviceNet network |

| **RIUP Rating**      | • Yes                 | • No                 | • No                 | • Yes                | • Yes                | • Yes (selected terminal base) |

| **Removable Terminal Blocks** | • Yes | • No | • No | • Yes (selected terminal base) |

| **Mounting Options**  | • Chassis             | • DIN rail           | • On-Machine (IP56/57/69K) | • DIN rail |

| **Protected Outputs** | • Yes                 | • No                 | • No                 | • No                 | • No                 | • No                 |

| **Additional Features** | • Wide variety of termination styles: spring clamp or screw clamp | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Embedded switch with ODL | • HART analog modules | • Self-configuring for any combination of inputs/outputs | • Electronically keyed |
|                       | • Rotary address switches | • Short circuit protected outputs | • Can be used as local or distributed I/O for CompactLogix™ | • Power supplies | • Channel level diagnostics | • Flash updateable |
|                       | • Can be used as local or distributed I/O for CompactLogix™ | • Short circuit detection | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Embedded switch with ODL | • Short circuit detection | • Short circuit detection |
|                       | • Can be used as local or distributed I/O for CompactLogix™ | • Open wire detection | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Embedded switch with ODL | • Open wire detection | • Flash updateable |
|                       | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Muting | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Embedded switch with ODL | • Muting | • Short circuit detection |
|                       | • Enhanced wiring diagram functionality | • Quick Connect capability | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | • Embedded switch with ODL | | • Short circuit detection |
|                       | • Quick Connect capability | | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | | | • Short circuit detection |
|                       | • Quick Connect capability | | • WeldBlock resists effects of weld dog and magnetic fields – ideal for end-of-arm robotic applications | | | • Short circuit detection |

| **Technical Documentation** | • 1756-TD002 | • 1756-TD006 | • 1732-5G200 | • 1732-5G201 | • 1732-5G202 | • 1794-5G200 |

For more information: www.rockwellautomation.com/go/ia
# Motor Control Devices At-A-Glance

## Ratings

<table>
<thead>
<tr>
<th>PowerFlex 525</th>
<th>PowerFlex 527</th>
<th>PowerFlex 753</th>
<th>PowerFlex 755</th>
<th>PowerFlex 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ratings</strong></td>
<td><strong>Ratings</strong></td>
<td><strong>Ratings</strong></td>
<td><strong>Ratings</strong></td>
<td><strong>Ratings</strong></td>
</tr>
<tr>
<td><strong>100-120V</strong></td>
<td><strong>200-240V</strong></td>
<td><strong>380-480V</strong></td>
<td><strong>500-600V</strong></td>
<td><strong>690V</strong></td>
</tr>
<tr>
<td>0.4-1.1 kW/0.5-1.5 Hp</td>
<td>0.4-1.5 kW/0.5-2 Hp</td>
<td>0.4-22 kW/0.5-30 Hp</td>
<td>0.4-22 kW/0.5-30 Hp</td>
<td>0.4-22 kW/0.5-30 Hp</td>
</tr>
<tr>
<td><strong>480-480V</strong></td>
<td><strong>500-500V</strong></td>
<td><strong>500-500V</strong></td>
<td><strong>500-500V</strong></td>
<td><strong>500-500V</strong></td>
</tr>
<tr>
<td>0.75-200 kW/1-350 Hp</td>
<td>1-1500 Hp</td>
<td>1-300 Hp</td>
<td>1-300 Hp</td>
<td>1-3000 Hp</td>
</tr>
<tr>
<td><strong>500-600V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.4-22 kW/0.5-30 Hp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>690V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5-225 kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Motor Control

<table>
<thead>
<tr>
<th>PowerFlex 525</th>
<th>PowerFlex 527</th>
<th>PowerFlex 753</th>
<th>PowerFlex 755</th>
<th>PowerFlex 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor Control</strong></td>
<td><strong>Motor Control</strong></td>
<td><strong>Motor Control</strong></td>
<td><strong>Motor Control</strong></td>
<td><strong>Motor Control</strong></td>
</tr>
<tr>
<td>Volts per Hertz</td>
<td>Volts per Hertz</td>
<td>Volts per Hertz</td>
<td>Volts per Hertz</td>
<td>Volts per Hertz</td>
</tr>
<tr>
<td>Sensorless Vector Control</td>
<td>Sensorless Vector Control</td>
<td>Sensorless Vector Control</td>
<td>Sensorless Vector Control</td>
<td>Sensorless Vector Control</td>
</tr>
<tr>
<td>Closed Loop Velocity Vector Control</td>
<td>Closed Loop Velocity Vector Control</td>
<td>Closed Loop Velocity Vector Control</td>
<td>Closed Loop Velocity Vector Control</td>
<td>Closed Loop Velocity Vector Control</td>
</tr>
</tbody>
</table>

## Enclosures

<table>
<thead>
<tr>
<th>PowerFlex 525</th>
<th>PowerFlex 527</th>
<th>PowerFlex 753</th>
<th>PowerFlex 755</th>
<th>PowerFlex 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enclosures</strong></td>
<td><strong>Enclosures</strong></td>
<td><strong>Enclosures</strong></td>
<td><strong>Enclosures</strong></td>
<td><strong>Enclosures</strong></td>
</tr>
<tr>
<td>IP20/NEMA/Open</td>
<td>IP20/NEMA/Open</td>
<td>IP20/NEMA/Open</td>
<td>IP20/NEMA/Open</td>
<td>IP20/NEMA/Open</td>
</tr>
<tr>
<td>IP30/NEMA/UL Type 1(with conduit kit)</td>
<td>IP30/NEMA/UL Type 1(with conduit kit)</td>
<td>IP30/NEMA/UL Type 1(with conduit kit)</td>
<td>IP30/NEMA/UL Type 1(with conduit kit)</td>
<td>IP30/NEMA/UL Type 1(with conduit kit)</td>
</tr>
</tbody>
</table>

