Integrated Architecture

Real-time Control and Information Delivering
Smart Manufacturing, Machines and Equipment

LISTEN.
THINK.
SOLVE.®

Rockwell Automation

Allen-Bradley • Rockwell Software

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

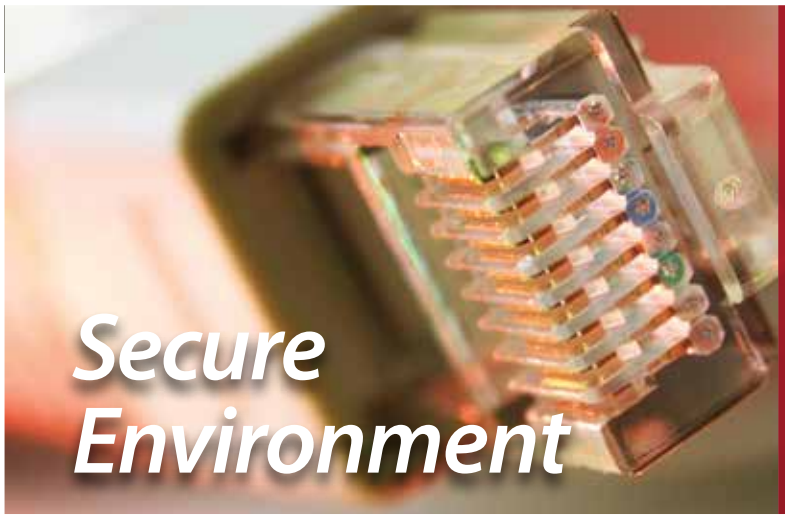
New technologies, software and information help to increase productivity and improve overall business performance.

Secure Environment

Technology that helps customers mitigate their enterprise risk and monetize their intellectual property.

Smarter Technology

Enhanced Productivity



Secure Environment

Contents

Product portfolio

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.

ED ENTERPRISE

EXPERTISE

K® Analytics

L & INFORMATION

– *Scalable*

Smart Machines and Equipment

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

Improved Asset Utilization and Optimization

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

Enterprise Risk Management

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

For more information: ***rok.auto/ia***

Smarter Technology

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*

Challenge

Getting control systems that work isn't the problem – the problem is getting ***control systems that work together seamlessly.***

Solution

The power of one – one common control platform, common network and common design environment *that simplifies everything and helps reduce costs.*

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.

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.

Integrated Architecture

PROGRAMMABLE AUTOMATION CONTROLLERS

CompactLogix™ • Compact GuardLogix® • ControlLogix® GuardLogix® • Armor™ GuardLogix® • Micro800®

OPERATOR INTERFACES & INDUSTRIAL COMPUTERS

PanelView™ • MobileView™ • VersaView®

INDUSTRIAL NETWORKS INFRASTRUCTURE & MEDIA

Stratix®

Studio

AUTOMATION DE

MOTOR CONTROL DEVICES

PowerFlex® • IntelliCENTER®

Discrete Control

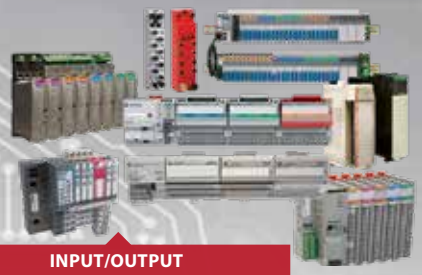
Logix provides exceptional reliability and performance for discrete applications. Tight integration between the programming software, controller and I/O modules reduces development time and cost at commissioning and during normal operation.

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.



INPUT/OUTPUT DEVICES

COMPACT 5000™ I/O • FLEX 5000™ I/O • FLEX™ I/O • POINT I/O™ • 1715 Redundant I/O • Dynamix

5000

VISUALIZATION & INFORMATION SOFTWARE

FactoryTalk® • Arena® • ThinManager®

SIGN SOFTWARE

MOTION CONTROL

Kinetix® • iTRAK® • MagneMotion®

PlantPAx
Distributed Control System

DISTRIBUTED CONTROL SYSTEM

PlantPAx®

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

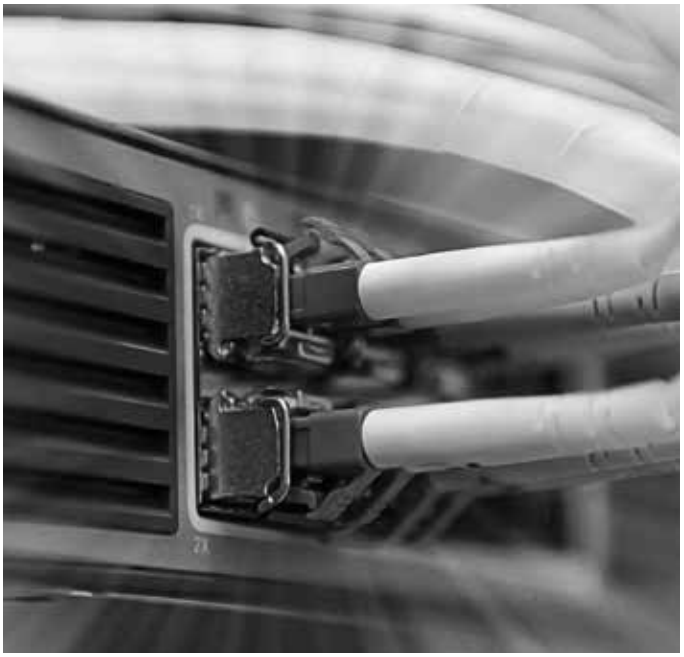
PlantPAx® Distributed Control System combines plant-wide control and unmatched scalability of the Integrated Architecture system with the core capabilities of a Modern DCS to help you gain a competitive advantage.

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.

Smarter Technology

SCALABLE ARCHITECTURE



Implement a scalable automation architecture with the flexibility to meet a variety of applications at the most competitive cost, while offering the smallest possible footprint.

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

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

Save Time and Money During Your Development Cycle

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

Improve Your Flexibility

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

Reduce Maintenance Costs and Downtime

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

Challenge

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

Solution

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

Case Study

Biopharmax Group

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

Smarter Technology

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.

Scalable Architecture

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.

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.

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.

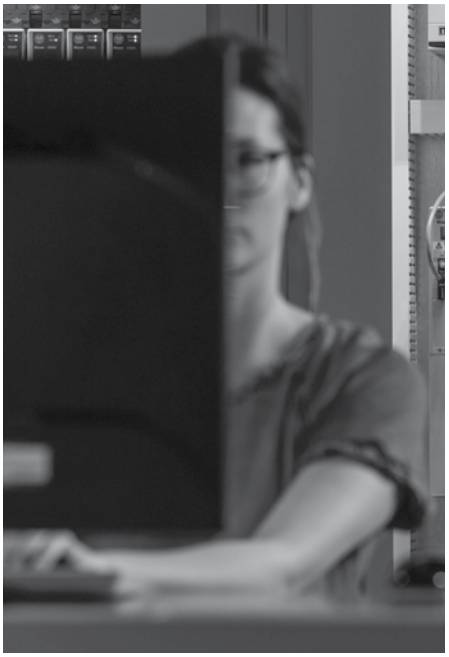
Increased I/O Flexibility

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 safety-rated 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 variable frequency drives for a wide range of applications, to high-performance, multi-axis servo drives for the most demanding applications.

Enhanced Productivity



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.

