Integrated Architecture
Integrated control and information helps improve productivity and achieve plant-wide optimization
The Connected Enterprise allows manufacturing and industrial operations to remain agile, to keep pace with the competition and to meet increasing demands.

Enabled by integrated control and information and enhanced by the Internet of Things (IoT), Rockwell Automation delivers The Connected Enterprise through three core platforms: Integrated Architecture, Services and Solutions and Intelligent Motor Control. 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 singe, unified architecture. Combined with the Internet of Things (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

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.

To further enable The Connected Enterprise, the Integrated Architecture provides a multidiscipline common control 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.

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

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

Secure environment
Technology that will help customers mitigate their enterprise risk and monetize their intellectual property.

For more information:
www.rockwellautomation.com/go/ia
Lower Costs with The Connected Enterprise

Speed Time to Market with The Connected Enterprise

Reduce Risk with The Connected Enterprise

Improve Asset Utilization with The Connected Enterprise

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

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.

The Connected Enterprise
Bringing people, processes and technology together.

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.

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.

For more information: www.rockwellautomation.com/go/ia
MULTIPLE DISCIPLINES FROM ONE AUTOMATION ARCHITECTURE

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

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

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

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

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

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Integrated Architecture

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 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.

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.

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

**Save time and money during your development cycle**

The ability to reuse control and visualization designs and practices helps you achieve faster startups, improves integration and optimizes your productivity.

**Improve your flexibility**

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

**Reduce maintenance costs and downtime**

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

**Challenge**

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

**Solution**

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

**Case study**

**Biopharmax Group**

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

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.

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.

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.

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

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

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

Smarter technology
AUTOMATION DESIGN PRODUCTIVITY

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.

The Integrated Architecture offers 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.

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

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

Case study
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.

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
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 work flows 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.

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

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

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

Virtual design and engineering
Achieve savings and maintain a competitive edge with digital design, simulation and emulation. This helps shorten development cycles, reduce risk and optimize system designs.

For more information: www.rockwellautomation.com/go/ia
MANUFACTURING INTELLIGENCE AND OPERATIONS MANAGEMENT

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

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

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

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.
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 out Key Performance Indicators (KPIs) such as OEE (overall equipment effectiveness), MTTR (Mean Time to Repair) and many more.

Manufacturing execution systems

Our MES solutions enable you to better provide standardized workflows, and manage procedures and execution to optimize production operations.

Put your information to work

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

Collaboration

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

Mobile solutions

Use your information to make better decisions by getting the right information to the right people at the right time on the right device. We have solutions for customers on all major mobile platforms. We focus on user enablement with intuitive workflows that un tether you from desktop computers.

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.

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.

Enhanced productivity
Industrial Automation Security

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

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

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

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

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

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

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

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

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

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

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

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

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

For more information: [www.rockwellautomation.com/go/ia]
PROFITABLE PARTNERSHIP

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

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

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

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

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

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

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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.

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

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

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

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

Profitable Partnership

Reduction Risk and Creating Value Throughout Your Production Lifecycle

Feasibility & Conceptual Studies
Front End Engineering & Design
Design & Engineering
Installation & Commissioning
Operation & Maintenance
Upgrades & Migrations

80 Countries
20 Languages
18 ISO-certified Repair Centers
9 Exchange Hubs
6 Remote Support Centers
Single-site or Multi-site Delivery
Average 13+ Years Industry Experience

For more information: www.rockwellautomation.com/go/ia
As the world's largest company dedicated to industrial automation, our extensive product portfolio, services and support help to improve your manufacturing cycle.

Logix programmable automation controllers
- Modular and scalable systems
- Process, batch, discrete, drives, safety and motion control
- High-availability
- Safety certified
- EtherCAT and DeviceNET support
- Embedded and Distributed I/O
- Extreme Environment (OT) and Conformal Coating
- SIL 2 and 3 safety certified
- Enhanced and Distributed I/O
- Smart Sensors with IO-Link

Input/Output devices
- Chassis-based, local, family-specific, distributable via communication networks
- On-Machine™ modular - direct-mount, reduced wiring costs, easy maintenance
- Distributed, in-cabinet block - includes network adapter, analog, digital and specialty
- On-Machine direct mount, block - reduced wiring costs, easy maintenance
- Distributed and embedded - built-in DeviceNet™ or EtherCAT™ support, optional DeviceLogix™ Smart Component Technology
- Safety – POINT Guard I/O™, ArmorBlock®, CompactBlock™, Guard I/O™ - reduced wiring costs and startup time, available for in-cabinet and On-Machine applications

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

Intelligent Devices
Radio Frequency Identification (RFID) System
- Ideal for tracking and tracing products as they move through the manufacturing process
- 1- and 2-channel EtherCAT/IP interface available
- Embedded switch, with Device Level Ring (DLR)
- Rugged for industrial locations

IO-Link Sensors
- Smart Sensors with IO-Link serve as an enabling technology for The Connected Enterprise
- IO-Link technology provides seamless integration of sensors through The Integrated Architecture
- Point I/O master module and a wide range of IO-Link-enabled smart sensors available

Motor control devices
PowerFlex® AC Drives
- Designed for application flexibility
- Real-time information access for your power and control system
- Premise integration with Studio 5000 software for seamless control system integration

PowerFlex Medium Voltage Drives
- Enable soft-starting and variable-speed control of processes with high-power demands
- High-availability
- Process, batch, discrete, drives, safety and motion control
- Safety – POINT Guard I/O™, ArmorBlock®, CompactBlock™, Guard I/O™ - reduced wiring costs and startup time, available for in-cabinet and On-Machine applications

Kineticx® 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

PanelView operator interfaces and industrial computers
- Extreme environment computers
- ATEX and IL-rated for hazardous locations
- Industrial environment, non-display and integrated display computers
- Absolute encoders for closed-loop control systems
- Incremental optical encoders provide low cost, small size, high frequency and high resolution

Stratix industrial networks infrastructure and Ethernet media
Stratix Switches
- Modular managed Ethernet switches use the Cisco® Catalyst® Operating System
- Variety of features for both IT and manufacturing environments
- Unmanaged Ethernet switches are ideal for small, isolated networks

Stratix Services Routers
- Combines several modern security functions into a single appliance
- Fully integrated with Cisco IOS

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

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

For more information: www.rockwellautomation.com/go/ia
Rockwell Software® offers a unified suite of software tools that help deliver efficiency across design, human machine interface, enterprise manufacturing intelligence, production management, process and manufacturing execution systems.

