

Integrated Architecture

The Convergence of Control and Information for Plantwide Optimization



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LISTEN.
THINK.
SOLVE.®

 Allen-Bradley • Rockwell Software

**Rockwell
Automation**

INTEGRATED ARCHITECTURE

ADDRESS MARKET CHALLENGES WITH CONVERGENCE-READY SOLUTIONS

UTILIZE YOUR CONTROL SYSTEM TO DRIVE PLANTWIDE OPTIMIZATION

As technology continues to drive innovations, the manufacturing enterprise must keep step to remain competitive. Manufacturers must converge their production disciplines into an integrated plantwide architecture.

Manufacturing convergence integrates your plant floor with your enterprise IT systems to unify your people, processes and technology, turning your resources into assets to achieve higher levels of business performance. Simply put, manufacturing convergence:

- moves toward the use of a single network to accomplish many tasks
- streamlines multiple disciplines and applications into a single package
- enables secure and easy flow of production data across the enterprise
- helps you to do more with less

To facilitate manufacturing convergence, our Rockwell Automation Integrated Architecture™ system helps you build a business where information flows across your organization so you can better address key market challenges:

- productivity
- globalization
- innovation
- sustainability

Help improve **PRODUCTIVITY** with better asset utilization and system performance

- Develop a standard set of engineering objects you can use across all of your applications
- Merge the production floor with the enterprise system to improve data flow and make faster, more informed business decisions
- Help improve uptime, increase speed and simplify integration using intelligent devices
- Take advantage of a single network infrastructure

Promote **GLOBALIZATION** with easy access to actionable, plantwide information

- Easily extract, share and use information across your enterprise and around the world directly from manufacturing assets like your controllers
- Track your manufacturing assets on a global basis
- Take advantage of a single, global standard

Support **SUSTAINABILITY** with extended product lifecycles and better asset utilization

- Reduce waste by specifying a system in a footprint that meets your needs
- Reduce energy costs by eliminating the need to “over-design”
- Streamline required assets and simultaneously reduce storage, energy costs, and waste materials

Cultivate **INNOVATION** with increased system flexibility and technical risk mitigation

- Invest less time in development so that you can spend more time creating new intellectual property
- Quickly make production changes to better meet market demands
- Mix industrial, business and commercial technologies to solve business challenges in new ways
- Share best practices and tools from IT and manufacturing

Knowledge Integration

- Premier integration of device and system to maximize and secure your intellectual property

The Integrated Architecture system provides the foundation to efficiently and effectively drive plantwide optimization, helping companies to respond competitively to the economy and changes in consumer demand.

How does Integrated Architecture accomplish this? By leveraging exceptional, industry-leading features that include:

Multiple Disciplines

- Functionality for a full range of automation applications with common equipment and standards

Scalable Dimensions

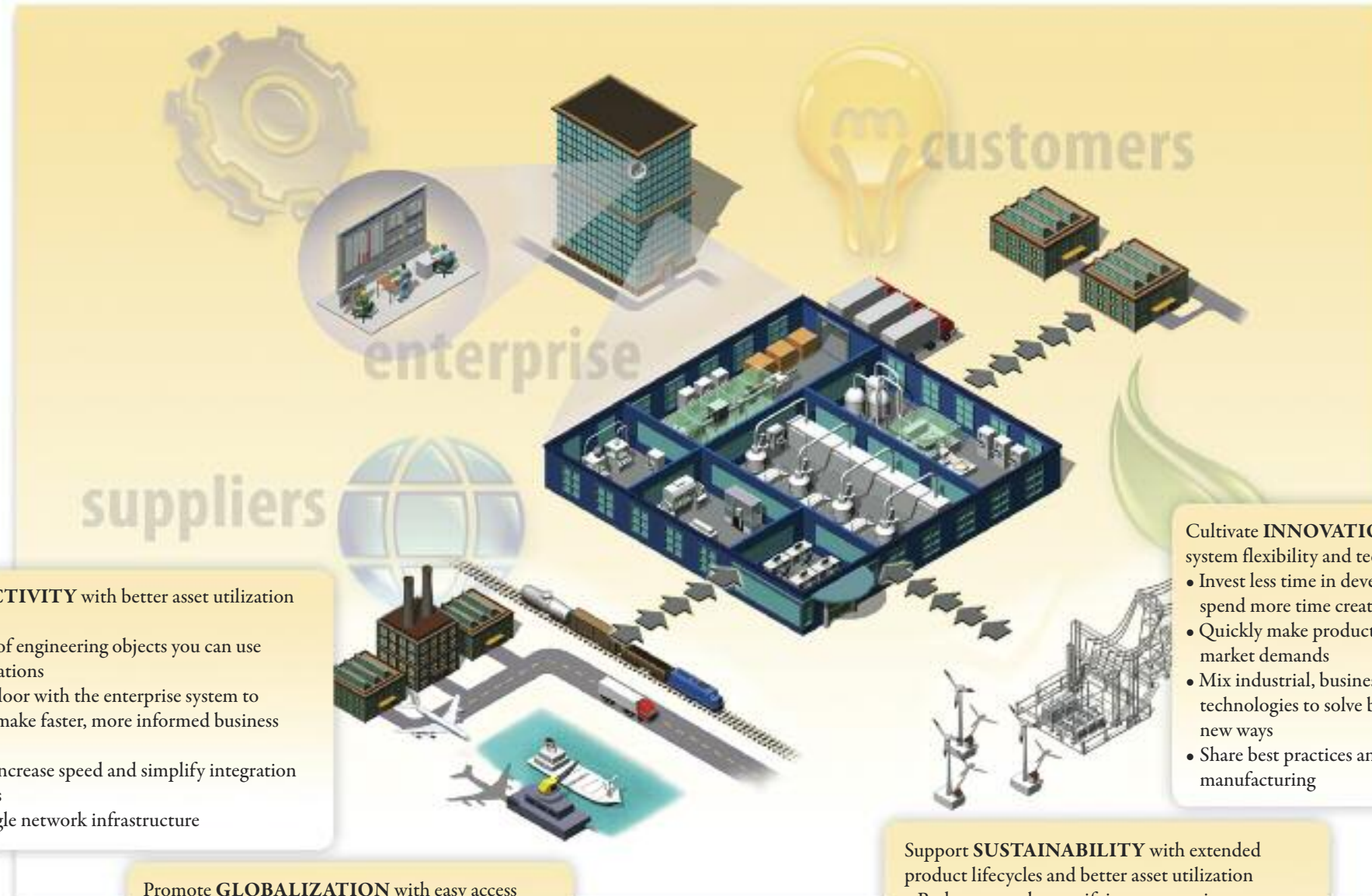
- Offerings that are right-sized by product, architecture and core multiple discipline functionality