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

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

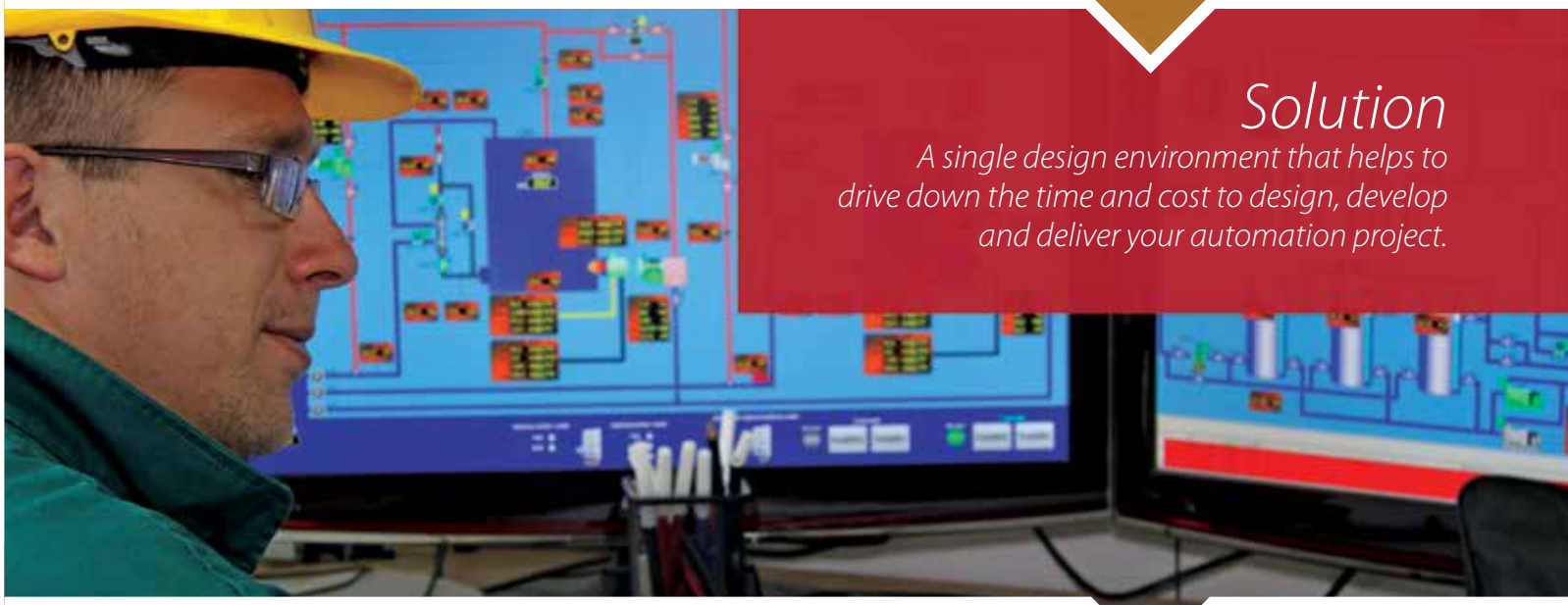
Key Features

- *Scalable and flexible - use modular code to simplify your application*
- *Efficient project design - write code, organize it, test it and duplicate it*
- *Effective content management - create content, store it, share it and reuse it*
- *Quicker downtime recovery - logically find what you need to quickly troubleshoot code*
- *Collaborative engineering - enable multiple people to code, then compare and merge*

Rockwell Software
Studio 5000

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.

Enhanced Productivity

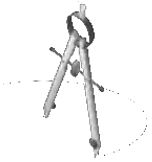
System Organization

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.

Rockwell Software

Studio 5000

Architect



Enables Simplified System Design and Data Exchange

Logix Designer

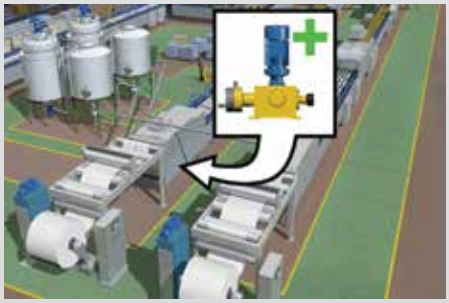
Collaborative System Programming and Configuration

View Designer

Highly Integrated HMI with Logix

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.

Application Code Manager

System Reuse and Quickly Build Projects

Logix Emulate

Virtual Design and Operator Training Systems

Virtual Design and Engineering

Achieve savings and maintain a competitive edge with digital design, simulation and emulation. Simulation helps protect your business by analyzing the impact of new business ideas, rules and strategies - before implementation. This helps shorten development cycles, reduce risk and optimize system designs.

System Security

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

Device Management

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

Collaborative Engineering

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

Enhanced Productivity

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.

Challenge

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

Solution

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

Case Study

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.

Enhanced Productivity

Manufacturing Intelligence and Operations Management

Choose an Architecture that Provides Integrated Control and Information

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

Performance Management with Enterprise Manufacturing Intelligence

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

Manufacturing Execution Systems

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

Put Your Information to Work

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

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.

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.

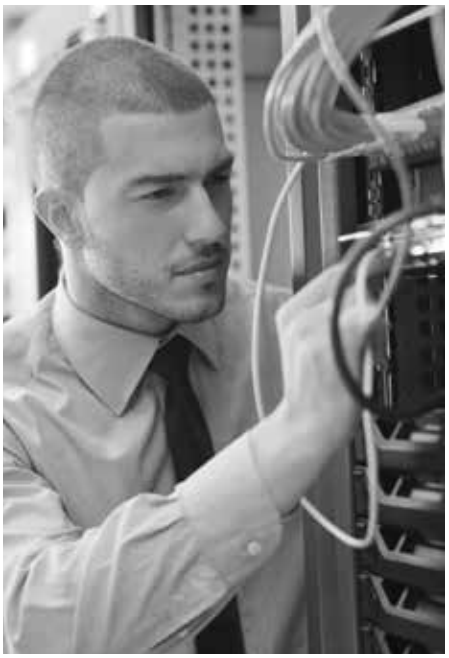
Mobile Solutions

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 untether 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.

Secure Environment



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 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

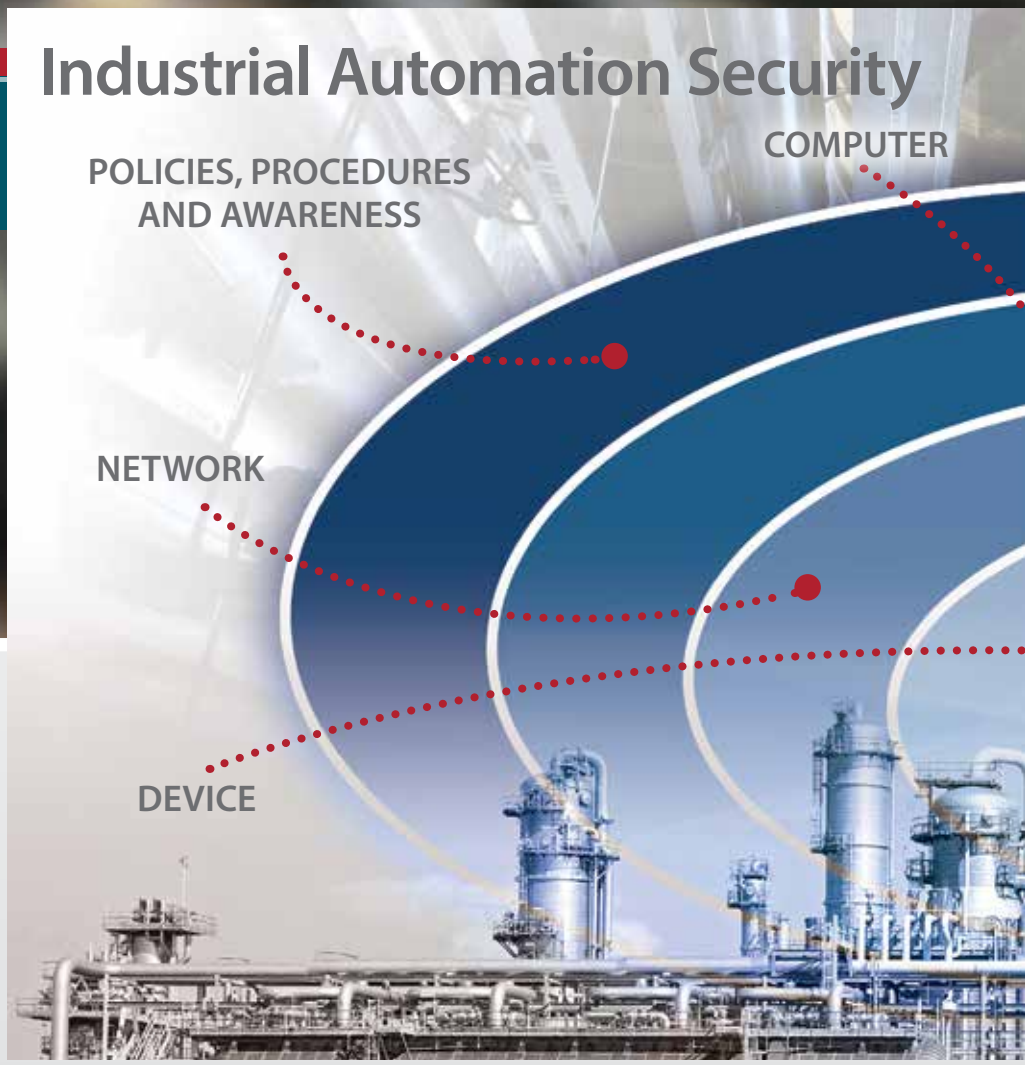
A consistent, comprehensive approach to industrial security that extends beyond the control system to include data, policies and procedures that address people, processes and technology-related risks.

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.

Secure Environment



Defense-in-depth Approach

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

Content Protection

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

Securing the Network Infrastructure

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

Tamper Detection

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

Access Control and Policy Management

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

Network and Security Services

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

Secure Environment

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

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.

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.

