Integrated Architecture
Real-time Control and Information Delivering
Smart Manufacturing, Machines and Equipment
The Connected Enterprise allows manufacturing and industrial operations to uncover new ways to bring value to customers through Digital Transformation, to keep pace with the competition and to meet increasing demands.

Through The Connected Enterprise, a Rockwell Automation® high-performance architecture helps manufacturers and industrial operators capitalize on the promise of an ever more connected world. The Digital Transformation of your entire value chain – from components to systems and from suppliers to customers – is the key to hidden value which can make a significant contribution to the productivity, quality, compliance and profitability of your enterprise. To achieve this and further enable The Connected Enterprise, the Integrated Architecture® from Rockwell Automation provides a multidiscipline automation architecture platform and network via EtherNet/IP™ for scalability and a smarter, more productive, more secure system.

Our comprehensive services and solutions help you reduce risk and create value throughout your production lifecycle with global and local support, now and into the future. This helps reduce risk and creates value over the long term.

Enabled by integrated control and information and enhanced by the Industrial Internet of Things (IIoT), Rockwell Automation delivers The Connected Enterprise. Use the power of real-time data to make better, more informed business decisions, enabling you to attain and maintain profitability and a competitive edge.

The Connected Enterprise is reshaping the future of industrial automation by converging information technology (IT) and operations technology (OT) into a single, unified architecture. Combined with the IoT, which connects the physical and virtual worlds, technology is now leveraged to better gather and analyze data, transforming it into actionable information delivered to the right people at the right place at the right time.

**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 helps customers mitigate their enterprise risk and monetize their intellectual property.

**The Connected Enterprise Provides:**
- Faster time to market
- Lower total cost of ownership
- Improved asset utilization and optimization
- Enterprise risk management
Contents

Multiple Disciplines from One Automation Architecture 6-9

Scalable Architecture 10-13

Automation Design Productivity 14-17

Manufacturing Intelligence and Operations Management 18-21

Industrial Automation Security 22-25

Profitable Partnership 26-29

Product portfolio

Hardware Portfolio 30-31
Software Portfolio 32-33
Programmable Automation Controllers 34-35
Input/Output Modules 36-39
Condition and Energy Monitoring Intelligent Devices 40-41
Servo Drives and Motors 42-43
Actuators and Independent Moving Cart Technology 44-47
AC Drives and Motor Control Devices 48-49
Operator Interfaces 50-53
Scalable Computers 54-55
Stratix Industrial Networks Infrastructure and Ethernet Media 56-57
Services and Support 58-60
For more information: rok.auto/ia
Smart Manufacturing

Our Integrated Architecture® control and information portfolio helps break down barriers, securely providing access to data that has traditionally been trapped and contextualizing it to provide the right intelligence to the right people at the right time. This actionable information impacts key performance indicators such as production throughput, process quality, asset health and energy efficiency, delivering real business value.

Faster Time to Market

Design productivity, faster commissioning times with intelligent devices, quicker startup of greenfields, proven technology around risk mitigation for operations and IT and the agility to respond to customer trends more quickly.

Lower Total Cost of Ownership

Better lifecycle management, enabling more effective operations, improved energy management and easier technology migration.
Smart Machines and Equipment

Our Integrated Architecture control and information portfolio helps original equipment manufacturers (OEMs) to create intelligent manufacturing equipment that easily integrates into a facility, provides access to information and enables agile reaction to changing market demands. Rockwell Automation can help OEMs and their customers become connected, compliant and competitive.

Improved Asset Utilization and Optimization

Improved reliability, quality and predictive maintenance driven by operational intelligence tools.

Enterprise Risk Management

Protection of intellectual property and brand image with a safe and secure operating environment; reduced exposure due to poor product quality and internal and external threats.

For more information: rok.auto/ia
MULTIPLE DISCIPLINES FROM ONE AUTOMATION ARCHITECTURE

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 removes 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:

- 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

- Increased productivity with continuous improvements that provide better asset utilization and system performance
Solution
The power of one – one common control platform, common network and common design environment that simplifies everything and helps reduce costs.

Challenge
Getting control systems that work isn’t the problem – the problem is getting control systems that work together seamlessly.

Case Study
North American Tillage Tools (NATT)
North American Tillage Tools (NATT) produces 1.8 million steel discs each year for farm equipment manufacturers. To increase production, NATT installed a new metal press with a Rockwell Automation system that integrates safety and motion control. NATT met its production requirements and CSA / TÜV safety standards, while also helping to future-proof its production line.

For more information: rok.auto/ia
The Power of One
With Logix technology, you can integrate process, batch, discrete, drives, safety and motion 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 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.

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 like safe speed and safe direction can help to significantly reduce expensive shutdowns.

Continuous Process Control

PlantPAx® Distributed Control System combines plant-wide control and unmatched scalability of the Integrated Architecture system with the core capabilities of a Modern 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, powered by Logix Based Sequence Manager.

For more information: rok.auto/ia
SCALABLE ARCHITECTURE

Implement a scalable automation architecture with the flexibility to meet a variety of applications at the most competitive cost, while offering 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, often they 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
A scalable design environment, network technology and automation portfolio, fully integrated for the application in question.

Case Study
Biopharmax Group
Biopharmax Group, a global pharmaceutical facilities company, needed an open and scalable system to allow future expansion, while maintaining a minimum footprint and high levels of cleanliness. The solution was a scalable, state-of-the-art Integrated Architecture® system that enables fast reaction to manufacturing variables and provides remedial actions.

For more information: rok.auto/ia
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 Solutions
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.

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.
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 safety-rated I/O products are TÜV-certified up to SIL 3, PLe, Cat. 4.

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 minimize the time spent to create machine differentiation.

Motor and Motion Control
Our portfolio extends from fixed speed starters, through variable frequency drives for a wide range of applications, to high-performance, multi-axis servo drives for the most demanding applications.

Manufacturing Production Intelligence
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.
Our Studio 5000 Automation Engineering & Design Environment® combines design and engineering elements into one standard framework with workflows that make it easy and intuitive to use.

We offer a unique approach to automation. It uses a common control engine and development environment designed to deliver world-class capabilities for all automation disciplines and industries.

The Studio 5000 development environment helps you respond quickly to changes in market and business needs and reduces total costs of ownership. New design capabilities can increase automation productivity and reduce costs during a project’s lifecycle. Studio 5000 extends beyond one controller to be a system-wide development and design tool.

**Key Features**

- Scalable and flexible - use modular code to simplify your application
- Efficient project design - write code, organize it, test it and duplicate it
- Effective content management - create content, store it, share it and reuse it
- Quicker downtime recovery - logically find what you need to quickly troubleshoot code
- Collaborative engineering - enable multiple people to code, then compare and merge
Challenge
The design process can be made complicated by using different tools for each task.

Solution
A single design environment that helps to drive down the time and cost to design, develop and deliver your automation project.

Case Study
CKC Engineering
CKC Engineering was asked by one of the world’s largest medical device companies to design and develop a custom microbore tubing spooler machine for a new extrusion plant. The Rockwell Automation solution helped reduce programming and commissioning time by 25 percent.

For more information: rok.auto/ia
Enhanced Productivity

System Organization
Organize your system in the way that’s best for you to design, operate and maintain your application. Studio 5000 offers a central point for design workflows and is the primary means to delivering contextual information to the right user at the right time.

Library Management
Simplifies the organization, accessibility and reuse of code, which helps establish best practices and standards. Efficiently managing reusable content speeds design time, especially when combined with the bulk engineering capabilities of Application Code Manager.

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.

Information-enabled
Device and system data structures make it easy to collect data across the enterprise, transform it into actionable information and make it available to the right person at the right time. This supports better decision making and improved overall performance.
Virtual Design and Engineering
Achieve savings and maintain a competitive edge with digital design, simulation and emulation. Simulation helps protect your business by analyzing the impact of new business ideas, rules and strategies - before implementation. This helps shorten development cycles, reduce risk and optimize system designs.

System Security
Help reduce risk and protect critical assets with a focus on infrastructure security, user access control, change detection and response and intellectual property management.

Device Management
Providing named data structures and 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: rok.auto/ia
Industrial enterprises worldwide are beginning to use 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.
Solution
Enabling real-time access to critical production information for better and faster decision making, business agility and improved performance and productivity.

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

Case Study
Trigg Technologies
Trigg Technologies sells, leases and services hydrocarbon transfers for oil and gas companies. The company cut an average of 20 days from billing cycles and reduced ticketing errors to virtually nil by using our control and information solution combined with a cloud platform. Trigg Technologies now has real-time visibility and historical trend data on transfers, overall oil quality and well productivity over time, improving maintenance and decision making.

For more information: rok.auto/ia
Choose an Architecture that Provides 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.

Performance Management with Enterprise Manufacturing Intelligence

Our solutions intuitively connect to your plant automation systems and present information on how your equipment is performing. Find Key Performance Indicators (KPIs) such as OEE (overall equipment effectiveness), MTTR (Mean Time to Repair) and many more.

Manufacturing Execution Systems

Our MES solutions enable 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.
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 untether you from desktop computers.

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.

Visibility is Everything
With the right information software in place, you can increase your visibility into your operations. Our software helps you 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 the way you want it.

Productivity Improvements
FactoryTalk® TeamONE™ mobile application seamlessly connects to the technology that manufacturers adopt during their digital transformation. It boosts team productivity by enabling users to collaborate and share knowledge, view live production diagnostics, interact with machine alarms, and troubleshoot devices.

For more information: rok.auto/ia
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 countermeasures.

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 and intellectual property 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
**Challenge**
Industrial organizations need to establish a seamless flow of information by connecting control systems to the enterprise; however, a complex, interconnected system doesn’t come without challenges.

**Solution**
A consistent, comprehensive approach to industrial security that extends beyond the control system to include data, policies and procedures that address people, processes and technology-related risks.

**Case Study**

**MG Bryan**
MG Bryan is a manufacturer of heavy equipment and machinery for the Oil & Gas industry. The company adopted cloud computing for remote asset management of high-tech fracking equipment through secure access to real-time information, and is now able to monitor fracking truck use by the minute, hour and day. This has enabled the company to change its leasing agreement from the industry-standard monthly agreements to a pay-by-use model.

For more information: rok.auto/ia
Secure Environment

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
Help protect valuable intellectual property such as production data, recipes, code from access and viewing by using Logix data protection services.

Securing the Network Infrastructure
Provide 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.

For more information: rok.auto/ia
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**

Our success is based on your success. 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.
Solution
A specialized supplier, committed to excellence in delivery and to the long-term future of your business and your automation investment.

Case Study
ASARCO
ASARCO, an integrated copper mining, smelting and refining company, required a control system upgrade for the electrolyte purification system at its refinery. Working with Rockwell Automation, ASARCO improved overall system efficiency, maintainability and flexibility – and the new integrated solution can extend to other parts of the facility.

For more information: rok.auto/ia
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.

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 of 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.

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

Modernization 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 that 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: rok.auto/ia
As one of the world’s largest companies dedicated to industrial automation, our extensive product portfolio, services and support help to improve your manufacturing cycle.

<table>
<thead>
<tr>
<th>Programmable Automation Controllers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Modular and scalable systems</td>
</tr>
<tr>
<td>• Process, batch, discrete, drives, safety and motion control</td>
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<tr>
<td>• High-availability</td>
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<td>• SIL 2 and SIL 3 safety certified</td>
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<td>• Embedded and Distributed I/O</td>
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<tr>
<td>• Extreme Environment (XT) and Conformal Coating</td>
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<tr>
<th>Input/Output</th>
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<tr>
<td>• Chassis-based, local, family-specific, distributable via communication networks</td>
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<tr>
<td>• Distributed, in-cabinet modular – flexible, customizable</td>
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<tr>
<td>• Distributed, in-cabinet block – includes network adapter, analog, digital and specialty</td>
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<tr>
<td>• On-Machine™ modular – direct-mount, reduced wiring costs, easy maintenance</td>
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<tr>
<td>• On-Machine direct mount, block – reduced wiring costs, easy maintenance</td>
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<tr>
<td>• Safety – FLEX 5000™ I/O, POINT Guard I/O™, ArmorBlock® I/O, CompactBlock™ Guard I/O™ – reduced wiring costs and startup time, available for in-cabinet and On-Machine applications</td>
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<tr>
<td>• Distributed/embedded - built-in EtherNet/IP™ and DeviceNet™ support, IO-Link technology, optional DeviceLogix™ Smart Component Technology</td>
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<tr>
<th>Condition and Energy Monitoring</th>
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<tbody>
<tr>
<td><strong>Condition Monitoring</strong></td>
</tr>
<tr>
<td>• Integrated condition monitoring on the EtherNet/IP network</td>
</tr>
<tr>
<td>• High-performance portable data collectors</td>
</tr>
<tr>
<td>• Proven, comprehensive predictive maintenance software</td>
</tr>
<tr>
<td>• Sensors and accessories for a complete solution</td>
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<table>
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<tr>
<th>Energy Monitoring</th>
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</thead>
<tbody>
<tr>
<td>• Energy monitoring on the EtherNet/IP network</td>
</tr>
<tr>
<td>• Capture comprehensive information:</td>
</tr>
<tr>
<td>- how much power you use</td>
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<td>- what your major loads are</td>
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<td>- when you use electric power the most</td>
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<tr>
<td>- how much you pay for it</td>
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<tr>
<td>- quality of the power you use</td>
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Sensors and Safety

Smart Sensors
- Smart Sensors with IO-Link serve as an enabling technology for The Connected Enterprise
- IO-Link provides seamless integration of sensors through The Integrated Architecture
- Multiple master options and a wide range of IO-Link enabled smart sensors available
- Radio Frequency Identification (RFID) Systems and Encoders with direct EtherNet/IP connectivity

Sensors and Safety

Smart Safety
- GuardLink technology seamlessly links safety components to The Integrated Architecture
- Ethernet connectivity for software configurable and GSR single-function safety relays
- The 440C-CR30 software configurable safety relay can share information with the control system through the optional EtherNet/IP plug-in module
- Intelligent Guardmaster® safety relays offer network connectivity via the optional 440R-ENET EtherNet/IP Interface

Motor Control

PowerFlex AC Drives
- Designed for application flexibility
- Real-time information access for your power and control system
- Premier 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
- Help reduce energy costs, component count, maintenance and motor wear

Motor Control Centers
- CENTERLINE® Motor Control Centers (MCCs) offer a rugged, high-performance packaging solution for all your motor control needs.