EtherNet/IP

- A single network of IT-friendly Ethernet for information, I/O and motion

Real-Time Information

- Live data and open access throughout your power and control system, enterprise and supply chain



MULTIPLE DISCIPLINES

FUNCTIONALITY FOR A FULL RANGE OF AUTOMATION APPLICATIONS

OPTIMIZE YOUR PRODUCTIVITY WITH A COMMON CONTROL ENGINE AND COMMON DEVELOPMENT ENVIRONMENT

In the past, manufacturers were forced to use multiple, dedicated control systems to solve different application requirements. Each control system required different software, language types, spare parts and training and integrating these disparate control systems proved time-consuming and costly.

Today, Logix technology offers a unique approach – one control platform using a common control engine with a common development environment, designed to deliver world-class control capabilities for all disciplines from process to safety to motion. Other approaches try to replicate this design by using multiple control engines within a control platform.

The difference? Logix technology helps you to achieve:

Architecture Simplification

Using one control platform across any discipline helps eliminate the need for separate controllers and systems.

Greater Information Access

Converging multiple manufacturing disciplines into a single platform gives you greater access to real-time information on the plant floor, remotely, or throughout the enterprise.

Faster Startups

The commonality between disciplines provides faster startups due to ease of integration between them. Reuse engineering designs as well as a common, tag-based system database to reduce your development and commissioning time.

Lower Maintenance

A common Logix control engine and development environment help reduce maintenance, spare parts and training costs.

Optimized Productivity

Reuse program segments or tags for new applications to help you react quickly to market and business changes.

- One control engine with complete functionality
- One development environment with complete functionality
- Convergence of process, batch, discrete, drives, safety and motion into one automation discipline



Think Productivity

Janda Company, Inc., engineers recently installed an Allen-Bradley CompactLogix programmable automation controller (PAC) and Ultra 3000 servo drives to upgrade its resistance welding machinery control system to help their customers produce higher quality products in less time with fewer people, while reducing the amount of scrap.

- Reduced electrical design time by 25%
 - Reduced build time from 40 hours to 15 hours
 - Reduced assembly time by 30%
- "Because we only need to learn one programming environment, we've been able to reduce our electrical design time by 25% and build complete, customized machines in 15 hours instead of 40. We're able to assemble machines 30% faster."

Bob White, Jr., President, JANDA Company, Inc.

Bradman Lake Group, a global leader in cartoning equipment, used the Logix Control Platform to consolidate discrete and motion control on its dual infeed robotic top-loading cartoning machines.

- Reduced design time by 66%
- Reduced installation time by 50%
- Reduced wiring time by 80%

"Working with the complex tools of (other) vendors, (our customers) were trying to decipher different programming languages and software packages rather than focusing on design of their own products."

Nick DiFabio, Electrical Engineer

SCALABLE DIMENSIONS

RIGHT-SIZED OFFERINGS FOR YOUR VARIED NEEDS

USE COMMON COMPONENTS AND TOOLS TO SCALE ANY SOLUTION – LARGE OR SMALL

Traditionally, system designers had to implement control systems developed for a specific-sized architecture.

Our innovative approach allows you to use common automation components and tools to scale a solution for your entire range of applications, regardless of size or complexity. Integrated Architecture offers you the flexibility to find the best fit through a range of components and tools, including:

- Controllers
- I/O
- Visualization
- Motion
- Drives
- Safety
- Information

This scalability helps reduce total ownership costs since you purchase only what you need. It also helps you minimize your investments in learning and deployment so that you can quickly make changes to machines/processes to react to market trends. You can:

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.