Modernization Support

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

Strategic Alliances

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

PartnerNetwork

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

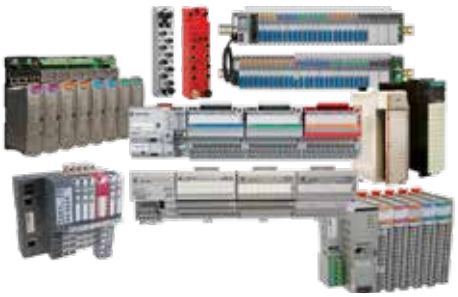
HARDWARE PORTFOLIO

Allen-Bradley

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

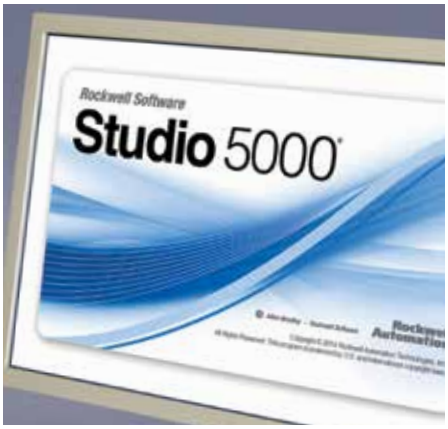
Network Topologies

- 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

SOFTWARE PORTFOLIO



Rockwell Software

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

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

FactoryTalk® Batch

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

Pavilion8® Software

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

Programmable Automation Controllers At-A-Glance

	ControlLogix 5580	ControlLogix 5570	CompactLogix 5480
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. 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.		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.
Key Features	• Suitable for high-performance, discrete and motion applications • Integrated Motion on EtherNet/IP™ • Multiple controllers in the same chassis, with each one operating independently • Built-in 1Gb Ethernet port • Designed for high performance with Compact 5000™ I/O • Conformal coating offers added protection in harsh environments	• Suitable for process, motion, discrete, safety and high-availability applications • GuardLogix® controllers have TÜV certification for functional safety • Integrated motion and safety on EtherNet/IP • Multiple controllers in the same chassis, with each one operating independently • Conformal coating offers added protection in harsh environments • Redundancy supports high availability requirements • ControlLogix-XT™ rated for -20 - 70 °C (-4 - 185 °F) operating environment	• Provides high-performance control and computing functionality in a single hardware platform • Offers the ability to run third-party applications in parallel with Logix real-time control • Supports up to 31 local Compact 5000 I/O modules • Offers simplified architectures with built-in communications, peripheral connectivity, integrated DisplayPort and multiple high-speed EtherNet/IP ports
Built-in Memory	Up to 40 MB GuardLogix 5580 up to 5 MB safety memory	ControlLogix controllers: Up to 32 MB GuardLogix controllers: 8 MB standard / 3.75 MB safety	20 MB (Logix) Approx. 16 GB free (OS)
Motion Control	Up to 256 axes of Integrated Motion on EtherNet/IP Typical controller performance 32 axes/ms	Up to 100 axes of Integrated Motion on EtherNet/IP Typical controller performance 6 axes / ms	Up to 150 axes of motion
Safety Level	GuardLogix 5580: SIL 2, PLd, Cat. 3 GuardLogix 5580: SIL 3, PLe, Cat. 4 (Safety Partner required)	ControlLogix controllers: SIL 2 when following ControlLogix SIL 2 Safety Reference Manual GuardLogix 5570: SIL 3, PLe, Cat. 4 (Safety Partner required)	N/A
On-Machine	N/A	Armor™ ControlLogix® controllers: IP67 rated Armor™ GuardLogix® controllers: IP67 rated	N/A
Language Support	Ladder Logic, Structured Text, Function Block, Sequential Function Chart		Ladder Logix, Structured Text, Function Block, Sequential Function Chart
Communications	Embedded USB and 1 Gb Ethernet port	Embedded USB	• 3 (2 ports configurable for Dual IP or DLR) and 1 GbE Port (OS) • 1 (DisplayPort) - supports standard converters for HDMI, DVI, VGA displays • 1 Device Port (Logix) 2 USB 3.0 Host Ports (OS)
Standards	cULus, CE, IECEx, KC, EtherNet/IP, FM, CSA, RCM, Ex, EAC, Marine Pending	cULus, CE, KC, FM, RCM, IECEx, EAC, Marine In addition, GuardLogix controllers: FM, TÜV	cULus, CE, RCM, KC, EAC, EtherNet/IP
Environmental	0-60 °C (32-140 °F)	0-60 °C (32-140 °F) XT versions rated -25-70 °C (-13-158 °F)	0 ^{0}C < Ta < +60 ^{0}C (+32 ^{0}F <Ta < +140 ^{0}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		

CompactLogix 5380	CompactLogix 5370	Micro800
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.	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® 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.
• Suitable for high performance, discrete and motion applications • Integrated Motion on EtherNet/IP • Two Ethernet ports each with individually configurable IP addresses and adjustable speed up to 1 Gb • Designed for high performance with Compact 5000 I/O, either local or distributed on EtherNet/IP • Conformal coating optional for added protection in harsh environments	• Suitable for process, motion, discrete and safety applications • Integrated Motion on EtherNet/IP • Distributed I/O via EtherNet/IP • Robot kinematics • Open socket capability for devices such as printers and barcode readers • Internal energy storage solution removes the need for battery • Conformal coating optional for added protection in harsh environments	• Suitable for low-cost, standalone, discrete, process and Pulse Train Outputs (PTO) motion applications • Customize and expand the functionality of Micro800 controller to meet specific application needs with plug-in and expansion I/O modules • Built-in 100 kHz high-speed counter • EtherNet/IP and DeviceNet™ • Supports Modbus TCP, Modbus RTU, ASCII and Open socket capability for communication with third-party devices • Micro820™ controllers: MicroSD™ slot for data logging and recipe management • Conformal coating optional for added protection in harsh environments
Up to 10 MB Compact GuardLogix 5380 up to 5 MB safety memory	CompactLogix L1: Up to 1 MB, L2: Up to 1 MB, L3: Up to 5 M	Up to 280 KB
Up to 32 axes of Integrated Motion on EtherNet/IP Typical performance 32 axes/ms	Up to 16 axes of Integrated Motion on EtherNet/IP	Up to 3 axes of 100 kHz PTO for Motion control
Compact GuardLogix 5380: SIL 2 PLd, Cat. 3	Compact GuardLogix 5370: SIL 3, PLe, Cat. 4	N/A
N/A	Armor™ CompactLogix™: IP67 rated Armor Compact Guardlogix: IP67 rated	N/A
Ladder Logic, Structured Text, Function Block, Sequential Function Chart		Ladder Logic, Structured Text, Function Block
• Embedded USB and Ethernet with DLR/Dual IP (selectable) • 1 Gb Ethernet port	Embedded USB and Ethernet with DLR	Embedded USB, RS232/485 and Ethernet
cULus, CE, RCM, ATEX, IECEx, EtherNet/IP, KC, EAC, Marine	cULus, CE, RCM, ATEX, EtherNet/IP, KC, EAC, Marine	cULus, CE, RCM, KC, EtherNet/IP, Marine
0-60 °C (32-140 °F)	L1: -20-60 °C (-4-140 °F) L2/L3: 0-60 °C (32-140 °F) Armor®: 0-60 °C (32-140 °F)	Micro810®: 0-55 °C (32-131 °F) Micro820, Micro830®, Micro850®, Micro870™: -20-65 °C (-4-149 °F)
		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

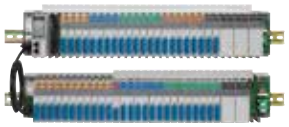
Input/Output (I/O) Modules At-A-Glance

	ControlLogix	Compact 5000	Compact
Overview	A full range of digital, diagnostic, analog, motion control, and specialty I/O. Modules can be used in the local chassis of a ControlLogix® controller or in a chassis linked to a ControlLogix controller across EtherNet/IP™.	The Compact 5000 I/O platform offers high-performance communication in a compact design and includes SIL-rated safety modules.	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.
Key Features	• Comprehensive diagnostics for detection of both system and field-side failures • Inherent time-stamping capabilities for Sequence Of Events applications • Electronic keying to help prevent replacement errors • Available with conformal coating to help protect in harsh environments • Removable terminal block or wiring interface module to connect all field-side wiring	• Install easily by sliding together; pull apart easily for maintenance • Comprehensive diagnostics for detection of both system and field-side failures • Inherent time-stamping capabilities for Sequence of Events applications • Electronic keying to help prevent replacement errors • Removable terminal block to connect all field-side wiring • Different termination style available	• 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)
I/O Types Offered	**Digital** • 8 to 32 points module • Offers a variety of voltages • Isolated and non-isolated module types **Analog** • Input, output and combination modules • Thermocouple and RTD modules **Specialty** • Configurable flowmeter modules • High-speed counter modules • Programmable limit switch modules **Isolated Analog HART** • Up to 16 points with channel-to-channel isolation • HART modem per channel for faster HART data update **Enhanced Analog** • Isolated 8-channel and non-isolated 12- and 16-channel modules with stability over the entire temperature operating range	**Digital** • 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 capabilties; event triggers, simple counter, time stamping, schedule output • Enhanced protection capability **Analog** • Universal analog input modules • Analog output modules • High resolution - fast conversion rates **Specialty** • Serial communication • Address reserve, high speed counter, field power distribution **Safety** • Safety digital input module — single-channel PLd, dual-channel PLe • Configurable safety output module (sourcing/bipolar) — Sourcing Mode: single channel PLe, dual channel PLe, Bipolar Mode: PLe	**Digital** • 8 to 32 points per module • Offers a variety of AC and DC voltages • Include contact output modules • Include high-speed input modules **Analog** • Analog, thermocouple and RTD modules **Specialty** • Address reserve, ASCII, Boolean control and high-speed counter modules available • Direct 1769 platform connection to PowerFlex® drives and other devices through Compact 5000 I/O to DPI/SCANport™ and Compact 5000 to DSI/Modbus modules • Digital input and digital output modules • PLd-rated, single channel safety inputs • PLe-rated, dual channel, safety inputs • Safety outputs rated up to PLe (use with GuardLogix family) • Can be used side by side in a standard Compact 5000 I/O system
Communications	Local chassis or in a chassis linked to a ControlLogix controller across ControlNet or EtherNet/IP	Local chassis to CompactLogix 5380 and CompactLogix 5480 controllers, distributed on EtherNet/IP to ControlLogix 5580 controller	Local chassis to CompactLogix 5370 controller or distributed on EtherNet/IP
More Information	For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/IO		

