Integrated Architecture
Real-time control and information delivering smart manufacturing, machines and equipment
DELIVERING THE CONNECTED ENTERPRISE

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.

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

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.
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.
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.

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.
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:

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

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
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.

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

**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.

**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.
Solution
A scalable design environment, network technology and automation portfolio, fully integrated for the application in question.

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

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.

Smarter Technology
Scalable Architecture
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.

For more information: rok.auto/ia
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.

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

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.
**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.
Collaborative System Programming and Configuration
Virtual Design and Operator Training Systems
Logix Emulate

Application Code Manager
System Reuse and Quickly Build Projects

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.

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.

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
MANUFACTURING INTELLIGENCE AND OPERATIONS MANAGEMENT

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
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.

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.

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.
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.
Challenge
Technology moves fast, but some suppliers move too fast, leaving you stranded with obsolete equipment that causes ongoing production headaches.

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
Secure Environment

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

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

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.

Profitable Partnership

Reduce Risk and Create Value Through

Feasibility & Conceptual Studies
Front End Engineering & Design
Design & Engineering
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.

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.

**Programmable Automation Controllers**
- Modular and scalable systems
- Process, batch, discrete, drives, safety and motion control
- High-availability
- SIL 2 and SIL 3 safety certified
- Embedded and Distributed I/O
- Extreme Environment (XT) and Conformal Coating

**Input/Output**
- Chassis-based, local, family-specific, distributable via communication networks
- Distributed, in-cabinet modular - flexible, customizable
- Distributed, in-cabinet block – includes network adapter, analog, digital and specialty
- On-Machine™ modular - direct-mount, reduced wiring costs, easy maintenance
- On-Machine direct mount, block - reduced wiring costs, easy maintenance
- 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
- Distributed/embedded - built-in EtherNet/IP™ and DeviceNet™ support, IO-Link technology, optional DeviceLogix™ Smart Component Technology

**Condition and Energy Monitoring**

**Condition Monitoring**
- Integrated condition monitoring on the EtherNet/IP network
- High-performance portable data collectors
- Proven, comprehensive predictive maintenance software
- Sensors and accessories for a complete solution

**Energy Monitoring**
- Energy monitoring on the EtherNet/IP network
- Capture comprehensive information:
  - how much power you use
  - what your major loads are
  - when you use electric power the most
  - how much you pay for it
  - quality of the power you use
### 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

**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-ENETR 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 (RJ45) Network Media
- On-Machine (M12 and Variant 1) Ethernet Media

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For more information: [rok.auto/ia](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 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**
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></td>
<td></td>
</tr>
<tr>
<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 more 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></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></td>
<td></td>
</tr>
<tr>
<td>• Suitable for high-performance, discrete and motion applications</td>
<td>• Suitable for process, motion, discrete, safety and high-availability applications</td>
<td>• Provides high-performance control and computing functionality in a single hardware platform</td>
</tr>
<tr>
<td>• Integrated Motion on EtherNet/IP™</td>
<td>• GuardLogix® controllers have TÜV certification for functional safety</td>
<td>• Offers the ability to run third-party applications in parallel with Logix real-time control</td>
</tr>
<tr>
<td>• Multiple controllers in the same chassis, with each one operating independently</td>
<td>• Integrated motion and safety on EtherNet/IP</td>
<td>• Supports up to 31 local Compact 5000 I/O modules</td>
</tr>
<tr>
<td>• Built-in 10 b Ethernet port</td>
<td>• Multiple controllers in the same chassis, with each one operating independently</td>
<td>• Offers simplified architectures with built-in communications, peripheral connectivity, integrated DisplayPort and multiple high-speed EtherNet/IP ports</td>
</tr>
<tr>
<td>• Designed for high performance with Compact 5000™ I/O</td>
<td>• Conformal coating offers added protection in harsh environments</td>
<td>• Integrated motion and safety on EtherNet/IP for functional safety</td>
</tr>
<tr>
<td>• Conformal coating offers added protection in harsh environments</td>
<td>• Redundancy supports high availability requirements</td>
<td>• Supports up to 31 local Compact 5000 I/O modules</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 / 1.75 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> GuardLogix 5580: SIL 2, Plc. Cat. 3 GuardLogix 5580: SIL 3, Plc. Cat. 4 (Safety Partner required) ControlLogix controllers: SIL 2 when following ControlLogix SIL 2 Safety Reference Manual GuardLogix 5570: SIL 3, Plc. Cat. 4 (Safety Partner required)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>On-Machine</strong> N/A Armor™ ControlLogix™ controllers: IP67 rated Armor™ GuardLogix™ controllers: IP67 rated</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Language Support</strong> Ladder Logic, Structured Text, Function Block, Sequential Function Chart Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td></td>
</tr>
<tr>
<td><strong>Communications</strong> Embedded USB and 1Gb Ethernet port Embedded USB</td>
<td>• 3 (2 ports configurable for Dual IP or DLR) and 1 GbE Port (OS)</td>
<td>• 1 (Display/Port) – supports standard converters for HDMI, DVI, VGA displays</td>
</tr>
<tr>
<td><strong>Standards</strong> 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>
<td>cULus, CE, RCM, KC, EAC, EtherNet/IP</td>
</tr>
<tr>
<td><strong>Environmental</strong> 0-60 °C (32-140 °F) 0-60 °C (32-140 °F) XT versions rated -25-70 °C (-13-158 °F)</td>
<td>0 °C &lt; Ta &lt; +60 °C (+32 °F &lt;Ta &lt; +140 °F)</td>
<td></td>
</tr>
<tr>
<td><strong>More Information</strong> For the most up-to-date information on our full range of programmable automation controllers and accessories, visit:</td>
<td>For the most up-to-date information on our full range of programmable automation controllers and accessories, visit:</td>
<td>ab.rockwellautomation.com/Programmable-Controllers</td>
</tr>
</tbody>
</table>

Micro820, Micro830®, Micro850®, Micro870™: -20-65 °C (-4-149 °F)

Micro810®: 0-55 °C (32-131 °F)

XT versions rated -25-70 °C (-13-158 °F)

0 °C < Ta < +60 °C (+32 °F <Ta < +140 °F)
### CompactLogix 5380
- Logix 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 in both standard and safety options.