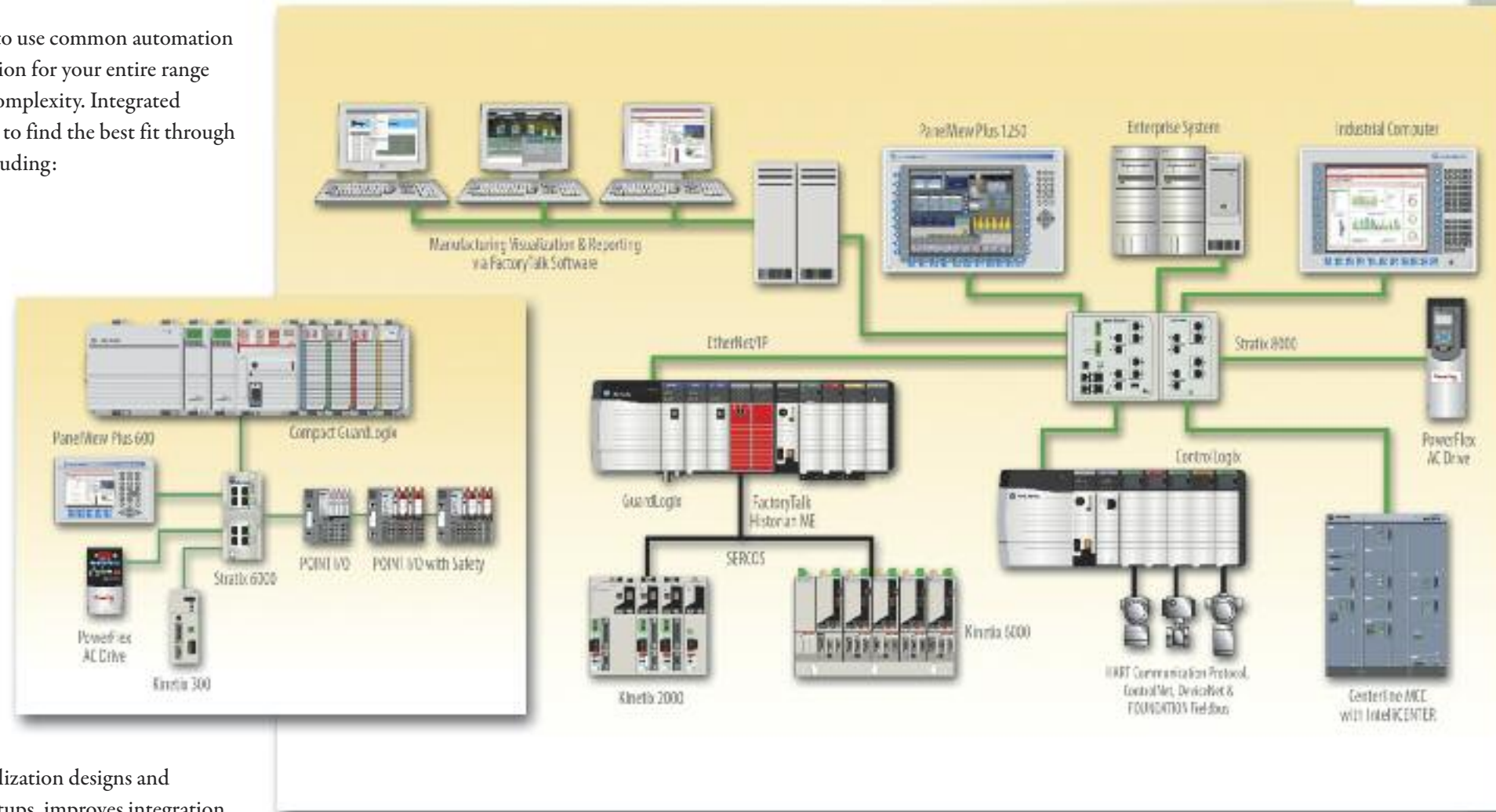
Scale Your Architecture at Any Time

Using common components and tools enables you to match your hardware and software to the needs of your application.

Reduce Maintenance Costs and Downtime

Common system components help reduce your maintenance costs by lowering your training requirements, spare part inventory, and Mean Time to Repair (MTTR) – all helping to increase your uptime.

- Scalable architecture size
- Scalable product offerings
- Scalable capabilities for core multiple discipline functionalities



Think Innovation

Green Planet Farms used the Integrated Architecture system to manage 100+ batch and continuous process phases designed to separate and dry the industry's first hexane-free soy protein isolates.

- Exceeded production goals by 15%
 - Saved two weeks of engineering man-hours
- “Rockwell Automation...shares our strong commitment to environmental stewardship and has considerable experience implementing innovative manufacturing processes.”

Susanne Stoeger-Moore, Board Chairman/
Chief Marketing Officer

Austral Pacific Energy Ltd. owns the Cheal oil field and used ControlLogix PACs and FactoryTalk View Site Edition software to gain a complete view of the oil field. With supervisory-level monitoring and a scalable architecture, it supports distributed-server/multi-user applications to achieve the industry's most important metric – time to first oil.