**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. With the Studio 5000 environment, you can respond more quickly to changing market and business needs, while reducing total costs of ownership, including maintenance and training.

- Use one intuitive design and configuration software package
- Simplify development of complex control solutions
- Have greater access to real-time information
- Develop localized applications in a single control platform in a collaborative engineering environment

**Enterprise Manufacturing Intelligence**

FactoryTalk® ViewPoint

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.

**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®

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®

PlantPAx is the modern DCS from Rockwell Automation with all the core capabilities expected in a world-class distributed control system. The system is built on a scalable architecture platform using Integrated Architecture that enables Plantwide control and Premier Integration with the Rockwell Automation Intelligent Motor Control portfolio.

FactoryTalk® Batch

Provides efficient, consistent predictable batch processing and supports the re-use of code, recipes, phases and logic. FactoryTalk® Batch combines the ISA S88 standard with proven technology that provides the flexibility you need to supply your product to market faster.

**Human Machine Interface (HMI)**

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.

**Enterprise Manufacturing Intelligence**

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 insights 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® EnergyMetríx™

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® Transaction Manager

Integrates the critical data from your shop-floor with enterprise IT and other manufacturing applications. This helps you establish an end-to-end link, giving you the ability to support enterprise-wide integration.

**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®

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®

PlantPAx is the modern DCS from Rockwell Automation with all the core capabilities expected in a world-class distributed control system. The system is built on a scalable architecture platform using Integrated Architecture that enables Plantwide control and Premier Integration with the Rockwell Automation Intelligent Motor Control portfolio.

FactoryTalk® Batch

Provides efficient, consistent predictable batch processing and supports the re-use of code, recipes, phases and logic. FactoryTalk® Batch combines the ISA S88 standard with proven technology that provides the flexibility you need to supply your product to market faster.
Logix Programmable Automation Controllers At-A-Glance

### Overview
Logix programmable automation controllers use a common control engine with a common development environment to provide high performance in an easy-to-use environment. Tight integration between the programming software, controller, and I/O modules reduces development time and cost at commissioning and during normal operation. CompactLogix™ controllers are ideal for small to mid-size machines and provide the benefits of Integrated Architecture for lower-cost machines.

ControlLogix® controllers are ideal for more demanding applications and can perform standard and safety control in the same chassis for a truly integrated system. Leverage the high-availability and extreme environment capabilities to meet your application needs.

### Key Features
- Suitable for process, motion, discrete and safety applications
- Integrated Motion on EtherNet/IP
- Distributed I/O via EtherNet/IP
- Robot kinematics
- Open socket capability for devices such as printers and barcode readers
- Internal energy storage solution removes the need for battery

#### Suitable for high performance discrete and motion applications
- Integrated Motion on EtherNet/IP
- Two Ethernet ports each with individually configurable IP addresses and adjustable speed up to 1 Gb
- Designed for high performance with 5069 Compact I/O, either local or on EtherNet/IP

#### Suitable for process, motion, discrete and safety applications
- GuardLogix® has TÜV certification for functional safety
- Integrated Motion and Safety on EtherNet/IP
- Multiple controllers in the same chassis, with each one operating independently
- Built in 1Gb Ethernet port
- Designed for high performance with 5069 Compact I/O

### Built-in Memory
- **CompactLogix 5370:** L1: Up to 1MB, L2: Up to 1MB, L3: Up to 4 MB
- **CompactLogix 5380:** Up to 4 MB
- **ControlLogix 5570:** Up to 32 MB
- **GuardLogix 5580:** 8 MB standard / 3.75 MB safety
- **ControlLogix 5580:** Up to 40 MB

### Motion Control
- **CompactLogix 5370:** Up to 16 axes of Integrated Motion on EtherNet/IP
- **CompactLogix 5380:** Up to 20 axes of Integrated Motion on EtherNet/IP
- **ControlLogix 5570:** Up to 100 axes of Integrated Motion on EtherNet/IP
- **GuardLogix 5580:** Up to 256 axes of Integrated Motion on EtherNet/IP

### Safety Level
- **CompactLogix 5370:** SIL 3, PLe, CAT 4
- **CompactLogix 5380:** SIL 2, when following ControlLogix SIL 2 Safety Reference Manual
- **ControlLogix 5570:** SIL 2, design for high performance with 5069 Compact I/O
- **GuardLogix 5580:** SIL 3, PLe, CAT 4

### On-Machine Armor™
- **CompactLogix 5370:** IP67 rated
- **CompactGuardLogix 5370:** IP67 rated
- **ControlLogix 5570:** IP67 rated
- **GuardLogix 5580:** IP67 rated

### Language Support
- **Ladder Logic**
- **Structured Text**
- **Function Block**
- **Sequential function chart**

### Communications
- **Built-in:** USB and Ethernet with GUI
- **CompactLogix 5370:** USB and Ethernet with Dual IP (selectable)
- **ControlLogix 5570:** Built-in USB
- **GuardLogix 5580:** Built-in 1 Gb Ethernet port

### Standards
- cULus, CE, C-Tick, ATEX, IECEx, RoHS, KC, GOST-R, Marine

### Environmental
- **CompactLogix 5370:**
  - L1: -20°-60°C (-4°-140°F)
  - L2/L3: 0°-60°C (32°-140°F)
  - Amor: 0°-60°C (32°-140°F)
- **CompactGuardLogix 5370:**
  - L1/L2/L3: 0°-60°C (32°-140°F)
- **ControlLogix 5570:**
  - 0°-60°C (32°-140°F)
  - XT versions used -25°-70°C (-13°-158°F)
- **GuardLogix 5580:**
  - 0°-60°C (32°-140°F)

### More Information
For the most up to date information on our full range of programmable automation controllers and accessories, visit ab.rockwellautomation.com/Programmable-Controllers

For more information: www.rockwellautomation.com/go/ia
# Input/Output (I/O) Modules At-A-Glance

## Overview

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

- **ArmorBlock™ I/O Modules** provide low-cost, hardened I/O suitable for On-Machine use. Mount anywhere on a machine, instead of housing in a cabinet, and connect using EtherNet/IP.
- **1715 Redundant I/O**
- **1732 ArmorBlock I/O**
- **1734 POINT I/O**
- **1756 ControlLogix I/O**

## Key Features

- Supports several network topologies, including Device Level Ring (DLR) for enhanced resiliency.
- Supports online module removal and replacement with no interruption of the signal inputs.
- Supports several network topologies, including Device Level Ring for critical processes by using a Device Level Ring (DLR) for enhanced network resiliency.
- I/O redundancy for systems requiring high availability.
- Suitable for simplex and duplex connections and fault tolerant applications.
- Supports online module removal and replacement with no interruption to the control system.