Motor Control
- SMC™ soft starters can be easily integrated into your intelligent motor control solution to offer higher productivity and shorter downtimes
- A full line of versatile and robust starters and relays for both low and medium voltage, and IEC and NEMA applications

Motion Control

- Servo drives for a broad range of applications
- Rotary and linear servo motors
- Safety servo drives minimize downtime and reduce energy and production waste

- Linear actuators and stages for flexible servo control
- Absolute encoders for closed-loop control systems
- Incremental optical encoders provide low cost, small size, high frequency and high resolution

Operator Interfaces and Industrial Computers

- Extreme environment computers
- ATEX and UL-rated for hazardous locations
- Industrial environment, non-display and integrated display computers

- Graphic terminals with dual Ethernet ports for Device Level Ring (DLR) topologies
- Industrial flat panel, LCD monitors – Class I, Division 2 locations

Industrial Networks Infrastructure and Ethernet Media

Stratix Switches
- Managed Ethernet switches use a Cisco® Operating System
- Variety of features for both IT and manufacturing environments
- Unmanaged Ethernet switches are ideal for small, isolated networks

Stratix Security Appliances
- Combine several modern security functions into a single appliance
- Help provide incident detection, prevention and response

Network Topologies
- Device-Level Ring (DLR)
- 3-ring DLR
- Parallel Redundancy Protocol (PRP)

Media and Connectors
- Complete portfolio of industrial-grade Ethernet physical media
- In-Cabinet (RU45) Network Media
- On-Machine (M12 and Variant 1) Ethernet Media

For more information: rok.auto/ia
Rockwell Software® offers a complete suite of software tools to help deliver efficiency and deliver value across your Connected Enterprise.

**Design and Configuration**

The Studio 5000® Automation Environment combines engineering and design elements into one standard framework that enables optimized productivity and reduced commissioning time.

**Studio 5000 Architect Software**

Studio 5000 Architect™ software is an integrated engineering environment that allows you to streamline the time to build your Logix and FactoryTalk® View automation system, supports reuse of content and provides seamless exchange of data between engineering tools.

**Studio 5000 View Designer Software**

Studio 5000 View Designer® software is the design environment for the PanelView™ 5000 graphic terminals. As part of the Studio 5000 environment, View Designer software offers enhanced integration with Logix to improve operator performance.

**Studio 5000 Logix Designer Software**

Studio 5000 Logix Designer® software, the next progression of RSLogix 5000® software, delivers a standardized framework for discrete, process, batch, motion, safety and drive-based systems, helping save programming time.

**Studio 5000 Application Code Manager**

Studio 5000® Application Code Manager software is a new design tool that allows you to leverage your re-usable content, helping you to increase deployment efficiency, accuracy and overall cost savings.

**Emulation and Simulation**

- **Emulate:** Studio 5000® Logix Emulate™ software is the core of Studio 5000 virtual design, enabling machine prototyping, throughput analysis, virtual commissioning and Operator Training Systems (OTS). Logix Emulate software provides the ability to validate, test and optimize application code independent of physical hardware.
- **Simulate:** Arena simulation software helps protect your business by analyzing the impact of new business ideas, rules and strategies - before implementation. This helps shorten development cycles, reduce risk and optimize system designs.

**Use FactoryTalk® Linx and RSLinx® Classic** with Rockwell Automation software to browse the network and communicate with compatible devices. It enables access to control system data for other software via an OPC communications interface.

**Connected Components Workbench™** software is the configuration, programming and visualization software that simplifies standalone machine development with one software solution. It offers easy programming for Micro800® controllers with the PanelView 800 HMI editor integration and PowerFlex® drives configuration.
**Visualization and Collaboration**

**FactoryTalk® View SE**
A supervisory-level HMI software for monitoring and controlling distributed-server/multi-user applications.

**FactoryTalk® View ME**
A versatile HMI application that provides a dedicated and powerful solution for machine-level operator interface devices.

**FactoryTalk® ViewPoint**
On the road, at home or in the office, provides a secure interface with FactoryTalk® View’s graphics, trending, and alarming applications through a web browser. Extends access to users anywhere for improved real-time decision making.

**FactoryTalk® TeamONE**
The FactoryTalk TeamONE productivity app seamlessly connects to the technology that manufacturers adopt during their digital transformation. It boosts team productivity by enabling users to collaborate and share knowledge, view live production diagnostics, interact with machine alarms, and troubleshoot devices.

**ThinManager**
ThinManager® allows unprecedented control and security in a scalable platform regardless of the size of your industrial environment or number of facilities. Its thin-client architecture allows for deployment of less expensive hardware, while giving users the applications and tools familiar to them and increasing security through centralized management.

**Manufacturing Intelligence and Analytics**

**FactoryTalk® VantagePoint EMI**
Manufacturing information delivered when you need it, the way you want to see it to make informed decisions. Gain real insight into your production information via any mobile device or view web-based reports and KPI dashboards.

**FactoryTalk® Historian**
Captures the data you need to improve operations. Powerful reporting and trending tools provide critical insight into performance parameters and are available at high speed, reliably – from machine to enterprise.

**FactoryTalk® Metrics**
Generates accurate reporting of real plant floor activity, giving you important insights into overall equipment effectiveness and downtime analysis for increased productivity and profitability.

**FactoryTalk® EnergyMetrix™ Software**
A web-enabled management software package that gives you access to critical energy information from virtually any location, providing complete energy-management decision support.

**FactoryTalk® Analytics**
Collect your raw data and turn it into actionable information with our scalable analytics solutions. From an Industrial IoT sensor to machines — all the way through your enterprise, we can help you with the right application and remove barriers to success.

**FactoryTalk® AssetCentre**
Provides you with a centralized tool for securing, managing, versioning, tracking and reporting automation related asset information across your entire facility. It can improve uptime, productivity, quality, employee safety or regulatory compliance.

**Manufacturing Execution Systems (MES)**

MES software provides standardized workflows to operators to help ensure the highest possible production quality as well as regulatory compliance. We offer standard application library suites for pharmaceutical, consumer packaged goods and automotive industries.

**FactoryTalk® ProductionCentre® Software**
Integrates quality management and business analytics with paperless shop floor and repair execution. This improves operational efficiencies while helping ensure regulatory compliance and the highest levels of quality.

**ERP Integration Gateway**
A cost-effective application that aligns manufacturing operations with the business processes and information housed in Enterprise Resource Planning (ERP) and other business systems.

**Process**

**PlantPAx® System**
Is the modern world-class distributed control system (DCS) from Rockwell Automation. Built on a scalable architecture, it enables plant-wide control and premier integration with the Rockwell Automation Intelligent motor control portfolio.

**FactoryTalk® Batch**
Provides consistent, predictable, batch processing and supports re-use of code, recipes, phases and logic. It combines the ISA S88 standard with proven technology providing the flexibility to go to market faster.

**Pavilion8® Software**
Is model predictive control software that provides tools to improve operation agility, allowing quick adaptation to changing business priorities and customer demands. The software includes modules to control, analyze, monitor, visualize, warehouse and integrate via its powerful modeling engine.

For more information: rok.auto/ia
# Programmable Automation Controllers At-A-Glance

<table>
<thead>
<tr>
<th>ControlLogix 5580</th>
<th>ControlLogix 5570</th>
<th>CompactLogix 5480</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>Logix programmable automation controllers use a common control engine with a common development environment to provide high performance in an easy-to-use environment. ControlLogix® controllers are ideal for demanding applications and can perform standard and safety control in the same chassis for a truly integrated system and leverage the high-availability and extreme environment capabilities to meet your application needs.</td>
<td>CompactLogix 5480 Controller offers the benefits of Logix control with Windows®-based computing. With a commercially available CPU and a Windows 10 IoT Enterprise operating system running in parallel to the Logix control engine, it provides a high-performance architecture with the ability to run third-party applications.</td>
</tr>
<tr>
<td><strong>Key Features</strong></td>
<td>• Suitable for high-performance, discrete and motion applications  • Integrated Motion on EtherNet/IP™  • Multiple controllers in the same chassis, with each one operating independently  • Built-in 1 Gb Ethernet port  • Designed for high performance with Compact 5000™ I/O  • Conformal coating offers added protection in harsh environments</td>
<td>• Suitable for process, motion, discrete, safety and high-availability applications  • GuardLogix® controllers have TÜV certification for functional safety  • Integrated motion and safety on EtherNet/IP  • Multiple controllers in the same chassis, with each one operating independently  • Conformal coating offers added protection in harsh environments  • Redundancy supports high availability requirements  • ControlLogix-XT™ rated for -20 - 70 °C (-4 - 185 °F) operating environment</td>
</tr>
<tr>
<td><strong>Built-in Memory</strong></td>
<td>Up to 40 MB GuardLogix 5580 up to 5 MB safety memory</td>
<td>ControlLogix controllers: Up to 32 MB GuardLogix controllers: 8 MB standard / 3.75 MB safety</td>
</tr>
<tr>
<td><strong>Motion Control</strong></td>
<td>Up to 256 axes of Integrated Motion on EtherNet/IP Typical controller performance 32 axes/ms</td>
<td>Up to 100 axes of Integrated Motion on EtherNet/IP Typical controller performance 6 axes / ms</td>
</tr>
<tr>
<td><strong>Safety Level</strong></td>
<td>GuardLogix 5580: SIL 2, PLd, Cat. 3 GuardLogix 5580: SIL 3, PLc, Cat. 4 (Safety Partner required)</td>
<td>ControlLogix controllers: SIL 2 when following GuardLogix SIL 2 Safety Reference Manual GuardLogix 5570: SIL 3, PLe, Cat. 4 (Safety Partner required)</td>
</tr>
<tr>
<td><strong>On-Machine</strong></td>
<td>N/A</td>
<td>Armor™ ControlLogix® controllers: IP67 rated</td>
</tr>
<tr>
<td><strong>Language Support</strong></td>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>Embedded USB and 1 Gb Ethernet port</td>
<td>Embedded USB</td>
</tr>
<tr>
<td><strong>Standards</strong></td>
<td>cULus, CE, IECEx, KC, EtherNet/IP, FM, CSA, RCM, Ex, EAC, Marine Pending</td>
<td>cULus, CE, KC, FM, RCM, IECEx, EAC, Marine  In addition, GuardLogix controllers: FM, TÜV</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>0-60 °C (32-140 °F)</td>
<td>0-60 °C (32-140 °F) XT versions rated -25-70 °C (-13-158 °F)</td>
</tr>
<tr>
<td><strong>More Information</strong></td>
<td>For the most up-to-date information on our full range of programmable automation controllers and accessories, visit: ab.rockwellautomation.com/Programmable-Controllers</td>
<td></td>
</tr>
<tr>
<td>CompactLogix 5380</td>
<td>CompactLogix 5370</td>
<td>Micro800</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Programmable automation controllers use a common control engine with a common development environment to provide high performance in an easy-to-use environment. CompactLogix™ controllers are ideal for small to mid-size machines and provide the benefits of Integrated Architecture for lower-cost machines.</td>
<td>Programmable automation controllers use a common control engine with a common development environment to provide high performance in an easy-to-use environment. CompactLogix™ controllers are ideal for small to mid-size machines and provide the benefits of Integrated Architecture for lower-cost machines.</td>
<td>Micro800 controllers provide a customized solution with basic control for standalone machines. Available in different form factors, these micro controllers are optimized to deliver a smart, productive, secure solution throughout all phases of the machine lifecycle. They can be programmed easily using the Connected Components Workbench™ software; they share common accessories, plug-in and expansion I/O modules that allow machine builders to personalize the controller for specific capabilities.</td>
</tr>
<tr>
<td>• Suitable for high performance, discrete and motion applications  • Integrated Motion on EtherNet/IP  • Two Ethernet ports each with individually configurable IP addresses and adjustable speed up to 1 Gb  • Designed for high performance with Compact 5000 I/O, either local or distributed on EtherNet/IP  • Conformal coating optional for added protection in harsh environments</td>
<td>• Suitable for process, motion, discrete and safety applications  • Integrated Motion on EtherNet/IP  • Distributed I/O via EtherNet/IP  • Robot kinematics  • Open socket capability for devices such as printers and barcode readers  • Internal energy storage solution removes the need for battery  • Conformal coating optional for added protection in harsh environments</td>
<td>• Suitable for low-cost, standalone, discrete, process and Pulse Train Outputs (PTO) motion applications  • Customize and expand the functionality of Micro800 controller to meet specific application needs with plug-in and expansion I/O modules  • Built-in 100 kHz high-speed counter  • EtherNet/IP and DeviceNet™  • Supports Modbus TCP, Modbus RTU, ASCII and Open socket capability for communication with third-party devices  • Micro820™ controllers: MicroSD™ slot for data logging and recipe management  • Conformal coating optional for added protection in harsh environments</td>
</tr>
<tr>
<td>Up to 10 MB  Compact GuardLogix 5380 up to 5 MB safety memory</td>
<td>CompactLogix L1: Up to 1 MB, L2: Up to 1 MB, L3: Up to 5 MB</td>
<td>Up to 280 KB</td>
</tr>
<tr>
<td>Up to 32 axes of Integrated Motion on EtherNet/IP  Typical performance 32 axes/ms</td>
<td>Up to 16 axes of Integrated Motion on EtherNet/IP</td>
<td>Up to 3 axes of 100 kHz PTO for Motion control</td>
</tr>
<tr>
<td>Compact GuardLogix 5380: SIL 2 Plc, Cat. 3</td>
<td>Compact GuardLogix 5370: SIL 3, Plc, Cat. 4</td>
<td>N/A</td>
</tr>
<tr>
<td>N/A</td>
<td>Armor™ CompactLogix™ IP67 rated  Armor Compact GuardLogix IP67 rated</td>
<td>N/A</td>
</tr>
<tr>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td>Ladder Logic, Structured Text, Function Block</td>
<td></td>
</tr>
<tr>
<td>• Embedded USB and Ethernet with DLR/Dual IP (selectable)  • 1 Gb Ethernet port</td>
<td>Embedded USB and Ethernet with DLR</td>
<td>Embedded USB, RS232/485 and Ethernet</td>
</tr>
<tr>
<td>cULus, CE, RCM, ATEX, ECEEx, EtherNet/IP, KC, EAC, Marine</td>
<td>cULus, CE, RCM, ATEX, EtherNet/IP, KC, EAC, Marine</td>
<td>cULus, CE, RCM, KC, EtherNet/IP, Marine</td>
</tr>
</tbody>
</table>