- Lowered cost of ownership
 - Quick time to first oil...just 10 months
- “Using ControlLogix PACs helps lower the cost of ownership, provides better flexibility and offers more scalability than a traditional DCS system.”

Alan Hooker, Instrument & Electrical
Engineer, Independent Technology Ltd. (ITL)

REAL-TIME INFORMATION

ACTIONABLE INFORMATION SHARED BY YOUR CONTROL AND BUSINESS SYSTEMS

UNLEASH THE INTELLIGENCE TO OPTIMIZE PLANTWIDE PERFORMANCE

Our Integrated Architecture system employs a technology that delivers live and historical data which manages information in an unprecedented way. Live data is served directly from the control architecture, using common services embedded in the control system. Other systems manage information through software connectors that sit on top of the control system, sharing the information through multiple databases and gateways.

The difference? With our Integrated Architecture system, you can:

Define Plant-floor Resources Once and Leverage Them Everywhere

Live data references resources you've defined initially, such as tags, displays and alarms, and then delivers that information when and where you need it without unnecessary sharing.

Use the Embedded Intelligence from Your Controllers

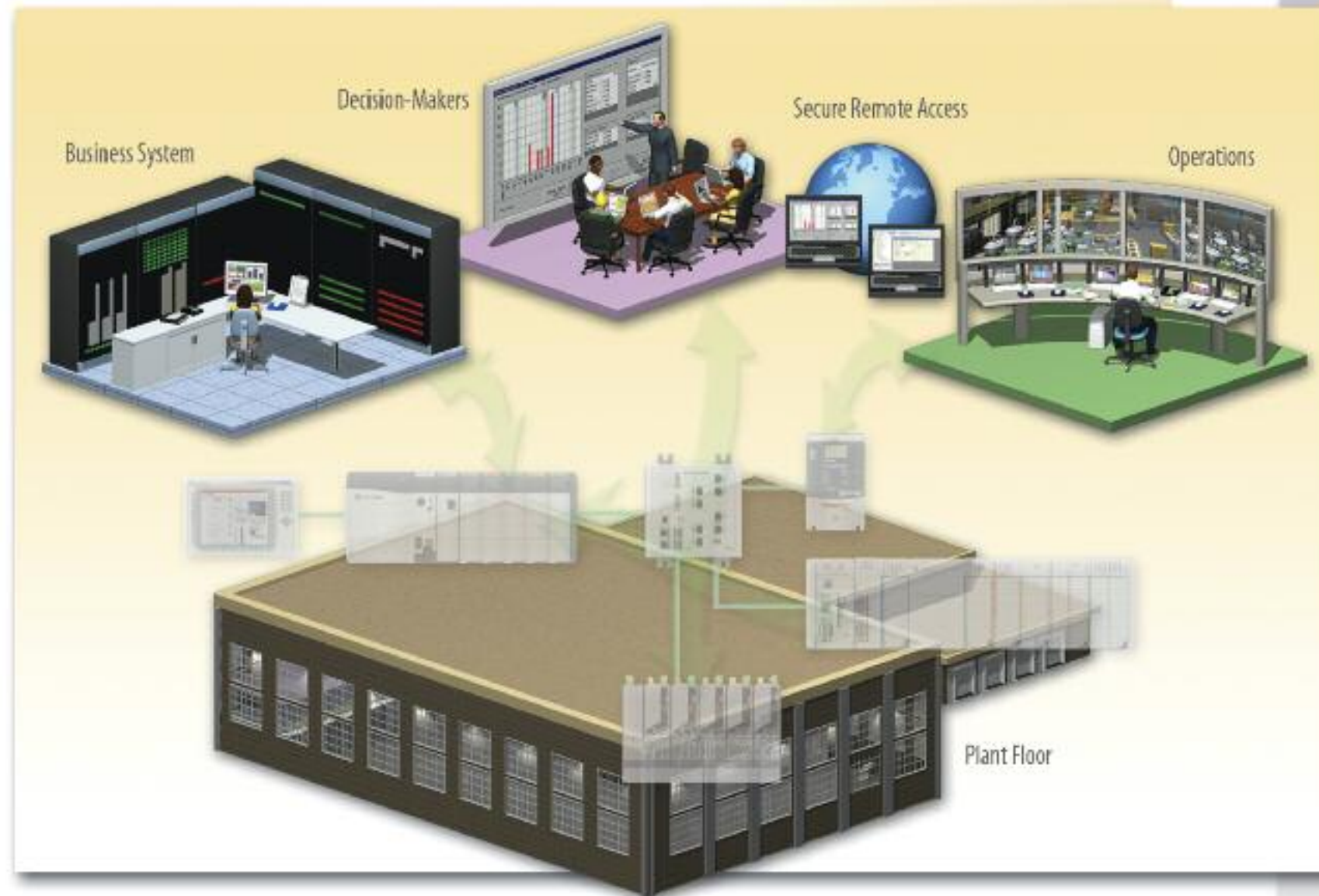
The valuable data stored in your controllers is delivered as live actionable information used to:

- analyze complex, historical process data easily.
- increase quality, reduce waste and improve your control by harnessing volumes of data into a usable format.
- improve fault detection and process sequencing using time-stamped data.