## I/O Types Offered

<table>
<thead>
<tr>
<th>I/O Types Offered</th>
<th>Digital Input Module</th>
<th>Analog Input Module</th>
<th>Digital Output Module</th>
<th>Analog Output Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Channel</td>
<td>8 or 16 point digital I/O blocks</td>
<td>Available with DP Sync on some blocks</td>
<td>8 point analog I/O blocks</td>
<td>Available with Quick Connect on some blocks</td>
</tr>
<tr>
<td>16 Channel</td>
<td>ArmorBlock®</td>
<td>10 point combined I/O blocks</td>
<td>Resist the effects of weld slag and magnetic fields found in close proximity to weld heads</td>
<td>10 point combined I/O blocks</td>
</tr>
<tr>
<td>Digital Input Module</td>
<td>ArmorBlock® Guard Safety-Rated Modules</td>
<td>16-point combined I/O blocks</td>
<td>Full-rated, single channel safety inputs</td>
<td>Full-rated, dual channel safety inputs</td>
</tr>
<tr>
<td>Analog Input Module</td>
<td>Safety Outputs Rated Up to Pt 1 (use with GuardLogix® family)</td>
<td>Safety Outputs Rated Up to Pt 1 (use with GuardLogix® family)</td>
<td>I/O Digital Modules</td>
<td></td>
</tr>
<tr>
<td>Digital Output Module</td>
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<td>Full-Rated Single Channel Safety Inputs</td>
<td>I/O Output, and Relay Output Modules</td>
<td></td>
</tr>
<tr>
<td>Analog Output Module</td>
<td>ArmorBlock®</td>
<td>Safety Outputs Rated Up to Pt 1 (use with GuardLogix® family)</td>
<td>Wide Variety of Voltages</td>
<td></td>
</tr>
</tbody>
</table>

## Communications

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<thead>
<tr>
<th>Communications</th>
<th>EtherNet/IP® Supports several network topologies, including Device Level Ring (DLR) for enhanced network resiliency</th>
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<th>DeviceNet, ControlNet, EtherNet/IP® PROFINET® OPC™ ¶</th>
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<td>Ethernet</td>
<td>For the most up-to-date information on our full range of I/O modules and accessories visit: ab.rockwellautomation.com/IO</td>
<td>EtherNet/IP®</td>
<td>Local chassis or in a chassis linked to a ControlLogix controller across EtherNet/IP®</td>
</tr>
</tbody>
</table>

## Time to Repair

- Industry-standard connectors simplify wiring and improve Mean Time to Repair.
- Embedded switch with Device Level Ring (DLR).
- Rotary switch to set IP address.
- Self-configuring blocks with both input and output functionality.

## Key Features

- I/O redundancy for systems requiring high availability.
- Supports online module removal and replacement with no interruption of the signal inputs.
- Supports several network topologies, including Device Level Ring for critical processes by using a Device Level Ring (DLR) for enhanced network resiliency.
- Supports online module removal and replacement with no interruption to the control system.

## Communications

- Supports network topologies, including Device Level Ring (DLR) for enhanced network resiliency.
- DeviceNet or EtherNet/IP®
- DeviceNet, ControlNet, EtherNet/IP®, PROFINET® OPC™ ¶

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

## 1769 CompactLogix I/O
- **Overview**: Can be used as local and distributed I/O with CompactLogix™ family of controllers. Rack-type features in a rack-less design lower costs and reduce replacement parts inventory.
- **Functionality**: Functionality of larger rack-based I/O without the space requirements. FLEX™ I/O offers cost-effectiveness, flexibility, modularity, and reliability.

## 1794 FLEX I/O
- **Overview**: Our newest generation I/O platform offering high performance in a compact design.
- **Functionality**: Provides flexibility with DIN rail or panel mounting options. Includes individual point diagnostic status to ease troubleshooting. Prevents incorrect positioning of module with software keying. Assembles without tools — all components snap into DIN rail and plug together to form the I/O system. Removable terminal block to connect all field-side wiring. Different termination style available.

## 5069 Compact I/O
- **Overview**: Can be used as local and distributed I/O with CompactLogix™ family of controllers. Rack-type features in a rack-less design lower costs and reduce replacement parts inventory.
- **Functionality**: Functionality of larger rack-based I/O without the space requirements. FLEX™ I/O offers cost-effectiveness, flexibility, modularity, and reliability.

## Key Features
- **I/O Types Offered**
- **Digital I/O Modules**
  - 8-32 points per module
  - Offer a variety of AC and DC voltages
  - Include contact output modules
  - Include high speed input modules
- **Analog I/O Modules**
  - Analog, thermocouple and RTD modules
  - Address reserve, ASCII, Boolean control and high-speed counter modules available
  - DeviceNET platform connections to PowerFlex® drives and other devices through Compact I/O™ to DPI SCANport™ and Compact I/O to DSI/Modbus modules
- **Speciality I/O Modules**
  - Frequency
  - Very High Speed counter
  - Pulse counter
  - FLEX XT Extreme Environment Modules
- **Communications**
  - Local to controller or distributed on EtherNet/IP

## Communications
- **Local to controller or distributed on EtherNet/IP**

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

## Additional Features
- **Digital I/O Modules**
  - Offer a variety of AC and DC voltages
  - Include Contact Output modules
  - Include isolated and non-isolated module types
  - Enhanced built-in capabilities; event triggers, simple counter, time stamping, schedule output
  - Enhanced protection capability
- **Analog I/O Modules**
  - Universal Analog input modules
  - Analog output modules
  - High resolution - fast conversion rates
  - Speciality I/O Modules
  - Address Reserve, High Speed Counter, Field Power Distribution, Serial modules
- **FLEX Digital I/O Modules**
  - 8-32 points per module
  - Isolated Inputs or outputs
  - Protected outputs, electronic fusing or diagnostics available on some modules
- **FLEX Analog I/O Modules**
  - Individually configurable channels, selectable input filters on many modules
  - Single-ended or differential inputs
  - Thermocouple, RTD, and HART modules available
- **FLEX Speciality I/O Modules**
  - Analog Input with HART support
  - Thermocouple, RTD and Combination I/O modules

## More Information
- For more information: [www.rockwellautomation.com/go/ia](www.rockwellautomation.com/go/ia)
Condition and Energy Monitoring At-A-Glance

Dynamix 1444 Series Integrated Machinery Monitoring System

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 Logix 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