## Safety

<table>
<thead>
<tr>
<th>PowerFlex 525</th>
<th>PowerFlex 527</th>
<th>PowerFlex 753</th>
<th>PowerFlex 755</th>
<th>PowerFlex 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety</strong></td>
<td><strong>Safety</strong></td>
<td><strong>Safety</strong></td>
<td><strong>Safety</strong></td>
<td><strong>Safety</strong></td>
</tr>
<tr>
<td>Safe Torque-off is a built-in feature that can be applied through either hardened safety or Integrated Safety – controller based safety via EtherCAT®. Both types achieve S&amp;L+ for CAT 3 ratings.</td>
<td>Safe Torque-off is a built-in feature that can be applied through either hardened safety or Integrated Safety – controller based safety via EtherCAT®. Both types achieve S&amp;L+ for CAT 3 ratings.</td>
<td>Safe Torque-off is a built-in feature that can be applied through either hardened safety or Integrated Safety – controller based safety via EtherCAT®. Both types achieve S&amp;L+ for CAT 3 ratings.</td>
<td>Safe Torque-off is a built-in feature that can be applied through either hardened safety or Integrated Safety – controller based safety via EtherCAT®. Both types achieve S&amp;L+ for CAT 3 ratings.</td>
<td>Safe Torque-off is a built-in feature that can be applied through either hardened safety or Integrated Safety – controller based safety via EtherCAT®. Both types achieve S&amp;L+ for CAT 3 ratings.</td>
</tr>
<tr>
<td>Safe Torque-off CAT 3</td>
<td>Safe Torque-off CAT 3</td>
<td>Safe Torque-off CAT 3</td>
<td>Safe Torque-off CAT 3</td>
<td>Safe Torque-off CAT 3</td>
</tr>
<tr>
<td>Safe Speed Monitor S&amp;L, Full CAT 4</td>
<td>Safe Speed Monitor S&amp;L, Full CAT 4</td>
<td>Safe Speed Monitor S&amp;L, Full CAT 4</td>
<td>Safe Speed Monitor S&amp;L, Full CAT 4</td>
<td>Safe Speed Monitor S&amp;L, Full CAT 4</td>
</tr>
</tbody>
</table>

## Additional Features

<table>
<thead>
<tr>
<th>PowerFlex 525</th>
<th>PowerFlex 527</th>
<th>PowerFlex 753</th>
<th>PowerFlex 755</th>
<th>PowerFlex 7000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional Features</strong></td>
<td><strong>Additional Features</strong></td>
<td><strong>Additional Features</strong></td>
<td><strong>Additional Features</strong></td>
<td><strong>Additional Features</strong></td>
</tr>
<tr>
<td>Embedded EtherCAT® port</td>
<td>Embedded EtherCAT® port</td>
<td>Embedded EtherCAT® port</td>
<td>Embedded EtherCAT® port</td>
<td>Embedded EtherCAT® port</td>
</tr>
<tr>
<td>Premier Integration with Studio 5000 environments for seamless control system integration</td>
<td>Premier Integration with Studio 5000 environments for seamless control system integration</td>
<td>Premier Integration with Studio 5000 environments for seamless control system integration</td>
<td>Premier Integration with Studio 5000 environments for seamless control system integration</td>
<td>Premier Integration with Studio 5000 environments for seamless control system integration</td>
</tr>
<tr>
<td>Embedded Studio™ programming via USB</td>
<td>Embedded Studio™ programming via USB</td>
<td>Embedded Studio™ programming via USB</td>
<td>Embedded Studio™ programming via USB</td>
<td>Embedded Studio™ programming via USB</td>
</tr>
<tr>
<td>Modular design makes installation easy</td>
<td>Modular design makes installation easy</td>
<td>Modular design makes installation easy</td>
<td>Modular design makes installation easy</td>
<td>Modular design makes installation easy</td>
</tr>
<tr>
<td>Application-specific parameter groups</td>
<td>Application-specific parameter groups</td>
<td>Application-specific parameter groups</td>
<td>Application-specific parameter groups</td>
<td>Application-specific parameter groups</td>
</tr>
<tr>
<td>Optional encoder card for simple positioning control</td>
<td>Optional encoder card for simple positioning control</td>
<td>Optional encoder card for simple positioning control</td>
<td>Optional encoder card for simple positioning control</td>
<td>Optional encoder card for simple positioning control</td>
</tr>
<tr>
<td>Economizer mode adjusts current output to help reduce energy use</td>
<td>Economizer mode adjusts current output to help reduce energy use</td>
<td>Economizer mode adjusts current output to help reduce energy use</td>
<td>Economizer mode adjusts current output to help reduce energy use</td>
<td>Economizer mode adjusts current output to help reduce energy use</td>
</tr>
</tbody>
</table>

*Environmental considerations can apply.*

For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
Motor Control Devices At-A-Glance