Easily Move Data Throughout Your Architecture

The networks in our Integrated Architecture system – EtherNet/IP, DeviceNet, ControlNet – all share a common protocol, the Common Industrial Protocol, so you gain immediate, open access to real-time information with no additional programming or routing. Integrated Architecture networks share characteristics that support real-time control, device configuration, and data collection and bridge power to help deliver actionable information when and where it is needed.

- No translating or sharing necessary with live data
- Right data, right place, right now throughout the enterprise
- Improved accuracy and performance



Think Productivity

Martinrea International, Inc. used the Integrated Architecture comprehensive plantwide reporting solution to execute more than 11.5 million data collection transactions per day to monitor inventory, production, budget, equipment operation and more.

- Reduced time for each Six Sigma project by 50%
- Reduced time for standard processes from 6 months to 3 months
- Found a cost-effective way to validate Six Sigma project results

“In effect, we’ve established a common template for plant performance reporting that maximizes our productivity and efficiency.”

Darren Allison, Manager, Information Technology

Holcim Inc. used the Integrated Architecture system to reduce production time at its Holly Hill cement manufacturing plant by lowering fuel consumption and improving maintenance time.

- Lowered fuel consumption by 50%
- Lowered production time by up to 75%
- Reduced maintenance time with improved diagnostic tracking

“We were hampered in our old plant by a lack of information to troubleshoot. We’ve got a conveyor belt that’s several thousand yards long, and if it goes out, the ControlLogix programmable automation controller identifies exactly what is wrong and where.”

Jeff Ouhl, Plant Manager

ETHERNET/IP

A SINGLE IT-FRIENDLY NETWORK FOR ENTERPRISE AND INDUSTRIAL APPLICATIONS

FUTURE-PROOF YOUR ARCHITECTURE USING THE ROBUST AND ACCEPTED DESIGN OF ETHERNET/IP

For years, you've relied on Ethernet for enterprise-level information-sharing, but you've required other specialized networking technologies to solve drive, motion, and I/O control, peer-to-peer interlocking and information applications.

We can help you streamline. EtherNet/IP is the same Ethernet you use in your front office, combined with a common protocol that provides robust, real-time networking for motion, drive, safety, process and high-speed discrete control. Unlike other networks that continuously alter their network design to meet the demands of industrial applications, EtherNet/IP helps ensure high usability and consistency of the entire system for increased real-time capabilities.

By using an EtherNet/IP network, you gain real competitive advantages:

Information Access in an "IT-Ready" Format

Products and tools that are integrated with our Integrated Architecture system allow you to share secure, actionable information between your plant floor devices and your enterprise. In addition, working with partners like Cisco, you gain the added benefit of tested recommendations and best practices using standard networking technologies as well as leveraging tools that provide secure integration with enterprise networks.

Expandability

With EtherNet/IP, you can add or change your application at any time adding capabilities such as safety, motion, wireless and security to your enterprise when needed.