1408 PowerMonitor 1000

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

Key Features
- Compact size
- Integrated LCD display
- Panel or DIN rail mounting
- Provides wiring diagnostics
- Time of use (On-Peak, Off-Peak)
- Energy, min/max, status and load factor log
- Ability to view data and configure through the integrated web page

Options
- 1408-BC3A-ENT
  - Basic consumption meter
- 1408-TS3A-ENT
  - Consumption + Volt/Current
- 1408-EM3A-ENT
  - Energy management meter

Accuracy levels (per standard EN62053-22)
- Class 1, 1% energy accuracy
- Class 0.2, 0.2% energy accuracy

Outputs
- Modbus RTU
- Ethercat/IP
- KYZ signal
- Digital signal
- Ethercat/IP
- DeviceNet
- Controller
- KYZ signal

Communications
- Available with Ethercat/IP, Serial CP, Modbus RTU, Modbus TCP communications
- Includes native EtherNet/IP port
- Provides a second communication port

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

1426 PowerMonitor 5000

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

Key Features
- Monitors 4 voltage and 4 current channels for every electrical cycle – 1024 data points across 8 channels every 12-17 milliseconds
- Calculates over 6,000 parameters every cycle
- Includes 4 digital inputs for VAGEII data collection
- Includes 4 outputs for connections to SCADA or control systems
- Offers configurable alarms for up to 20 events
- Provides virtual wiring connection capability

Options
- M5 – base model
- M6 – includes base model features, plus:
  - Harmonics
  - Oscillography
  - Event Sync
- M8 – includes base model features, plus:
  - Harmonics
  - Oscillography
  - Event Sync
  - Flicker
  - Interharmonics
  - Transient Detect

Accuracy levels (per standard EN62053-22)
- Class 1, 1% energy accuracy
- Class 0.2, 0.2% energy accuracy

Outputs
- Modbus RTU
- Ethercat/IP
- KYZ signal
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More Information
- To see our full range of energy monitoring products and for more information on these products visit: http://ab.rockwellautomation.com/Energy-Monitoring

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

#### SGRF Radio Frequency Identification (RFID) System
- **Overview**: 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.

#### IO-Link Sensors
- **IO-Link Technology**: A worldwide open-standard protocol that integrates sensors into our Connected Enterprise by connecting the IO-Link enabled devices 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.

#### 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.

#### 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 SGRF intelligent safety relays via the optional EtherCAT® Interface helps minimize unplanned downtime, increase efficiency and enables The Connected Enterprise.

#### Key Features
- **High-Frequency RFID**: Offering visit: http://ab.rockwellautomation.com/Sensors-Switches/RFID/
  - Disc – High Temperature
  - Disc – Large Memory FRAM (2 or 8 kb)
  - Disc – High-Impact Resistant (Extreme Durability)
  - Disc – 128 Byte SLI (8 – 50 mm Dia)
  - Cylindrical M30
  - Square 40 x 40
  - Rectangular 80 x 90
  - 1-2 RFID ports plus I/O
  - 1-2 RFID ports plus I/O
  - Programmed in Studio 5000® (AOP and Add-On Instruction available)

- ** EtherCAT® Interface Blocks**
  - **Transmitters**
    - Linear: 40 ± 5 mm
    - Square: 40 x 40
    - Cylindrical M 30
    - Cylindrical M 18
  - Tags
    - Disc – (23 mm SLIP – 10 mm Dia)
    - Disc – High-Impact Resistant (Extreme Durability)
    - Disc – Mount-on-Slot
    - Disc – Large Memory FRAM (2 or 8 kb)
    - Disc – High Temperature

- **Communcations**
  - 1 and 2 channel EtherCAT® interface embedded switch, with Device Level Ring (DLR)

For more information visit: http://ab.rockwellautomation.com/Relays-and-Timers/Safety-Relays

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**Notes:**
- For more information: www.rockwellautomation.com/go/ia
Kinetix Servo Drives At-A-Glance

**Overview**

Kinetix® 300 Single-axis EtherCAT/® servo drives are designed to provide cost-effective, co-ordinated motion control. EtherCAT™ communications are used for commissioning, configuration and startup via standalone operation.

Kinetix® 350 Single-axis EtherCAT/® servo drives provide scalability of the integrated motion. Leveraging a single network, EtherCAT™ supports the integration of the entire system including PLC, programmable automation controllers, I/O and motors.

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

Kinetix® 5700 servo drives help expand the value of integrated motion on EtherCAT/® 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® 6500 EtherCAT/® servo drives combine high-performance integrated motion with an open EtherCAT/® network. This drive provides safety features to help improve operator safety and enhance machine efficiency. Its modular structure provides an adaptable platform for future machine enhancements.

**Key Features**

- Supports five different index types and as many as 32 indices.
- Analog input control and digital output control.
- Memory module for automatic device replacement.
- Programmable in Studio 5000/® Motion Designer.
- Integrates with Logix controllers as part of The Integrated Architecture/® system.
- Integrates seamlessly with MP® Series™ and TL-Series™ servo motors and actuators.

**Supply Voltage**

- 115-240V AC single phase
- 230-480V AC 3 phase

**Continuous Power**

- 0.4-6.8 kW (115V single phase)
- 0.4-7.7 kW (230V single phase)
- 0.5-5.5 kW (230V 3 phase)
- 0.5-3.7 kW (230V 3 phase)
- 1.8-22 kW (230V 3 phase)
- 1.6-60 kW (460V 3 phase)
- 1.1-15 kW (460V 3 phase)

**Communications**

- EtherCat/® network
- EtherCAT/® communications

**For more information:**

http://connect.rockwellautomation.com/Motion-Control/Servo-Drives

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

### Overview
- **Kinetix VP Rotary Servo Motors**
  - 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® 6500, Kinetix® 300, and Kinetix® 350 servo drive families.

- **Kinetix MP Rotary Servo Motors**
  - 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.

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

### Key Features
- **Kinetix VP Rotary Servo Motors**
  - 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

- **Kinetix MP Rotary Servo Motors**
  - High-energy rare-earth magnets for quicker acceleration
  - Standard IEC 72-1 mounting dimensions
  - Specified diff. connections allow flexible orientation of connection
  - Integrated 24-volt holding brake option
  - Model variants
    - **MPL** - LowInertia
    - **MPM** – Medium inertia
    - **MPF** – Food grade
      - Stainless steel shaft and fasteners
      - Food-grade grease on shaft seal
      - Composite shaft cover and shaft seal
      - IP66 and IP67 rated connectors can be rotated without the use of tools
    - **MPF** – 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

- **TL-Series Compact Rotary Servo Motors**
  - Multi-turn feedback with battery backup available
  - Controls high load-to-motor inertia ratios while maintaining a stable system
  - Onboard memory retains motor identity
  - Serial communication automatically reports identity to the drive
  - SpeedTEC DIN connectors allow flexible orientation of connectors
  - Integrated 24-volt holding 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

### Torque/Force Rating
- **Kinetix VP Rotary Servo Motors**
  - **VPL** continuous 0.46 to 32 Nm (4 to 283 lb-in)
  - **VPF** continuous 0.93 to 19 Nm (8 to 172 lb-in)

- **Kinetix MP Rotary Servo Motors**
  - **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)

- **TL-Series Compact Rotary Servo Motors**
  - 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.