### CompactLogix 5370
- Logix 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.

### Micro800
- 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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>CompactLogix 5380</th>
<th>CompactLogix 5370</th>
<th>Micro800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>cULus, CE, RCM, ATEX, EAC, Marine</td>
<td>cULus, CE, RCM, ATEX, EtherNet/IP, KC, EAC, Marine</td>
<td>cULus, CE, RCM, KC, EtherNet/IP, Marine</td>
</tr>
<tr>
<td>Temp. Range</td>
<td>-25-70 °C (-13-158 °F)</td>
<td>-4 - 185 °F</td>
<td>-4-140 °F</td>
</tr>
<tr>
<td>Built-in Memory</td>
<td>Up to 1 MB, L2: Up to 1 MB, L3: Up to 5 MB</td>
<td>Up to 280 KB</td>
<td>N/A</td>
</tr>
<tr>
<td>Language Support</td>
<td>Ladder Logic, Structured Text, Function Block, Sequential Function Chart</td>
<td>Ladder Logic, Structured Text, Function Block</td>
<td>Ladder Logic, Structured Text, Function Block</td>
</tr>
<tr>
<td>Embedded USB and Ethernet with DLR/Dual IP (selectable)</td>
<td>Embedded USB and Ethernet with DLR</td>
<td>Embedded USL, RS232/485 and Ethernet</td>
<td>N/A</td>
</tr>
<tr>
<td>O-60 °C (32-140 °F)</td>
<td>-20-60 °C (-4-140 °F)</td>
<td>L2/L3: -60-60 °C (32-140 °F) / Armor L3: -60-60 °C (32-140 °F)</td>
<td>Mirco800: 0-55 °C (32-131 °F) / Micro830®, Micro850®, Micro870®: -20-65 °C (-4-149 °F)</td>
</tr>
</tbody>
</table>

For more information: rok.auto/ia

To see our full range of micro PLCs and for more information on these products, visit: http://ab.rockwellautomation.com/Programmable-Controllers/Micro-and-Nano
## Input/Output (I/O) Modules At-A-Glance

<table>
<thead>
<tr>
<th>ControlLogix</th>
<th>Compact 5000</th>
<th>Compact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></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>
<tr>
<td><strong>Key Features</strong></td>
<td>• 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</td>
<td>• 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)</td>
</tr>
<tr>
<td><strong>I/O Types Offered</strong></td>
<td><strong>Digital</strong> • 8 to 32 points module • Offers a variety of voltages • Isolated and non-isolated module types <strong>Analog</strong> • Input, output and combination modules • Thermocouple and RTD modules <strong>Specialty</strong> • Configurable flowmeter modules • High-speed counter modules • Programmable limit switch modules <strong>Isolated Analog HART</strong> • Up to 16 points with channel-to-channel isolation • HART modem per channel for faster HART data update <strong>Enhanced Analog</strong> • Isolated 8-channel and non-isolated 12- and 16-channel modules with stability over the entire temperature operating range</td>
<td><strong>Digital</strong> • 4 to 16 points per module • Offers a variety of AC and DC voltages • Include contact output modules • Isolated and non-isolated module types • Enhanced built-in capabilities: event triggers, simple counter, time stamping, schedule output • Enhanced protection capability <strong>Analog</strong> • Universal analog input modules • Analog output modules • High resolution - fast conversion rates <strong>Specialty</strong> • Serial communication • Address reserve, high speed counter, field power distribution <strong>Safety</strong> • 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</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>Local chassis or in a chassis linked to a ControlLogix controller across ControlNet or EtherNet/IP</td>
<td>Local chassis to CompactLogix 5380 and CompactLogix 5480 controllers, distributed on EtherNet/IP to CompactLogix 5380 controller</td>
</tr>
<tr>
<td><strong>More Information</strong></td>
<td>For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/I0</td>
<td></td>
</tr>
</tbody>
</table>

*Image of Compact 5000 I/O system (use with GuardLogix family)*
<table>
<thead>
<tr>
<th>FLEX 5000</th>
<th>FLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

### Key Features
- **Digital**
  - 16-point input and output modules
    - High current output module
    - 8-channel relay output module
- **Analog**
  - 8-channel analog input module supporting Voltage, Current, RTD, and TC inputs
  - 8-channel input/output
- **Safety**
  - 16-point digital input and output modules
  - 4-point isolated relay output module

### Overview
- Built for extreme and hazardous environments, with the ability to operate at -40°C-70°C (-40°F-158°F)
- Enhances communication with 1 Gb EtherNet/IP connectivity
- Reduce downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation
- Flexible and modular with capability to support up to 32 channel digital input/output and 8 channel analog input/output
- Includes safety modules rated up to SIL 3, PLe, and Cat. 4
- Common wiring configuration for standard and safety inputs

### Specialty
- Isolated and non-isolated module types
- Offers a variety of AC and DC voltages
- 4 to 16 points per module
- Different termination style available
- Removable terminal block to connect all field-side wiring
- Electronic keying to help prevent replacement errors
- Inherent time-stamping capabilities for system and field-side failures
- Comprehensive diagnostics for detection and powerFlex® drives and other devices
- Address reserve, ASCII, Boolean control
- Frequency
- Very High-speed counter
- Pulse counter

### FLEX™ I/O-XT™ Extreme Environment
- Rated for -20-70 °C (-4-185 °F) and are compatible with ControlLogix-XT™ extreme environment system
- Analog input with HART support
- Thermocouple, RTD and HART modules available

### Communications
- 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
## Input/Output (I/O) Modules At-A-Glance

<table>
<thead>
<tr>
<th>POINT</th>
<th>ArmorBlock</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>ArmorBlock<strong>I/O</strong> 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.</td>
</tr>
<tr>
<td><strong>Key Features</strong></td>
<td><strong>I/O Types Offered</strong></td>
</tr>
<tr>
<td>• Independently select the I/O, termination style and network interface</td>
<td><strong>Digital</strong></td>
</tr>
<tr>
<td>• Install easily by sliding together; pull apart easily for maintenance</td>
<td>• Input, output, and relay output modules</td>
</tr>
<tr>
<td>• Removable wiring system saves time and money during installation and troubleshooting</td>
<td>• Wide variety of voltages</td>
</tr>
<tr>
<td>• Comprehensive diagnostics and configurable features</td>
<td>• Up to eight single-ended inputs or outputs per module</td>
</tr>
<tr>
<td>• Reduce downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation</td>
<td>• 4-channel input/output</td>
</tr>
<tr>
<td>• Mount horizontally or vertically, with no derating required</td>
<td>• Thermocouple and RTD modules</td>
</tr>
<tr>
<td>• Also available 1738 ArmorPOINT™ I/O for On-Machine applications</td>
<td>Speciality</td>
</tr>
<tr>
<td>• Available with conformal coating to help protect in harsh environments</td>
<td>• Counter and encoder modules</td>
</tr>
<tr>
<td></td>
<td><strong>Analog</strong></td>
</tr>
<tr>
<td></td>
<td>• Serial synchronous interface Absolute Encoder module</td>
</tr>
<tr>
<td></td>
<td>• Serial interface modules</td>
</tr>
<tr>
<td></td>
<td>• Address Reserve Module (URM)</td>
</tr>
<tr>
<td></td>
<td><strong>POINT Guard I/O™ Safety</strong></td>
</tr>
<tr>
<td></td>
<td>• Digital input, digital output, and analog input modules and bipolar output modules</td>
</tr>
<tr>
<td></td>
<td>• TÜV-certified for functional safety up to and including SIL 3, Cat. 4, PLe</td>
</tr>
<tr>
<td></td>
<td>• Can be used side-by-side in a standard POINT I/O system</td>
</tr>
<tr>
<td></td>
<td>ArmorBlock<strong>Guard I/O™ Safety</strong></td>
</tr>
<tr>
<td></td>
<td>• 16-point combined I/O blocks</td>
</tr>
<tr>
<td></td>
<td>• Available with CIP Sync on some blocks</td>
</tr>
<tr>
<td></td>
<td>• 4-point analog, thermocouple and RTD I/O blocks</td>
</tr>
<tr>
<td></td>
<td>• Supports connection to IO-Link enabled devices with the IO-Link master module</td>
</tr>
<tr>
<td></td>
<td>• Available with Quick Connect on some blocks</td>
</tr>
<tr>
<td></td>
<td>• IP69K and NEMA 4X (when marked)</td>
</tr>
<tr>
<td></td>
<td><strong>Armor WeldBlock</strong></td>
</tr>
<tr>
<td></td>
<td>• 16-points</td>
</tr>
<tr>
<td></td>
<td>• Resists the effects of weld slag and magnetic fields found in close proximity to weld heads</td>
</tr>
<tr>
<td></td>
<td>• Light-weight nickel-plated aluminum metal housing</td>
</tr>
<tr>
<td></td>
<td>ArmorBlock**Guard I/O™ Safety</td>
</tr>
<tr>
<td></td>
<td>• 16-point combined I/O blocks</td>
</tr>
<tr>
<td></td>
<td>• PL6-rated, single channel safety inputs</td>
</tr>
<tr>
<td></td>
<td>• PLe-rated, dual channel, safety inputs</td>
</tr>
<tr>
<td></td>
<td>• Safety outputs rated up to PLe (use with GuardLogix™ family)</td>
</tr>
<tr>
<td></td>
<td>• Dual IP65 and IP67 ratings</td>
</tr>
<tr>
<td></td>
<td><strong>Communications</strong></td>
</tr>
<tr>
<td></td>
<td>Ethernet/IP, ControlNet, DeviceNet, PROFIBUS DP</td>
</tr>
<tr>
<td></td>
<td>DeviceNet or EtherNet/IP</td>
</tr>
<tr>
<td></td>
<td><strong>More Information</strong></td>
</tr>
<tr>
<td></td>
<td>For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/I0</td>
</tr>
</tbody>
</table>
### 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.