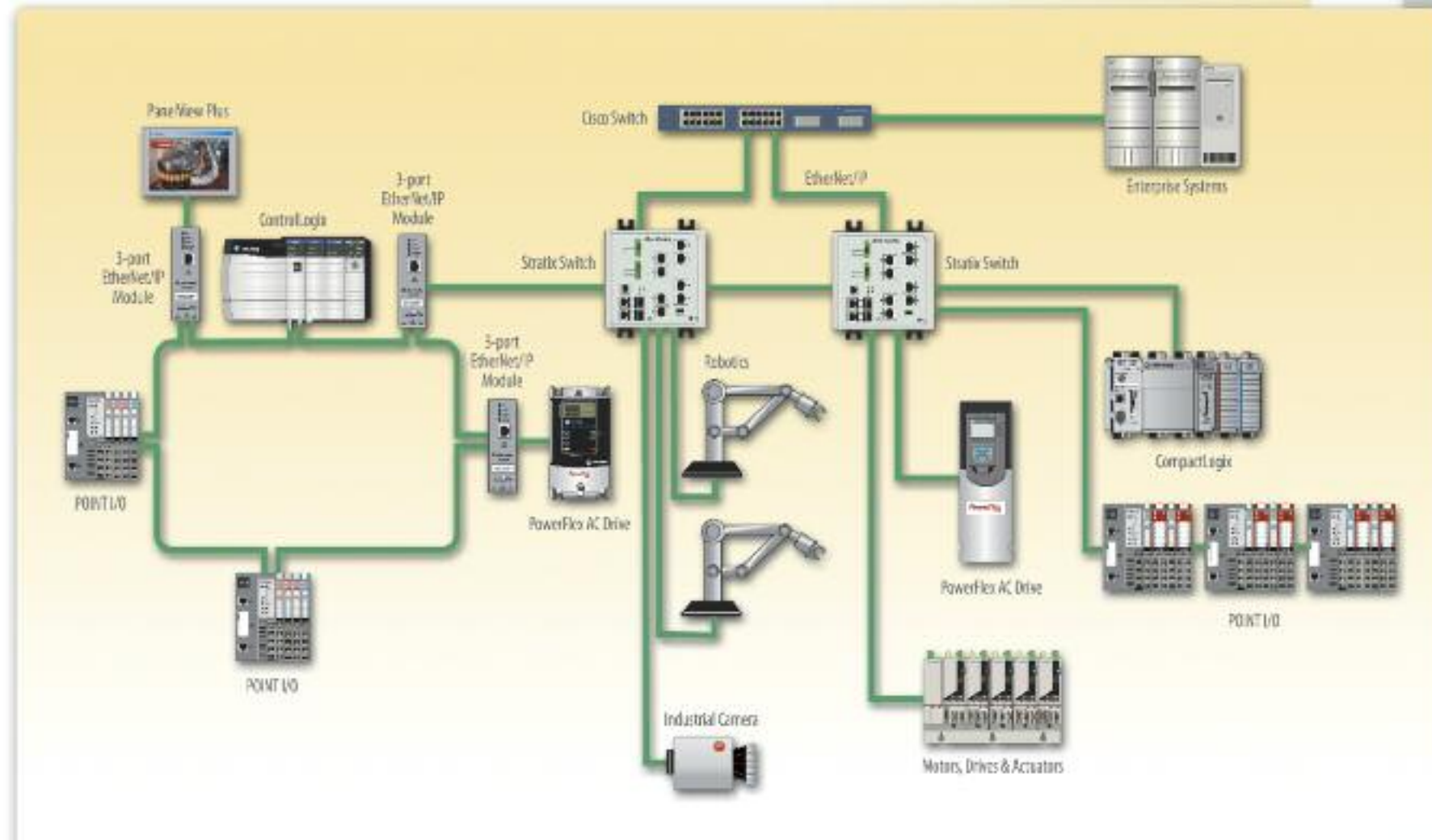
Compatibility

Design and monitor your network using any mix of the 850+ products available on EtherNet/IP today, including those offered by leading automation vendors around the world.

Architecture Simplification

- Eliminate the gateways and bridges you need when you use specialty or special-purpose networks.
- Reduce the complexity of your design with fewer networks by using multiple topologies, devices and managed switch rings.

- Single EtherNet/IP network – the standard for IT and industrial applications
- Real-time access to power and control system data without hardware or software gateways
- The global standard adopted by leading automation vendors



Think Globalization

Cerutti, a printing industry leader, opted to invest in a standardized solution – EtherNet/IP – to control individual large printing machines knowing that determinism is a fundamental characteristic of the system.

- Reduced management and cabling problems
- Reduced the complexity of the system
- Improved the integration and performance of the system

“Ethernet supports the I/O, drives, and HMI system of the network itself, which can be shared with the company’s IT resources and connected to the Internet...for communication and control on a world scale.”

Paolo Di Santo, director of packaging machine software

XCS Systems integrated over 160 motors and drives into a new can conveyor line. Leveraging the combination of an EtherNet/IP network and RSLogix 5000 software, they were able to interlock all the machines and the various sections of its can conveyor line together.

- Reduced programming time by 80%
- Easier integration of the drives into the controller programs

Paul Croad, XCS Systems, System Integrator

KNOWLEDGE INTEGRATION

DEVICE AND SYSTEM INTEGRATION DESIGNED TO MAXIMIZE AND SECURE YOUR INTELLECTUAL PROPERTY

STREAMLINE YOUR ENGINEERING WITH EASY TO USE TOOLS

Our Integrated Architecture system minimizes the number of software tools you need to integrate configuration, startup, diagnostic and visualization. Unlike other systems that require additional customization to provide value-added capabilities such as asset management, monitoring and information, the Integrated Architecture system helps you to:

Speed Device Configuration

- Configure both the controller and device simultaneously using one software package, RSLogix 5000, to help eliminate configuration mismatch errors.
- Automatically create data types and descriptive device tag names with proper data types that are consistent between multiple programs.
- Configure devices in a single project file that you can download to your controller and use for easy replacement or restoration.
- Use step-by-step start-up wizards to guide you in commissioning your devices and their associated parameters, saving time and improving accuracy.