<table>
<thead>
<tr>
<th>Model</th>
<th>Low Voltage, NEMA</th>
<th>Low Voltage, IEC</th>
<th>Medium Voltage, NEMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating</td>
<td>• Up to 600V, 600-3000 A</td>
<td>• Up to 600V, 800-4000 A</td>
<td>• Up to 6900V, 200-800 A</td>
</tr>
<tr>
<td>Network Interfaces</td>
<td>• EtherNet/IP network</td>
<td>• EtherNet/IP network</td>
<td>• EtherNet/IP network</td>
</tr>
<tr>
<td>IntelliCENTER Software</td>
<td>• Enhanced personnel safety with remote access to information</td>
<td>• Better manage assets with electronic documentation</td>
<td>• Enhanced integration tools</td>
</tr>
<tr>
<td></td>
<td>• Enhanced integration tools</td>
<td>• Automatic tag generation for Studio 5000 Automation Engineering &amp; Design Environment</td>
<td>• Easy plug-ins for HMI screens</td>
</tr>
<tr>
<td>Additional Safety Options</td>
<td>• SecureConnect™ electrical isolation</td>
<td>• ArcShield™ arc-resistant features</td>
<td>• ArcShield™ arc-resistant features</td>
</tr>
<tr>
<td>Technical Documentation</td>
<td>• 2100-SG003</td>
<td>• 2500-SG001</td>
<td>• 1500-SG001</td>
</tr>
</tbody>
</table>

**E1 Plus Electronic Overload Relay**

- Ratings: • 0.1-800 A
- Motor Control: • Solid-state Starter
- I/O: • 2 Inputs 1 Output
- Communications: • EtherNet/IP Communication Module
- Technical Documentation: • EC-C4001

**E300 Electronic Overload Relay**

- Ratings: • 0.5-6000 A
- Motor Control: • Microprocessor Based Starter
- I/O: • 4/3 (AC), 6/3 (DC), 2/2 (AC with Protection), 4/2 (DC with Protection), 16/8 Extra (with optional Digital Expansion Modules)
- Communications: • EtherNet/IP network (EXR)
- Technical Documentation: • 193-SG010A

**857 Motor/Feeder Protection Relay**

- Ratings: • 10-20000 A
- Motor Control: • Microprocessor Based and Standard Starter
- I/O: • Configurable inputs and outputs
- Communications: • EtherNet/IP network
- Technical Documentation: • 857-SR001

**SMC Flex**

- Ratings: • 1-1250 A
- Motor Control: • Soft Start
- I/O: • 4 functionally programmable on-board output contacts (N.O. or N.C)
- Technical Documentation: • 150-SG009

**SMC-50**

- Ratings: • 0.5-120 A
- Motor Control: • Soft Start
- I/O: • Two fully programmable contacts as normal, UTS, fault, alarm, external brake, auxiliary control, network or external bypass
- Technical Documentation: • 150-SG010

For more information: www.rockwellautomation.com/go/ia
# Condition Monitoring At-A-Glance

## Main Modules

<table>
<thead>
<tr>
<th>Dynamic 1444</th>
<th>Dynamix 1444 Tachometer Signal Conditioner</th>
<th>Dynamix 1444 Relay</th>
<th>Dynamix 1444 Analog Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Dynamic Channels</td>
<td>-4</td>
<td>+2</td>
<td>N/A</td>
</tr>
<tr>
<td>Input Tachometer</td>
<td>+2 (TTL)</td>
<td>+2 (mV)</td>
<td>N/A</td>
</tr>
<tr>
<td>4-20mA Outputs</td>
<td>N/A</td>
<td>N/A</td>
<td>+4</td>
</tr>
<tr>
<td>Relays (SPDT)</td>
<td>1</td>
<td>N/A</td>
<td>1+6 N/A</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>11.5 Hz to 40 kHz</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tracking Filters</td>
<td>4 per channel</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Spectra</td>
<td>Continuous to 1000 Hz</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Time Waveform</td>
<td>Continuous or Demand</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Simultaneous Time Waveform</td>
<td>Continuous per channel pair</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Overall</td>
<td>2 per channel before/after integration</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Bands Per Channel</td>
<td>8</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gap</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Speed</td>
<td>2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Alarms</td>
<td>20: Measurement alarms, 15 voted alarms</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Configuration</td>
<td>Yes: Add-on Profile, currently requires Studio 5000/124</td>
<td>Configuration part of host module configuration</td>
<td>N/A</td>
</tr>
<tr>
<td>Network Communications</td>
<td>Ethernet/RJ, single or DLR</td>
<td>Local Expansion Bus</td>
<td>N/A</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-25 to 70°C (-13° to 158°F)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Technical Documentation</td>
<td>1444-TD001</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Expansion Modules

<table>
<thead>
<tr>
<th>XM-124</th>
<th>XM-16X</th>
<th>XM-36X</th>
<th>XM DYN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dynamic Measurement</strong></td>
<td><strong>Overall Value Monitoring</strong></td>
<td><strong>Temperature Monitoring</strong></td>
<td><strong>Protection &amp; Condition Monitoring</strong></td>
</tr>
<tr>
<td>XM-124</td>
<td>XM-160</td>
<td>XM-161</td>
<td>XM-361</td>
</tr>
</tbody>
</table>