FLEX 5000	FLEX
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.	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.
• 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	• Modular design lets you independently select the I/O, termination style and network interface • Assembles without tools – all components snap into DIN rail and plug together to form the I/O system • Mounts horizontally or vertically • Reduce downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation • Available with conformal coating to help protect in harsh environments
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	**Digital** • 8 to 32 points per module • Isolated inputs or outputs • Protected outputs, electronic fusing or diagnostics available on some modules **Analog** • Individually configurable channels, selectable input filters on many modules • Single-ended or differential inputs • Thermocouple, RTD, and HART modules available **Specialty** • 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 Combination I/O modules
Distributed on EtherNet/IP to CompactLogix 5380, CompactLogix 5480 or ControlLogix 5580 controllers	EtherNet/IP, ControlNet, DeviceNet, PROFIBUS DP

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

	POINT	ArmorBlock
Overview	Ideal for applications requiring flexibility and low-cost of ownership. Granularity of 1 to 8 points lets you buy only the I/O you need. The compact design makes installation easier in limited panel space. POINT I/O™ is the only IP20-rated modular I/O solution compliant with ODVA requirements for Linear, Star and Ring EtherNet/IP architectures.	ArmorBlock® I/O Modules are low-cost, hardened I/O that can be mounted on machines to help reduce wiring cost and enable easier maintenance. ArmorBlock I/O can be used for automotive, material handling and packaging applications or for machinery applications where diagnostics and local control are not needed.
Key Features	• Independently select the I/O, termination style and network interface • Install easily by sliding together; pull apart easily for maintenance • Removable wiring system saves time and money during installation and troubleshooting • Comprehensive diagnostics and configurable features • Reduce downtime with Removal and Insertion Under Power (RIUP) by replacing modules while system is in operation • Mount horizontally or vertically, with no derating required • Also available 1738 ArmorPOINT® I/O for On-Machine applications • Available with conformal coating to help protect in harsh environments	• IP67/69K-rated water- and corrosion-resistant housing reduces enclosure costs • Industry-standard connectors simplify wiring and improve Mean Time to Repair • Embedded switch with Device Level Ring (DLR) • Rotary switch to set IP address • Self-configuring blocks with both input and output functionality
I/O Types Offered	**Digital** • Input, output, and relay output modules • Wide variety of voltages **Analog** • Up to eight single-ended inputs or outputs per module • 4-channel input/output • Thermocouple and RTD modules **Specialty** • Counter and encoder modules • Serial synchronous interface Absolute Encoder module • Serial interface modules • Address Reserve Module (ARM) • IO-Link master module **POINT Guard I/O™ Safety** • Digital input, digital output, and analog input modules and bipolar output modules • TUV-certified for functional safety up to and including SIL 3, Cat. 4, PLe • Can be used side-by-side in a standard POINT I/O system	**ArmorBlock® I/O** • Input, output and combination modules, up to 16 points per block • Available with CIP Sync on some blocks • 4-point analog, thermocouple and RTD I/O blocks • Supports connection to IO-Link enabled devices with the IO-Link master module • Available with Quick Connect on some blocks • IP69K and NEMA 4X (when marked) **Armor WeldBlock** • 16-points • Resists the effects of weld slag and magnetic fields found in close proximity to weld heads • Light-weight nickel-plated aluminum metal housing **ArmorBlock® Guard I/O™ Safety** • 16-point combined I/O blocks • PLd-rated, single channel safety inputs • PLe-rated, dual channel, safety inputs • Safety outputs rated up to PLe (use with GuardLogix® family) • Dual IP65 and IP67 ratings
Communications	EtherNet/IP, ControlNet, DeviceNet, PROFIBUS DP	DeviceNet or EtherNet/IP
More Information	For the most up-to-date information on our full range of I/O modules and accessories, visit: ab.rockwellautomation.com/IO	



1719 Ex	1715 Redundant
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.	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.
• I/O modules for intrinsic safety field connections, rated for Zone 2 or Class I, Division 2 mounting • EtherNet/IP DLR adapter • Optional N+1 Power Supply Redundancy • Removal and Insertion Under Power (RIUP) lets you replace modules and make connections while the system is in operation (in absence of hazardous atmosphere) • Modularity and several chassis options provide scalability for larger applications • HART 7 support standard on all analog modules	• Supports several network topologies, including Device Level Ring (DLR) for enhanced resiliency • Flexible, modular construction for user-configurable I/O applications • I/O redundancy for systems requiring high availability • Suitable for simplex and duplex connections and fault tolerant applications • Supports online module removal and replacement with no interruption of the signal inputs
Digital • 8-channel NAMUR Digital Input module • 2-channel Digital Output modules to support nearly any solenoid requirement **Analog** • Configurable 4 channel Analog Input/Output module • 4-channel Analog Input, Thermocouple, and RTD Modules **Specialty** • Single channel frequency counter module	**Digital** • 16-channel input • 8-channel output **Analog** • 16-channel input • 8-channel output
EtherNet/IP	EtherNet/IP: Supports several network topologies, including Device Level Ring (DLR) for enhanced network resiliency

Condition and Energy Monitoring At-A-Glance

	Dynamix 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 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

	PowerMonitor 1000	PowerMonitor 5000
Overview	A compact power monitor for load profiling, cost allocation, or energy control. Integrates with existing energy monitoring systems to provide sub-metering. Communicates easily with Logix controllers to use energy data in automation systems.	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	• 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 logs • Ability to view data and configure through the integrated web page	• 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 WAGES data collection • Includes 4 outputs for connection to SCADA or control systems • Offers configurable alarms for up to 20 events • Provides virtual wiring correction capability
Options	**1408-BC3A-ENT** • Basic consumption meter **1408-TS3A-ENT** • Consumption + Volt/Current **1408-EM3A-ENT** • Energy management meter	**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 • EtherNet/IP • KYZ signal	• Digital signal • EtherNet/IP • DeviceNet • ControlNet • KYZ signal
Communications	Available with EtherNet/IP, Serial DF1, 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	

Intelligent Devices At-A-Glance

	56RF Radio Frequency Identification (RFID) System	IO-Link Sensors
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 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.
Key Features	• Rugged transceiver styles for industrial locations • 13.56 MHz high frequency technology for light industrial applications • ISO 15693 / ISO 18000-3 M1 • 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)	• 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	**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	**IO-Link is currently available on the following sensors** • 42EF RightSight™ General Purpose Sensors designed for light- to medium-level industrial use • 42JS and 42JT VisiSight™ Sensors offer a small rectangular package with visible light beam for ease of alignment and industry standard mounting • 45CRM Color Registration Mark Sensors have a high-speed response time and discern the difference in color between the mark and background • 45LMS Laser Measurement Sensors offer an excellent mid- to long-range measurement solution • 871C Mini Tubular Sensors are general purpose, solid-state devices that sense ferrous and nonferrous metal objects without touching them • 871TM Tubular Stainless Steel Sensors are ideal for harsh or extremely demanding environments
Communications	1 and 2 channel EtherNet/IP interface available Embedded switch, with Device Level Ring (DLR)	Devices connect to POINT and ArmorBlock IO-Link master modules
More Information	For the most up-to-date information on our full range of RFID offering, visit: http://ab.rockwellautomation.com/Sensors-Switches/RFID/High-Frequency-RFID	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

2080-IQ4OB4
- 8-point combo: 4-pt digital input, 12/24V DC, sink/source, Type3 and 4-point digital output, 12/24V DC, source

2080-IQ4
- 4-point digital input, 12/24V DC, sink/source, Type3

2080-OB4
- 4-pt digital output, 12/24V DC, source

2080-OW4I
- 4-point relay output, individually isolated, 2 A

2080-MEMBAK-RTC
- Project backup and restore module

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

- Provides embedded communication via USB programming port and non-isolated serial port for RS-232 communications
- Offers optional Ethernet plug-in 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 13849-1or 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

Guardmaster® DI/DIS
- Consolidates functionality of two safety relays into a single electromechanical relay (DI) or solid-state (DIS) outputs

Guardmaster® SI/CI
- Ideal for safety functions using one dual or single channel safety device. Ideally suited for global E-stop function in combination with another GSR relay

Guardmaster® EM/EMD
- Easily add 4 N.C. instantaneous (EM) or delayed (EMD) outputs to a system

Guardmaster® GLT/GLP
- Developed for applications requiring access control monitoring the stop time, standstill or safe limited speed to unlock guards when equipment reaches a safe condition.