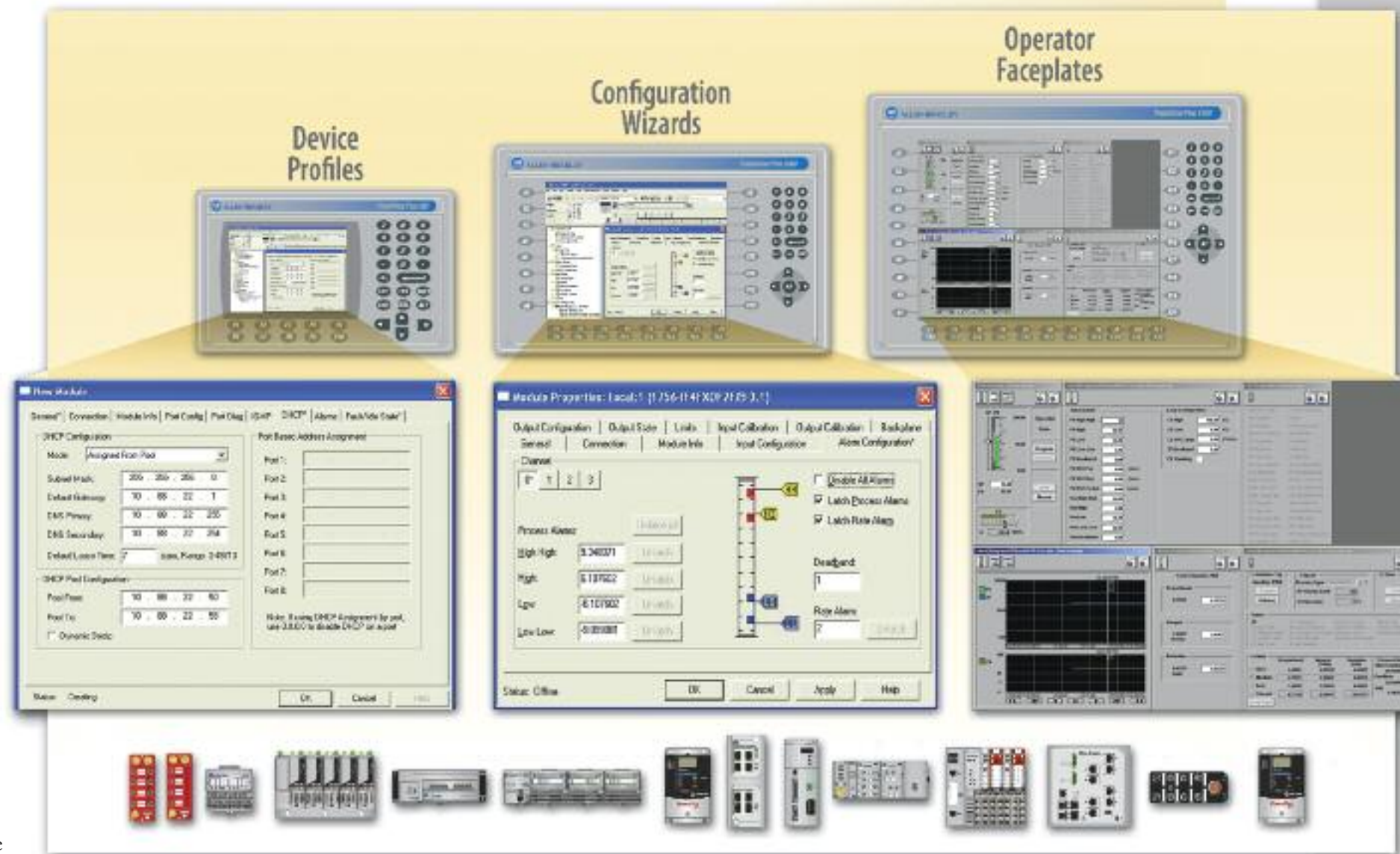
Speed Control, Status and Diagnostic Tasks

- Pre-configured, pre-programmed, pre-tested, faceplates and Add-On Instruction (AOI) sets allow you to quickly and easily program and operate devices.
- Faceplates and AOI sets automatically create tags to provide code for your controller and graphics for your HMI when you add a device into a project.
- Ease maintenance with an integrated software package (RSLogix 5000 with Add-On Profiles) that saves the entire controller/device system in a single project file.

Improve Ease-of-Use

Take advantage of reference architecture tested designs, system characterization, accelerator toolkits, migration enablers and building blocks to further streamline engineering efforts.

- Enhanced product configuration environment
- Easy access to native device intelligence
- Pre-configured profiles, wizards, faceplates and tools



Think Sustainability

The Moulin de Verdonnet mill engaged Rockwell Automation to automate its processes using a distributed system based on the Integrated Architecture. A signal from the electric company allows the control system to start and stop the mill's machinery without any outside assistance, enabling the mill to benefit from the reduced rates offered outside of peak times. In addition, any faults spotted by the system are communicated to an operator via phone who takes relevant action remotely to start/stop the mill's machinery.

- Produced twice the amount of wheat per day
 - Increased energy savings
- "80% of all incidents can now be solved remotely...the new installation has resulted in energy savings of 20%."
- Marc Monier, General Manager

Integrated Gas Recovery Services (IGRS) collects, controls and ultimately generates electricity from the landfill gases at the Region of Peel landfill. IGRS contracted a system integrator to design, build and install a fully automated control system with Allen-Bradley intelligent motor control solutions to control its processes, protect its assets, and maintain production levels.

"We've experienced tremendous energy savings. Instead of running both gas compressors at full speed, the drives typically run at 75% of their maximum speed to provide sufficient gas supply to run but minimize parasitic power costs."

Matt Dugan, Plant Engineering Manager

INTEGRATED ARCHITECTURE SYSTEM

PORTFOLIO OF PRODUCTS AND SERVICES

SELECT PRODUCT FAMILIES

The industry-leading Rockwell Automation Integrated Architecture system facilitates manufacturing convergence providing solutions to solve your business objectives:

- Productivity
- Innovation
- Globalization
- Sustainability

The Integrated Architecture system is unique because it:

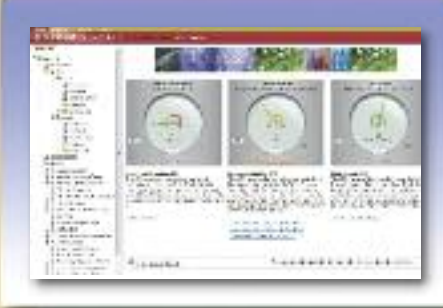










- Supports multiple disciplines in a scalable and information-enabled architecture
- Leverages the standard EtherNet/IP network
- Provides premier integration to a broad portfolio of world-class products and services

These features provide you with the insight and capability to maximize your:

- System performance
- System flexibility
- Plantwide information
- Lifecycle optimization
- Asset utilization

The multiple discipline control and information offers the completeness of process, the performance of motion and the functional requirements of safety plantwide.