<table>
<thead>
<tr>
<th>Digital</th>
<th>Analog</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 8-channel NAMUR Digital Input module</td>
<td>• Configurable 4-channel Analog Input/Output module</td>
<td>• Single channel frequency counter module</td>
</tr>
<tr>
<td>• 2-channel Digital Output modules to support nearly any solenoid requirement</td>
<td>• 4-channel Analog Input, Thermocouple, and RTD Modules</td>
<td></td>
</tr>
</tbody>
</table>

### 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>Digital</th>
<th>Analog</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Supports several network topologies, including Device Level Ring (DLR) for enhanced resiliency</td>
<td>• Supports online module removal and replacement with no interruption of the signal inputs</td>
<td></td>
</tr>
<tr>
<td>• Flexible, modular construction for user-configurable I/O applications</td>
<td>• I/O redundancy for systems requiring high availability</td>
<td></td>
</tr>
<tr>
<td>• I/O redundancy for systems requiring high availability</td>
<td>• Suitable for simplex and duplex connections and fault tolerant applications</td>
<td></td>
</tr>
</tbody>
</table>

### EtherNet/IP

<table>
<thead>
<tr>
<th>1719 Ex</th>
<th>1715 Redundant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redundant I/O: Supports several network topologies, including Device Level Ring (DLR) for enhanced network resiliency</td>
<td></td>
</tr>
</tbody>
</table>
## 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://ab.rockwellautomation.com/Condition-Monitoring](http://ab.rockwellautomation.com/Condition-Monitoring)
## Overview

<table>
<thead>
<tr>
<th>PowerMonitor 1000</th>
<th>PowerMonitor 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

## 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 digital inputs for WAGES data collection</td>
</tr>
<tr>
<td>• Provides wiring diagnostics</td>
<td>• Includes 4 outputs for connection to SCADA or control systems</td>
</tr>
<tr>
<td>• Time of use (On-Peak, Off-Peak)</td>
<td>• Offers configurable alarms for up to 20 events</td>
</tr>
<tr>
<td>• Energy, min/max, status and load factor logs</td>
<td>• Provides virtual wiring correction capability</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></td>
</tr>
<tr>
<td>1408-TS3A-ENT</td>
<td>M6 – includes base model features, plus:</td>
</tr>
<tr>
<td>• Consumption + Volt/Current</td>
<td>• Harmonics</td>
</tr>
<tr>
<td>1408-EM3A-ENT</td>
<td>• Oscillography</td>
</tr>
<tr>
<td>• Energy management meter</td>
<td>• Event Sync</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></td>
<td>Provides a second communication port</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](http://ab.rockwellautomation.com/Energy-Monitoring)
### 56RF Radio Frequency Identification (RFID) System

<table>
<thead>
<tr>
<th>Overview</th>
<th>56RF is ideal for tracking and documenting products as they move through the manufacturing process in light-duty industrial applications. The RFID system tags, transceivers and interfaces are designed to the ISO 15693 open standard for high frequency.</th>
</tr>
</thead>
</table>
| Key Features | - Rugged transceiver styles for industrial locations  
- 13.56 MHz high frequency technology for light industrial applications  
- Tag memory options: 64 B, 128 B, 256 B and 2 KB  
- Read/write speeds up to 625 B/s  
- Different tag styles with sensing distances of up to 7.3 in. (185 mm)  
- Reusable Rislan® tags  
- Programmed in Studio 5000 (AOP and Add-on Profile Instruction available) |
| Options | **EtherNet/IP Interface Blocks**  
- 1-2 RFID ports plus I/O  
**Transceivers**  
- Rectangular 80 x 90  
- Square 40 x 40  
- Cylindrical M30  
- Cylindrical M18  
**Tags**  
- Disc – 128 Byte SLI (8 – 50 mm Dia)  
- Disc – High-Impact Resistant (Extreme Durability)  
- Disc – Mount on metal  
- Disc – Large memory FRAM (2 or 8 Kb)  
- Disc – High temperature |
| Communications | 1 and 2 channel EtherNet/IP interface available  
Embedded switch, with Device Level Ring (DLR) |
| More Information | For the most up-to-date information on our full range of RFID offerings, visit:  
http://ab.rockwellautomation.com/Sensors-Switches/RFID/High-Frequency-RFID |

### IO-Link Sensors

<table>
<thead>
<tr>
<th>Overview</th>
<th>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.</th>
</tr>
</thead>
</table>
| Key Features | - IO-Link technology provides seamless integration of sensors through the Integrated Architecture  
- Enabled sensors offer advanced features and diagnostics  
- In addition to product detection, sensors provide detailed and accurate machine health status to improve uptime  
- POINT and ArmorBlock IO-Link master modules, and a wide range of IO-Link enabled smart sensors available |
| Options | **IO-Link is currently available on the following sensors**  
- 45CRM Color Registration Mark Sensors have a high-speed response time and are visible light beam for ease of alignment and industry standard mounting  
- 42JS and 42JT VisiSight™ Sensors offer a small rectangular package with medium-level industrial use  
- 42EF RightSight™ General Purpose Sensors designed for light- to medium-duty applications  
- 42ET High Resolution Sensors provide a highly accurate measurement solution  
- 45C5 Color Registration Mark Sensors have a high-speed response time and discern the difference in color between the mark and background  
- 45LM Laser Measurement Sensors offer an excellent mid- to high-range measurement solution  
- 8T7C Mini Tubular Sensors are general purpose, solid-state devices that sense ferrous and nonferrous metal objects without touching them  
- 8T71M Tubular Stainless Steel Sensors are ideal for harsh or extremely demanding environments |
| Communications | Devices connect to POINT and ArmorBlock IO-Link master modules |
| More Information | For the most up-to-date information on our full IO-Link offering, visit:  
http://ab.rockwellautomation.com/Networks-and-Communications/IO-Link |
## 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.