For more information: rok.auto/ia
# Input/Output (I/O) Modules At-A-Glance

## Overview

<table>
<thead>
<tr>
<th>ControlLogix</th>
<th>Compact 5000</th>
<th>Compact</th>
</tr>
</thead>
<tbody>
<tr>
<td>A full range of digital, diagnostic, analog, motion control, and specialty I/O. Modules can be used in the local chassis of a ControlLogix® controller or in a chassis linked to a ControlLogix controller across EtherNet/IP™.</td>
<td>The Compact 5000 I/O platform offers high-performance communication in a compact design and includes SIL-rated safety modules.</td>
<td>Can be used as local and distributed I/O with CompactLogix 5370 family of controllers. Rack-type features in a rackless design lowers costs and reduces replacement parts inventory.</td>
</tr>
</tbody>
</table>

## Key Features

### Digital
- Comprehensive diagnostics for detection of both system and field-side failures
- Inherent time-stamping capabilities for Sequence Of Events applications
- Electronic keying to help prevent replacement errors
- Available with conformal coating to help protect in harsh environments
- Removable terminal block or wiring interface module to connect all field-side wiring
- Install easily by sliding together, pull apart easily for maintenance
- Comprehensive diagnostics for detection of both system and field-side failures
- Inherent time-stamping capabilities for Sequence Of Events applications
- Electronic keying to help prevent replacement errors
- Removable terminal block to connect all field-side wiring
- Different termination style available

### Analog
- 8 to 32 points module
- Offers a variety of voltages
- Isolated and non-isolated module types

#### Analog
- Input, output and combination modules
- Thermocouple and RTD modules

#### Specialty
- Configurable flowmeter modules
- High-speed counter modules
- Programmable limit switch modules

#### Isolated Analog HART
- Up to 16 points with channel-to-channel isolation
- HART modem per channel for faster HART data update

#### Enhanced Analog
- Isolated 8-channel and non-isolated 12- and 16-channel modules with stability over the entire temperature operating range
- Provides flexibility with DIN rail or panel mounting options
- Includes individual point diagnostic status indicators to ease troubleshooting
- Prevents incorrect positioning of module with software keying
- Connects as many as three banks of Compact 5000 I/O to a controller (requires use of a communication adapter module and power supply)

### Specialty
- HART modem per channel for faster channel-to-channel isolation
- Programmable limit switch modules
- Configurable flowmeter modules
- High-speed counter modules
- Programmable limit switch modules

### Safety
- Safety digital input module — single-channel PLe, dual-channel PLe
- Configurable safety output module (sourcing/bipolar) — Sourcing Mode: single channel PLe, dual channel PLe; Bipolar Mode: PLe

### Communications
- Local chassis or in a chassis linked to a ControlLogix controller across ControlNet or EtherNet/IP
- Local chassis to CompactLogix 5380 and CompactLogix 5480 controllers, distributed on EtherNet/IP to CompactLogix 5580 controller
- Local chassis to CompactLogix 5370 controller or distributed on EtherNet/IP

## More Information

For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/IO
### FLEX 5000

The FLEX 5000 I/O is a flexible and reliable I/O solution that is modular and easy to install. It is also designed for use in extreme or hazardous environments, and includes fail-safe SIL 3 rated Safety modules.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>8 to 32 points per module</td>
</tr>
<tr>
<td>Digital</td>
<td>8-channel analog input module supporting Voltage, Current, RTD, and TC inputs</td>
</tr>
<tr>
<td>Safety</td>
<td>8-channel relay output module</td>
</tr>
<tr>
<td>Safety</td>
<td>16-point digital input and output modules</td>
</tr>
<tr>
<td>Safety</td>
<td>4-point isolated relay output module</td>
</tr>
</tbody>
</table>

### FLEX

FLEX™ I/O offers the functionality of larger rack-based I/O without the space requirements. It can help eliminate multiple long wiring runs, reduce terminations, decrease engineering and installation costs and time, and substantially reduce downtime. FLEX I/O offers cost-effectiveness, flexibility, modularity, and reliability.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>Modular design lets you independently select the I/O, termination style and network interface</td>
</tr>
<tr>
<td>Digital</td>
<td>Assembles without tools – all components snap into DIN rail and plug together to form the I/O system</td>
</tr>
<tr>
<td>Safety</td>
<td>Mounts horizontally or vertically</td>
</tr>
<tr>
<td>Safety</td>
<td>Reduces downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation</td>
</tr>
<tr>
<td>Safety</td>
<td>Available with conformal coating to help protect in harsh environments</td>
</tr>
</tbody>
</table>

### FLEX I/O-XT™ Extreme Environment

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>Individually configurable channels, selectable input filters on many modules</td>
</tr>
<tr>
<td>Digital</td>
<td>Single-ended or differential inputs</td>
</tr>
<tr>
<td>Digital</td>
<td>Thermocouple, RTD, and HART modules available</td>
</tr>
</tbody>
</table>

### FLEX™ I/O offers cost-effectiveness, flexibility, modularity, and reliability.

Distributed on EtherNet/IP to CompactLogix 5380, CompactLogix 5480 or ControlLogix 5580 controllers

EtherNet/IP, ControlNet, DeviceNet, PROFIBUS DP

For more information: [rok.auto/ia](http://rok.auto/ia)
# Input/Output (I/O) Modules At-A-Glance

## Overview

**POINT**
- Ideal for applications requiring flexibility and low-cost of ownership.
- Granularity of 1 to 8 points lets you buy only the I/O you need. The compact design makes installation easier in limited panel space. POINT I/O™ is the only IP20-rated modular I/O solution compliant with ODVA requirements for Linear, Star and Ring EtherNet/IP architectures.

**ArmorBlock**
- ArmorBlock® I/O Modules are low-cost, hardened I/O that can be mounted on machines to help reduce wiring cost and enable easier maintenance. ArmorBlock I/O can be used for automotive, material handling and packaging applications or for machinery applications where diagnostics and local control are not needed.

## Key Features

**POINT**
- Independently select the I/O, termination style and network interface
- Install easily by sliding together; pull apart easily for maintenance
- Removable wiring system saves time and money during installation and troubleshooting
- Comprehensive diagnostics and configurable features
- Reduce downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation
- Mount horizontally or vertically, with no derating required
- Also available 1738 ArmorPOINT™ I/O for On-Machine applications

**ArmorBlock**
- IP67/69K-rated water- and corrosion-resistant housing reduces enclosure costs
- Industry-standard connectors simplify wiring and improve Mean Time to Repair
- Embedded switch with Device Level Ring (DLR)
- Rotary switch to set IP address
- Self-configuring blocks with both input and output functionality

## I/O Types Offered

**POINT**
- Digital
  - Input, output, and relay output modules
  - Wide variety of voltages
- Analog
  - Up to eight single-ended inputs or outputs per module
  - 4-channel input/output
  - Thermocouple and RTD modules
- Specialty
  - Counter and encoder modules
  - Serial synchronous interface Absolute Encoder module
  - Serial interface modules
  - Address Reserve Module (ARM)
  - IO-Link master module
  - **POINT Guard I/O™ Safety**
    - Digital input, digital output, and analog input modules and bipolar output modules
    - TUV-certified for functional safety up to and including SIL 3, Cat. 4, PLe
    - Can be used side-by-side in a standard POINT I/O system

**ArmorBlock**
- Digital
  - Input, output and combination modules, up to 16 points per block
  - Available with CIP Sync on some blocks
  - 4-point analog, thermocouple and RTD I/O blocks
  - Supports connection to IO-Link enabled devices with the IO-Link master module
  - Available with Quick Connect on some blocks
  - IP69K and NEMA 4X (when marked)
- Analog
  - 8-channel output
  - 16-channel input
- Specialty
  - Suitable for simplex and duplex connections and fault tolerant applications
  - I/O redundancy for systems requiring high availability
  - Flexible, modular construction for user-configurable I/O applications
  - Supports several network topologies, including Device Level Ring (DLR)

## Communications

**POINT**
- EtherNet/IP, ControlNet, DeviceNet, PROFIBUS DP

**ArmorBlock**
- DeviceNet or EtherNet/IP

## More Information

For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/IO
### Input/Output (I/O) Modules At-A-Glance

For the most up-to-date information on our full range of I/O modules and accessories, visit: [ab.rockwellautomation.com/IO](http://ab.rockwellautomation.com/IO)

#### Communications
- EtherNet/IP, ControlNet, DeviceNet, PROFIBUS DP
- DeviceNet or EtherNet/IP

### I/O Types Offered

**Digital**
- Independently select the I/O, termination style and network interface
- Can be used side-by-side in a standard POINT I/O system
- TUV-certified for functional safety up to and including SIL 3, Cat. 4, PLe
- Digital input, digital output, and analog input modules and bipolar output
- IO-Link master module
- Address Reserve Module (ARM)
- Serial interface modules
- Serial synchronous interface Absolute Encoder module
- Counter and encoder modules
- Specialty 4-channel input/output
- Up to eight single-ended inputs or outputs per module

**Analog**
- Wide variety of voltages
- Input, output, and relay output modules
- Available with conformal coating to help protect in harsh environments
- Also available 1738 ArmorPOINT® I/O for On-Machine applications
- Mount horizontally or vertically, with no derating required by replacing modules while the system is in operation
- Reduce downtime with Removal and Insertion Under Power (RIUP)
- Comprehensive diagnostics and configurable features
- Removable wiring system saves time and money during installation
- Industry-standard connectors simplify wiring and improve enclosure costs
- IP67/69K-rated water- and corrosion-resistant housing reduces maintenance. ArmorBlock I/O can be mounted on machines to help reduce wiring cost and enable easier handling and packaging applications or for machinery applications
- 16-points
- 4-point analog, thermocouple and RTD I/O blocks
- Available with CIP Sync on some blocks
- Input, output and combination modules, up to 16 points per block

**EtherNet/IP**
- Supports several network topologies, including Device Level Ring (DLR) for enhanced resiliency
- Flexible, modular construction for user-configurable I/O applications
- I/O redundancy for systems requiring high availability
- Suitable for simplex and duplex connections and fault tolerant applications
- Supports online module removal and replacement with no interruption of the signal inputs

#### 1719 Ex
- Intrinsically safe distributed 1719 Ex I/O solution that is mounted in Zone 2 or Division 2 and helps enable customers to integrate devices in hazardous (Zones 0, 1 or Division 1) areas via EtherNet/IP

#### 1715 Redundant
- Redundant I/O provides fault tolerance and redundancy for critical processes by using a pair of redundant Ethernet adapters and multiple I/O modules. I/O modules provide diagnostics and are interchangeable with no interruption to the control system. Plus, it requires no user programming code or additional hardware to operate.

<table>
<thead>
<tr>
<th>Feature</th>
<th>1719 Ex</th>
<th>1715 Redundant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital</td>
<td>I/O modules for intrinsic safety field connections, rated for Zone 2 or Class I, Division 2 mounting</td>
<td>Supports several network topologies, including Device Level Ring (DLR) for enhanced resiliency</td>
</tr>
<tr>
<td></td>
<td>EtherNet/IP DLR adapter</td>
<td>Flexible, modular construction for user-configurable I/O applications</td>
</tr>
<tr>
<td></td>
<td>Optional N+1 Power Supply Redundancy</td>
<td>I/O redundancy for systems requiring high availability</td>
</tr>
<tr>
<td></td>
<td>Removal and Insertion Under Power (RIUP) lets you replace modules and make connections while the system is in operation (in absence of hazardous atmosphere)</td>
<td>Suitable for simplex and duplex connections and fault tolerant applications</td>
</tr>
<tr>
<td></td>
<td>Modularity and several chassis options provide scalability for larger applications</td>
<td>Supports online module removal and replacement with no interruption of the signal inputs</td>
</tr>
<tr>
<td></td>
<td>HART 7 support standard on all analog modules</td>
<td></td>
</tr>
<tr>
<td>Analog</td>
<td>8-channel NAMUR Digital Input module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-channel Digital Output modules to support nearly any solenoid requirement</td>
<td></td>
</tr>
<tr>
<td>Specialty</td>
<td>Configurable 4 channel Analog Input/Output module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-channel Analog Input, Thermocouple, and RTD Modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single channel frequency counter module</td>
<td></td>
</tr>
<tr>
<td>EtherNet/IP</td>
<td></td>
<td>Supports several network topologies, including Device Level Ring (DLR) for enhanced network resiliency</td>
</tr>
</tbody>
</table>

For more information: [rok.auto/ia](http://rok.auto/ia)
# Condition and Energy Monitoring At-A-Glance

## Overview
Rotating and reciprocating machinery protection within your standard control system. Configured with Studio 5000 and connected on EtherNet/IP providing a single architecture to control and protect.

## Key Features
- Configured from Studio 5000 for CompactLogix or ControlLogix controllers with v24+ or V20 firmware
- Allows machinery protection to API-670 5th Edition
- Power using single or redundant 18-32V DC SELV supplies
- Temperature rated for -25 to 70 °C
- Hazardous area certifications – IECEx Conformity; ATEX Zone 2; UL Class 1 Div 2; Groups A, B, C, D
- Spring or screw style removable plug connectors
- Circuit cards are conformal coated
- Certified to Marine standards for shock and vibration

## Option Modules
- **Tachometer Signal Conditioner Expansion Module**
  - Two-channel monitor that converts the signal from common speed sensing transducers into a once-per-rev TTL class signal suitable for use by up to six dynamic measurement modules
- **Relay Expansion Module**
  - Four-relay expansion module. Up to three relay expansion modules may be used with each dynamic measurement module
- **Analog Output Expansion Module**
  - Four-channel module that outputs 4-20 mA analog signals that are proportional to measured values provided by the dynamic measurement module

## Main Module Inputs
- 4 channels dynamic, 2 tachometer (TTL)

## Frequency Range
- 11.5 Hz to 40 kHz

## Tracking Filters
- 4 per channel

## Alarms
- 23 Measurement alarms, 13 Voted alarms

## Communications
- EtherNet/IP, dual port or Device Level Ring

## More Information
To see our full range of condition monitoring products and for more information on these products, visit: http://abrockwellautomation.com/Condition-Monitoring
## Condition and Energy Monitoring At-A-Glance

### PowerMonitor 1000

**Overview**
A compact power monitor for load profiling, cost allocation, or energy control. Integrates with existing energy monitoring systems to provide sub-metering. Communicates easily with Logix controllers to use energy data in automation systems.

### PowerMonitor 5000

**Overview**
Next generation high-end, power-quality metering product. Building on core power and energy metering capabilities, the PowerMonitor™ 5000 takes energy monitoring to the next level.