## Technical Notes

- **Input Channels**: -4, +2, N/A
- **Input Tachometer**: 2 (TTL), +2 (mV), N/A
- **4-20mA Outputs**: N/A, N/A, +4
- **Relays (SPDT)**: 1, N/A, 1+6 N/A
- **Frequency Range**: 11.5 Hz to 40 kHz, N/A, N/A
- **Tracking Filters**: 4 per channel, N/A, N/A
- **Spectra**: Continuous to 1000 Hz, N/A, N/A
- **Time Waveform**: Continuous or Demand, N/A, N/A
- **Simultaneous Time Waveform**: Continuous per channel pair, N/A, N/A
- **Overall**: 2 per channel before/after integration, N/A, N/A
- **Bands Per Channel**: 8, N/A, N/A
- **Gap**: Yes, N/A, N/A
- **Speed**: 2, N/A, N/A
- **Alarms**: 20: Measurement alarms, 15 voted alarms, N/A, N/A
- **Configuration**: Yes: Add-on Profile, currently requires Studio 5000/124, Configuration part of host module configuration, N/A
- **Network Communications**: Ethernet/RJ, single or DLR, Local Expansion Bus, N/A
- **Operating Temperature**: -25 to 70°C (-13° to 158°F), N/A, N/A
- **Technical Documentation**: 1444-TD001, N/A, N/A

For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
Kinetix Servo Drives At-A-Glance

Key Features

- Integrated Safe Torque Off
- Analog input control and step and direction control
- Facility to integrate Rockwell Automation MP-Series™ and TL-Series™ servo motors and actuators
- Innovative common AC/DC bus helps reduce hardware, installation time and cost
- Compact with optimized power density
- Drive power ratings optimized to match VP Low Inertia motor family
- Supports induction motors
- Innovative common AC/DC bus helps reduce hardware, installation time and cost
- Compact with optimized power density
- Drive power ratings optimized to match VP Low Inertia motor family
- Supports induction motors
- Dual axis modules
- Built-in
- CAT 3 safe-off
- ISO 13849-1 Safety Performance Level d
- IEC 61508 SIL 2
- ISO version: ISO 13849/PID, IEC 61508 SIL 3 safe-off
- S1 version: ISO 13849/PID, IEC 61508 SIL 3
- Advanced safety features: safe door monitor, enable switching, safe speed monitor
- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders
- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders
- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders
- Integrated Motion on EtherCAT/IP network
- EtherCAT/IP network
- SERCOS Interface
- EtherCAT/IP network
- SERCOS Interface

Continuous Output Current

- 2 - 12 A
- 1.0 - 22.5 A
- 0.4 - 49 A
- 1.0 - 22.5 A
- 4 - 49 A
- 1.0 - 49 A
- 0.4 - 0.8 kW (115V), 0.4 - 1.7 kW (230V)
- 0.5 - 3 kW (230V), 1.3 - 4.8 kW (400V)
- 1.6 - 60 kW
- 1.8 - 60 kW
- 1.8 - 60 kW
- 1.8 - 60 kW

Continuous Power

- 0.4 - 0.8 kW (115V), 0.4 - 1.7 kW (230V)
- 0.5 - 3 kW (230V), 1.3 - 4.8 kW (400V)
- 1.6 - 60 kW
- 1.8 - 60 kW
- 1.8 - 60 kW
- 1.8 - 60 kW

Input Volts

- 115-240V AC single phase
- 380-480V AC 3 phase
- 480-600V AC 3 phase
- 195-264V AC Single (H003-H015)
- 324-528V AC 3 phase
- 324-528V AC 3 phase
- 324-528V AC 3 phase
- 324-528V AC 3 phase

Network

- EtherCAT/IP network
- Integrated Motion on EtherCAT/IP network
- EtherCAT/IP network
- Integrated Motion on EtherCAT/IP network
- SERCOS Interface
- SERCOS Interface

Safety Function Support

- Built-in
- ISO 13849-1 Safety Performance Level d
- IEC 61508 SIL 2
- ISO version: ISO 13849/PID, IEC 61508 SIL 3 safe-off
- S1 version: ISO 13849/PID, IEC 61508 SIL 3
- Advanced safety features: safe door monitor, enable switching, safe speed monitor

Servo Motor/Actuator compatibility

- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders
- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders
- MP-Series Motors
- TL-Series Motors
- MP-Series Linear Stages
- LDL/LDC-Series Linear Motors
- MP-Series/TL-Series Electric Cylinders

For more information: www.rockwellautomation.com/go/ia
## Kinetix Rotary Servo Motors At-A-Glance

### Kinetix VP Low Inertia
- **Standard** – VPL
- **Food Grade** – VPF
- **MP-Series**
  - **MPM/MPL**
  - **Food Grade – MPF**
  - **Stainless Steel – MPS**