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

	Kinetix 5700	Kinetix 5500
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	• 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
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** • PLe, Cat. 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 - 15kW
Supply Voltage	325-528V AC	• 195-528V AC single phase (H003-H015) • 195-528V AC 3 phase all models
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	

Kinetix 350	Kinetix 300
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.
• 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	• Supports five different index types and as many as 32 indices • Analog input control and step and direction control • Memory module for automatic device replacement • Programmable in Studio 5000 Logix Designer • Integrates with Logix controllers as part of The Integrated Architecture system • 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	**Hardwired Safety – Safe Torque Off** • Safe Torque Off is certified at ISO 13849-1 PLe, SIL 2, and requires an external safety relay to meet EN954-1, Cat. 3 • Prevents drive restarts after the safety circuit is tripped
• 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)	• 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)
• 115-240V AC single phase • 230-480V AC 3 phase	• 115-240V AC single phase • 230-480V AC 3 phase
Integrated Motion on EtherNet/IP	EtherNet/IP network

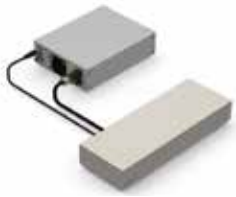
Servo Motors At-A-Glance

	Kinetix VP Rotary	Kinetix MP Rotary
Overview	Optimized to operate with the Kinetix 5500 family of servo drives, supporting Integrated Motion on EtherNet/IP. Based on proven MP technology for dynamic performance, these motors offer the many benefits of a single cable for feedback, brake and power.	Low-Inertia, high-output brushless servo motors. These compact and highly dynamic brushless servo motors are designed to meet the demanding requirements of high-performance motion systems. Typically used with the Kinetix® 5700, Kinetix® 6000, Kinetix® 6200, Kinetix® 6500, Kinetix® 300, and Kinetix® 350 servo drive families.
Key Features	• Based on proven magnetic core MP technology • Provides real-time motor performance information to the control system via digital feedback device • Provides feedback, motor brake, and motor power through a single cable • Optimized to match drive ratings allowing for efficient system sizing • Integrated 24-volt holding brake option **Model variants** • VPL – Standard low inertia • VPF – Food grade Stainless steel shaft and fasteners Food grade and REACH compliant shaft seal grease Offers improved food grade white paint Food grade shaft seal IP66- and IP67-rated connectors can be rotated without the use of tools • VPC – Continuous torque High continuous power applications up to 30 Kw Field replaceable fan kit	• High-energy rare-earth magnets for quicker acceleration • Standard IEC 72-1 mounting dimensions • SpeedTEC DIN connectors allow flexible orientation of connectors • Integrated 24-volt holding brake option **Model variants** • 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	

TL-Series Compact Rotary	LDC & LDL Linear
Low-inertia, high-performance servo motors for lighter industrial applications. Substantial power in a small footprint, with a high-torque density. Available with absolute encoder or 2000-line incremental encoder.	Linear motors provide you with the ability to increase your throughput and reliability as a result of their high speed and accelerations capabilities and the reduction in mechanical transmission parts commonly found in applications that convert rotary to linear motion.
• Multi-turn feedback with battery backup available • Controls high load-to-motor rotor inertia ratios while maintaining a stable system • Onboard memory retains motor identity • Serial communication automatically reports identity to the drive • 46 mm, 70 mm, 90 mm and 100 mm frame sizes • Integral 24V brake option **Model Variants** • TL – equipped with rectangular plastic connectors, intended for use only with Kinetix 3 servo drives • TLY – equipped with circular plastic connectors, intended for use with Kinetix 2000/6000 servo drives	• Velocities up to 10 ms and accelerations as high as 10 m/s • Precise linear positioning • No-wear parts such as bearings, gears, and belts • Full setup and programming support through Studio 5000 environments
Continuous 0.086-5.42 Nm (0.85 to 48 lb-in)	• LDL Continuous 63 to 596 N or 14 to 134 lbf Peak 209 to 1977 N or 47 to 444 lbf • LDC Continuous 74 to 1922 N or 17 to 432 lbf Peak 188 to 5246 N or 42 to 1179 lbf
N/A	User-supplied
200V Class Windings	200V and 400V Class Windings

Actuators and Independent Cart Technology

	MP-Series/T-Series Electric Cylinders	LDAT-Series Linear Thruster	iTRAK Intelligent Mover System
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.	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.	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.
Key Features	• Flexible, efficient servo controlled rod actuation • Extend and retract with precise positioning, velocity or force • Fully assembled, ready to install • Clean, energy efficient alternative to fluid power • Flexible positioning for parts, tools, set works, etc. • Dynamic, precise response for a wide range of linear motion applications • Available in multiple frame sizes	• 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	**iTRAK® Series Assembled Systems** • Minimize maintenance • Change between products at the push of a button • Simplify mechanical designs • Upgrade easily by reducing complex tooling • Operate faster with less downtime • Reduce energy consumption through direct drive **iTRAK® Series System Components** • 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
Force Rating	• Continuous force 240-7784 N (54-1750 lbs) • Peak force to 14500 N (3300 lbs)	Peak force to 5469 N (1229 lbs)	• 50 mm: 264 N • 100 mm: 529 N • 150 mm: 793 N
Speed Rating	Up to 1 m/s	Up to 5 m/s	• 50 mm: > 5 m/s • 100 mm: 4 m/s • 150 mm: 2.75 m/s
Feedback Options	Absolute high-resolution multi-turn feedback	Incremental TTL or Absolute Hiperface	• Absolute feedback • Feedback Resolution < 10 µm
Winding Voltage	200V and 400V Class Windings	200V and 400V Class Windings	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		For the most up-to-date information on iTrak®, visit: http://ab.rockwellautomation.com//global/solutions-services/capabilities/motion/itrak



MagneMover LITE	QuickStick	QuickStick HT
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.	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.	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.
• Intelligent motion • Process optimization tools simplify system design • Complete traceability at all times • Flexible layouts • Easy to clean and maintain up to IP65 wash-down	• Intelligent motion • Flexibility with simultaneous tracking and easy add and removal of modules • Easy-to-use modular design • Less maintenance with fewer moving parts	• Functional in industrial, clean, harsh, underwater and other unique environments • Innovative design allows various configurations • Easy-to-use modular design and control system • Less maintenance with fewer moving parts
6 N/10 N	15.9 N per magnet array	Over 2500 N Single Wide, Over 5000N Double Wide
2 m/s	100 m/s	2.5 m/s
Absolute	Absolute	Absolute
36V	48V	400V

For the most up-to-date information on intelligent conveyors, visit: www.magnemotion.com

AC Drives At-A-Glance

	PowerFlex 755T AC Drives	PowerFlex 750-Series 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.	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	• 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	• Multiple motor control modes and support for induction and permanent magnet motors • Predictive diagnostics help to extend the life of the drive • Flexible slot-based hardware architecture allows you to select option modules for safety, feedback, communications and I/O • Automatic Device Configuration (ADC) allows Logix controllers to detect a replaced drive and download all configuration parameters automatically • PowerFlex 755 drives have the option to be programmed using motion instructions in the Studio 5000 Logix Designer application • Available with conformal coating to help protect in harsh environments
Ratings	• 400-480V: 160-2000 kW/250-3000 Hp • 600-690V: 250-2500 Hp/200-2300 kW	• 200-240V: 0.37 - 132 kW/0.5-200 Hp/2.2 - 477 A • 380-480V: 0.75-1400 kW/1.0-2000 Hp/2.1- 2330 A • 600V: 1.0-1500 Hp/1.7-1530 A • 690V: .75-1500 kW/12-1485 A
Safety	• Safe Speed Monitor option • Safe Torque Off – hardwired or network options	• 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	• Premier Integration into Logix control environment
Communications	Built-in dual ports for EtherNet/IP and support for additional industrial networks	PowerFlex 753: Optional single or dual port EtherNet/IP and additional industrial networks PowerFlex 755: Built-in port for EtherNet/IP; optional dual port EtherNet/IP; support for additional industrial networks
More Information	To see our full range of PowerFlex AC drives and for more information on these products, visit: www.ab.rockwellautomation.com/Drives	