### Key Features

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact size</td>
<td>Monitors 4 voltage and 4 current channels for every electrical cycle – 1024 data points across 8 channels every 12-17 milliseconds</td>
</tr>
<tr>
<td>Integrated LCD display</td>
<td>Calculates over 6,000 parameters every cycle</td>
</tr>
<tr>
<td>Panel or DIN rail mounting</td>
<td>Includes 4 outputs for connection to SCADA or control systems</td>
</tr>
<tr>
<td>Provides wiring diagnostics</td>
<td>Offers configurable alarms for up to 20 events</td>
</tr>
<tr>
<td>Time of use (On-Peak, Off-Peak)</td>
<td>Provides virtual wiring correction capability</td>
</tr>
<tr>
<td>Energy, min/max, status and load factor logs</td>
<td>Ability to view data and configure through the integrated web page</td>
</tr>
<tr>
<td>Ability to view data and configure through the integrated web page</td>
<td></td>
</tr>
</tbody>
</table>

### Options

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1408-BC3A-ENT</td>
<td>M5 – base model</td>
</tr>
<tr>
<td>• Basic consumption meter</td>
<td>M6 – includes base model features, plus:</td>
</tr>
<tr>
<td>1408-TS3A-ENT</td>
<td>• Harmonics</td>
</tr>
<tr>
<td>• Consumption + Volt/Current</td>
<td>• Oscillography</td>
</tr>
<tr>
<td>1408-EM3A-ENT</td>
<td>• Event Sync</td>
</tr>
<tr>
<td>• Energy management meter</td>
<td>• Flicker</td>
</tr>
<tr>
<td></td>
<td>• Interharmonics</td>
</tr>
<tr>
<td></td>
<td>• Transient Detect</td>
</tr>
</tbody>
</table>

### Accuracy levels (per standard EN62053-22)

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1, 1% energy accuracy</td>
<td>Class 0.2, 0.2% energy accuracy</td>
</tr>
</tbody>
</table>

### Outputs

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Modbus RTU</td>
<td>• Digital signal</td>
</tr>
<tr>
<td>• EtherNet/IP</td>
<td>• EtherNet/IP</td>
</tr>
<tr>
<td>• KYZ signal</td>
<td>• DeviceNet</td>
</tr>
<tr>
<td></td>
<td>• ControlNet</td>
</tr>
<tr>
<td></td>
<td>• KYZ signal</td>
</tr>
</tbody>
</table>

### Communications

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available with EtherNet/IP, Serial DFI, Modbus RTU, Modbus TCP communications</td>
<td>Includes native EtherNet/IP port</td>
</tr>
<tr>
<td>Provides a second communication port</td>
<td></td>
</tr>
</tbody>
</table>

### More Information

To see our full range of energy monitoring products and for more information on these products, visit:
http://ab.rockwellautomation.com/Energy-Monitoring

For more information: rok.auto/ia
## Intelligent Devices At-A-Glance

<table>
<thead>
<tr>
<th><strong>56RF Radio Frequency Identification (RFID) System</strong></th>
<th><strong>IO-Link Sensors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>IO-Link Technology is a worldwide open-standard protocol that integrates sensors into our Connected Enterprise by connecting the IO-Link enabled device into an IO-Link master module. You can deliver data from the sensor directly into a control system in a very efficient manner. The flexibility of IO-Link capable sensors allows machines to operate more effectively by providing the controller with diagnostics. In addition to product detection, sensors provide detailed and accurate machine health status to improve uptime.</td>
</tr>
<tr>
<td><strong>Key Features</strong></td>
<td><strong>IO-Link is currently available on the following sensors</strong></td>
</tr>
<tr>
<td>• Rugged transceiver styles for industrial locations</td>
<td>• 42EF RightSight™ General Purpose Sensors designed for light- to medium-level industrial use</td>
</tr>
<tr>
<td>• 13.56 MHz high frequency technology for light industrial applications</td>
<td>• 42JS and 42JT VisiSight™ Sensors offer a small rectangular package with visible light beam for ease of alignment and industry standard mounting</td>
</tr>
<tr>
<td>• ISO 15693 / ISO 18000-3 M1</td>
<td>• 45CRM Color Registration Mark Sensors have a high-speed response time and discern the difference in color between the mark and background</td>
</tr>
<tr>
<td>• Tag memory options: 64 B, 128 B, 256 B and 2 KB</td>
<td>• 45LMS Laser Measurement Sensors offer an excellent mid- to medium-level industrial use</td>
</tr>
<tr>
<td>• Read/write speeds up to 625 B/s</td>
<td>• Reusable Rislan® tags</td>
</tr>
<tr>
<td>• Different tag styles with sensing distances of up to 7.3 in. (185 mm)</td>
<td>• Programmed in Studio 5000 (AOP and Add-on Profile Instruction available)</td>
</tr>
<tr>
<td>• Reusable Rislan® tags</td>
<td><strong>Options</strong></td>
</tr>
<tr>
<td>• Programmed in Studio 5000 (AOP and Add-on Profile Instruction available)</td>
<td><strong>EtherNet/IP Interface Blocks</strong></td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td>• 1-2 RFID ports plus I/O</td>
</tr>
<tr>
<td><strong>Transceivers</strong></td>
<td><strong>Transceivers</strong></td>
</tr>
<tr>
<td>• Rectangular 80 x 90</td>
<td>• Rectangular 80 x 90</td>
</tr>
<tr>
<td>• Square 40 x 40</td>
<td>• Square 40 x 40</td>
</tr>
<tr>
<td>• Cylindrical M30</td>
<td>• Cylindrical M30</td>
</tr>
<tr>
<td>• Cylindrical M18</td>
<td>• Cylindrical M18</td>
</tr>
<tr>
<td><strong>Tags</strong></td>
<td><strong>Tags</strong></td>
</tr>
<tr>
<td>• Disc – 128 Byte SL1 (8 – 50 mm Dia)</td>
<td>• Disc – High-Impact Resistant (Extreme Durability)</td>
</tr>
<tr>
<td>• Disc – High-Impact Resistant (Extreme Durability)</td>
<td>• Disc – High-Impact Resistant (Extreme Durability)</td>
</tr>
<tr>
<td>• Disc – Mount on metal</td>
<td>• Disc – Mount on metal</td>
</tr>
<tr>
<td>• Disc – Large memory FRAM (2 or 8 Kb)</td>
<td>• Disc – Large memory FRAM (2 or 8 Kb)</td>
</tr>
<tr>
<td>• Disc – High temperature</td>
<td>• Disc – High temperature</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td><strong>Communications</strong></td>
</tr>
<tr>
<td>1 and 2 channel EtherNet/IP interface available</td>
<td>Devices connect to POINT and ArmorBlock IO-Link master modules</td>
</tr>
<tr>
<td>Embedded switch, with Device Level Ring (DLR)</td>
<td><strong>More Information</strong></td>
</tr>
<tr>
<td><strong>More Information</strong></td>
<td>For the most up-to-date information on our full IO-Link offering, visit: <a href="http://abrockwellautomation.com/Networks-and-Communications/">http://abrockwellautomation.com/Networks-and-Communications/</a> IO-Link</td>
</tr>
<tr>
<td>For the most up-to-date information on our full range of RFID offering, visit: <a href="http://abrockwellautomation.com/Sensors-Switches/RFID/">http://abrockwellautomation.com/Sensors-Switches/RFID/</a> High-Frequency-RFID</td>
<td></td>
</tr>
</tbody>
</table>
### Guardmaster 440C-CR30 Software Configurable Safety Relay

Flexible, cost-effective, and easy to use. This relay is ideal for applications requiring as many as ten dual-channel safety circuits and controlling as many as five output zones. You can configure this relay by selecting certified safety function blocks to rapidly build your applications. This relay is integrated with Logix controllers and can be configured using the Studio 5000 Logix Designer application.

- **2080-IQ4O84**: 8-point combo: 4-pt digital input, 12/24V DC, sink/source, Type3 and 4-point digital output, 12/24V DC, source
- **2080-IQ4**: 4-point digital input, 12/24V DC, sink/source, Type3
- **2080-OB4**: 4-pt digital output, 12/24V DC, source
- **2080-OW4**: 4-point relay output, individually isolated, 2 A
- **2080-MEMBAK-RTC**: Project backup and restore module
- **440C-ENET**: Ethernet plug-in module, slot 1 only

For more information, visit [http://ab.rockwellautomation.com/Relays-and-Timers/Safety-Relays](http://ab.rockwellautomation.com/Relays-and-Timers/Safety-Relays)

### Guardmaster Safety Relays

Monitor a broad range of safety devices in a variety of applications. These single-function relays can achieve most of the functions safety systems require to help simplify purchasing and parts management. These relays offer key functions to simplify installation and system complexity. In addition, information gathered from the GSR intelligent safety relays via the optional EtherNet/IP Interface help minimize unplanned downtime, increase efficiencies and enable The Connected Enterprise.

- **Guardmaster® DI/DIS**: Consolidates functionality of two safety relays into a single electromechanical relay (DI) or solid-state (DIS) outputs
- **Guardmaster® SI/CI**: Ideal for safety functions using one dual or single channel safety device. Ideally suited for global E-stop function in combination with another GSR relay
- **Guardmaster® EM/EMD**: Easily add 4 N.C. instantaneous (EM) or delayed (EMD) outputs to a system
- **Guardmaster® GLT/GLP**: Developed for applications requiring access control monitoring the stop time, standstill or safe limited speed to unlock guards when equipment reaches a safe condition

- **440C-ENET**: Ethernet plug-in module, slot 1 only

For more information: [rok.auto/ia](http://rok.auto/ia)
## Servo Drives At-A-Glance

### Overview
- **Kinetix 5700** servo drives help expand the value of Integrated Motion on EtherNet/IP to large machine builder applications. The Kinetix 5700 servo drive can help reduce commissioning time and improve machine performance. It offers the simplicity, power and space savings you need to help get your machine up and running faster.
- **Kinetix 5500** servo drives connect to and operate with Logix controllers, supporting Integrated Motion on EtherNet/IP. With its innovative, compact design, the Kinetix 5500 drive helps minimize machine footprint and simplifies system wiring.
- **Kinetix® 350** Single-axis EtherNet/IP servo drives provide scalability of Integrated Motion.
- **Kinetix® 300** EtherNet/IP Indexing servo drives provide cost-effective, co-ordinated motion control. EtherNet/IP™ communications are used for commissioning, configuration and start-up via standalone operation.

### Key Features
- **Kinetix 5700**
  - Features dual-axis modules
  - Controls servo and induction motors
  - Reduces wiring with single cable technology
  - Allows for tuning-less commissioning for most axes
  - Delivers 40% to 70% cabinet space savings
  - Supports optional encoder output module
  - Regenerative power supply option with energy management and low harmonic operation
  - Available with conformal coating to help protect in harsh environments
  - Innovative common AC/DC bus helps reduce hardware, installation time and cost
  - Fewer terminations and simpler wiring. 60% less wiring with single cable feedback
  - Compact with optimized power density
  - Drive power ratings optimized to match VP
  - Low Inertia motor family

- **Kinetix 5500**
  - Innovative common AC/DC bus helps reduce hardware, installation time and cost
  - Fewer terminations and simpler wiring. 60% less wiring with single cable feedback
  - Compact with optimized power density
  - Drive power ratings optimized to match VP
  - Low Inertia motor family
  - Supports servo and induction motors
  - Supports optional encoder output module
  - Available with conformal coating to help protect in harsh environments

### Safety Level
- **Standard Kinetix 5700 Servo Drive**
  - Integrated Safe Torque Off: PLe, Cat 3 (ISO 13849), SIL CL 3 (IEC 61508, EN 61800-5-2, EN 62061)
  - Hardwired Safe Torque Off: PLe, Cat 3, SIL CL 3 (ISO 13849)
- **Advanced Safety Kinetix 5700 Servo Drive**
  - Network-based advanced safety
  - Certified PLe, SIL 3
  - Ability to monitor speed, direction, and position
  - Ability to perform controlled and monitored stops and perform zero speed monitoring
- **Integrated Safety - Safe Torque Off**
  - PLe, Cat. 3 (ISO 13849)
  - SIL CL 3 (IEC 61508, EN 61800-5-2, EN 62061)

### Continuous Power
- **Kinetix 5700**
  - 1.6 - 112 kW
- **Kinetix 5500**
  - 0.5 - 15 kW

### Supply Voltage
- **Kinetix 5700**
  - 325-528V AC
- **Kinetix 5500**
  - 195-528V AC single phase (H003-H015)
  - 195-528V AC 3 phase

### Communications
- **Kinetix 5700**
  - Integrated Motion on EtherNet/IP
  - Dual port Ethernet connector allows for both line and Device Level Ring (DLR) topologies
- **Kinetix 5500**
  - Integrated Motion on EtherNet/IP
  - Dual port Ethernet connector allows for both line and Device Level Ring (DLR) topologies

### More Information
For the most up-to-date information on our full range of servo drives, visit: [http://ab.rockwellautomation.com/Motion-Control/Servo-Drives](http://ab.rockwellautomation.com/Motion-Control/Servo-Drives)
## Overview

Kinetix® 5700 servo drives help expand the value of Integrated Motion on EtherNet/IP to large machine builder applications. The Kinetix® 5700 servo drive can help reduce commissioning time and improve machine performance. It offers the simplicity, power and space savings you need to help get your machine up and running faster.

Kinetix® 5500 servo drives connect to and operate with Logix controllers, supporting Integrated Motion on EtherNet/IP. With its innovative, compact design, the Kinetix 5500 drive helps minimize machine footprint and simplifies system wiring.

Kinetix® 350 Single-axis EtherNet/IP servo drives provide scalability of Integrated Motion. Leveraging a single network, EtherNet/IP simplifies the integration of the entire system including HMI, programmable automation controller, I/O and motion.

Kinetix® 300 EtherNet/IP Indexing servo drives provide cost-effective, co-ordinated motion control. EtherNet/IP™ communications are used for commissioning, configuration and start up via standalone operation.