- Suitable for applications up to PLe, Cat. 4 per ISO 13849-1 and SIL CL3 per IEC 62061
- Offers 22-point embedded safety I/O
- Supports as many as two Micro800 Plug-in modules
- Includes two single-wire safety input/output points for interlocking between Guardmaster® safety relays
- Can communicate diagnostic data to a Logix controller with optional Ethernet communications module

## 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.

- Offers a broad range of safety functions
- Designed to meet new functional safety standards, such as ISO 13849-for IEC 62061
- Provides versatility through simple logic, reset and timing configurations
- Includes single wire safety relay connection, which allows for ease of installation and system flexibility
- Terminals are grouped together by power inputs and outputs for clear connection
- Offers compact solution, which saves energy and space on DIN rail
- Provides consistent terminal layouts and configuration, which allows simplified installation

<table>
<thead>
<tr>
<th>2080-IQ4Ob4</th>
<th>2080-IQ4Ob4</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-point combo: 4-pt digital input, 12/24V DC, sink/source, Type3</td>
<td>4-pt digital output, 12/24V DC, source</td>
</tr>
<tr>
<td>and 4-point digital output, 12/24V DC, source</td>
<td>2080-IQ4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2080-OB4</th>
<th>2080-OB4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-pt digital input, 12/24V DC, sink/source, Type3</td>
<td>4-pt digital output, 12/24V DC, source</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2080-OW4</th>
<th>2080-OW4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-point relay output, individually isolated, 2 A</td>
<td>2080-MEMBAK-RTC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>440C-ENET</th>
<th>440C-ENET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet plug-in module, slot 1 only</td>
<td>For more information: rok.auto/ia</td>
</tr>
</tbody>
</table>

- Provides embedded communication via USB programming port and non-isolated serial port for RS-232 communications
- Offers optional Ethernet plug-in module

- Optional Guardmaster® EtherNet/IP Network Interface

For the most up-to-date information on our full range of safety relays, visit: http://ab.rockwellautomation.com/Relays-and-Timers/Safety-Relays
### 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.

#### 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

- **Kinetix® 5500**
  - Innovative common AC/DC bus helps reduce hardware, installation time and cost
  - Fewer terminations and simpler wiring, 80% less wiring with single cable feedback.
  - Compact with optimized power density
  - Drive power ratings optimized to match VP
  - 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

- **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**
  - Certified PLe, SIL 3 (ISO 13849)
  - SIL CL 3 (IEC 61508, EN 61800-5-2, EN 62061)

- **Hardwired Safety - Safe Torque Off**
  - PLd, Cat. 3 (ISO 13849)
  - SIL CL 2 (IEC 61508, EN 61800-5-2, EN 62061)

#### Continuous Power
- 1.6 - 112 kW
- 0.5 - 15 kW

#### Supply Voltage
- 325-528V AC
- 195-528V AC single phase (H003-H015)
- 230-480V AC 3 phase
- 115-240V AC single phase
- 230-480V AC 3 phase

#### Communications
- Integrated Motion on EtherNet/IP
- Dual port Ethernet connector allows for both line and Device Level Ring (DLR) topologies
- 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
### 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
- Supports servo and induction motors
- Supports optional encoder output module
- Available with conformal coating to help protect in harsh environments

### Studio 5000 Motion Instruction Set

- Studio 5000 motion instruction set including kinematics
- Convenient compact size makes it easy to connect
- Integrates seamlessly with MP-Series™ and TL-Series™ servo motors and actuators

### Hardwired Safety – Safe Torque Off

- ISO 13849-1 Safety Performance Level d
- IEC 61508 SIL 2

- 0.4–0.8 kW (115V single phase)
- 0.4–1.7 kW (230V single phase)
- 0.5–3 kW (230V 3 phase)
- 1–3 kW (460V 3 phase)

### Communications

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

### Continuous Power

- 1.6–112 kW
- 0.5–15 kW
- 0.4–0.8 kW (115V single phase)
- 0.4–1.7 kW (230V single phase)
- 0.5–3 kW (230V 3 phase)
- 1–3 kW (460V 3 phase)

### Supply Voltage

- 325–528V AC
- 195–528V AC single phase (H003-H015)
- 195–528V AC 3 phase all models
- 115–240V AC single phase
- 230–480V AC 3 phase

### 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
## Servo Motors At-A-Glance

### Overview
Optimized to operate with the Kinetix 5500 family of servo drives, supporting Integrated Motion on EtherCAT/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.

### 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

- **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

### 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](http://www.ab.rockwellautomation.com/Motion-Control/Servo-Motors)
**TL-Series Compact Rotary**

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.

- 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

**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

<table>
<thead>
<tr>
<th>Winding Voltage</th>
<th>200V Class Windings</th>
<th>400V Class Windings</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**LDC & LDL Linear**

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.

- 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

**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

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

<table>
<thead>
<tr>
<th>200V and 400V Class Windings</th>
</tr>
</thead>
<tbody>
<tr>
<td>200V Class Windings</td>
</tr>
</tbody>
</table>

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><strong>Overview</strong></td>
<td><strong>Overview</strong></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>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><strong>Key Features</strong></td>
<td><strong>Key Features</strong></td>
<td><strong>Key Features</strong></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>iTRAK® Series Assembled Systems</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>• Minimize maintenance</td>
</tr>
<tr>
<td>• Fully assembled, ready to install</td>
<td>• Standard rotating SpeedTec DIN Connectors</td>
<td>• Change between products at the push of a button</td>
</tr>
<tr>
<td>• Clean, energy efficient alternative to fluid power</td>
<td>• Multiple mounting surfaces and methods</td>
<td>• Simplify mechanical designs</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>• Upgrade easily by reducing complex tooling</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>• Operate faster with less downtime</td>
</tr>
<tr>
<td>• Available in multiple frame sizes</td>
<td></td>
<td>• Reduce energy consumption through direct drive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iTRAK® Series System Components</td>
</tr>
<tr>
<td><strong>Force Rating</strong></td>
<td><strong>Force Rating</strong></td>
<td><strong>Force Rating</strong></td>
</tr>
<tr>
<td>• Continuous force 240-7784 N (54-1750 lbs)</td>
<td>Peak force to 5489 N (1229 lbs)</td>
<td>• 50 mm: 264 N</td>
</tr>
<tr>
<td>• Peak force to 14600 N (3300 lbs)</td>
<td></td>
<td>• 100 mm: 529 N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 150 mm: 793 N</td>
</tr>
<tr>
<td><strong>Speed Rating</strong></td>
<td><strong>Speed Rating</strong></td>
<td><strong>Speed Rating</strong></td>
</tr>
<tr>
<td>Up to 1 m/s</td>
<td>Up to 5 m/s</td>
<td>• 50 mm: &gt; 5 m/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 mm: 4 m/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 150 mm: 2.75 m/s</td>
</tr>
<tr>
<td><strong>Feedback Options</strong></td>
<td><strong>Feedback Options</strong></td>
<td><strong>Feedback Options</strong></td>
</tr>
<tr>
<td>Absolute high-resolution multi-turn feedback</td>
<td>Incremental TTL or Absolute Hiperface</td>
<td>• Absolute feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Feedback Resolution &lt; 10 µm</td>
</tr>
<tr>
<td><strong>Winding Voltage</strong></td>
<td><strong>Winding Voltage</strong></td>
<td><strong>Winding Voltage</strong></td>
</tr>
<tr>
<td>200V and 400V Class Windings</td>
<td>200V and 400V Class Windings</td>
<td>400V Class Windings</td>
</tr>
<tr>
<td><strong>More Information</strong></td>
<td><strong>More Information</strong></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/iTrak">http://ab.rockwellautomation.com/global/solutions-services/capabilities/motion/iTrak</a></td>
<td></td>
</tr>
</tbody>
</table>
### MagneMover LITE