PowerFlex 520-Series AC Drives	PowerFlex 6000 Medium Voltage Drives	PowerFlex 7000 Medium Voltage 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.	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.	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.
• PowerFlex 520-Series drives offer multiple motor control modes; PowerFlex 525 supports permanent magnet motor control • Compact footprint saves panel space and provides flexible installation • Operating temperatures from -20 °C (-4 °F) up to 50 °C (122°F). Up to 70 °C (158 °F) with current derating and optional control module fan kit • Drives can be installed vertically or horizontally • Automatic Device Configuration (ADC) allows Logix controllers to detect a replaced drive and download all configuration parameters automatically • Available with conformal coating to help protect in harsh environments	• 100% starting torque without the requirement of an encoder • High-efficiency ECO main cooling fans are internally powered to reduce operating costs and reduce external control power requirements • Designed to meet the IEEE 519 standard • Near-sinusoidal output waveforms allow use of standard motors and motor cable lengths to 400m (without an output filter) • Automatic Power Cell Bypass minimizes downtime (optional) • Extended ride-through control keeps your drive running through most power quality disturbances • Intuitive, easy-to-use color touchscreen HIM • Conformally coated control boards helps protect in harsh environments • Air-cooled for simplified installation	• 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
• 100-115V: 0.2-1.1 kW/0.25-1.5 Hp/1.6-6 A • 200-240V: 0.2-15 kW/0.25-20 Hp/1.6-62.1 A • 400-480V: 0.4-22 kW/0.5-30 Hp/1.4-43 A • 600-600V: 0.4-22 kW/0.5-30 Hp/0.9-32 A	• 2.3 kV: 140-2238 kW/200-3000 Hp • 3.3 kV: 160-3280 kW/215-4400 Hp • 4.16 kV: 225-3954 kW/300-5300 Hp • 6.6 kV: 300-6565 kW/400-8200 Hp • 6.9 kV: 315-6565 kW/415-8200 Hp • 10 kV: 200-9950 kW/270-13,350 Hp • 11 kV: 220-10,950 kW/300-14,680 Hp	• 2.3-2.4 kV: 150-1500 kW/200-2000 Hp • 3.3 kV: 187-3600 kW/250-4750 Hp • 4-4.16 kV: 261-4400 kW/350-5750 Hp • 6.6 kV: 400-6000 kW/500-8000 Hp
• PowerFlex 525: 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	• 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
• Premier Integration into Logix control environment • PowerFlex 527 uses Studio 5000 motion instructions exclusively	Integration into Logix environment via PlantPAx Faceplates and Add-on Instructions (AOIs)	Premier Integration into Logix control environment
PowerFlex 523: 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	Options for EtherNet/IP and additional industrial networks	Options for EtherNet/IP and additional industrial networks

Motor Control Devices At-A-Glance

	CENTERLINE 2100 NEMA Motor Control Centers (MCCs)	CENTERLINE 2500 IEC Motor Control Centers (MCCs)	CENTERLINE 1500 Medium Voltage Motor Control Centers (MCCs)
Overview	Our industry-leading MCC meets UL and NEMA standards and offer solutions for networking and communications, and safety.	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.	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	• Offers proven technology for high quality and years of dependable service • Provides consistent design to allow for backward compatibility • Includes center-mounted bus design for to improve heat dissipation • Provides solid grounding system to help reduce shock hazards	• 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	• 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	Up to 600V, 600-3200 A	Up to 690V, 800-4000 A	2400V-690V, 400-800 A
Safety	• CENTERLINE 2100 with SecureConnect™ units helps reduce electrical shock and exposure to electrical hazards • CENTERLINE 2100 with ArcShield™ Technology helps to reduce arc flash hazards and increases protection against internal electrical arcing faults	• 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	• 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 • Support for PlantPAx® Process Object Library Faceplates and Add-on Instructions (AOIs)	Integration into Logix environment via IntelliCENTER Software	Integration into Logix environment via IntelliCENTER Software
Standards	• ABS Type Certified (Marine & Coast Guard) • International Building Code – IBC (Seismic) • UL/cUL • NMXS-353-ANCE • CE Conformance • ISO 9001 Certification	• IEC 60204-1 • IEC 61439-1 and 2 (Edition 2.0) • BS EN 61439-1 and 2 • AS/NZS 61439-1 and 2 • AS/NZS 3439.1 (Including Annex ZD for Arc Flash Containment) • IEC/TR 61641 (Edition 3.0) • 2006/95/EC & 2014/35/EU – Low Voltage Directive • 2004/108/EC & 2014/30/EU – EMC Directive	• UL 347 and CSA, Industrial Control Equipment C22.2 No. 253 (harmonized with UL 347, fifth edition) • NEMA, Medium Voltage Controllers Rated 1501 to 7200 VAC ICS 3-2 (formerly ICS 2-324) • IEEE C37.20.7, Type 2B for arc resistance • National Electrical Code (NEC) • Occupational Safety & Health Act (OSHA) • European Directives for EMC
Communications	• Options for EtherNet/IP and additional industrial networks • Options to include IntelliCENTER® software which provides access to operating data and troubleshooting to help reduce downtime and lower total cost of ownership.	• 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.	• CENTERLINE 1500 with IntelliCENTER Technology provides remote access to data to minimize the need to approach the MCC • Options for EtherNet/IP and additional industrial networks
More Information	For the most up-to-date information on our full range of motor protection, visit: https://ab.rockwellautomation.com/Motor-Control		





	E1 Plus Electronic Overload Relay	E300 Electronic Overload Relay	857 Motor/Feeder Protection Relay	SMC Flex	SMC-50
Rating	0.1-800 A	0.5-65000 A	10-20000 A	1-1250 A	108-480A (Internal Bypass) 90-520 A (Solid State)
Motor Control	• Solid-state • Standard starter	• Microprocessor based • Standard starter • Reversing starter • Wye/Delta (Star/Delta) starter • Two-speed starter	• Motor and Feeder Protection • Low Voltage and Medium Voltage control • 12-channel digital recorder • Remote RTD Sensing • Analog input/output capabilities	• 9 Starting/Stopping modes available • 3 Control Module versions available - Standard - Pump Control - Braking Control • Power Structure has built-in SCR bypass/run contactor • Built-in electronic motor overload protection	• 17 starting / Stopping modes available • All-in-one Control Module • Power Structure available with either Built-in SCR bypass or Solid State configuration • Built-in electronic motor overload protection • Three expansion ports to install I/O option modules • Programmable Faults and Alarms • Built-in Power Monitor • DeviceLogix
I/O	• 2 Inputs • 1 Output	4/3 (AC), 6/3 (DC), 2/2 (AC with protection), 4/2 (DC with protection)	Minimum 9 configurable output contacts, 18 digital inputs and various Virtual I/O capabilities. Additional I/O capabilities available	Four functionally programmable on-board output contacts (N.O. or N.C.)	• Two fully programmable contacts as: normal, UTS, fault, alarm, external brake, DeviceLogix, auxiliary control, fan control, network or external bypass • I/O Option Modules available for expansion
Communications	EtherNet/IP Communication Module	EtherNet/IP network (DRL)	Ethernet/IP, IEC 61850, Modbus TCP, Modbus, Profibus, DNP 3, IEC 101-10	Options for EtherNet/IP network and additional industrial networks	
Technical Documentation	EC-CA001	193-SG010A	857-SR001	150-TD009	
More Information	For the most up-to-date information on our full range of motor protectors, visit: http://ab.rockwellautomation.com/circuit-and-load-protection			For the most up-to-date information on our full range of motor control devices, visit: http://ab.rockwellautomation.com/motor-control	

Operator Interfaces At-A-Glance

	PanelView Plus 7		PanelView 5000	
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.		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.	
Key Features	**Standard version** • Ideal for small and mid-size machine applications requiring basic features • Connectivity to one controller and up to 50 screens (25 on top, 25 replace) and 500 alarm messages • Single, embedded Ethernet port for network connectivity • ATEX Zone 2/22 certification • Optional Device Level Ring (DLR)	**Performance models** • Designed for all applications, ranging from small to large, complex machines • High performing processors and embedded Ethernet ports that support Device Level Ring, linear or star network topologies • Video playback support for advanced user help • View maintenance manuals and other documents directly on terminal • Stainless steel bezel options available • Conformal coating available for 9" and 12" DC touch-only displays	**PanelView 5510** • Designed for all applications, ranging from small to large, complex machines • Modern design with display sizes from 7-19 in. with wide screen, touch, and keypad options • 1 controller, 100 screens, 1000 alarms • PDF Viewer • Logix-based alarms to eliminate need for additional configuration • High-speed HMI button provides <100 ms response for jogging applications • Navigation button display alarms, diagnostic and setting information • Ability to automatically share tags, alarms and other data using Studio 5000 View Designer®	**PanelView 5310** • Ideal for small and mid-size machine applications requiring basic features • Modern design with display sizes from 6-12 in. with wide screen options • 4 controllers, 100 screens, and 1000 alarms per controller
Display Options and Viewing Area Dimensions	4 in. (95 x 54 mm) to 15 in. display (304 x 228 mm) available *Select displays available in wide-screen versions	7 in. (132 x 99 mm) to 19 in. display (376 x 301 mm) available *Select displays available in wide-screen versions	7 in. (132 x 99 mm) to 19 in. display (376 x 301 mm) available *Select displays available in wide-screen versions	6 in. wide (115 x 86 mm) to 12 in. wide display (261 x 163 mm) available *Select displays available in wide-screen versions
Display Type	Color TFT LCD, 18-Bit Color Graphics		Color TFT LCD, 24-bit Color Graphics (16.7 million colors), Light-emitting diode backlight	
Internal Storage	512 MB storage		500 MB internal storage	
Input Power Options	DC (18-30V DC)	DC (18-30V DC) and AC (100-240V AC)	24V DC nom (18-30V DC)	
Communications	• One 10/100Base-T, Auto MDI/MDI-X Ethernet port with IEEE1588 support • Two 10/100Base-T, Auto MDI/MDI-X Ethernet ports supporting star, linear, or DLR network topology	• Two 10/100Base-T, Auto MDI/MDI-X Ethernet ports that support DLR (Device Level Ring), linear, or star network topologies • 2 USB-A and 1 USB-B (v2.0 high speed)	Two 10/100 Base-T, Auto MDI/MDI-X Ethernet ports that support (Device Level Ring) DLR, linear or star network topologies	One 10/100Base-T, Auto MDI/MDI-X Ethernet port with IEEE1588 support
Environmental	NEMA 12, 13, 4X, IP54, IP66 0-55 °C (32-131 °F)		NEMA and UL Type 12, 13, 4X, also rated IP66 as Classified by UL 0-55 °C (32-131 °F), EAC, Marine	NEMA and UL Type 12, 13, 4X, also rated IP65 as Classified by UL 0-50 °C (32-122 °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	PanelView 800
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.	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.
• Offered in 5 m, 10 m, or 15 m cables with quick connect and mounting bracket options • Software assignable function keys with either a hardwired momentary push button or key switch • Features 3-position enabling switch • 10 in. wide display (1280 x 800) with resistive touch screen for easy viewing • Internal SD card for application and data log storage • Provides mobility without generating unintended E-stops • Offers cost effective thin client mobile terminal • Second generation MobileView terminal offers all the mobility features of the first generation product with the addition of an illuminated E-stop, ability to work with the IP65 junction box, and the option to be used as a thin client • IP65 Junction Box works with the second generation MobileView terminal to provide an On-machine visualization solution • E-stop bridging allows the MobileView terminal to be unplugged from the IP65 junction box without tripping the E-stop circuit • Box ID feature provides location awareness, which allows the MobileView terminal to know where on the manufacturing line it's located	• High-resolution display with LED backlight supporting 65K colors • Monitor and configure terminals remotely via Virtual Network Computing (VNC) servers • High-performance 800 MHz CPU processor with 256 MB memory • USB host port and microSD™ support file transfer or updating firmware • Alerts operators with alarm messages that include embedded variables • Ability to upload and download groups of data or parameter settings with recipe capabilities • Connects with Micro800®, MicroLogix™ and CompactLogix™ 5370 controllers • Send email notification over encryption • Remotely access datalog, alarm history and recipe using FTP
• Screen size: 10.1" • Diameter of product: 349 mm (13.74 in.) • Depth w/o handle: 70 mm (2.75 in.) • Depth with handle: 110 mm (4.33 in.)	• 4 in. (95 x 53.9 mm) • 7 in. (153.6 x 86.6 mm) • 10 in. (211.2 x 158.4 mm)
Color/resolution: WXGA/1280 x 800 pixels, Resistive Touch Screen	TFT touch screen, wide LCD
4 GB DRAM / 32 GB Flash / 2 GB SD Card	256 MB
24V DC	24V DC
10/100 Ethernet	• 1- Ethernet 10/100 Mbps • Separate RS-232 and RS422/RS485 connectors
IP65; 0-45 °C (32-113 °F)	IP65, NEMA 4X, 12, 13