## Key Features

- Features dual-axis modules
- Controls servo and induction motors
- Reduces wiring with single cable technology
- Allows for tuning-less commissioning for most axes
- Delivers 40% to 70% cabinet space savings
- Supports optional encoder output module
- Regenerative power supply option with energy management and low harmonic operation
- Available with conformal coating to help protect in harsh environments
- Innovative common AC/DC bus helps reduce hardware, installation time and cost
- Fewer terminations and simpler wiring. 60% less wiring with single cable feedback
- Compact with optimized power density
- Drive power ratings optimized to match VP
- Low Inertia motor family

## Safety

<table>
<thead>
<tr>
<th>Safety Level</th>
<th>Standard Kinetix 5700 Servo Drive</th>
<th>Advanced Safety Kinetix 5700 Servo Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Safe Torque Off</td>
<td>PLe, Cat 3 (ISO 13849), SIL CL 3</td>
<td>Certified PLe, SIL 3</td>
</tr>
<tr>
<td>Hardwired Safety – Safe Torque Off</td>
<td>ISO 13849-1 SIL 2</td>
<td>Ability to monitor speed, direction, and position</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ability to perform controlled and monitored stops and perform zero speed monitoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Continuous Power

<table>
<thead>
<tr>
<th>Kinetix 350</th>
<th>Kinetix 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6 - 112 kW</td>
<td>0.5 - 15 kW</td>
</tr>
<tr>
<td>0.4-0.8 kW</td>
<td>0.4-0.8 kW</td>
</tr>
<tr>
<td>0.4-1.7 kW</td>
<td>0.4-1.7 kW</td>
</tr>
<tr>
<td>0.5-3 kW</td>
<td>0.5-3 kW</td>
</tr>
<tr>
<td>1-3 kW</td>
<td>1-3 kW</td>
</tr>
</tbody>
</table>

## Supply Voltage

<table>
<thead>
<tr>
<th>Kinetix 350</th>
<th>Kinetix 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>325-528V AC</td>
<td>195-528V AC</td>
</tr>
<tr>
<td>195-528V AC</td>
<td>115-240V AC</td>
</tr>
<tr>
<td>230-480V AC</td>
<td>230-480V AC</td>
</tr>
</tbody>
</table>

## Communications

- Integrated Motion on EtherNet/IP
- Dual port Ethernet connector allows for both line and Device Level Ring (DLR) topologies

## More Information

For the most up-to-date information on our full range of servo drives, visit: [http://ab.rockwellautomation.com/Motion-Control/Servo-Drives](http://ab.rockwellautomation.com/Motion-Control/Servo-Drives)

For more information: [rok.auto/ia](rok.auto/ia)
Servo Motors At-A-Glance

**Kinetix VP Rotary**
- Optimized to operate with the Kinetix 5500 family of servo drives, supporting Integrated Motion on EtherNet/IP. Based on proven MP technology for dynamic performance, these motors offer the many benefits of a single cable for feedback, brake and power.

**Kinetix MP Rotary**
- Low-inertia, high-output brushless servo motors. These compact and highly dynamic brushless servo motors are designed to meet the demanding requirements of high-performance motion systems. Typically used with the Kinetix® 5700, Kinetix® 6000, Kinetix® 6200, Kinetix® 6500, Kinetix® 300, and Kinetix® 350 servo drive families.

### Overview
- Based on proven magnetic core MP technology
- Provides real-time motor performance information to the control system via digital feedback device
- Provides feedback, motor brake, and motor power through a single cable
- Optimized to match drive ratings allowing for efficient system sizing
- Integrated 24-volt holding brake option

### Key Features
**Model variants**
- **VPL** – Standard low inertia
- **VPF** – Food grade
  - Stainless steel shaft and fasteners
  - Food grade and REACH compliant shaft seal grease
  - Offers improved food grade white paint
  - IP66- and IP67-rated connectors can be rotated without the use of tools
- **VPC** – Continuous torque
  - High continuous power applications up to 30 Kw
  - Field replaceable fan kit

**Model variants**
- **MPL** – Low Inertia
- **MPM** – Medium inertia
- **MPF** – Food grade
  - Stainless steel shaft and fasteners
  - Food-grade grease on shaft seal
  - IP66- and IP67-rated connectors can be rotated without the use of tools
- **MPS** – Stainless steel
  - Tightly sealed for maximum protection and corrosion resistance
  - Meets requirements for IP66, IP67 and IP69K for 1200 psi wash-down

### Torque/Force Rating
- **VPL** continuous 0.46 to 32 Nm (4 to 283 lb-in)
- **VPF** continuous 0.93 to 19 Nm (8 to 172 lb-in)
- **VPC** continuous up to 191 Nm (1,593 lb-in)
- **MPL** continuous 0.26 to 163 Nm (2 to 1440 lb-in)
- **MPM** continuous 2 to 62 Nm (19 to 556 lb-in)
- **MPF** continuous 2 to 19 Nm (14 to 172 lb-in)
- **MPS** continuous 4 to 21 Nm (32 to 190 lb-in)

### Feedback Options
- Single-turn, digital, absolute encoder
- Multi-turn, digital, absolute encoder
- Heidenhain encoder (option on VPC only)
- Single-turn, 1024 sin/cos, absolute encoder
- Multi-turn, 1024 sin/cos, absolute encoder

### Winding Voltage
- 400V Class Windings
- 200V and 400V Class Windings

### More Information
For the most up-to-date information on our full range of servo motors, visit: www.ab.rockwellautomation.com/Motion-Control/Servo-Motors
Kinetix VP Rotary
Kinetix MP Rotary TL-Series Compact Rotary LDC & LDL Linear

Overview

Optimized to operate with the Kinetix 5500 family of servo drives, supporting Integrated Motion on EtherNet/IP. Based on proven MP technology for dynamic performance, these motors offer the many benefits of a single cable for feedback, brake and power.

Low-Inertia, high-output brushless servo motors. These compact and highly dynamic brushless servo motors are designed to meet the demanding requirements of high-performance motion systems. Typically used with the Kinetix® 5700, Kinetix® 6000, Kinetix® 6200, Kinetix® 6500, Kinetix® 300, and Kinetix® 350 servo drive families.

Low-inertia, high-performance servo motors for lighter industrial applications. Substantial power in a small footprint, with a high-torque density. Available with absolute encoder or 2000-line incremental encoder.

Linear motors provide you with the ability to increase your throughput and reliability as a result of their high speed and accelerations capabilities and the reduction in mechanical transmission parts commonly found in applications that convert rotary to linear motion.

Key Features

• Based on proven magnetic core MP technology
• Provides real-time motor performance information to the control system via digital feedback device
• Provides feedback, motor brake, and motor power through a single cable
• Optimized to match drive ratings allowing for efficient system sizing
• Integrated 24-volt holding brake option

Model variants

• VPL – Standard low inertia
• VPF – Food grade
  Stainless steel shaft and fasteners
  Food grade and REACH compliant shaft seal grease
  Offers improved food grade white paint
  Food grade shaft seal
  IP66- and IP67-rated connectors can be rotated without the use of tools
• VPC – Continuous torque
  High continuous power applications up to 30 Kw
  Field replaceable fan kit
  • High-energy rare-earth magnets for quicker acceleration
  • Standard IEC 72-1 mounting dimensions
  • SpeedTEC DIN connectors allow flexible orientation of connectors
  • Integrated 24-volt holding brake option

• MPL – Low Inertia
• MPM – Medium inertia
• MPF – Food grade
  Stainless steel shaft and fasteners
  Food-grade grease on shaft seal
  Durable two-part food-grade epoxy coating
  Hardened shaft wear sleeve for long-lasting shaft seal and shaft
  IP66- and IP67-rated connectors can be rotated without the use of tools
• MPS – Stainless steel
  Tightly sealed for maximum protection and corrosion resistance
  Hardened shaft wear sleeve for long-lasting shaft seal and shaft
  Meets requirements for IP66, IP67 and IP69K for 1200 psi wash-down
• Multi-turn feedback with battery backup available
• Controls high load-to-motor rotor inertia ratios while maintaining a stable system
• Onboard memory retains motor identity
• Serial communication automatically reports identity to the drive
• 46 mm, 70 mm, 90 mm and 100 mm frame sizes
• Integral 24V brake option

Model Variants

• TL – equipped with rectangular plastic connectors, intended for use only with Kinetix 3 servo drives
• TLY – equipped with circular plastic connectors, intended for use with Kinetix 2000/6000 servo drives

• Velocities up to 10 ms and accelerations as high as 10 m/s
• Precise linear positioning
• No-wear parts such as bearings, gears, and belts
• Full setup and programming support through Studio 5000 environments

Torque/Force Rating

• VPL continuous 0.46 to 32 Nm (4 to 283 lb-in)
• VPF continuous 0.93 to 19 Nm (8 to 172 lb-in)
• VPC continuous up to 191 Nm (1,593 lb-in)
• MPL continuous 0.26 to 163 Nm (2 to 1440 lb-in)
• MPM continuous 2 to 62 Nm (19 to 556 lb-in)
• MPF continuous 2 to 19 Nm (14 to 172 lb-in)
• MPF continuous 2 to 19 Nm (14 to 172 lb-in)
• MPS continuous 4 to 21 Nm (32 to 190 lb-in)

Continuous 0.086-5.42 Nm (0.85 to 48 lb-in)

Feedback Options

• Single-turn, digital, absolute encoder
• Multi-turn, digital, absolute encoder
• Heidenhain encoder (option on VPC only)
• Single-turn, 1024 sin/cos, absolute encoder
• Multi-turn, 1024 sin/cos, absolute encoder

N/A

Windings

400V Class Windings

200V Class Windings

Winding Voltage

200V Class Windings

More Information

For the most up-to-date information on our full range of servo motors, visit: www.ab.rockwellautomation.com/Motion-Control/Servo-Motors

For more information:
rok.auto/ia
# Actuators and Independent Cart Technology

<table>
<thead>
<tr>
<th>MP-Series/T-Series Electric Cylinders</th>
<th>LDAT-Series Linear Thruster</th>
<th>ITRAK Intelligent Mover System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td></td>
<td>The ITRAK® independent cart system is a modular, scalable linear motor system that allows for independent control of multiple movers on straight or curvilinear paths. The ITRAK system frees the machine designer from the constraints of mechanical cam design so that they can focus on the process, the programming and game-changing innovation.</td>
</tr>
<tr>
<td>Electric Cylinders are compact, lightweight, high force actuators that serve as an alternative to pneumatic and hydraulic solutions. Our ready-to-install electric cylinders are energy-efficient and help provide machine flexibility, including precise, multi-point positioning. Industry-standard mountings and end effector attachments help simplify your assembly and reduce mechanical design engineering, wiring, and commissioning time.</td>
<td>LDAT Integrated Linear Thrusters provide high-speed, load-bearing linear motion out-of-the-box and are capable of pushing, pulling, or carrying a load. They use direct drive technology to help maximize performance and reliability.</td>
<td></td>
</tr>
<tr>
<td><strong>Key Features</strong></td>
<td></td>
<td>ITRAK® Series Assembled Systems</td>
</tr>
<tr>
<td>• Flexible, efficient servo controlled rod actuation</td>
<td>• Linear actuator with an integrated linear bearing capable of pushing, pulling or carrying a load</td>
<td>• Minimize maintenance</td>
</tr>
<tr>
<td>• Extend and retract with precise positioning, velocity or force</td>
<td>• Direct Drive™ technology for dynamic performance combining high velocity, acceleration, and peak thrust forces</td>
<td>• Change between products at the push of a button</td>
</tr>
<tr>
<td>• Fully assembled, ready to install</td>
<td>• Standard rotating SpeedTec DIN Connectors</td>
<td>• Simplify mechanical designs</td>
</tr>
<tr>
<td>• Clean, energy efficient alternative to fluid power</td>
<td>• Multiple mounting surfaces and methods</td>
<td>• Upgrade easily by reducing complex tooling</td>
</tr>
<tr>
<td>• Flexible positioning for parts, tools, set works, etc.</td>
<td>• Ability to have a moving slider or moving stator</td>
<td>• Operate faster with less downtime</td>
</tr>
<tr>
<td>• Dynamic, precise response for a wide range of linear motion applications</td>
<td>• Availability as a modified standard product with an integral brake or with a boot that provides IP66 protection</td>
<td>• Reduce energy consumption through direct drive</td>
</tr>
<tr>
<td>• Available in multiple frame sizes</td>
<td></td>
<td>ITRAK® Series System Components</td>
</tr>
<tr>
<td><strong>Force Rating</strong></td>
<td>Peak force to 5469 N (1229 lbs)</td>
<td>• Straight and 90° curve linear motor sections available in standard 400 mm lengths</td>
</tr>
<tr>
<td>• Continuous force 240-7784 N (54-1750 lbs)</td>
<td></td>
<td>• Different force ratings available with various coil sizes, including 50 mm, 100 mm and 150 mm</td>
</tr>
<tr>
<td>• Peak force to 14500 N (3300 lbs)</td>
<td></td>
<td>• Combine for racetrack, square or rectangle configurations to any length</td>
</tr>
<tr>
<td><strong>Speed Rating</strong></td>
<td>Up to 5 m/s</td>
<td>• Each motor section contains a multiphase configuration to any length</td>
</tr>
<tr>
<td>Up to 1 m/s</td>
<td></td>
<td>• 50 mm: 264 N</td>
</tr>
<tr>
<td>• 50 mm: &gt; 5 m/s</td>
<td>Up to 5 m/s</td>
<td>• 100 mm: 529 N</td>
</tr>
<tr>
<td>• 100 mm: 4 m/s</td>
<td></td>
<td>• 150 mm: 793 N</td>
</tr>
<tr>
<td>• 150 mm: 2.75 m/s</td>
<td></td>
<td><strong>Feedback Options</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absolute feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Feedback Resolution &lt; 10 µm</td>
</tr>
<tr>
<td><strong>Feedback Options</strong></td>
<td>Incremental TTL or Absolute Hiperface</td>
<td><strong>Winding Voltage</strong></td>
</tr>
<tr>
<td>Absolute high-resolution multi-turn feedback</td>
<td></td>
<td>200V and 400V Class Windings</td>
</tr>
<tr>
<td><strong>Winding Voltage</strong></td>
<td>200V and 400V Class Windings</td>
<td>400V Class Windings</td>
</tr>
<tr>
<td>200V and 400V Class Windings</td>
<td></td>
<td><strong>More Information</strong></td>
</tr>
<tr>
<td>For the most up-to-date information on our full range of actuators, visit: <a href="http://ab.rockwellautomation.com/Motion-Control/Actuator">http://ab.rockwellautomation.com/Motion-Control/Actuator</a></td>
<td>For the most up-to-date information on Itrak*, visit: <a href="http://ab.rockwellautomation.com//global/solutions-services/capabilities/motion/itrac">http://ab.rockwellautomation.com//global/solutions-services/capabilities/motion/itrac</a></td>
<td></td>
</tr>
</tbody>
</table>