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.

- 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

<table>
<thead>
<tr>
<th>8 N/10 N</th>
<th>15.9 N per magnet array</th>
<th>Over 2500 N Single Wide, Over 5000N Double Wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 m/s</td>
<td>100 m/s</td>
<td>2.5 m/s</td>
</tr>
<tr>
<td>Absolute</td>
<td>Absolute</td>
<td>Absolute</td>
</tr>
<tr>
<td>36V</td>
<td>48V</td>
<td>400V</td>
</tr>
</tbody>
</table>

For the most up-to-date information on intelligent conveyors, visit: [www.magnemotion.com](http://www.magnemotion.com)

### QuickStick

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.

- Intelligent motion
- Flexibility with simultaneous tracking and easy add and removal of modules
- Easy-to-use modular design
- Less maintenance with fewer moving parts

### QuickStick HT

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.

- 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

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

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>460-480V</td>
<td>0.75-1500 kW</td>
</tr>
<tr>
<td>600-690V</td>
<td>250-2500 Hp</td>
</tr>
</tbody>
</table>

**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

**More Information**
To see our full range of PowerFlex AC drives and for more information on these products, visit: [www.ab.rockwellautomation.com/Drives](http://www.ab.rockwellautomation.com/Drives)

### 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 500 Logix Designer application
- Available with conformal coating to help protect in harsh environments

**Ratings**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-240V</td>
<td>0.37 - 122 kW</td>
</tr>
<tr>
<td>380-480V</td>
<td>0.75-1400 kW</td>
</tr>
<tr>
<td>600V</td>
<td>1.0-5600 Hp</td>
</tr>
<tr>
<td>380V</td>
<td>0.75-1500 kW</td>
</tr>
</tbody>
</table>

**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](http://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.

#### Options for EtherNet/IP and additional industrial networks

- 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).
- 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 527 uses Studio 5000 motion instructions exclusively

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-115V</td>
<td>0.2-1.1 kW/0.25-1.5 Hp/1.6-6 A</td>
</tr>
<tr>
<td>200-240V</td>
<td>0.2-15 kW/0.25-20 Hp/1.1-62.1 A</td>
</tr>
<tr>
<td>400-480V</td>
<td>0.4-22 kW/0.5-30 Hp/1.4-4.3 A</td>
</tr>
<tr>
<td>600-690V</td>
<td>0.4-22 kW/0.5-30 Hp/0.9-32 A</td>
</tr>
</tbody>
</table>

- 2.3 kW: 140-2233 kW/200-3000 Hp
- 3.3 kW: 180-3280 kW/275-4400 Hp
- 4.16 kW: 225-3954 kW/300-5300 Hp
- 6.6 kW: 300-6566 kW/400-8200 Hp
- 8.9 kW: 315-6655 kW/415-8450 Hp
- 10 kW: 200-9500 kW/270-13,350 Hp
- 11 kW: 220-10,950 kW/300-14,880 Hp

- PowerFlex 527: Built-in hardwired Safe Torque Off
- PowerFlex 527: Built-in Safe Torque Off – hardwired or networked

- 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

- PowerFlex 527: Optional dual port EtherNet/IP
- PowerFlex 525: Built-in port for EtherNet/IP; optional dual port EtherNet/IP
- PowerFlex 527: Built-in dual ports for EtherNet/IP
- PowerFlex 520-Series: Additional industrial networks

### PowerFlex 6000 Medium Voltage Drives

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

- 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 help protect in harsh environments
- Air-cooled for simplified installation

- Digital sensorless control, direct vector control or full vector control with encoder feedback (optional)
- Reduce energy costs with regenerative braking and return energy back to the incoming power source
- High-efficiency ECO main cooling fans reduce operating costs
- Active front end (AFE) technology or 18 pulse rectifier designs mitigate input harmonics, to meet the IEEE 519 standard
- PowerCage™ inverter and rectifier modules allow SGCT replacement in under 10 minutes to minimize Mean-Time-To-Repair
- Conformally coated control boards help protect in harsh environments
- Air-cooled and liquid-cooled configurations available
- Extended power range up to 25,400 kW (34,000 Hp) with parallel modules

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.16 kV</td>
<td>225-3954 kW/300-5300 Hp</td>
</tr>
<tr>
<td>6.6 kV</td>
<td>300-6566 kW/400-8200 Hp</td>
</tr>
<tr>
<td>8.9 kV</td>
<td>315-6655 kW/415-8450 Hp</td>
</tr>
<tr>
<td>10 kV</td>
<td>220-9500 kW/270-13,350 Hp</td>
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</tr>
<tr>
<td>2.3-2.4 kV</td>
<td>150-1500 kW/200-2000 Hp</td>
</tr>
<tr>
<td>3.3 kV</td>
<td>187-3600 kW/250-4750 Hp</td>
</tr>
<tr>
<td>4.16 kV</td>
<td>281-4400 kW/350-5750 Hp</td>
</tr>
<tr>
<td>6.6 kV</td>
<td>400-8000 kW/500-8000 Hp</td>
</tr>
</tbody>
</table>

- 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

### PowerFlex 7000 Medium Voltage Drives

Flexibility and highly efficient performance in a single solution. Built-in regenerative braking capability make 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.

- Designed for flexibility, connectivity and productivity. Provides an exceptional user experience, from initial programming through operation
- For constant torque applications. Delivers an easy-to-use and simplified user experience.
- 11 kV: 220-10,950 kW/300-14,680 Hp
- 6.6 kV: 400-8000 kW/500-8000 Hp
- 3.3 kV: 187-3600 kW/250-4750 Hp
- 4.16 kV: 281-4400 kW/350-5750 Hp
- 2.3-2.4 kV: 150-1500 kW/200-2000 Hp

- 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

### PowerFlex 520-Series AC Drives
- TotalFORCE™ technology, our patented field-oriented control for harmonic mitigation (PowerFlex 755TL) and flexible common DC bus configurations
- Designed to meet the IEEE 519 standard
- Regulate active current and reactive power to correct power factor
- Reduce commissioning time and mechanical wear with Load Observer
- Keep your equipment running through most power quality disturbances
- Designed for flexibility, connectivity and productivity. Provides an exceptional user experience, from initial programming through operation
- For constant torque applications. Delivers an easy-to-use and simplified user experience.