### Key Features
- Provides real-time motor performance information to the control system via digital feedback device
- Optimized to match drive ratings and allow for efficient system sizing
- Available in 6 frame sizes
- Offers torque rating of 0.46-33.0 N•m (4-292 lb•in)
- Based on proven magnetic core MP technology
- Provides feedback, motor brake, and motor power through a single cable
- Includes frame sizes: 63, 75, 100, 115, 130, 165 mm
- Offers .54 N•m to 14.78 N•m (4.7-130.8 lb•in)
- Includes food grade shaft seal
- Includes food grade and REACH-compliant shaft seal grease
- Includes stainless steel shaft and fasteners
- Low and Medium inertia motors with high dynamic performance in a compact size
- Offers the widest range of frame sizes, torque points and options
- Improved winding insulation material for enhanced thermal management and heat transfer, resulting in higher performance
- DIN connector versions of motors allow flexible orientation of connections and use of a single cable family with all MP-Series Motors
- Low inertia motor for use in light-duty food and beverage applications
- Compact motor with high torque
- Durable two-part food grade epoxy
- Stainless steel fasten and shaft
- Ships with a shaft seal
- IP66 and IP67 rated to prevent liquid contamination
- Designed for high pressure, highly caustic conditions
- Simple to install with factory sealed cable exit
- 300 series stainless steel enclosure resists corrosion and is easy to clean
- IP66 and IP67 rated, as well as IP94 K for 1200 psi washdown requirements
- Compact, low inertia product family, optimized for low-power applications
- J1 or NEMA mount options

### Voltage/Travel and Speed
- **200V and 400V Class Windings**
  - Up to 6000 rpm
- **200V and 400V Class Windings**
  - Up to 6000 rpm
- **200V and 400V Class Windings**
  - Up to 5000 rpm
- **230V and 460V Class Windings**
  - Up to 8000 rpm
- **200V Class Windings**
  - Up to 6000 rpm

### Feedback Options
- **Absolute single-turn digital encoder** (Hiperface DSL interface)
- **Absolute single-turn Hiperface DSL interface**
- **Absolute high-resolution feedback with multi-turn option**
- **Absolute high-resolution feedback with multi-turn option**
- **Absolute high-resolution feedback with multi-turn option**
- **Absolute high-resolution feedback with multi-turn option**
- **Incremental and resolver limited frame sizes**
- **Incremental and resolver limited frame sizes**

### Continuous Stall Torque/Force
- **0.46-33 N•m (12-702 lb•in)**
- **0.54-14.78 N•m (4.7-130.8 lb•in)**
- **0.26-163 N•m (2.3-1442 lb•in)**
- **1.58-19.4 N•m (14-172 lb•in)**
- **3.6-21.5 N•m (32-190 lb•in)**
- **0.086-5.42 N•m (0.85-48 lb•in)**

### Applications
- **Packaging**
- **Converting**
- **Material handling**
- **Electronic assembly**
- **Automotive**
- **Mold forming**
- **Food and Beverage packaging and handling**
- **Life sciences and consumer products**
- **Secondary food packaging and handling**
- **Order Picking**
- **Form, fill and seal machinery**
- **High-speed packaging machinery**
- **Material handling**
- **Manufacturing and Assembly**
- **Form, fill and seal machinery**
- **Secondary food packaging and handling**
- **Order Picking**
- **Food and Beverage packaging and handling**
- **Life sciences and consumer products**
- **Plastic packaging machines**
- **Semi-Conductor manufacturing**
- **Winders**
- **Pick and Place**

For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
### Key Features
- High levels of acceleration and servo responsiveness to increase throughput
- "No mechanical wear" items result in highly-reliable motion
- Optional encoder resolution to suite a wide variety of applications
- Connect directly to the payload to help reduce any need for inertia matching
- Linear actuator with an integrated linear bearing capable of pushing, pulling, or carrying a load
- Direct Drive™ technology for dynamic performance combining high velocity, acceleration, and peak thrust forces
- Standard rotating SpeedTec DIN Connectors
- Flexible, efficient servo controlled rod actuation
- Optional encoder resolution to suite a wide variety of applications
- Connect directly to the payload to help reduce any need for inertia matching
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- Standard rotating SpeedTec DIN Connectors
- Flexible, efficient servo controlled rod actuation
- Optional encoder resolution to suite a wide variety of applications
- Connect directly to the payload to help reduce any need for inertia matching

### Voltage/Travel and Speed
- **LDL-Series/LDC-Series**
  - 230V and 460V
  - Up to 10 ms and 10 gs

- **LDAT-Series**
  - 230V and 460V
  - Stroke lengths up to 800 mm
  - Speeds up to 1 ms
  - ± 0.02 mm position repeatability

- **MP-Series/TL-Series**
  - 230V and 460V
  - Velocities up to 5 ms (197 in/s) with direct drive models
  - Ball screws or linear motor combinations for a variety of application needs
  - Customizable combinations also available such as MPA-Series Linear Stages and MPW-Series Electric Actuators

- **MP-Series Integrated Linear Stages**
  - Pre-assembled and pre-aligned 2-axis combinations simplify installation
  - X/Y and T/Az configurations to satisfy a variety of application needs
  - Bolt through, toe clamp and T-slot mounting options for ease of installation
  - Ball screws or linear motor combinations for a variety of application needs

- **MP-Series Multi-Axis Linear Stages**
  - Three frame sizes for varying degrees of payload
  - Bolt through, toe clamp and T-slot mounting options for ease of installation
  - Ball screws or linear motor combinations for a variety of application needs

### Feedback Options
- User-supplied

### Continuous Stall Torque/Force
- **LDL-Series/LDC-Series**
  - Peak forces to 548 N (1229 lbs)

- **LDAT-Series**
  - Peak forces to 5400 N (1202 lbs)

- **MP-Series/TL-Series**
  - 240-7784 N (54-1750 lbs)
  - Direct drive model with peak forces to 601 N (135 lbs)
  - Ballscrew/servo Motor-driven ballscrew/servo with high resolution multi-turn absolute