### Feedback Options
- **Kinetix VP Rotary Servo Motors**
  - Single-turn, digital, absolute encoder
  - Multi-turn, digital, absolute encoder

- **Kinetix MP Rotary Servo Motors**
  - Single-turn, 1024 sin/cos, absolute encoder
  - Multi-turn, 1024 sin/cos, absolute encoder

- **TL-Series Compact Rotary Servo Motors**
  - N/A
  - User supplied

### Winding Voltage
- **Kinetix VP Rotary Servo Motors**
  - 200V and 400V Class Windings

- **Kinetix MP Rotary Servo Motors**
  - 200V and 400V Class Windings

- **TL-Series Compact Rotary Servo Motors**
  - 200V Class Windings

### More Information
For more information, visit: [www.ab.rockwellautomation.com/Motion-Control/Servo-Motors](http://www.ab.rockwellautomation.com/Motion-Control/Servo-Motors)
Kinetix Actuators At-A-Glance

LDAT-Series Linear Thruster
Overview
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 reliable direct drive technology to help maximize performance and reliability.

Key Features
• Linear actuator with an integrated linear bearing capable of pushing, pulling or carrying a load
• Direct Drive™ technology for dynamic performance combining high velocity, acceleration, and peak thrust forces
• Standard rotating SpeedTec DIN Connectors
• Multiple mounting surfaces and methods
• Ability to have a moving slider or moving stator
• Availability as a modified standard product with an integral brake or with a boot that provides IP66 protection

Force Rating
Peak force to 5469 N (1229 lbs)
Continuous force 240-7784 N (54-1750 lbs)
Ballscrew peak force to 1272 N (273 lbs)

Speed Rating
Up to 5 m/s
Up to 1 ms
Up to 5 ms with direct drive version

Feedback Options
Incremental TTL or Absolute Hiperface
Absolute high-resolution multi-turn feedback
Direct drive model with incremental 5 micron resolution

Winding Voltage
200V and 400V Class Windings

More Information
For the most up-to-date information on our full range of actuators visit: http://ab.rockwellautomation.com/Motion-Control/Actuator

MP-Series/TL-Series Electric Cylinders
Overview
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.

Key Features
• Flexible, efficient servo controlled rod actuation
• Standard rotating SpeedTec DIN Connectors
• Flexible positioning for parts, tools, set works, etc.
• Dynamic, precise response for a wide range of linear motion applications
• Available in multiple-frame sizes

Force Rating
Peak force to 14500 N (3300 lbs)
Direct drive: peak force to 601 N (135 lbs)
Ballscrew: peak force to 1212 N (273 lbs)

Speed Rating
• 50mm: > 5 ms
• 100mm: 4 ms
• 150mm: 2.75 ms

Feedback Options
Incremental TTL or Absolute Hiperface
Absolute high-resolution multi-turn feedback Direct drive model with incremental 5 micron resolution Ballscrew driven model with absolute high-resolution multi-turn

Winding Voltage
200V and 400V Class Windings

More Information
For the most up-to-date information on our full range of actuators visit: http://ab.rockwellautomation.com/Motion-Control/Actuator

MP-Series Integrated Linear Stages
Overview
Integrated Linear Stages can support heavy loads and tolerate moment loads. These actuators are ideal for high precision applications in clean environments. They are designed with ball screws and linear motor technology.

Key Features
• Three frame sizes for varying degrees of payload
• Linear Motor Driven versions for high speed or high precision applications
• Ballscrew versions for high-thrust force applications
• Bolt through, toe clamp and T-slot mounting options for ease of installation
• Available in pre-assembled and pre-aligned X/Y and X/Z-axis configurations to satisfy a variety of application needs

ITRAK Intelligent Mover System
Overview
The ITRAK® independent mover 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.

Key Features
• Minimum maintenance
• Change between products at the push of a button
• Simplify mechanical design
• Upgrade easily by reducing complex tooling
• Operate faster with less downtime
• Reduce energy consumption through direct drive

ITRAK® Series Assembled Systems
• Straight and 90° curve linear motor sections available in standard 400 mm lengths
• Different force ratings available with various coil sizes, including 50 mm, 100 mm and 150 mm
• Combine for racetrack, square or rectangle configurations to any length
• Each motor section contains a multiphase drive and absolute encoder

ITRAK® Series System Components
• 50mm: 264 N
• 100mm: 529 N
• 150mm: 793 N

Feedback Resolution < 10 µm

For more information:
http://ab.rockwellautomation.com/global/solutions-services/capabilities/motion/itrak

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

**PowerFlex 525**
- Embedded EtherNet/IP port
- Premier Integration with Studio 5000 environments for seamless control system integration
- Manifold™ programming via USB
- Modular design eases installation
- Option for dual port EtherNet/IP adapter that supports OLR functionality
- Automatic Device Configuration
- Optional encoder card for simple positioning control
- Economizer mode adjusts current output to help reduce energy use

**PowerFlex 527**
- Designed to be used exclusively with Allen-Bradley Logix controllers
- Uses the same motion instructions in Studio 5000 Logix Designer as Allen-Bradley Kinetix servo drives to provide a common programming experience
- Built-in dual-port EtherNet/IP supports multiple network topologies and Device Level Ring functionality
- Drive configuration stored in the controller supporting fast, automatic device replacement
- Removable terminal blocks help simplify installation

**PowerFlex 753**
- Embedded EtherNet/IP port
- Premier Integration with Studio 5000 environments for seamless control system integration
- Option for dual port EtherNet/IP adapter that supports OLR functionality
- Automatic Device Configuration
- Option for dual port EtherNet/IP adapter that supports DLR functionality
- Application-specific parameter groups
- Optional encoder card for simple positioning control
- Economizer mode adjusts current output to help reduce energy use