* Itrak*
<table>
<thead>
<tr>
<th>MagneMover LITE</th>
<th>QuickStick</th>
<th>QuickStick HT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MagneMover LITE is an intelligent and highly cost-effective conveyor system specifically designed to move light loads quickly and efficiently. MM LITE outperforms conventional belt and chain conveyors for OEM/in-machine applications and for demanding motion requirements, delivering new levels of process optimization and throughput.</td>
<td>QuickStick® is the Intelligent Conveyor System that offers increased throughput and a lower cost of ownership, providing a faster, cleaner, and more efficient alternative to pallet conveyor systems. Linear motor technology enables modules to be configured end-to-end, creating an electromagnetic force to propel carriers up to 10 times faster than traditional systems.</td>
<td>QuickStick HT™ is designed to provide fast, precise transport for heavy loads up to 1000s of kilograms. It is the ideal solution for automotive assembly or other industrial applications as well as clean room, glove box or submerged applications, and can be easily integrated into existing manufacturing lines or serve as a platform for next generation.</td>
</tr>
</tbody>
</table>
| • Intelligent motion  
• Process optimization tools simplify system design  
• Complete traceability at all times  
• Flexible layouts  
• Easy to clean and maintain up to IP65 wash-down | • Intelligent motion  
• Flexibility with simultaneous tracking and easy add and removal of modules  
• Easy-to-use modular design  
• Less maintenance with fewer moving parts | • Functional in industrial, clean, harsh, underwater and other unique environments  
• Innovative design allows various configurations  
• Easy-to-use modular design and control system  
• Less maintenance with fewer moving parts |
| 6 N/10 N | 15.9 N per magnet array | Over 2500 N Single Wide, Over 5000N Double Wide |
| 2 m/s | 100 m/s | 2.5 m/s |
| Absolute | Absolute | Absolute |
| 36V | 48V | 400V |

For the most up-to-date information on intelligent conveyors, visit: www.magnemotion.com
# AC Drives At-A-Glance

## PowerFlex 755T AC Drives

| Overview | Offers precise motor control along with solutions for regeneration (PowerFlex 755TR), harmonic mitigation (PowerFlex 755TL) and flexible common DC bus configurations (PowerFlex 755TM). TotalFORCE™ technology, our patented field-oriented control for accurate torque control, delivers fast, precise, responsive control of position, velocity and torque. |
| Key Features | • Reduce energy costs with regeneration  
• Regulate active current and reactive power to correct power factor  
• Designed to meet the IEEE 519 standard  
• Keep your equipment running through most power quality disturbances with active front end ride-through control  
• Reduce commissioning time and mechanical wear with Load Observer and Adaptive Tuning  
• Flexible slot-based hardware architecture allows you to select option modules for safety, feedback, communications and I/O  
• Modular design provides for easier installation and maintenance  
• Predictive diagnostics help reduce unplanned downtime and improve productivity  
• Compact  
• Available with conformal coating to help protect in harsh environments |
| Ratings | • 400-480V: 160-2000 kW/250-3000 Hp  
• 600-690V: 250-2500 Hp/200-2300 kW |
| Safety | • Safe Speed Monitor option  
• Safe Torque Off – hardwired or network options |
| Logix Integration | • Premier Integration into Logix control environment |
| Communications | Built-in dual ports for EtherNet/IP and support for additional industrial networks |

## PowerFlex 750-Series AC Drives

| Overview | Designed for flexibility, connectivity and productivity. Provide an exceptional user experience, from initial programming through operation and maintenance. Offering more selection for control, communications, safety and supporting hardware options than any other drives in their class, PowerFlex® 750-Series AC drives provide the features you need to help maximize your productivity. |
| Key Features | • Multiple motor control modes and support for induction and permanent magnet motors  
• Predictive diagnostics help to extend the life of the drive  
• Flexible slot-based hardware architecture allows you to select option modules for safety, feedback, communications and I/O  
• Automatic Device Configuration (ADC) allows Logix controllers to detect a replaced drive and download all configuration parameters automatically  
• PowerFlex 755 drives have the option to be programmed using motion instructions in the Studio 5000 Logix Designer application  
• Available with conformal coating to help protect in harsh environments |
| Ratings | • 200-240V: 0.37 - 132 kW/0.5-200 Hp/2.2 - 477 A  
• 380-480V: 0.75-1.400 kW/1.0-2000 Hp/2.1 - 2330 A  
• 600V: 1.0-1500 Hp/1.7-1530 A  
• 690V: 1.1-1500 kW/2.0-2330 A |
| Safety | • PowerFlex 753: Safe Speed Monitor and Safe Torque Off options  
• PowerFlex 755: Safe Speed Monitor and hardwired or networked Safe Torque Off options |
| Logix Integration | • Premier Integration into Logix control environment |
| Communications | PowerFlex 753: Optional single or dual port EtherNet/IP and additional industrial networks  
PowerFlex 755: Built-in port for EtherNet/IP, optional dual port EtherNet/IP, support for additional industrial networks |
| More Information | To see our full range of PowerFlex AC drives and for more information on these products, visit: www.ab.rockwellautomation.com/Drives |
### PowerFlex 520-Series AC Drives

These compact variable frequency drives combine innovation and ease of use to provide motor control solutions designed to maximize your system performance and reduce your time to design and deliver better machines. The PowerFlex® 523, PowerFlex 525 and PowerFlex 527 drives each offer a unique set of features to distinctively match the needs of your application.

- **PowerFlex 520-Series drives** offer multiple motor control modes; PowerFlex 525 supports permanent magnet motor control.
- Compact footprint saves panel space and provides flexible installation.
- Operating temperatures from -20 °C (-4 °F) up to 50 °C (122 °F). Up to 70 °C (158 °F) with current derating and optional control module fan kit.
- Drives can be installed vertically or horizontally.
- **Automatic Device Configuration (ADC)** allows Logix controllers to detect a replaced drive and download all configuration parameters automatically.
- Available with conformal coating to help protect in harsh environments.

- **PowerFlex 525: Built-in port for EtherNet/IP; optional dual port** EtherNet/IP
- **PowerFlex 527: Built-in dual ports for EtherNet/IP**

### PowerFlex 6000 Medium Voltage Drives

Ideal for general purpose applications such as fans, pumps, torque, and compressors. Suitable for new and retrofit, variable torque, and constant torque applications. Delivers an easy-to-use and simplified user experience.

- **PowerFlex 6000 Medium Voltage Drives**

### PowerFlex 7000 Medium Voltage Drives

Flexibility and highly efficient performance in a single solution. Built-in regenerative braking capability makes this ideal for challenging, high performance applications. Component count is the lowest in the market, resulting in increased reliability, less downtime and fewer spare parts. To achieve even more efficiency, choose an AFE configuration with Direct-to-Drive™ technology and connect a motor directly to the drive without the requirement of an isolation transformer.

- **PowerFlex 7000 Medium Voltage Drives**

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**For more information:** [rok.auto/ia](rok.auto/ia)

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**PowerFlex 520-Series AC Drives**

- 100% starting torque without the requirement of an encoder
- High-efficiency ECO main cooling fans are internally powered to reduce operating costs and reduce external control power requirements
- Designed to meet the IEEE 519 standard
- Near-sinusoidal output waveforms allow use of standard motors and motor cable lengths to 400m (without an output filter)
- Automatic Power Cell Bypass minimizes downtime (optional)
- Extended ride-through control keeps your drive running through most power quality disturbances
- Intuitive, easy-to-use color touchscreen HIM
- Conformally coated control boards helps protect in harsh environments
- Air-cooled for simplified installation

- 100-115V: 0.2-1.1 kW/0.25-1.5 Hp/1.6-6 A
- 200-240V: 0.2-1.5 kW/0.25-20 Hp/1.6-62.1 A
- 400-480V: 0.4-22 kW/0.5-50 Hp/1.4-43 A
- 600-690V: 0.4-22 kW/0.5-30 Hp/0.9-32 A

**PowerFlex 6000 Medium Voltage Drives**

- Electro-mechanical interlocking (standard), trapped key interlocking (optional)
- Fiber optic device firing and mechanical barriers provide isolation and separation between medium voltage and low voltage control

- 2.3 kV: 140-2238 kW/200-3000 Hp
- 3.3 kV: 160-3280 kW/215-4400 Hp
- 4.16 kV: 225-3954 kW/300-5300 Hp
- 6.6 kV: 300-6565 kW/400-8200 Hp
- 8.9 kV: 315-6655 kW/415-8200 Hp
- 10 kV: 200-9950 kW/270-13,350 Hp
- 11 kV: 220-10,950 kW/300-14,680 Hp

**PowerFlex 7000 Medium Voltage Drives**

- ArcShield™ arc resistant enclosure (optional) helps provide additional arc fault protection
- Hardwired Safe Torque Off (optional)
- Trapped key mechanical interlocking
- Fiber optic device firing and mechanical barriers provide isolation and separation between medium voltage and low voltage control

- 2.3-2.4 kV: 150-1500 kW/200-2000 Hp
- 3.3 kV: 187-3600 kW/250-4750 Hp
- 4.4-16 kV: 261-4400 kW/350-5750 Hp
- 6.6 kV: 400-6000 kW/300-8000 Hp

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**Premier Integration into Logix control environment**

- PowerFlex 520 uses Studio 5000 motion instructions exclusively
- Integration into Logix environment via PlantPAx Faceplates and Add-on Instructions (AOIs)

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**Premier Integration into Logix control environment**

- Options for EtherNet/IP and additional industrial networks

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**For more information:** [rok.auto/ia](rok.auto/ia)
## Motor Control Devices At-A-Glance

### CENTERLINE 2100 NEMA Motor Control Centers (MCCs)

**Overview**
Our industry-leading MCC meets UL and NEMA standards and offers solutions for networking and communications, and safety.

**Key Features**
- Offers proven technology for high quality and years of dependable service
- Provides consistent design to allow for backward compatibility
- Includes center-mounted bus design for to improve heat dissipation
- Provides solid grounding system to help reduce shock hazards

**Rating**
Up to 600V, 600-3200 A

**Safety**
- CENTERLINE 2100 with SecureConnect™ units helps reduce electrical shock and exposure to electrical hazards
- CENTERLINE 2100 with ArcShield™ Technology helps to reduce arc flash hazards and increases protection against internal electrical arcing faults

**Logix Integration**
- Integration into Logix environment via IntelliCENTER Software
- Support for PlantPAx® Process Object Library Faceplates and Add-on Instructions (AOIs)

**Standards**
- ABS Type Certified (Marine & Coast Guard)
- International Building Code – IBC (Seismic)
- UL/cUL
- NMKS-353-ANCE
- CE Conformance
- ISO 9001 Certification

**Communications**
- Options for EtherNet/IP and additional industrial networks
- Options to include IntelliCENTER® software which provides access to operating data and troubleshooting to help reduce downtime and lower total cost of ownership.

**More Information**
For the most up-to-date information on our full range of motor protection, visit: https://ab.rockwellautomation.com/Motor-Control

### CENTERLINE 2500 IEC Motor Control Centers (MCCs)

**Overview**
By combining a smaller footprint and comprehensive type testing, the CENTERLINE 2500 MCCs meet the global demand for factory-ready, space, energy, and cost-efficient motor control solutions.

**Key Features**
- Includes high density fixed units when floor space is limited
- Select fully withdrawable units for fast replacement
- Provides high unit density to optimize column space
- Offers a variety of intelligent motor control options
- Offers fully type tested standard designs

**Rating**
Up to 690V, 800-4000 A

**Safety**
- CENTERLINE 2500 with ArcShield Technology helps to reduce arc flash hazards and provides increased protection against internal electrical arcing faults
- Includes arc-resistant baffles for PowerFlex® variable speed drives to enable adequate heat dissipation and retain arc-containment

**Logix Integration**
Integration into Logix environment via IntelliCENTER Software

**Standards**
- IEC 60204-1
- IEC 61439-1 and 2 (Edition 2.0)
- BS EN 61439-1 and 2
- AS/NZS 61439-1 and 2
- AS/NZS 3439.1 (Including Annex ZD for Arc Flash Containment)
- IEC/TR 61641:1 (Edition 3.0)
- 2006/95/EC & 2014/35/EU – Low Voltage Directive
- UL 347 and CSA, Industrial Control Equipment C22.2 No. 253 (harmonized with UL 347, fifth edition)
- NEMA, Medium Voltage Controllers Rated 1501 to 7200VAC ICS 3-2 (formerly ICS 2-324)
- IEEE C37.20.7, Type 2B for arc resistance
- National Electrical Code (NEC)
- Occupational Safety & Health Act (OSHA)
- European Directives for EMC

**Communications**
- Options for EtherNet/IP and additional industrial networks
- Options to include IntelliCENTER® software which provides access to operating data and troubleshooting to help reduce downtime and lower total cost of ownership.

**More Information**
For the most up-to-date information on our full range of motor protection, visit: https://ab.rockwellautomation.com/Motor-Control

### CENTERLINE 1500 Medium Voltage Motor Control Centers (MCCs)

**Overview**
Available in various control formats that include arc resistant product designs. Controller options include full-voltage, reversing, reduced-voltage, solid-state reduced-voltage, multi-speed, and synchronous control.

**Key Features**
- Includes isolation switch with visible indication that the power cell is not energized
- Includes CENTERLINE horizontal power bus with removable cover plates for accessibility
- Offers Type 2B accessibility
- Provides remote access to data to minimize the need to approach the MCC

**Rating**
2400V-690V, 400-800 A

**Safety**
- CENTERLINE 1500 with ArcShield helps to reduce arc flash hazards:
  - Provides increased protection against internal electrical arcing faults
  - Provides arc resistance to 40 kA or 50 kA per C37.20.7

**Logix Integration**
Integration into Logix environment via IntelliCENTER Software

**Standards**
- AS/NZS 3439.1 (Including Annex ZD for Arc Flash Containment)
- AS/NZS 61439-1 and 2
- BS EN 61439-1 and 2
- IEC 60204-1
- IEC 61439-1 and 2 (Edition 2.0)
- BS EN 61439-1 and 2
- UL 347 and CSA, Industrial Control Equipment C22.2 No. 253 (harmonized with UL 347, fifth edition)
- NEMA, Medium Voltage Controllers Rated 1501 to 7200VAC ICS 3-2 (formerly ICS 2-324)
- IEEE C37.20.7, Type 2B for arc resistance
- National Electrical Code (NEC)
- Occupational Safety & Health Act (OSHA)
- European Directives for EMC

**Communications**
- CENTERLINE 1500 with IntelliCENTER Technology provides remote access to data to minimize the need to approach the MCC
- Options for EtherNet/IP and additional industrial networks
### E1 Plus Electronic Overload Relay
- Rating: 0.1-800 A
- Motor Control: • Solid-state • Standard starter • Reversing starter • Wye/Delta (Star/Delta) starter • Two-speed starter
- I/O: • 2 Inputs • 1 Output
- Communications: EtherNet/IP Communication Module
- Technical Documentation: EC-CA001

### E300 Electronic Overload Relay
- Rating: 0.5-65000 A
- Motor Control: • Microprocessor based • Standard starter • Low Voltage and Medium Voltage control • 12-channel digital recorder • Remote RTD Sensing • Analog input/output capabilities
- I/O: • Minimum 9 configurable output contacts, 18 digital inputs and various Virtual I/O capabilities. Additional I/O capabilities available
- Communications: EtherNet/IP (DRL) Ethernet/IP, IEC 61850, Modbus TCP, Modbus, Profinet, DNP 3, IEC 101-10
- Technical Documentation: 193-SG010A