### Applications
- Material handling
- Form, fill and seal
- Shape cutting
- Solar panel scribing
- Dispensing machines
- Case Packing
- Cartoning
- Vertical and Top-load
- Case packing
- Horizontal packaging
- Vertical motion conveyors
- Tray and case handling
- Automotive
- Medical and Life Sciences
- Food & Beverage
- Assembly and Test
- Material handling
- Packaging
- Flying Shears
- Cartoning
- Dispensing
- Medical Assembly
- Non-contact cutting such as laser
- Pick and Place
- Dispensing
- Inspection
- Cutting

For more information: [www.rockwellautomation.com/go/ia]
<table>
<thead>
<tr>
<th>Operator Interfaces At-A-Glance</th>
</tr>
</thead>
</table>

### PanelView Plus 7 Standard
- **Display Size**: 400W - 4.3 in (95 x 54 mm)
- **Resolution**: 400W - 480x272 WQVGA
- **Display Size**: 400W - 4.3 in (95 x 54 mm)
- **Resolution**: 400W - 480x272 WQVGA
- **Venting**: Yes (SDK available)
- **RAM**: 512 MB
- **Operating System**: Microsoft Windows® CE 6.0 R3
- **CPU**: 1.0 GHz Core Duo U2500
- **RAM**: 4 GB DDR3 RAM (Expandable to 16 GB)
- **Hard Drive**: 8 GB SSD
- **Development Software**: Visual Studio 2008
- **Real-Time Clock**: Battery backed time clock
- **Environmental Temperature Operating**: 0-50 °C (32-122 °F)
- **Power Requirements**: 100-240 VAC, 1.0 A
- **Operating Temperature**: -20-70 °C (-4-158 °F)
- **Vibration-Operating**: 0.002 in. p-p, (10-57 Hz)
- **Shock-Operating**: 1.5 g (SSD)
- **Accuracy**: +/-2 minutes per month

### PanelView Plus 6 (700 - 1500)
- **Display Size**: 18-30V DC (non-isolated) or 85-265V AC @ 47-63 Hz
- **Resolution**: 900W - 800x480 WVGA
- **Display Size**: 1000 - 10.4 in (254 x 264 mm)
- **Resolution**: 1250 - 12.1 in (307 x 307 mm)
- **Venting**: Yes (SDK available)
- **RAM**: 2 GB DDR2
- **Operating System**: Windows XP Professional
- **CPU**: 2.0 GHz Core Duo or 1.86 GHz Celeron M
- **RAM**: 4 GB DDR2
- **Hard Drive**: 32 GB SSD
- **Development Software**: FactoryTalk View Studio
- **Real-Time Clock**: Battery backed time clock
- **Environmental Temperature Operating**: 0-50 °C (32-122 °F)
- **Power Requirements**: 180-240 VAC, 1.0 A
- **Operating Temperature**: -20-70 °C (-4-158 °F)
- **Vibration-Operating**: 0.002 in. p-p, (10-57 Hz)
- **Shock-Operating**: 7.5 g
- **Accuracy**: +/-2 minutes per month

### PanelView Plus 6 (400 and 600)
- **Display Size**: 18-30V DC (non-isolated) or 85-265V AC @ 47-63 Hz
- **Resolution**: 700 - 640x480 VGA
- **Display Size**: 600 - 5.7 in (145 x 145 mm)
- **Resolution**: 400 - 320x240
- **Venting**: Yes (SDK available)
- **RAM**: 1 GB DDR2
- **Operating System**: Windows XP Professional
- **CPU**: 1.0 GHz Celeron M
- **RAM**: 1 GB DDR2
- **Hard Drive**: 250 GB Hard Disk Drive 7200
- **Development Software**: FactoryTalk View Studio
- **Real-Time Clock**: Battery backed time clock
- **Environmental Temperature Operating**: 0-50 °C (32-122 °F)
- **Power Requirements**: 180-240 VAC, 1.0 A
- **Operating Temperature**: -20-70 °C (-4-158 °F)
- **Vibration-Operating**: 0.002 in. p-p, (10-57 Hz)
- **Shock-Operating**: 7.5 g
- **Accuracy**: +/-2 minutes per month

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For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
## Operator Interfaces – Industrial Monitors At-A-Glance

<table>
<thead>
<tr>
<th>Display Type</th>
<th>Resolution</th>
<th>Bezel Type</th>
<th>Touch Screen Option</th>
<th>USB Hub</th>
<th>Video Input</th>
<th>Network Communications</th>
<th>Operating Temperature</th>
<th>Ratings</th>
<th>Vibration-Operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>12” (300 mm)</td>
<td>800 x 600, 1024 x 768 or 1280 x 1024</td>
<td>Aluminum and Stainless Steel (15-19” models only)</td>
<td>Resistive touch screen</td>
<td>2 USB 2.0</td>
<td>VGA</td>
<td>AC: 90-264V AC, autoranging +47-63 Hz</td>
<td>+47-63 Hz</td>
<td>+0.05% Type: 1/124</td>
<td>&lt;2 g peak, swept 10-500 Hz</td>
</tr>
<tr>
<td>15” (300 mm)</td>
<td>1024 x 768 or 1280 x 1024</td>
<td>Aluminum and Stainless Steel (15-19” models only)</td>
<td>Resistive touch screen</td>
<td>2 USB 2.0</td>
<td>VGA</td>
<td>DC: 5 V DC or 300 V DC</td>
<td>+47-63 Hz</td>
<td>+0.05% Type: 1/124</td>
<td>&lt;2 g peak, swept 10-500 Hz</td>
</tr>
<tr>
<td>17” (430 mm)</td>
<td>1024 x 768 or 1280 x 1024</td>
<td>Panel mount: Aluminum Alloy</td>
<td>Resistive touch screen</td>
<td>2 USB 2.0</td>
<td>VGA</td>
<td>DC: 5 V DC or 300 V DC</td>
<td>+47-63 Hz</td>
<td>+0.05% Type: 1/124</td>
<td>&lt;2 g peak, swept 10-500 Hz</td>
</tr>
<tr>
<td>19” (480 mm) Class Color Active Matrix TFT</td>
<td>1024 x 768 or 1280 x 1024</td>
<td>Vesa mount: Plastic (steel reinforced)</td>
<td>Resistive touch screen</td>
<td>2 USB 2.0</td>
<td>VGA</td>
<td>DC: 5 V DC or 300 V DC</td>
<td>+47-63 Hz</td>
<td>+0.05% Type: 1/124</td>
<td>&lt;2 g peak, swept 10-500 Hz</td>
</tr>
</tbody>
</table>