**PowerFlex 755**
- Premier Integration with Studio 5000 environments for seamless control system integration
- Option to configure and program like Kinetix servo drives, using motion instructions in the Studio 5000 Logix Designer application
- Automatic Device Configuration
- Predictive Diagnostics
- Adjustable Voltage Control
- Three option slots for I/O, feedback, safety, auxiliary control power, and communications
- Drive configuration stored in the controller supporting fast, automatic device replacement

**PowerFlex 7000**
- Designed to be used exclusively with Allen-Bradley Logix controllers
- Uses the same motion instructions in Studio 5000 Logix Designer as Allen-Bradley Kinetix servo drives to provide a common programming experience
- Built-in dual-port EtherNet/IP supports multiple network topologies and Device Level Ring functionality
- Drive configuration stored in the controller supporting fast, automatic device replacement
- Removable terminal blocks help simplify installation

**Ratings**
- 100-120V: 0.4-1.1 kW/0.5-1.5 Hp
- 200-240V: 0.4-15 kW/0.5-20 Hp
- 400-480V: 0.4-22 kW/0.5-30 Hp
- 500-600V: 0.4-22 kW/0.5-30 Hp

- 400-480V: 0.75-1400 kW /1-2000 Hp
- 500-600V: 1-1500 Hp
- 690V: 7.5-1500 kW

- Heavy: 150% OL:
  - 2400V: 200-1000 Hp
  - 3300V: 187-1500 kW
  - 4160V: 350-2500 Hp
  - 6600V: 400-2250 kW

**Motor Control**
- Volts per Hertz
- Sensorless Vector Control
- Closed Loop Velocity Vector Control
- Sensorless vector control with Economizer

- Vector Control with FORCE Technology with and without an encoder
- Sensorless vector Control
- Volts per Hertz
- Permanent Magnet/Motor Control (Surface and Interior)
- Vector Motor with a Feedback Device
- Induction Motor Control
- Single-Drive Multi-Motor Capability
- Multi-Drive Loadshare Operation
- TorqProve™ Control

**Enclosures**
- IP20 NEMA/Open
- IP42 NEMA/UL Type 1 (with conduit kit)
- R100/105, NEMA/UL Open Type
- R105, NEMA/UL Type 1 (with conduit kit)
- Wall Mount Drives
- Forward ID: NEMA/UL Open Type
- Forward ID: NEMA/UL Type 1
- Back ID: NEMA/UL Type 4X
- Open Type
- NEMA/UL Type 12

- IP41/43, NEMA/UL Open Type
- Forward ID: NEMA/UL Open Type
- Forward ID: NEMA/UL Type 1
- Back ID: NEMA/UL Type 4X
- Open Type
- NEMA/UL Type 12
- Floor Mount Drives with MCC-style Cabinet

- IP21 (Standard)
- IP42 (Optional)

**Safety**
- Embedded Safe Torque Off, SIL 2, FLS, CAT 3
- Safe Torque Off is a built-in feature that can be applied through either traditional safety or integrated safety - controller-based safety via EtherNet/IP. Both types achieve SIL 3 for CAT 3 ratings.
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More Information
For the most up to date information on our full range of motor control devices visit: http://ab.rockwellautomation.com/Motor-Control

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

## CENTRELINE 2100 Low Voltage, NEMA
- **Rating:** Up to 600V, 600-3000 A
- **Network Interfaces:** EtherCAT
- **IntelliCENTER Software**: Enhanced personnel safety with remote access to information
- **Additional Safety Options**: SecureConnect™ electrical isolation
- **Technical Documentation**: 2100-SG003
- **More Information**: For the most up to date information on our full range of motor control devices visit: http://ab.rockwellautomation.com/Motor-Control

## CENTERLINE 2500 Low Voltage, IEC
- **Rating:** Up to 600V, 800-4000 A
- **Network Interfaces:** EtherCAT
- **IntelliCENTER Software**: Enhanced personnel safety with remote access to information
- **Additional Safety Options**: SecureConnect™ electrical isolation
- **Technical Documentation**: 2500-SG001
- **More Information**: For the most up to date information on our full range of motor control devices visit: http://ab.rockwellautomation.com/Motor-Control

## CENTERLINE 1500 Medium Voltage, NEMA
- **Rating:** Up to 6900V, 200-800 A
- **Network Interfaces:** EtherCAT
- **IntelliCENTER Software**: Enhanced personnel safety with remote access to information
- **Additional Safety Options**: SecureConnect™ electrical isolation
- **Technical Documentation**: 1500-SG001
- **More Information**: For the most up to date information on our full range of motor control devices visit: http://ab.rockwellautomation.com/Motor-Control

## Additional Table

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<td>- Solid state</td>
<td>2 Inputs/1 Output</td>
<td>EtherCAT Communication Module</td>
<td>EC-CA001</td>
<td>For the most up to date information on our full range of motor control devices visit: <a href="http://ab.rockwellautomation.com/Motor-Control">http://ab.rockwellautomation.com/Motor-Control</a></td>
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<tr>
<td>E300 Electronic Overload Relay</td>
<td>0.5-6500 A</td>
<td>- Solid state</td>
<td>4/3 (AC), 4/2 (DC), 2/2 (AC with Protection), 16/8 Extra (with optional Digital Expansion Module)</td>
<td>EtherCAT/IP Network (DRL)</td>
<td>193-SG010</td>
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</tr>
<tr>
<td>SMC Flex</td>
<td>90-520 A</td>
<td>- Soft Start</td>
<td>4/3 (AC), 4/2 (DC), 2/2 (AC with Protection), 16/8 Extra (with optional Digital Expansion Module)</td>
<td>EtherCAT/IP Network</td>
<td>857-SG003</td>
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<td>SMC 50</td>
<td>90-520 A</td>
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<td>4/3 (AC), 4/2 (DC), 2/2 (AC with Protection), 16/8 Extra (with optional Digital Expansion Module)</td>
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</tbody>
</table>
Operator Interfaces At-A-Glance

**Overview**

Available in Standard and Performance versions with display sizes from 4...19 in. with fieldview options. Use FactoryTalk® View Machine Edition to build your application and help simplify configuration and strengthen your Integrated Architecture™ solution. These terminals include Ethernet connectivity and enable you to monitor applications from remote locations with HMI connectivity.