### 857 Motor/Feeder Protection Relay
- Rating: 10-20000 A
- Motor Control: • Motor and Feeder Protection • Low Voltage and Medium Voltage control • 3 Control Module versions available - Standard - Pump Control - Braking Control • Power Structure has built-in SCR bypass/run contactor • Built-in electronic motor overload protection
- I/O: Four functionally programmable on-board output contacts (N.O. or N.C.)
- Communications: Options for EtherNet/IP network and additional industrial networks
- Technical Documentation: 857-SR001

### SMC Flex
- Rating: 1-1250 A
- Motor Control: • 9 Starting/Stopping modes available • All-in-one Control Module • Power Structure available with either Built-in SCR bypass or Solid State configuration • Built-in electronic motor overload protection • Three expansion ports to install I/O option modules • Programmable Faults and Alarms • Built-in Power Monitor • DeviceLogix
- I/O: • Two fully programmable contacts as: normal, UTS, fault, alarm, external brake, DeviceLogix, auxiliary control, fan control, network or external bypass • I/O Option Modules available for expansion
- Communications: Options for EtherNet/IP network and additional industrial networks
- Technical Documentation: 150-TD009

### SMC-50
- Rating: 108-480A (Internal Bypass) 90-520 A (Solid State)
- Motor Control: • 17 starting / Stopping modes available
- I/O: • Two fully programmable contacts as: normal, UTS, fault, alarm, external brake, DeviceLogix, auxiliary control, fan control, network or external bypass • I/O Option Modules available for expansion
- Communications: Options for EtherNet/IP network and additional industrial networks
- Technical Documentation: 150-TD009

### More Information
For the most up-to-date information on our full range of motor protectors, visit: http://ab.rockwellautomation.com/circuit-and-load-protection
For the most up-to-date information on our full range of motor control devices, visit: http://ab.rockwellautomation.com/motor-control
Operator Interfaces At-A-Glance

**PanelView Plus 7**

**PanelView 5000**
- With an intuitive, modern design, the PanelView™ 5000 Family provides enhanced Logix integration using Studio 5000 View Designer software. This integration allows engineers to enter configuration information once and use it for the entire automation design.

### Overview

### Key Features
- **Standard version**
  - Ideal for small and mid-size machine applications requiring basic features
  - Connectivity to one controller and up to 50 screens (25 on top, 25 replace) and 500 alarm messages
  - Single, embedded Ethernet port for network connectivity
  - ATEX Zone 2/22 certification
  - Optional Device Level Ring (DLR)

- **Performance models**
  - Designed for all applications, ranging from small to large, complex machines
  - High performing processors and embedded Ethernet ports that support Device Level Ring, linear or star network topologies
  - Video playback support for advanced user help
  - View maintenance manuals and other documents directly on terminal
  - Stainless steel bezel options available
  - Conformal coating available for 9” and 12” DC touch-only displays

- **PanelView 5510**
  - Designed for all applications, ranging from small to large, complex machines
  - Modern design with display sizes from 7-19 in. with wide screen, touch, and keypad options
  - 1 controller, 100 screens, 1000 alarms
  - PDF Viewer

- **PanelView 5310**
  - Ideal for small and mid-size machine applications requiring basic features
  - Modern design with display sizes from 6-12 in. with wide screen options
  - 4 controllers, 100 screens, and 1000 alarms per controller

### Display Options and Viewing Area Dimensions
- **PanelView Plus 7**
  - 4 in. (95 x 54 mm) to 15 in. display (304 x 228 mm) available
  - 7 in. (132 x 99 mm) to 19 in. display (376 x 301 mm) available

- **PanelView 5000**
  - 7 in. (132 x 99 mm) to 19 in. display (376 x 301 mm) available
  - 6 in. wide (115 x 86 mm) to 12 in. wide display (261 x 163 mm) available

### Display Type
- **PanelView Plus 7**
  - Color TFT LCD, 18-Bit Color Graphics

- **PanelView 5000**
  - Color TFT LCD, 24-bit Color Graphics (16.7 million colors), Light-emitting diode backlight

### Internal Storage
- **PanelView Plus 7**
  - 512 MB storage

- **PanelView 5000**
  - 500 MB internal storage

### Input Power Options
- **PanelView Plus 7**
  - DC (18-30V DC)

- **PanelView 5000**
  - DC (18-30V DC) and AC (100-240V AC)

### Communications
- **PanelView Plus 7**
  - One 10/100Base-T, Auto MDI/MDI-X Ethernet port with IEEE1588 support
  - Two 10/100Base-T, Auto MDI/MDI-X Ethernet ports that support DLR (Device Level Ring), linear, or star network topologies
  - 2 USB-A and 1 USB-B (v2.0 high speed)

- **PanelView 5000**
  - Two 10/100 Base-T, Auto MDI/MDI-X Ethernet ports that support DLR (Device Level Ring) DLR, linear or star network topologies

### Environmental
- **PanelView Plus 7**
  - NEMA 12, 4X, IP54, IP66
  - 0-55 °C (32-131 °F)

- **PanelView 5000**
  - NEMA and UL Type 12, 13, 4X, also rated IP66 as Classified by UL 0-55 °C (32-131 °F), EAC, Marine

### More Information
- For the most up-to-date information on our full range of operator interfaces, visit: http://ab.rockwellautomation.com/Graphic-Terminals
MobileView

Mobile graphic terminals that help increase operator productivity and provide a safe production environment. This mobile operator interface runs the Windows Embedded Standard 7 operating system, but allows reuse of FactoryTalk® View ME and FactoryTalk® View Studio applications to help reduce development costs.

- Offered in 5 m, 10 m, or 15 m cables with quick connect and mounting bracket options
- Software assignable function keys with either a hardwired momentary push button or key switch
- Features 3-position enabling switch
- 10 in. wide display (1280 x 800) with resistive touch screen for easy viewing
- Internal SD card for application and data log storage
- Provides mobility without generating unintended E-stops
- Offers cost effective thin client mobile terminal
- Second generation MobileView terminal offers all the mobility features of the first generation product with the addition of an illuminated E-stop, ability to work with the IP65 junction box, and the option to be used as a thin client
- IP65 Junction Box works with the second generation MobileView terminal to provide an On-machine visualization solution
- E-stop bridging allows the MobileView terminal to be unplugged from the IP65 junction box without tripping the E-stop circuit
- Box ID feature provides location awareness, which allows the MobileView terminal to know where on the manufacturing line it’s located

PanelView 800

Graphic terminals that are packed with high-speed processors, high-resolution displays with light-emitting diode backlight, internal memory and remote monitoring features for enhanced productivity and maintenance. Offers flexible solution for small and mid-size applications with the capability to connect to micro and small controllers.

- High-resolution display with LED backlight supporting 65K colors
- Monitor and configure terminals remotely via Virtual Network Computing (VNC) servers
- High-performance 800 MHz CPU processor with 256 MB memory
- USB host port and microSD™ support file transfer or updating firmware
- Alerts operators with alarm messages that include embedded variables
- Ability to upload and download groups of data or parameter settings with recipe capabilities
- Connects with Micro800®, MicroLogix™ and CompactLogix™ 5370 controllers
- Send email notification over encryption
- Remotely access datalog, alarm history and recipe using FTP

<table>
<thead>
<tr>
<th>MobileView</th>
<th>PanelView 800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screen size:</strong> 10.1”</td>
<td><strong>4 in. (95 x 53.9 mm)</strong></td>
</tr>
<tr>
<td><strong>Diameter of product:</strong> 349 mm (13.74 in.)</td>
<td><strong>7 in. (153.6 x 86.6 mm)</strong></td>
</tr>
<tr>
<td><strong>Depth w/o handle:</strong> 70 mm (2.75 in.)</td>
<td><strong>10 in. (211.2 x 158.4 mm)</strong></td>
</tr>
<tr>
<td><strong>Depth with handle:</strong> 110 mm (4.33 in.)</td>
<td></td>
</tr>
</tbody>
</table>
Computers At-A-Glance

### VersaView 5000

<table>
<thead>
<tr>
<th>Overview</th>
<th>Integrated Display</th>
<th>Non-Display</th>
<th>Monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The VersaView® 5400 open architecture integrated display computers and VersaView S200 thin client versions include a modern, edge-to-edge glass display and provide versatility with the ability to load different software applications.</td>
<td>Non-display computers, VersaView S200 and ThinManager® thin client versions offer a modern, small footprint with multiple mounting options.</td>
<td>The VersaView 5100 monitors include a modern, edge-to-edge glass display, projected capacitance multi-touch touch screens and multiple display inputs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Features</th>
<th>Integrated Display Computers</th>
<th>Non-Display Computer</th>
<th>Non-Display Thin Clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Screen sizes: 12-in., 15-in., 19-in., 22-in. (all wide screen)</td>
<td>Dual external display support</td>
<td>Single Display Thin Client</td>
<td></td>
</tr>
<tr>
<td>- Projected capacitive multi-touch</td>
<td>- Performance: Quad core Intel Atom</td>
<td>- More compact design targeted for cost-conscious applications</td>
<td></td>
</tr>
<tr>
<td>- Performance: Quad core Intel Atom</td>
<td>- Storage: 128 GB SSD</td>
<td>- Single DisplayPort video output</td>
<td></td>
</tr>
<tr>
<td>- Operating Systems: 64-bit Windows</td>
<td>- DC Power</td>
<td>- Single core Intel Atom CPU to meet standard application needs</td>
<td></td>
</tr>
<tr>
<td>- Full HD 1080P options (on 22-in. systems)</td>
<td></td>
<td>- Dual external display output</td>
<td></td>
</tr>
<tr>
<td>- DC Power</td>
<td></td>
<td>Dual 4K Display Thin Client</td>
<td></td>
</tr>
<tr>
<td>Integrated Display Thin Client</td>
<td></td>
<td></td>
<td>- High-performance quad core Intel Atom CPU for demanding applications (complex virtual screens, multi-session, multiple IP camera feeds and more)</td>
</tr>
<tr>
<td>Rockwell Automation ThinManager ready</td>
<td></td>
<td></td>
<td>- Dual 4K Displays, 1x DisplayPort, 1x HDMI</td>
</tr>
<tr>
<td>Screen sizes: 12, 15, 19, 22 (all wide screen)</td>
<td></td>
<td>Multi-4K Display Thin Client</td>
<td></td>
</tr>
<tr>
<td>Projected capacitive multi-touch</td>
<td></td>
<td></td>
<td>- High-performance quad core Intel I5 CPU for applications requiring multiple displays with demanding applications</td>
</tr>
<tr>
<td>Full HD 1080P options</td>
<td></td>
<td></td>
<td>- Three or seven 4K Displays, 3x DisplayPort, 4x mini DisplayPort (optional)</td>
</tr>
</tbody>
</table>

| Software | Ideal open architecture platform for use with FactoryTalk View, or with Rockwell Automation ThinManager software for thin client architectures. |

<table>
<thead>
<tr>
<th>Standards &amp; Environment</th>
<th></th>
<th>Non-Display Computer</th>
<th>Non-Display Thin Clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Operates in 0-50 °C (32-122 °F)</td>
<td>Non-display Computer</td>
<td>- Operates in -20-60 °C</td>
<td>Non-display Thin Clients</td>
</tr>
<tr>
<td>- IP65</td>
<td>- cULus listed, CE, EAC, KC, RCM</td>
<td>- Operating temperature varies per thin client</td>
<td>- cULus listed, CE, EAC, KC, RCM</td>
</tr>
<tr>
<td>- cULus listed, CE, EAC, KC, RCM</td>
<td>Non-Display Computer</td>
<td>- NEMA 4X, IP65</td>
<td>Non-Display Thin Clients</td>
</tr>
<tr>
<td>Non-Display Computer</td>
<td>- cULus listed, CE, EAC, KC, RCM</td>
<td>- cULus listed, CE, EAC, KC, RCM</td>
<td>- cULus listed, CE, EAC, KC, RCM</td>
</tr>
</tbody>
</table>

| More Information | To see our full range of open architecture operator interface options and for more information on these products, visit: http://ab.rockwellautomation.com/Computers | | |

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**To see our full range of open architecture operator interface options and for more information on these products, visit:**

http://ab.rockwellautomation.com/Computers
### Industrial Environment Computers

Industrial Environment Computers offer solutions for the physical limitations and requirements of your environment. Industrial Environment Computers provide a variety of options in form factors, RAM, storage, and performance. Our Industrial Data Center provides the ability to run multiple operating systems and applications off of virtualized servers.

<table>
<thead>
<tr>
<th>6181P Integrated Display Computers*</th>
<th>6181X Hazardous Location Integrated Display Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Available in 12-in., 15-in., 15.6-in., 17-in., 18.5-in., and 19-in. wide display models</td>
<td>• 12.1-in. TFT color display offers resistive touch and readability in sunlight</td>
</tr>
<tr>
<td>• Widescreen and projected capacitive multi-touch options</td>
<td>6181X Hazardous Location Non-display Computers</td>
</tr>
<tr>
<td>• Stainless steel bezel (optional)</td>
<td>• Wall mountable</td>
</tr>
<tr>
<td>• Support dual external monitor video output</td>
<td>• Combines with Bulletin 6186M Performance Industrial Monitor to form a Class I Division 2 certified system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6181P Non-Display Computers*</th>
<th>Industrial Data Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Versatile mounting options ideal for control cabinet use</td>
<td>• Include multiple offerings providing one to multiple servers with expansion capability</td>
</tr>
<tr>
<td>• Windows Server 2008 R2 option with RAID support</td>
<td>• Two to 9 TB useable storage</td>
</tr>
<tr>
<td>• Field replaceable integrated AC and DC power supply</td>
<td>• vSphere standard to vSphere Enterprise</td>
</tr>
</tbody>
</table>

### Extreme Environment Computers

Extreme Environment Computers combine Hazardous Location certifications along with the capacity to withstand more extreme temperatures than any other offering on the market. Industries such as Oil & Gas, chemicals, and mining involve potentially explosive materials in locations where hardware often takes a beating.