Computers At-A-Glance

	VersaView 5000		
Overview	**Integrated Display** The 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.	**Non-Display** The VersaView 5400 Non-display computers, VersaView 5200 and ThinManager® thin client versions offer a modern, small footprint with multiple mounting options.	**Monitors** The VersaView 5100 monitors include a modern, edge-to-edge glass display, projected capacitance multi-touch touch screens and multiple display inputs.
Key Features	**Integrated Display Computers** • Screen sizes: 12-in., 15-in., 19-in., 22-in. (all wide screen) • Projected capacitive multi-touch • Performance: Quad core Intel Atom • Storage: 128 GB SSD • Operating Systems: 64-bit Windows • Full HD 1080P options (on 22-in. systems) • DC Power **Integrated Display Thin Client** • Rockwell Automation ThinManager ready • Screen sizes: 12, 15, 19, 22 (all wide screen) • Projected capacitive multi-touch • Full HD 1080P options	**Non-Display Computer** • Dual external display support • Performance: Quad core Intel Atom • Storage: 128 GB SSD • Operating Systems: 64-bit Windows • DC Power **Non-Display Thin Clients** **Single Display Thin Client** • More compact design targeted for cost-conscious applications • Single DisplayPort video output **Dual Display Thin Client** • Single core Intel Atom CPU to meet standard application needs • Dual external display output **Dual 4K Display Thin Client** • High-performance quad core Intel Atom CPU for demanding applications (complex virtual screens, multi-session, multiple IP camera feeds and more) • Dual 4K Displays, 1x DisplayPort, 1x HDMI **Multi-4K Display Thin Client** • High-performance quad core Intel i5 CPU for applications requiring multiple displays with demanding applications • Three or seven 4K Displays, 3x DisplayPort, 4x mini DisplayPort (optional)	• Screen sizes: 12-in., 15-in., 19-, 22-in. (all wide screen) • Projected capacitive multi-touch • Display inputs: VGA, DVI, DisplayPort • Full HD 1080P option is available on 22-in. models • DC Power
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	**Non-Display Computer** • Operates in -20-60 °C • cULus listed, CE, EAC, KC, RCM **Non-Display Thin Clients** • Operating temperature varies per thin client • cULus/CE, KC, BIS, EAC, RCM	• Operates in 0-50 °C (32-122 °F) • NEMA 4X, 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

Ideal platform for use with FactoryTalk® View Site Edition

- Operates in 0-50 °C (32-122 °F)
- CE, ULus listed, RCM/C-Tick, EAC, WEEE, RoHS, KC (Korean)
- NEMA 1/12/4/4x (stainless), IP66

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.

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

6181X Hazardous Location Non-display Computers
- Wall mountable
- Combines with Bulletin 6186M Performance Industrial Monitor to form a Class I Division 2 certified system

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

Stratix Industrial Networks Infrastructure and Security At-A-Glance




	Stratix 5410 Distribution Switch	Stratix 5400 Managed Switch	Stratix 5800 Managed Switch	Stratix 8000 and 8300 Managed Switches
Overview	Distribution switches that offers a 19" 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.	Managed switches that support layer 2 switching and layer 3 routing with PoE and fiber (SFP) and all Gb port options.	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.	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.
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 ID port security • Encrypted Administrative Traffic			
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	Stratix 2500 Lightly Managed Switch	Stratix 2000 Unmanaged Switch	Stratix 5950 Security Appliance	FactoryTalk Network Manager
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.	Lightly managed switches that enable network connectivity in applications where traditional unmanaged switches lack the ability to provide diagnostics and security.	Unmanaged switches are ideal for small control networks. These industrial-grade switches do not require any configuration and use simple cable connections.	Security appliances combine several enhanced security functions into a single appliance to help protect your industrial automation infrastructure.	Software that helps provide increased network visibility, troubleshooting and simplified configuration and maintenance.
• Optional Network Address Translation (NAT) maps local, machine-level IP addresses, to the broader plant network • Power over Ethernet (PoE), Gb ports and IEEE 1588 support • Includes security features such as access control lists (ACLs **ArmorStratix 5700** • Minimizes hardware in the control cabinet	• Cable diagnostics, including broken wire detection, helps minimize downtime • SNMPv3, Syslog uncovers errors before the network stops completely • VLAN provides logical segmentation • IGMP enables multicast for data traffic control • Topology discovery (LLDP) • STP, RSTP and MSTP – Loop prevention	• Offers a low-cost, compact solution • Includes ability to automatically negotiate speed and duplex settings • Operates on 20V AC or 24V DC power • Includes automatic cable crossover detection	• Visibility and control at the Cell/Area Zone level • Cisco ASA firewall and FirePower technology provide threat detection and prevention • Deep Packet Inspection (DPI) technology helps to detect, prevent and/or respond to potentially malicious traffic between devices • Subscription license offering provides a term-based solution for threat and application control updates with 24/7 TechConnect℠ Support	• 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 • Captures managed switch level alarms and events in real time for more precise troubleshooting • Provides historical data retention • Offers configuration backup and compare along with Plug-N-Play Stratix switch configuration
• 6, 10, 18 and 20 port versions • 2 ports up to 1 Gb • Up to 4 SFP slots • Up to 4 PoE ports • 8, 10, 16, 18, 24 port versions • 2 ports support 1 Gb • Up to 8 PoE ports	• 5 and 8 port versions	• 5 to 16 ports • 6 ports with support for 1 Gb • 2 SFP slots	• 4 total ports • Four 1 Gb copper ports • Two SFP-capable ports • 1 console port	N/A
Optional	Not supported	Not supported	Yes	N/A
Optional (single ring)	Not supported	Not supported	Not supported	
	• Port security helps disable ports or control end device connectivity based on MAC address • SSH and HTTPS for secure connectivity		• Access Control List (ACL) • Firewall for Stateful Inspection - Inline Transparent/routed mode - Passive Monitor - only mode • FirePower services for threat detection and prevention • Network Address Translation (NAT) • Remote Access	• Offers network admin, system admin and operator roles with the following user access rights: - Role-based access control - Network settings - System settings - Alarm management - Device management
	• Add-on Profile (AOP) for configuration via Studio 5000® and FactoryTalk® View Faceplate	None required		• Network management tool that provides premier integration to Stratix switches
	Yes	N/A	Yes	Supports all managed switch versions
SD card (optional)	Not supported	N/A	SD card (included)	N/A