### PowerFlex 6000 Medium Voltage Drives
- 2.3 kW: 225-3954 kW/300-5300 Hp
- 6.6 kW: 300-6566 kW/400-8200 Hp
- 8.9 kW: 315-6655 kW/415-8450 Hp
- 10 kW: 200-9500 kW/270-13,350 Hp
- 11 kW: 220-10,950 kW/300-14,880 Hp
- 4.16 kW: 225-3954 kW/300-5300 Hp
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- 4.16 kV: 281-4400 kW/350-5750 Hp
- 2.3-2.4 kV: 150-1500 kW/200-2000 Hp

### PowerFlex 520-Series AC Drives
- Integrated dual port EtherNet/IP
- Support for additional industrial networks
- Premier Integration into Logix control environment
- Logix Integration

### PowerFlex 6000 Medium Voltage Drives
- Ideal for general purpose applications such as fans, pumps, and compressors. Suitable for new and retrofit, variable torque, and constant torque applications. Delivers an easy-to-use and simplified user experience.

### PowerFlex 7000 Medium Voltage Drives
- Flexibility and highly efficient performance in a single solution. Built-in regenerative braking capability make 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.
### 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 to improve heat dissipation
- Provides solid grounding system to help reduce shock hazards

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

**Safety**
- CENTERLINE 2000 with SecureConnect™ units helps reduce electrical shock and exposure to electrical hazards
- CENTERLINE 2300 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
- NMXS-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 help 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 600V, 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 60439-1 and 2 (Edition 2.0)
- BS EN 60439-1 and 2
- AS/NZS 60439-1 and 2
- AS/NZS 3431 (Including Annex ZD for Arc Flash Containment)
- IEC/TR 61864 (Edition 3.0)
- 2006/95/EC & 2014/35/EU - Low Voltage Directive

**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**
- IEEE C37.20.7, Type 2B for arc resistance
- National Electrical Code (NEC)
- Occupational Safety & Health Act (OSHA)
- European Directives for EMC
- UL 347 and CSA, Industrial Control Equipment C22.2 No. 253 (harmonized with UL 347, fifth edition)
- NEMA, Medium Voltage Controllers Rated 1501 to 7200 VAC ICS 3-2 (formerly ICS 2-324)
- IEEE C37.20.7, Type 2B for arc resistance
- European Directives for EMC
- DeviceLogix, auxiliary control, fan control, network or external devices

**Communications**
- Options for EtherNet/IP and additional industrial networks
- Options for remote access to data to minimize the need to approach the MCC

**More Information**
For the most up-to-date information on our full range of motor protection, visit: https://ab.rockwellautomation.com/Motor-Control
<table>
<thead>
<tr>
<th>Rating</th>
<th>Motor Control</th>
<th>I/O</th>
<th>Communications</th>
<th>Technical Documentation</th>
<th>More Information</th>
</tr>
</thead>
</table>
Operator Interfaces At-A-Glance

PanelView Plus 7

Available in Standard and Performance versions with display sizes from 4-19 in. with widescreen options. Use FactoryTalk® View Machine Edition to build your application and help simplify configuration and strengthen your Integrated Architecture® solution. Includes Ethernet connectivity enabling remote monitoring with VNC connectivity.

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

Available in Standard and Performance versions with display sizes from 4-19 in. with widescreen options. Use FactoryTalk® View Machine Edition to build your application and help simplify configuration and strengthen your Integrated Architecture® solution. Includes Ethernet connectivity enabling remote monitoring with VNC connectivity.

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
• 4 controllers, 500 screens, 4000 alarms per controller
• HTML5-compatible web browser
• Physical navigation button to display the navigation menu
• Two Ethernet ports to support Device Level Ring (DLR) network topologies

PanelView 5310

• 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
• 4 controllers, 500 screens, 4000 alarms per controller
• HTML5-compatible web browser
• Physical navigation button to display the navigation menu
• Two Ethernet ports to support Device Level Ring (DLR) network topologies

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
• 4 controllers, 500 screens, 4000 alarms per controller
• HTML5-compatible web browser
• Physical navigation button to display the navigation menu
• Two Ethernet ports to support Device Level Ring (DLR) network topologies

PanelView 5310

• 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
• 4 controllers, 500 screens, 4000 alarms per controller
• HTML5-compatible web browser
• Physical navigation button to display the navigation menu
• Two Ethernet ports to support Device Level Ring (DLR) network topologies

Display Options and Viewing Area Dimensions

PanelView Plus 7

4 in. (95 x 54 mm) to 15 in. display (304 x 228 mm) available
*Select displays available in wide-screen versions

PanelView 5000

6 in. wide (15 x 86 mm) to 12 in. wide display (281 x 183 mm) available
*Select displays available in wide-screen versions

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 (90-240V AC)

Communications

PanelView Plus 7

• One 10/100Base-T, Auto MDI/MDI-X Ethernet port with IEEE802 support
• Two 10/100Base-T, Auto MDI/MDI-X Ethernet ports supporting star, linear, or DLR network topology

PanelView 5000

• Two 10/100 Base-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)

Environmental

PanelView Plus 7

NEMA 12, 13, 4X, IP64, IP66
0-55 °C (32-121 °F)

PanelView 5000

NEMA and UL Type 12, 13, 4X, also rated IP66 as Classified by UL
0-55 °C (32-121 °F), EAC, Marine

NEMA and UL Type 12, 13, 4X, also rated IP66 as Classified by UL
0-55 °C (32-121 °F)

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.

- Display Type: Color TFT LCD, 18-Bit Color Graphics
- Viewing Area Dimensions: 4 in. (95 x 53.9 mm) to 15 in. display (304 x 228 mm) available
- Key Features:
  - Multiple programmable function keys
  - Navigation button display alarms, diagnostic and setting information
  - High-speed HMI button provides <100 ms response for jogging applications
  - Logix-based alarms to eliminate need for additional configuration

### 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.

- Display Options and Key Features:
  - Display Type: Color TFT LCD, 24-bit Color Graphics (16.7 million colors), wide-screen versions
  - Viewing Area Dimensions: 4 in. (95 x 54 mm) to 15 in. display (304 x 228 mm) available