## Operator Interfaces – Non-display Industrial Computers At-A-Glance

1. Aluminum bezel only.

<table>
<thead>
<tr>
<th>Model</th>
<th>6155R Compact Non-Display Industrial Computer</th>
<th>6177R Machine Mount Non-Display Industrial Computer</th>
<th>6177R Rack Mount Non-Display Industrial Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>6155R</td>
<td>6177R</td>
<td>6177R</td>
</tr>
<tr>
<td>Performance Range</td>
<td>External Monitor Required</td>
<td>Performance, Advanced, Server</td>
<td></td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>1 Compact Flash (Type 2)</td>
<td>1 PCI Express x16</td>
<td>1 PCI Express x16</td>
</tr>
<tr>
<td>Processor Types</td>
<td>1 GHz Celeron M Processor</td>
<td>Intel i3-2120 dual core 3.1GHz or Intel i5-2400 quad core 3.3GHz</td>
<td></td>
</tr>
<tr>
<td>RAM</td>
<td>2 GB DDR3</td>
<td>4 GB DDR3</td>
<td>8 GB DDR3</td>
</tr>
<tr>
<td>Storage Drive</td>
<td>100 GB HDD, 2/5” SATA or 2/5” SSD</td>
<td>1 x 500 GB, 3.5” SATA or 2 x 500 GB, 3.5” SATA</td>
<td></td>
</tr>
<tr>
<td>I/O</td>
<td>1 Serial Port (Standard)</td>
<td>4 USB ports, 2 serial ports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Serial Ports (Performance)</td>
<td>2 USB ports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10/100/1000 Ethernet port (Standard)</td>
<td>1 USB 3.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2/10/100/1000 Ethernet ports (Performance)</td>
<td>1 eSATAp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 USB 2.0 ports</td>
<td>2 PS/2 ports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio line out</td>
<td>Audio line out/in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10/100/1000 Ethernet port</td>
<td>1 Parallel port</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 VGA port</td>
<td>Audio line out/in</td>
<td></td>
</tr>
<tr>
<td>Operating Systems</td>
<td>Windows 7 Professional</td>
<td>Windows 7 Professional (64 bit)</td>
<td>Windows 7 Professional (64 bit)</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>0-45˚C (32-113˚F) Fanless</td>
<td>0-45˚C (32-113˚F) Fanless</td>
<td>0-45˚C (32-113˚F) Fanless</td>
</tr>
<tr>
<td>Vibration-Operating</td>
<td>1 g peak, swept 10-500 Hz</td>
<td>1 g peak, swept 10-500 Hz</td>
<td>1 g peak, swept 10-500 Hz</td>
</tr>
<tr>
<td>Shock-Operating</td>
<td>15 g (1/2 sine, 11 ms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratings</td>
<td></td>
<td>1 G</td>
<td></td>
</tr>
</tbody>
</table>
# Stratix Industrial Networks Infrastructure and Ethernet Media At-A-Glance

## Hardware Features

<table>
<thead>
<tr>
<th>Model</th>
<th>Ports Per Module</th>
<th>Total Max Ports</th>
<th>Fiber Ports</th>
<th>Copper Ports</th>
<th>1G Ports</th>
<th>100 Mbs Fiber Support</th>
<th>1 G Fiber Support</th>
<th>Power Over Ethernet (PoE)</th>
<th>Nonvolatile Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stratix 2000</td>
<td>10-18</td>
<td>Up to 20</td>
<td>Up to 4 SFP slots</td>
<td>6-16 ports</td>
<td>2 copper or SFP slots</td>
<td>No</td>
<td>Yes</td>
<td>Up to 8 ports</td>
<td>Yes</td>
</tr>
<tr>
<td>1783-NATR</td>
<td>6-16, 18, 24 port versions</td>
<td>Up to 24</td>
<td>N/A</td>
<td>6-24 ports</td>
<td>Up to 2 copper or SFP slots</td>
<td>N/A</td>
<td>Yes</td>
<td>Up to 4 ports</td>
<td>N/A</td>
</tr>
<tr>
<td>Stratix 5900</td>
<td>6-16, 18, 24 port versions</td>
<td>Up to 24</td>
<td>N/A</td>
<td>6-24 ports</td>
<td>Up to 2 copper or SFP slots</td>
<td>N/A</td>
<td>Yes</td>
<td>Up to 8 ports</td>
<td>N/A</td>
</tr>
<tr>
<td>Stratix 5100</td>
<td>6-16, 18, 24 port versions</td>
<td>Up to 24</td>
<td>N/A</td>
<td>6-24 ports</td>
<td>Up to 2 copper or SFP slots</td>
<td>N/A</td>
<td>Yes</td>
<td>Up to 8 ports</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Ports Per Module
- **5-16** ports on 5100
- **2** ports on 5900
- **4** ports on 2000