**Key Features**

- **Standard version**:
  - Ideal for small and mid-size machine applications requiring basic features
  - Connectivity to one controller and up to 25 screens and 200 alarm messages
  - Single, embedded Ethernet port for network connectivity
  - ATX Zone 2/22 certification

- **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

**Input Power Options**

- DC (18-30V DC) and AC (100-240V AC)
- 24V DC

**Communications**

- One 10/100Base-T, Auto-MDIX Ethernet port with IEEE1588 support
- Two 10/100Base-T, Auto-MDIX Ethernet ports supporting star, linear, or DLX network topology

**Certifications**

- Standard model certifications:
  - ATEX Zone 2, ATX Zone 22, cULus Listed Class I, Div 2, Groups A,B,C,D, T4, Class IIC
- Performance model certifications:
  - cULus Listed Class I, Div 2, Groups A,B,C,D, T4, Class IIC, Zone 2
  - Performance model certifications:
  - cULus Listed Class I, Div 2, Groups A,B,C,D, T4, Class IIC

**Environmental**

- NEMA 12, 13, 4X, IP54, IP66
- 0-55 °C (-4-131 °F)

**More Information**

For the most up-to-date information on our full range of operator interfaces visit: http://us.rockwellautomation.com/Graphics-Terminals

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**PanelView Plus 7**

- Graphic terminals that leverage a high-speed processor, high-resolution display with LED backlight and internal memory to help improve productivity and maintainance, while enjoying the convenience and efficiencies of single-source buying.

**PanelView 800**

- With an intuitive, modern design, the PanelView® 800 terminal provides enhanced Logix integration using Studio 5000 View Designer™ software. This integration enables engineers to enter configuration information once and use it for the entire automation design.

**PanelView 5000**

- 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.

**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.

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**Display Options and Viewing Area Dimensions**

- 4 inch display (95 x 54 mm)
- 6 inch display (115 x 86 mm)
- 7 inch display (132 x 93 mm)
- 10 inch display (211 x 158 mm)
- 12 inch display (261 x 163 mm)
- 15 inch display (304 x 203 mm)

- 7 inch display (152 x 90 mm)
- 8 inch display (196 x 158 mm)
- 10 inch display (211 x 158 mm)
- 12 inch display (261 x 163 mm)
- 15 inch display (304 x 228 mm)
- 19 inch display (376 x 301 mm)

- 4 inch (95 x 54 mm)
- 7 inch (150 x 86.4 mm)
- 10 inch (211 x 158.4 mm)
- 19 inch (376 x 301 mm)

**Display Type**

- Color TFT LCD, 18-bit Color Graphics
- Resistive Touch Screen

**Internal Storage**

- 512 MB storage
- 128 MB (8 terminals), 256 MB (7 and 10)
- 256 MB internal storage

**Display Options and Viewing Area Dimensions**

- 4 inch display (95 x 54 mm)
- 6 inch display (115 x 86 mm)
- 7 inch display (132 x 93 mm)
- 10 inch display (211 x 158 mm)
- 12 inch display (261 x 163 mm)
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- 4 inch display (95 x 54 mm)
- 6 inch display (115 x 86 mm)
- 7 inch display (132 x 93 mm)
- 10 inch display (211 x 158 mm)
- 12 inch display (261 x 163 mm)
- 15 inch display (304 x 228 mm)
- 19 inch display (376 x 301 mm)

**Display Type**

- Color TFT LCD, 18-bit Color Graphics

**Input Power Options**

- DC (18-30V DC) and AC (100-240V AC)
- DC (18-30V DC) and AC (100-240V AC)
- 24V DC

**Communications**

- One 10/100Base-T, Auto-MDIX Ethernet port with IEEE1588 support
- Two 10/100Base-T, Auto-MDIX Ethernet ports supporting star, linear, or DLX network topology

**Certifications**

- Standard model certifications:
  - ATEX Zone 2, ATX Zone 22, cULus Listed Class I, Div 2, Groups A,B,C,D, T4, Class IIC
- Performance model certifications:
  - cULus Listed Class I, Div 2, Groups A,B,C,D, T4, Class IIC, Zone 2, Groups 1/3T4 KC, CC, CE, IK08, RoHS, EAC, INMETRO

**Environmental**

- NEMA 12, 13, 4X, IP54, IP66
- 0-55 °C (-4-131 °F)

**More Information**

For more information: www.rockwellautomation.com/go/ia
Industrial Monitors and Computers At-A-Glance

Overview
Industrial Environment Computers offer solutions for the physical limitations and requirements of your environment. Non-display Computers provide a variety of options in form factors, RAM, storage, performance, operating temperatures and optical drives. Integrated Display Computers are available in different screen sizes, storage options, performance packages, and models with built in keypads.

Industrial Monitors deliver the latest in LED flat panel technology for rugged industrial environments. Bulletin 6186M Industrial Monitors are better suited for specialized environments such as Class I Division 2, and food and beverage areas. Bulletin 6176M Industrial Monitors are designed for environments that are less demanding but still must maintain endurance to temperature, shock and vibration.

Extreme Environment Computers combine Hazardous Location certifications along with the capacity to withstand more extremes than any other offering on the market. Industries such as oil and gas, chemicals, and mining involve potentially explosive materials in locations where hardware often takes a beating. These computers are designed to endure harsh temperature extremes. They are ATEX, IECEx, and UL Listed for hazardous locations.

Key Features

Display Computers

- 6181 Integrated Display Computers
  - Available in 12-inch, 15-in., 15.6-in., 17-in., 18.5-in. and 19-in. display models
  - Widescreen and projected capacitive multi-touch options
  - Improved multi-tasking performance
  - Installation assist clip, user interface button, and LED indicators for improved system integration and easy access to key information
  - Stainless steel bezel to meet food and beverage industry equipment regulations
  - Support dual external monitor video output

Non-Display Computers

- 6155R Compact Non-display Computers
  - DIN-rail mount, machine-mount and VESA-mount
  - Continuous duty hard disk drive or solid-state drive
  - Provides two CompactFlash expansion slots

- 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
  - Internal USB port for secure use of software activation dongles or USB mass-storage devices
  - Front-removable, shock-mounted, hot-swappable, 24/7 hard disk drives with RAID capabilities
  - Pre-Installed with Windows® XP Professional or Windows® Server 2003 operating system

Industrial Monitors

- 6178M Standard Monitors
  - Available in 15 in., 17 in., and 19 in. models
  - Resolutions range from 1024 x 768 to 1280 x 1024
  - Resistive anti-glare touch screen option
  - USB hub on backside for easy connection to a keyboard or mouse
  - Panel, rack, bench or tabletop, VESA and wall mount form factors
  - Rated to 45 °C (113 °F)