<table>
<thead>
<tr>
<th>Feature</th>
<th>MobileView</th>
<th>PanelView 800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen size:</td>
<td>10.1&quot;</td>
<td>4 in. (105 x 53.9 mm)</td>
</tr>
<tr>
<td>Diameter of product:</td>
<td>349 mm (13.74 in.)</td>
<td>7 in. (163.6 x 88.9 mm)</td>
</tr>
<tr>
<td>Depth w/o handle:</td>
<td>70 mm (2.75 in.)</td>
<td>10 in. (211.2 x 158.4 mm)</td>
</tr>
<tr>
<td>Depth with handle:</td>
<td>110 mm (4.33 in.)</td>
<td></td>
</tr>
<tr>
<td>Color/resolution:</td>
<td>WXGA/1280 x 800 pixels, Resistive Touch Screen</td>
<td>TFT touch screen, wide LCD</td>
</tr>
<tr>
<td>4 GB DRAM / 32 GB Flash / 2 GB SD Card</td>
<td></td>
<td>256 MB</td>
</tr>
<tr>
<td>24V DC</td>
<td></td>
<td>24V DC</td>
</tr>
<tr>
<td>10/100 Ethernet</td>
<td>1- Ethernet 10/100 Mbps, Separate RJ45 connectors</td>
<td></td>
</tr>
<tr>
<td>IP66; 0-45 °C (32-113 °F)</td>
<td>IP65, NEMA 4X, 12, 13</td>
<td></td>
</tr>
</tbody>
</table>

For more information: [rok.auto/ia](rok.auto/ia)
## 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>VersaView 5400 open architecture integrated display computers and VersaView 5200 thin client versions include a modern, edge-to-edge glass display and provide versatility with the ability to load different software applications.</td>
<td>The VersaView 5400 Non-display computers, VersaView 5200 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>Projected capacitive multi-touch</td>
<td>Performance: Quad core Intel Atom</td>
<td>More compact design targeted for cost-conscious applications</td>
<td>Projected capacitive multi-touch</td>
</tr>
<tr>
<td>Performance: Quad core Intel Atom</td>
<td>Storage: 128 GB SSD</td>
<td>Single DisplayPort video output</td>
<td>Display inputs: VGA, DVI, DisplayPort</td>
</tr>
<tr>
<td>Operating Systems: 64-bit Windows</td>
<td>Operating Systems: 64-bit Windows</td>
<td>Dual Display Thin Client</td>
<td>Full HD 1080P option is available on 22-in. models</td>
</tr>
<tr>
<td>Full HD 1080P options</td>
<td>DC Power</td>
<td>Single core Intel Atom CPU to meet standard application needs</td>
<td>DC Power</td>
</tr>
<tr>
<td>DC Power</td>
<td></td>
<td>Dual external display output</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integrated Display Thin Client</th>
<th>Non-Display Thin Clients</th>
<th>Dual Display Thin Client</th>
<th>Multi-4K Display Thin Client</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockwell Automation ThinManager ready</td>
<td>Single Display Thin Client</td>
<td>Dual 4K Display Thin Client</td>
<td>High-performance quad core Intel CPU for demanding applications (complex virtual screens, multi-session, multiple IP camera feeds and more)</td>
</tr>
<tr>
<td>Screen sizes: 12, 15, 18, 22 (all wide screen)</td>
<td>More compact design targeted for cost-conscious applications</td>
<td>Dual 4K Displays, 1x DisplayPort, 1x HDMI</td>
<td>Dual 4K Displays, 1x DisplayPort, 1x HDMI</td>
</tr>
<tr>
<td>Projected capacitive multi-touch</td>
<td>Single DisplayPort video output</td>
<td>Multi-4K Display Thin Client</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>Dual external display output</td>
<td>Three or seven 4K Displays, 3x DisplayPort, 4x mini DisplayPort (optional)</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.

### Standards & Environment

- Operates in 0-50 °C (32-122 °F)
- IP65
- cULus listed, CE, EAC, KC, RCM

### 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
### 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.

#### 6181P Integrated Display Computers*
- Available in 12-in, 15-in, wide, 15.6-in., 17-in., 18.5-in., and 19-in, wide display models
- widescreen and projected capacitive multi-touch options
- Stainless steel bezel (optional)
- Support dual external monitor video output

#### 6181P Non-Display Computers*
- Versatile mounting options ideal for control cabinet use
- Windows Server 2008 R2 option with RAID support
- Field replaceable integrated AC and DC power supply

#### 6177R Non-display Computers
- Multiple performance packages for every application
- Front-removable, shock-mounted, hot-swappable, 24/7 hard disk drives with RAID
- Windows: 10 IoT Enterprise, 8.1, 7, Server 2012 and 2008
- 100-240V AC, autoranging power requirements

#### 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

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.

#### 618IX Hazardous Location Integrated Display Computers
- 12.1 in TFT color display offers resistive touch and readability in sunlight

#### 618IX Hazardous Location Non-display Computers
- Wall mountable
- Combines with Bulletin 6186M Performance Industrial Monitor to form a Class I Division 2 certified system

### Industrial Environment Computers

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<tr>
<th>Model</th>
<th>Description</th>
<th>Features</th>
</tr>
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<tbody>
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<td>6181P</td>
<td>Integrated Display Computers</td>
<td>Available in various display models, widescreen and projected capacitive multi-touch options, support for dual external monitors.</td>
</tr>
<tr>
<td>6181P</td>
<td>Non-Display Computers</td>
<td>Versatile mounting options, Windows Server 2008 R2 option with RAID support, field replaceable integrated AC and DC power supply.</td>
</tr>
<tr>
<td>6177R</td>
<td>Non-display Computers</td>
<td>Multiple performance packages, front-removable, shock-mounted, 24/7 hard disk drives with RAID, Windows operating systems.</td>
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### Extreme Environment Computers

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<tr>
<th>Model</th>
<th>Description</th>
<th>Features</th>
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<tr>
<td>618IX</td>
<td>Hazardous Location Integrated Display Computers</td>
<td>12.1 in TFT color display, resistive touch and readability in sunlight.</td>
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<td>618IX</td>
<td>Hazardous Location Non-display Computers</td>
<td>Wall mountable, combines with Bulletin 6186M Performance Industrial Monitor.</td>
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For more information: [rok.auto/ia](http://rok.auto/ia)
# Stratix Industrial Networks Infrastructure and Security At-A-Glance