<table>
<thead>
<tr>
<th>6181X Hazardous Location Integrated Display Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 12.1-in. TFT color display offers resistive touch and readability in sunlight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6181X Hazardous Location Non-display Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Wall mountable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industrial Data Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 100-240V AC, autoranging power requirements</td>
</tr>
</tbody>
</table>

### Industrial Data Centers

| Include multiple offerings providing one to multiple servers with expansion capability |
| Two to 9 TB useable storage |
| vSphere standard to vSphere Enterprise |

### Extreme Environment Computers

| • Rated ATEX Zone 2/22, IECEx, and UL Listed for Class I Div 2 hazardous locations |
| • Operates in -20-70 °C (-4-158 °F) temperature range without requiring a heater on the back side, only |
| • Rated ATEX Zone 2/22, IECEx, and UL Listed for Class I Div 2 hazardous locations |

For more information: [rok.auto/ia](rok.auto/ia)
### Stratix Industrial Networks Infrastructure and Security At-A-Glance

<table>
<thead>
<tr>
<th>Stratix 5410 Distribution Switch</th>
<th>Stratix 5400 Managed Switch</th>
<th>Stratix 5800 Managed Switch</th>
<th>Stratix 8000 and 8300 Managed Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>Managed switches that support layer 2 switching and layer 3 routing with PoE and fiber (SFP) and all Gb port options.</td>
<td>Modular managed switch for maximum flexibility to support combinations of copper, fiber and PoE ports. Supports layer 2 switching and layer 3 routing in an all Gb platform.</td>
<td>Modular managed switches that use a Cisco operating system with tools that are familiar to IT professionals and help provide secure integration with the enterprise network.</td>
</tr>
<tr>
<td><strong>Key Features</strong></td>
<td>• Layer 2 access switching and layer 3 routing for the flexibility to create multiple network configurations. • All Gb platform for high performance network support. • Dual Gb ring configuration for high performance network resiliency.</td>
<td>• Modular design for configuration flexibility. • Layer 2 switching and layer 3 routing options. • All Gb platform.</td>
<td>• Copper, fiber, SFP, and Power over Ethernet (PoE) expansion modules. • Default configurations for industrial automation and EtherNet/IP devices. <strong>Stratix 8300 Layer 3 routing</strong> • Static, dynamic, multicast, redundant, IPv6 and policy-based routing and VFR-Lite virtualization.</td>
</tr>
<tr>
<td><strong>Ports</strong></td>
<td>• 28 total ports • 16 SFP slots • 12 PoE ports • All support 1 Gb, up to 4 SFP slots support 10 Gb</td>
<td>• 8, 12, 16 and 20 port versions • Up to 12 SFP slots • Up to 8 PoE ports • All support 1 Gb</td>
<td>• 6 and 10 port base switches • Up to 26 copper, 14 SFP slots and 8 PoE ports with expansion modules • 2 ports support 1 Gb</td>
</tr>
<tr>
<td><strong>NAT</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>DLR</strong></td>
<td>Not supported</td>
<td>Optional</td>
<td>Future</td>
</tr>
<tr>
<td><strong>Security Features</strong></td>
<td>• Port control in Logix • Access Control List (ACL) • IEEE 802.1x Security • Centralized Authentication Capable (RADIUS, TACACS+) • MAC ID port security • Encrypted Administrative Traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Logix Integration</strong></td>
<td>Premier integration to Integrated Architecture including: • Studio 5000 Add-on Profile for configuration and monitoring • Predefined Logix tags for monitoring and port control • FactoryTalk View Faceplates for status monitoring and alarming</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cisco IOS</strong></td>
<td>Yes</td>
<td>Cisco IOS-XE</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>On-board backup/restore</strong></td>
<td>SD card (included)</td>
<td>SD card (included)</td>
<td>SD card (included)</td>
</tr>
<tr>
<td><strong>More Information</strong></td>
<td>For the most up-to-date information on our full range of Industrial Networks Infrastructure products and accessories, visit: <a href="http://ab.rockwellautomation.com/Networks-and-Communications/Ethernet-IP-Network">http://ab.rockwellautomation.com/Networks-and-Communications/Ethernet-IP-Network</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Stratix 5700 Managed Switch, ArmorStratix 5700 Managed Switch

- Compact and scalable managed layer 2 switch for small to complex applications. The Stratix 5700 requires DIN rail cabinet mounting while the ArmorStratix 5700 is used for on-machine P66/67 environments.
- Optional Network Address Translation (NAT) maps local machine-level IP addresses to the broader plant network.
- Power over Ethernet (PoE), Gb ports and IEEE 1588 support.
- Includes security features such as access control lists (ACLs).

### ArmorStratix 5700

- Minimizes hardware in the control cabinet.
- Includes security features such as access control lists (ACLs).

### Stratix 2500 Lightly Managed Switch

- Lightly managed switches that enable network connectivity in applications where traditional unmanaged switches lack the ability to provide diagnostics and security.
- Includes security features such as access control lists (ACLs).

### Stratix 2000 Unmanaged Switch

- Unmanaged switches are ideal for small control networks. These industrial-grade switches do not require any configuration and use simple cable connections.
- Includes security features such as access control lists (ACLs).

### Stratix 5950 Security Appliance

- Security appliances combine several enhanced security functions into a single appliance to help protect your industrial automation infrastructure.
- Includes security features such as access control lists (ACLs).

### FactoryTalk Network Manager

- Software that helps provide increased network visibility, troubleshooting, and simplified configuration and maintenance.
- Includes security features such as access control lists (ACLs).

<table>
<thead>
<tr>
<th>Stratix 5700 Managed Switch, ArmorStratix 5700 Managed Switch</th>
<th>Stratix 2500 Lightly Managed Switch</th>
<th>Stratix 2000 Unmanaged Switch</th>
<th>Stratix 5950 Security Appliance</th>
<th>FactoryTalk Network Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td><strong>Overview</strong></td>
<td><strong>Overview</strong></td>
<td><strong>Overview</strong></td>
<td><strong>Overview</strong></td>
</tr>
<tr>
<td>Compact and scalable managed layer 2 switch for small to</td>
<td>Lightly managed switches that</td>
<td>Unmanaged switches are ideal</td>
<td>Security appliances combine</td>
<td>Software that helps</td>
</tr>
<tr>
<td>complex applications. The Stratix 5700 requires DIN rail</td>
<td>enable network connectivity in</td>
<td>for small control networks.</td>
<td>several enhanced security</td>
<td>provide increased network</td>
</tr>
<tr>
<td>cabinet mounting while the ArmorStratix 5700 is used for</td>
<td>applications where traditional</td>
<td>These industrial-grade</td>
<td>functions into a single</td>
<td>visibility, troubleshooting,</td>
</tr>
<tr>
<td>on-machine P66/67 environments.</td>
<td>unmanaged switches lack the</td>
<td>switches do not require any</td>
<td>appliance to help protect</td>
<td>and simplified</td>
</tr>
<tr>
<td></td>
<td>ability to provide diagnostics</td>
<td>configuration and use simple</td>
<td>your industrial automation</td>
<td>configuration and</td>
</tr>
<tr>
<td></td>
<td>and security.</td>
<td>cable connections.</td>
<td>infrastructure.</td>
<td>maintenance.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Optional Network Address Translation (NAT) maps local</td>
<td>• Cable diagnostics, including</td>
<td>• Offers a low-cost, compact</td>
<td>• Visibility and control at</td>
<td>• Discovery of plant floor</td>
</tr>
<tr>
<td>machine-level IP addresses to the broader plant network.</td>
<td>broken wire detection, helps</td>
<td>solution</td>
<td>the Cell/Area Zone level</td>
<td>assets using multiple</td>
</tr>
<tr>
<td>• Power over Ethernet (PoE), Gb ports and IEEE 1588 support.</td>
<td>minimize downtime</td>
<td>• Includes ability to</td>
<td>Cisco ASA firewall and</td>
<td>discovery protocols including</td>
</tr>
<tr>
<td>• Includes security features such as access control lists</td>
<td>• SNMPv3, Syslog uncovers errors</td>
<td>automatically negotiate</td>
<td>FirePower technology provide</td>
<td>IP, SNMP, Modbus, PROFINET,</td>
</tr>
<tr>
<td>(ACLs)</td>
<td>before the network stops</td>
<td>speed and duplex settings</td>
<td>threat detection and</td>
<td></td>
</tr>
<tr>
<td>ArmorStratix 5700</td>
<td>completely</td>
<td>• Operates on 20V AC or</td>
<td>prevention</td>
<td></td>
</tr>
<tr>
<td>• Minimizes hardware in the control cabinet.</td>
<td>• VLAN provides logical</td>
<td>24V DC power</td>
<td>• Deep Packet Inspection (DPI)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>segmentation</td>
<td>• Includes automatic cable</td>
<td>technology helps to detect,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• IGMP provides multicast for</td>
<td>crossover detection</td>
<td>prevent and/or respond to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>data traffic control</td>
<td></td>
<td>potentially malicious traffic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Topology discovery (LLDP)</td>
<td></td>
<td>between devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• STP, RSTP and MSTP – Loop</td>
<td></td>
<td>• Subscription license</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prevention</td>
<td></td>
<td>offering provides a term-based</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Optional Network Address</td>
<td></td>
<td>solution for threat detection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Translation (NAT)</td>
<td></td>
<td>and application control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 6, 10, 18 and 20 port versions</td>
<td></td>
<td>updates with 24/7 TechConnectSM Support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 ports up to 1 Gb</td>
<td></td>
<td>• Discovery of plant floor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Up to 4 SFP slots</td>
<td></td>
<td>assets using multiple</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Up to 4 PoE ports</td>
<td></td>
<td>discovery protocols including</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8, 10, 16, 18, 24 port versions</td>
<td></td>
<td>IP, SNMP, Modbus, PROFINET,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 ports support 1 Gb</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Up to 8 PoE ports</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• 6 to 16 ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 5 and 8 port versions</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• 5 to 16 ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 Gb ports with support for 1 Gb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 SFP slots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4 total ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8 SFP slots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 8 Gb ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 16 ports</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• 20 ports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 6 ports with support for 1 Gb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 SFP slots</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• 4 total ports</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• 8 Gb ports</td>
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<td></td>
<td>• 16 ports</td>
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<td></td>
<td>• 20 ports</td>
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<td></td>
<td>• 5 and 8 port versions</td>
<td></td>
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<td></td>
<td>• 5 to 16 ports</td>
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<tr>
<td></td>
<td>• 2 Gb ports with support for 1 Gb</td>
<td></td>
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<tr>
<td></td>
<td>• 2 SFP slots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
</tr>
<tr>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
<td>Optional (single ring)</td>
</tr>
<tr>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td>• Port security helps disable ports or control end device</td>
<td>• Access Control List (ACL)</td>
<td>• Offers network admin, system</td>
<td>• Network management tool that</td>
<td></td>
</tr>
<tr>
<td>connectivity based on MAC address.</td>
<td>• Firewall for Stateful Inspection</td>
<td>admin and operator roles with</td>
<td>provides premier integration</td>
<td></td>
</tr>
<tr>
<td>• SSH and HTTPS for secure connectivity.</td>
<td>• Inline Transparent/routed mode</td>
<td>the following user access</td>
<td>to Stratix switches</td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>• Passive Monitor - only mode</td>
<td>rights:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>• FirePower services for threat</td>
<td>- Role-based access control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>detection and prevention</td>
<td>- Network settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>• Network Address Translation (NAT)</td>
<td>- System settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>• Remote Access</td>
<td>- Alarm management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>• Add-on Profile (AOP) for</td>
<td>- Device management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>configuration via Studio 5000*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>and FactoryTalk® View Faceplate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>None required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>SD card (optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>Not supported</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>SD card (optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dante for high performance</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For more information: rok.auto/ia
# Ethernet Media At-A-Glance

## Ethernet Cable Spools
- Ethernet Cable Spools help supply a reliable network connection in harsh surroundings.
- We offer unshielded twisted pair, shielded twisted pair, and 600V cables.

## In-cabinet Connectivity
- Products include patch cords and cord sets, field attachable connectors, crimp connectors and bulkhead adapters.

## On-Machine Connectivity
- Our On-Machine™ cables have an IP67 over molded connector and twisted pair cable designed for high flex applications and provide better performance in applications with noise and vibration.

### Key Features
- **Overview**
  - Four- and eight-conductor styles
  - Shielded or Unshielded
  - Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss
  - Riser polyvinylchloride (PVC) cables used for general-purpose environments
  - Red cable jacket option to identify safety networks
  - 600V variant On-Machine™ rated cable for use in a cable tray shared with high voltage power cables

- **Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) options**
  - Robotic high flex TPE cable (two and four pair), tested to 10 million flexing cycles
  - Polyvinylchloride (PVC) riser cable (four pair) for general-purpose applications
  - Plenum cable (four pair) for air duct applications
  - Red cable jacket option to identify safety networks
  - 600V PVC rated cable available (two and four pair)
  - Red cable jackets identify safety networks on your machines
  - Gigabit Cat. 6 options available

- **Over molded housing helps protect the integrity of the signal**
- **Over molded patch cords**
- **Field attachable connectors**
- **Red cable jacket option to identify safety networks**
- **M12 X-code patch cords available with Cat 6 Gigabit cable**
- **Variant 1 Ethernet cables include RJ45 connectors with protective thermoplastic housings, providing an IP67 solution**

### More Information
To see our full range of Ethernet network media and for more information on these products, visit: [http://ab.rockwellautomation.com/Connection-Devices/EtherNet-Media](http://ab.rockwellautomation.com/Connection-Devices/EtherNet-Media)
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**Food & Beverage**
- Product safety & compliance
- Line performance
- Batch, blending, routing & CIP
- Production & order management

**Tire & Rubber**
- Safety wind-up & Let-off (WULO)
- Calenders
- Mixing/TSR systems & curing
- Extruders

**Mining & Cement**
- Ventilation on demand
- Ore beneficiation/processing
- Loadout systems
- Crushers & conveyors

**Household & Personal Care**
- Material tracking/genealogy
- Historian & dashboards
- Mixing, blending, routing & CIP
- Production & order management

**Oil & Gas**
- Integrated control & safety systems
- Production & pipeline SCADA
- Rotating equipment control
- Engineer, procure & construct

**Water/Wastewater**
- Process control
- Power control
- SCADA - data collection
- Remote terminal units

**Life Sciences**
- Full MES & compliance
- Formulation & filling
- Track & trace
- Modular process build

**Power Generation**
- Combustion controls/burner management
- Fuel handling/energy conversion
- Electrical protection & control
- Balance of plant automation/integration

**Metals**
- Melt shop & continuous casting
- Strip processing & finishing
- Rod & bar mills
- Material tracking

**Automotive**
- Body & painting line control
- Error proofing & kitting
- Presses & press line control
- Scheduling & ERP integration

**Chemicals**
- Batch processing
- Mixing & blending
- Material tracking
- Tank farm control

**Pulp & Paper**
- Burner management & digesters
- Stock prep/on-machine DCS
- Paper & tissue machine systems
- Winder & sheeter safety

For more information: rok.auto/ia
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