- 6186M Performance Monitors
  - Available in 12-, 15-, 17-, and 19-in. models
  - Class I Division 2 rated
  - Stainless steel, resistive and anti-glare touch screen options
  - Panel, rack, bench or tabletop, and wall mount form factor
  - Two rear USB ports plus 1 front lockable USB port on aluminum models
  - 12- and 15-in. models are rated to 55 °C (131 °F)
  - 17- and 19-in. models are rated to 50 °C (122 °F)

- 6181X Hazardous Location Integrated Display Computers
  - 12.1 in. TFT color display offers resistive touch and readability in sunlight

Software

- Integrated Operating System Backup and Restore utility
- Integrated diagnostics and system health monitoring functionality
- Touch screen (Series C release) supported by Windows® XP Pro, Windows 7 Pro (32 bit and 64 bit), Windows Server® 2003, and Windows Server 2008 (including R2)

More Information

For the most up to date information on our full range of Industrial Monitors and Computers visit: http://ab.rockwellautomation.com/Computers

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

For more information: www.rockwellautomation.com/go/ia
For the most up to date information on our full range of Industrial Networks Infrastructure products and accessories, visit:

http://rockwellautomation.com/Networks-and-Communications/Ethernet-IP-Network
## Ethernet Media

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<tr>
<td>• Compatible with IP67 ArmorBlock and ArmorPOINT products • High Flex up to 10 million flex cycles for robotic applications • Cabinet to cabinet connectivity • Resistant to high vibration, shock, chemicals • Shielded and unshielded cables • Achieve IP67 rating using RJ45 connectors • Available with Thermoplastic and Die Cast Zinc housings • Transition from IP67 environment to IP67 • Stratix switch to Armor I/O • Custom assembly and installation • Isolation Displacement Technology used with M12 D Code and RJ45 connectors • KAT 1B connector provides secure and reliable installation • M12 D Code field attachable connectors in male and female • Custom assembly and installation • Standard industrial rated, High Flex, Plenum rated spools • Shielded and unshielded cables • Twisted pair formation allows for high performance, balance, and noise immunity • Custom assembly and installation • Unshielded: 2 and 4 pair TPE, 4 pair PVC, 2 and 4 pair PUR • 300V and 600V • Achieve IP67 rating using RJ45 connectors • Available with Thermoplastic and Die Cast Zinc housings • Custom assembly and installation • Insulation Displacement Technology used with M12 D Code and RJ45 connectors • RJ45 IDC connector provides secure and reliable installation • M12 D Code field attachable connectors in male and female • Custom assembly and installation • Standard industrial rated, High Flex, Plenum rated spools • Shielded and unshielded cables • Twisted pair formation allows for high performance, balance, and noise immunity • Custom assembly and installation • Unshielded: 2 and 4 pair TPE, 4 pair PVC, 2 and 4 pair PUR • 300V and 600V • Achieve IP67 rating using RJ45 connectors • Available with Thermoplastic and Die Cast Zinc housings • Custom assembly and installation • Insulation Displacement Technology used with M12 D Code and RJ45 connectors • RJ45 IDC connector provides secure and reliable installation • M12 D Code field attachable connectors in male and female • Custom assembly and installation • Standard industrial rated, High Flex, Plenum rated spools • Shielded and unshielded cables • Twisted pair formation allows for high performance, balance, and noise immunity • Custom assembly and installation • Unshielded: 2 and 4 pair TPE, 4 pair PVC, 2 and 4 pair PUR • 300V and 600V</td>
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<td>-20/10 °C (-40/158 °F)</td>
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<td>M1I1C1E2</td>
<td>M1I1C1E3</td>
<td>M1I1C1E2</td>
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For more information: [www.rockwellautomation.com/go/ia](http://www.rockwellautomation.com/go/ia)
Providing the resources you need, when and where you need them, Rockwell Automation has an integrated, global network of ISO-certified repair centers, exchange hubs, field service professionals, IACET-recognized training centers, certified technical phone support centers and online tools.

Remote Support & Monitoring
- Real-time product, system and application-level support
- Unlimited online resources and tools
- Live chat and support forums
- Secure equipment monitoring, alarming and diagnostics

Training Services
- Instructor-led and computer or web-based courses
- Virtual classroom
- Training assessments
- Workstations and job aids

OnSite Services
- Embedded engineering
- Preventive maintenance
- Migrations and conversions
- Start-up and commissioning and diagnostics

Repair Services
- Product remanufacturing
- Repair services on non-Rockwell Automation brands
- Annual repair agreements

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

Lifecycle Extension & Migrations
- Installed Base Evaluation™
- Pinpoint obsolescence risk
- Tools and lifecycle support service agreements to mitigate production risk

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

Safety Services
- Safety assessments and remediation
- Safety design, integration and validation services

Visit Get Support Now, www.rockwellautomation.com/support to select your country and find your local support information.

Food & Beverage
- Product Safety & Compliance
- Line Performance
- Batch, Blending, Routing & CIP
- Production & Order Management

Household & Personal Care
- Material Tracking/Genealogy
- Historian & Dashboards
- Mixing, Blending, Routing & CIP
- Production & Order Management

Life Sciences
- Full MES & Compliance
- Formulation & Filling
- Track & Trace
- Modular Process Build

Automotive
- Body & Painting Line Control
- Error Proofing & Kitting
- Press & Press Line Control
- Scheduling & ERP Integration

Chemicals
- Batch Processing
- Mixing & Blending
- Material Tracking
- Tank Farm Control

Tire & Rubber
- Safety Wind-up & Let-off (WULO)
- Calenders
- Mixing/TSR Systems & Curing
- Extruders

Oil & Gas
- Integrated Control & Safety Systems
- Production & Pipeline SCADA
- Rotating Equipment Control
- Engineer, Procure & Construct

Power Generation
- Combustion Controls/Burner Management
- Fuel Handling/Energy Conversion
- Electrical Protection & Control
- Balance of Plant Automation / Integration

Metals
- Melt Shop & Continuous Casting
- Strip Processing & Finishing
- Rod & Bar Mills
- Material Tracking

Pulp & Paper
- Burner Management & Digesters
- Stock Prep/In-Machine DCS
- Paper & Tissue Machine Systems
- Winder & Sheeter Safety

Mining & Cement
- Ventilation on Demand
- Ore Beneficiation/Processing
- Loadout Systems
- Crushers & Conveyors

Water/Wastewater
- Process Control
- Power Control
- SCADA - Data Collection
- Remote Terminal Units

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Rockwell Automation, Inc. (NYSE:ROK), the world’s largest company dedicated to industrial automation, makes its customers more productive and the world more sustainable. Throughout the world, our flagship Allen-Bradley® and Rockwell Software® product brands are recognized for innovation and excellence.