Ethernet Media At-A-Glance

	Ethernet Cable Spools	In-cabinet Connectivity	On-Machine Connectivity
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.	Our On-Machine™ cables have an IP67 over molded connector and twisted pair cable designed for high flex applications and provide better performance in applications with noise and vibration.
Key Features	• Four- and eight-conductor styles • Shielded or Unshielded • Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss • Riser polyvinylchloride (PVC) cables used for general-purpose environments • Red cable jacket option to identify safety networks • 600V variant On-Machine™ rated cable for use in a cable tray shared with high voltage power cables	• Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) options • Robotic high flex TPE cable (two and four pair); tested to 10 million flexing cycles • Polyvinylchloride (PVC) riser cable (four pair) for general-purpose applications • Plenum cable (four pair) for air duct applications • Red cable jacket option to identify safety networks • 600V PVC rated cable available (two and four pair) • Red cable jackets identify safety networks on your machines • Gigabit Cat. 6 options available	• Over molded housing helps protect the integrity of the signal • Over molded patch cords • Field attachable connectors • Red cable jacket option to identify safety networks • M12 X-code patch cords available with Cat 6 Gigabit cable • Variant 1 Ethernet cables include RJ45 connectors with protective thermoplastic housings, providing an IP67 solution
More Information	To see our full range of Ethernet network media and for more information on these products, visit: http://ab.rockwellautomation.com/Connection-Devices/EtherNet-Media		

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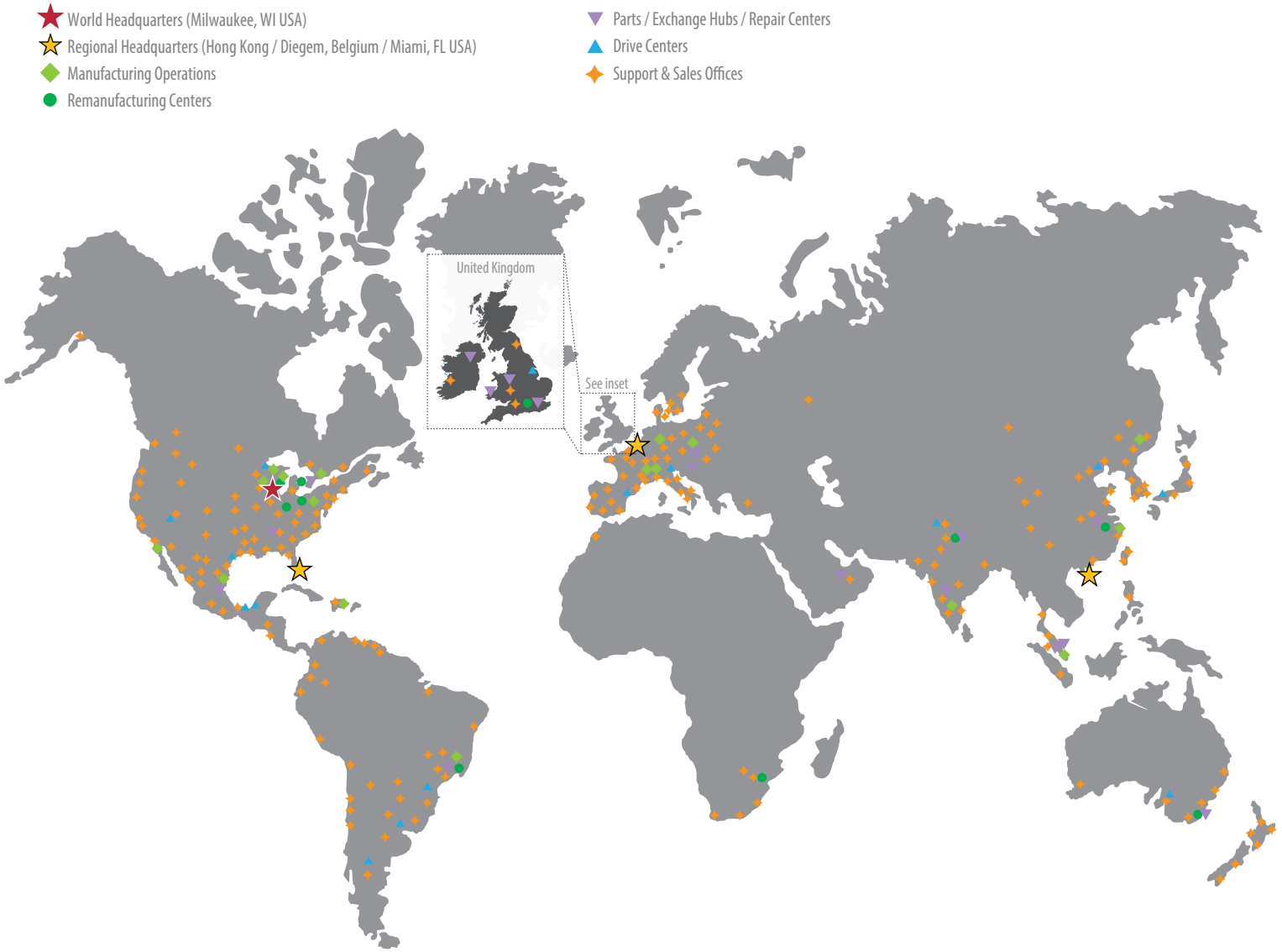

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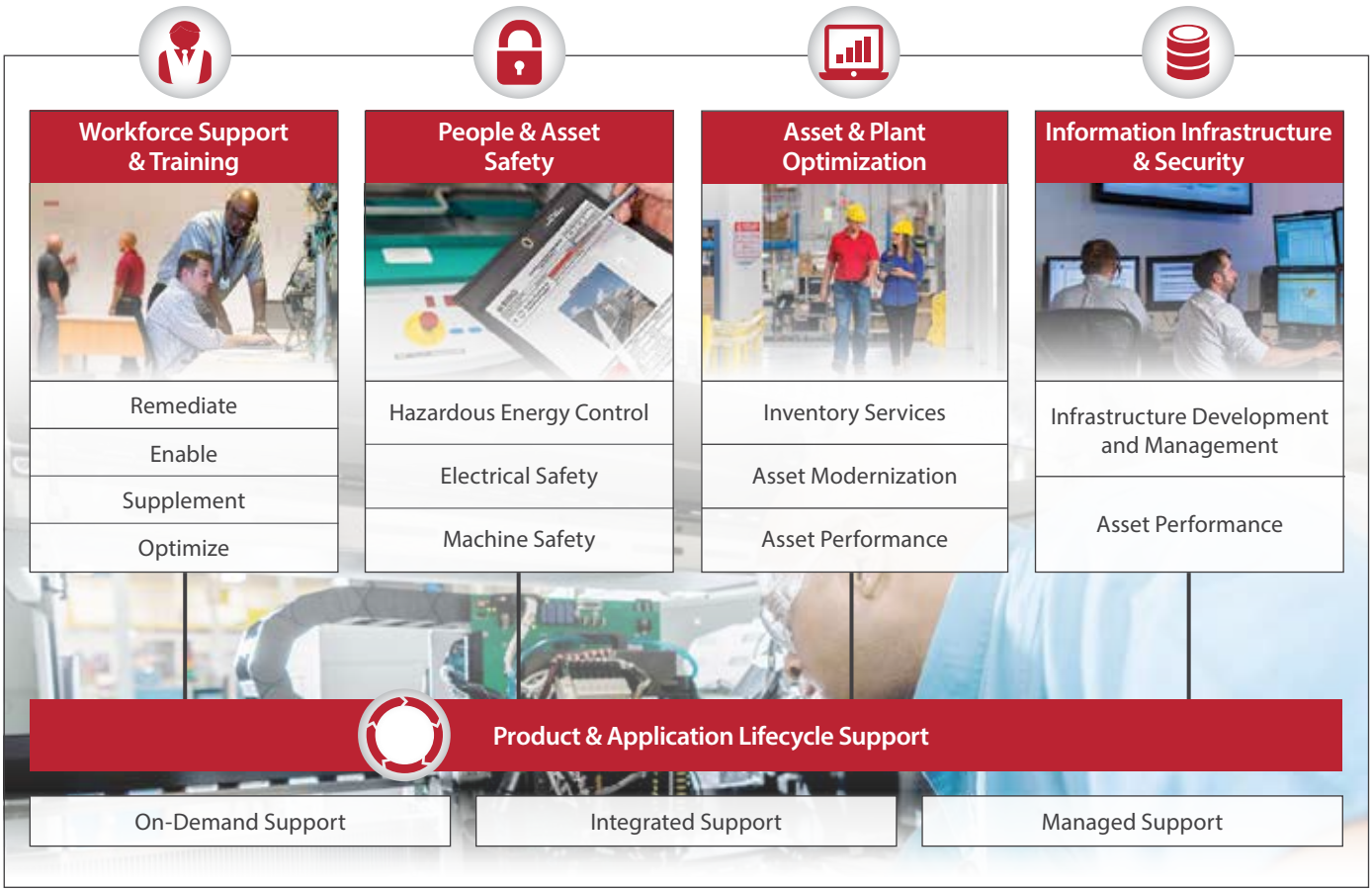

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- Scheduling & ERP integration

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- Calenders
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- Extruders

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- Production & pipeline SCADA
- Rotating equipment control
- Engineer, procure & construct

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- 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/on-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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