### Total Max Ports
- **Up to 16** ports on 5100
- **2** ports on 5900
- **4** ports on 2000

### Fiber Ports
- **Up to 10 SFP slots** on 5900
- **Up to 4 SFP slots** on 2000
- N/A on 5100

### Copper Ports
- **Up to 16** ports on 5100
- **2** ports on 5900
- **5** ports on 2000

### 1G Ports
- **Up to 6** ports on 5100
- N/A on 5900
- **1 WAN** ports on 2000

## Software Features

<table>
<thead>
<tr>
<th>Model</th>
<th>Cisco IOS</th>
<th>Quality of Service (QoS)</th>
<th>Layer 3 Routing</th>
<th>DLR (Device Level Ring)</th>
<th>IGMP Snooping and Query</th>
<th>STP/RSTP</th>
<th>SNMP Support</th>
<th>Etherchannels</th>
<th>REP (Resilient Ethernet Protocol)</th>
<th>CIP Sync (IEEE 1588)</th>
<th>Stratix and InterVLAN Routing</th>
<th>VLANs</th>
<th>Network Address Translation (NAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stratix 2000</td>
<td>Yes</td>
<td>Yes*</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes*</td>
<td>Yes*</td>
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<td>1783-NATR</td>
<td>Yes</td>
<td>Yes*</td>
<td>No</td>
<td>No</td>
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<td>Yes</td>
<td>Yes*</td>
<td>Yes*</td>
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<td>Stratix 5900</td>
<td>Yes</td>
<td>Yes*</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes*</td>
<td>Yes*</td>
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<td>Stratix 5100</td>
<td>Yes</td>
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<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

### Quality of Service (QoS)
- **Yes** on Private port

### Layer 3 Routing
- **Yes**

### DLR (Device Level Ring)
- **Yes**

### IGMP Snooping and Query
- **Yes**

### STP/RSTP
- **Yes**

### SNMP Support
- **Yes**

### Etherchannels
- **Yes**

### REP (Resilient Ethernet Protocol)
- **Cisco Discovery Protocol (CDP)**

### CIP Sync (IEEE 1588)
- Yes pass through

### Stratix and InterVLAN Routing
- Yes

### VLANs
- Yes

### Network Address Translation (NAT)
- Yes

* SW Option  ** Option

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### Ethernet Media

<table>
<thead>
<tr>
<th>Applications</th>
<th>1585D</th>
<th>1585J</th>
<th>1585B</th>
<th>1585A</th>
<th>1585C</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Compatible with IP67 ArmorBlock and ArmorPOINT products</td>
<td>• Achieve IP67 rating using M12 shielded and unshielded cables</td>
<td>• Transition from IP00 to IP67</td>
<td>• Insulator, Displacement Technology used with RJ45 and M12 shielded cables</td>
<td>• Standard industrial rated, high flex, Plenum rated spools</td>
<td>—</td>
</tr>
<tr>
<td>• High flex up to 10 million flex cycles for robotic applications</td>
<td>• Available in standard PVC, high flex TPE, PUR or Plenum PVC cable jackets, 300V and 600V</td>
<td>• Field attachable connectors in male and female</td>
<td>• Shielded and unshielded cables</td>
<td>• Shielded and unshielded cables</td>
<td>—</td>
</tr>
<tr>
<td>• Cabinet to cabinet connectivity</td>
<td>• Available with Thermoplastic and Die Cast Zinc housing</td>
<td>• Custom assembly and installation</td>
<td>• Shielded and unshielded cables</td>
<td>• 2 and 4 pair TPE, 4 pair PVC, 4 pair Plenum Shielded</td>
<td>—</td>
</tr>
<tr>
<td>• Resistance to high vibration, shock, chemicals</td>
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</tr>
</tbody>
</table>

### Operating Temperature

- -40-60 °C (-40-140 °F)
- -40-70 °C (-40-158 °F)
- -20-65 °C (-4-185 °F)
- -20-60 °C (-4-140 °F)
- -40-75 °C (-40-167 °F)

### Ratings

- IP67 CAT 5e
- IP20 CAT 5e
- IP67 CAT 5e
- IP20 to IP67 CAT 5e
- IP20 CAT 6
- CAT 5e

### MICE Rating

- M3I3C3E3
- M1I1C1E3
- M3I3C3E2
- M1I1C1E3
- M3I3C3E3

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- Training assessments
- Workstations and job aids

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- Repair services on non-Rockwell Automation brands
- Annual repair agreements

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- Comprehensive asset management planning
- Reliability services
- Global spare parts inventory
- Storeroom and firmware management

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- Pinpoint obsolescence risk
- Tools and Lifecycle support service agreements to mitigate production risk

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- Manage network convergence
- Security technology, policies and procedures services
- Network design, integration and validation services

Safety Services
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- Safety design, integration and validation services

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