<table>
<thead>
<tr>
<th></th>
<th>Stratix 5410 Distribution Switch</th>
<th>Stratix 5400 Managed Switch</th>
<th>Stratix 5800 Managed Switch</th>
<th>Stratix 8000 and 8300 Managed Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview</strong></td>
<td>Distribution switches that offers a 19&quot; rack mount design for increased port density. These switches offer up to four 10 Gigabit Ethernet ports and Network Address Translation capabilities for networks where high performance is critical.</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>
</tbody>
</table>
| **Key Features** | • 19" rack mount design for increased port density  
• Up to four 10 Gb uplinks for high performance applications  
• Layer 2 switching and layer 3 routing options  
• Horizontal stacking for higher port density  
• Supports multiple high-performance network resiliency protocols  
• Available with conformal coating to help protect in harsh environments | • 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 | • Modular design for configuration flexibility  
• Layer 2 switching and layer 3 routing options  
• All Gb platform | • Copper, fiber, SFP, and Power over Ethernet (PoE) expansion modules  
• Default configurations for industrial automation and Ethernet/IP devices  
Stratix 8300 Layer 3 routing  
Static, dynamic, multicast, redundant, IPv6 and policy-based routing and VFR-Lite virtualization |
| **Ports** | • 28 total ports  
• 16 SFP slots  
• 12 PoE ports  
• All support 1 Gb, up to 4 SFP slots support 10 Gb | • 8, 12, 16 and 20 port versions  
• Up to 12 SFP slots  
• Up to 8 PoE ports  
• All support 1 Gb | • Discovery of plant floor assets using multiple discovery protocols including CIP, SNMP, Modbus and PROFINET  
• Network topology view with overlays for VLANs, DLR and configurable Groups | • 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 |
| **NAT** | Yes | Yes | Optional | Not supported |
| **DLR** | Not supported | Yes (3 rings) | Future | Not supported |
| **Security Features** | • Port control in Logix  
• Access Control List (ACL)  
• IEEE 802.1x Security  
• Centralized Authentication Capable (RADIUS, TACACS+)  
• MAC 10 port security  
• Encrypted Administrative Traffic | • Discovery of plant floor assets using multiple discovery protocols including CIP, SNMP, Modbus and PROFINET  
• Network topology view with overlays for VLANs, DLR and configurable Groups  
• Centralized Authentication Capable (RADIUS, TACACS+)  
• MAC 10 port security  
• Encrypted Administrative Traffic  
• Captures managed switch level alarms  
• 40 application control updates with 24/7 monitoring  
• Zone level DLP  
• Remote Access  
• Network Address Translation (NAT) - Alarm management  
• System settings  
• Network settings  
• Port configuration  
• Remote Access  
• Network Address Translation (NAT) - Network settings  
• System settings  
• Network settings  
• Port configuration  
• Remote Access  
• Network Address Translation (NAT) - Zone level DLP  
• Remote Access  
• Network Address Translation (NAT) - Network level DLP  
• System settings  
• Port configuration | • Discovery of plant floor assets using multiple discovery protocols including CIP, SNMP, Modbus and PROFINET  
• Network topology view with overlays for VLANs, DLR and configurable Groups  
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• Port configuration  
• Remote Access  
• Network Address Translation (NAT) - Zone level DLP  
• Remote Access  
• Network Address Translation (NAT) - Network level DLP  
• System settings  
• Port configuration | | |
| **Logix Integration** | 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 | | | |
| **Cisco IOS** | Yes | Cisco IOS-XE | Yes | |
| **On-board backup/restore** | SD card (included) | SD card (included) | SD card (included) | |
| **More Information** | For the most up-to-date information on our full range of Industrial Networks Infrastructure products and accessories, visit: http://ab.rockwellautomation.com/Networks-and-Communications/Ethernet-IP-Network | | | |
### Stratix 5700 Managed Switch, ArmorStratix 5700 Managed Switch

<table>
<thead>
<tr>
<th>Feature</th>
<th>Stratix 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>
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<tbody>
<tr>
<td>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 IP66/67 environments.</td>
<td>Lightly managed switches that enable network connectivity in applications where traditional unmanaged switches lack the ability to provide diagnostics and security.</td>
<td>Unmanaged switches are ideal for small control networks. These industrial-grade switches do not require any configuration and use simple cable connections.</td>
<td>Security appliances combine several enhanced security functions into a single appliance to help protect your industrial automation infrastructure.</td>
<td>Software that helps provide increased network visibility, troubleshooting and simplified configuration and maintenance.</td>
<td></td>
</tr>
<tr>
<td>ArmorStratix 5700</td>
<td>Minimizes hardware in the control cabinet</td>
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<tr>
<td>• Optional Network Address Translation (NAT) maps local, machine-level IP addresses, to the broader plant network.</td>
<td>• Power over Ethernet (PoE), Gb ports and IEEE 1588 support</td>
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<tr>
<td>• Includes security features such as access control lists (ACLs).</td>
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<td>• Cable diagnostics, including broken wire detection, helps minimize downtime.</td>
<td>• 802.1x port control in Logix</td>
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<tr>
<td>• SMIv3, Syslog uncovers errors before the network stops completely.</td>
<td>• Includes ability to automatically negotiate speed and duplex settings</td>
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<td>• VLAN provides logical segmentation.</td>
<td>• Operates on 220V AC or 24V DC power</td>
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<td>• SNMP enables multicast for data traffic control.</td>
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<td>• Offers low-cost, compact solution</td>
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<tr>
<td>Optional (single ring)</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>6, 10, 18 and 20 port versions</td>
<td>5 and 8 port versions</td>
<td>5 to 16 ports</td>
<td>4 total ports</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>2 ports up to 1 Gb</td>
<td>5 to 16 ports</td>
<td>6 ports with support for 1 Gb</td>
<td>4 total ports</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>6 ports with support for 1 Gb</td>
<td>6 ports with support for 1 Gb</td>
<td>2 SFP slots</td>
<td>1 total port</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>2 ports support 1 Gb</td>
<td>2 SFP slots</td>
<td>4 total ports</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 ports up to 4 PoE ports</td>
<td>4 total ports</td>
<td>18, 24 port versions</td>
<td>4 total ports</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>8, 10, 18, 24 port versions</td>
<td>24 port versions</td>
<td>2 SFP-capable ports</td>
<td>1 console port</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
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<td>Optional Network Address Translation (NAT)</td>
<td>• Visibility and control at the CellArea Zone level</td>
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</tr>
<tr>
<td>• Cisco ASA firewall and FirePower technology provide threat detection and prevention.</td>
<td>• Deep Packet Inspection (DPI) technology helps to detect, prevent and/or respond to potentially malicious traffic between devices.</td>
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<tr>
<td>• Subscription license offering provides a term-based solution for threat and application control updates with 24x7 techConnectSM Support</td>
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<td>• Network topology view with overlays for VLANs, L2P and configurable Groups</td>
<td>• Captures managed switch level alarms and events in real-time for more precise troubleshooting.</td>
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<tr>
<td>• Includes security features such as access control lists (ACLs).</td>
<td>• Provides historical data retention.</td>
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<tr>
<td>• Includes security features such as access control lists (ACLs).</td>
<td>• Offers configuration backup and compare along with Plug-N-Play Stratix switch configuration</td>
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<td>• Topology discovery (LLDP).</td>
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<td>• Power over Ethernet (PoE), Gb ports and IEEE 1588 support</td>
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<td>• Includes security features such as access control lists (ACLs).</td>
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Ethernet Media At-A-Glance

Overview

Ethernet Cable Spools help supply a reliable network connection in harsh surroundings. We offer unshielded twisted pair, shielded twisted pair, and 600V cables. Products include patch cords and cord sets, field attachable connectors, crimp connectors and bulkhead adapters.

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

- 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 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
DOING BUSINESS GLOBALLY

Rockwell Automation stands ready to serve you from more than 80 sales, service and support locations around the world.

To find your nearest Sales office, visit: www.rockwellautomation.com/rockwellautomation/distributor-locator/sales-locator.page

For more information: rock.auto/ia
MINIMIZING RISK. MAXIMIZING PRODUCTIVITY.

For more information about how we can help you solve your unique business challenges, contact your local authorized Allen-Bradley distributor or Rockwell Automation sales office, or visit: rok.auto/services
Repeatable Industry Solutions, Customized for Your Unique Needs

Food & Beverage
- Product safety & compliance
- Line performance
- Batch, blending, routing & CIP
- Production & order management

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

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

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

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

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

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

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

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

For more information: rok.auto/ia