If you would like further information, please contact your local authorized distributor, Rockwell Automation representative, or visit us online at www.rockwellautomation.com/solutions/integratedarchitecture.

			
Software Page 16	Programmable Automation Controllers Page 20	I/O Page 22	Ethernet Media Page 22
			
Operator Interface Page 24	Industrial Computers and Monitors Page 26	Servo Drives, Motors and Actuators Page 28	Intelligent Motor Control Page 30
			
Machine Monitoring and Protection System Page 32	Ethernet Switches Page 33	Services and Support Page 34	

Software At-A-Glance

Design and Configuration

RSLogix™ 5000



RSLogix 5000 is the common design and configuration tool you use to program all Logix controllers and all control disciplines. Maximize productivity and reduce training:

- Single software package for discrete, process, batch, motion, safety and drive-based applications
- Ladder logic, Structured Text, Function Block Diagram and Sequential Function Chart editors share same development environment and tag database
- Improve code readability and simplify documentation using tag-based programming that eliminates physical memory addresses
- Augment extensive, built-in instruction set by creating your own Add-On Instructions to protect intellectual property and ease programming
- Share data with other Rockwell Automation software products to reduce data entry time, provide auditing and simplify code reuse and handling
- Selection guide: 9324-PP005

RSLogix™ Architect



RSLogix Architect software helps you develop a graphical representation of your control system that you can use to reduce your development costs and more easily manage your system:

- View your system as a whole versus as a collection of configuration files
- Manage all RSLogix 5000 based controller configurations in one place
- Efficiently manage:
 - controller configuration
 - network configuration and communication
 - produced and consumed tag relationships and reporting
 - Add-On Instructions (AOIs)
 - User-Defined Data Types (UDTs)
- Search multiple projects for tags, programs, routines, AOIs, UDTs, etc.
- Manage intellectual property using a stored library from which you can deploy, search and update AOIs and UDTs across multiple projects

Asset Management

FactoryTalk® AssetCentre



- Provides a single point of access for gathering, analyzing and managing maintenance information across an enterprise
- Enables staff to proactively and centrally manage automated production environments
- Creates a foundation for optimizing maintenance and plant operations through risk mitigation procedures across discrete, drives and process applications
- Scalable design allows for easy expansion of device count and adaptability to a variety of applications from small line to enterprise-wide installations

IntelliCENTER Software



- Preconfigured software gives maintenance personnel easy access to critical CENTERLINE Motor Control Center (MCC) configuration information and process data for troubleshooting.
- Provides system status at a glance and can help keep facilities running with electronic documentation, remote diagnostics and predictive maintenance.
- Reduces PLC development time with automatic tag generation and the ability to complete network configuration before the MCC is powered up.
- Reduces HMI programming time by using powerful preconfigured ActiveX controls for MCC diagnostics

Software At-A-Glance

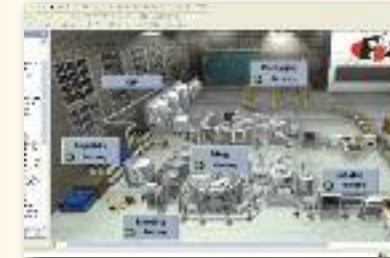
Performance and Visibility

FactoryTalk® Metrics



- Provides the basis for understanding root causes of downtime, waste and scrap, and lost capacity through simple drill-down reports and dashboards
- Creates a window into production processes to help improve efficiencies, decrease cycle time and increase overall production
- Provides baseline information to help you make continuous operational improvements using existing machinery and labor resources more effectively

FactoryTalk® View



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

FactoryTalk® ViewPoint



- FactoryTalk ViewPoint is a thin client solution for FactoryTalk View SE and PanelView Plus, which adds the ability for FactoryTalk View projects to be used in a web browser.
- Allows managers, OEMs and system integrators to view real-time plant floor operations data simply by logging onto an Internet browser
- Connect to customer sites, perform diagnostics, or provide remote support without having to actually be at the end-user's site.
- Thin client configuration requires no client software to install or maintain, helping to lower total cost of ownership
- Provides HMI view access to casual read only users without the need for an installed application
- Delivers crisp, sharp images and a rich user experience resulting from advanced visualization technology that displays current values or operational states in real time.

FactoryTalk® VantagePoint



- FactoryTalk VantagePoint is a web-based data management, analysis and reporting package that connects to data from a variety of manufacturing systems, allowing you to more easily monitor key factors that impact performance, efficiency and quality.
- Direct connections to FactoryTalk Live Data sources including Rockwell Automation Logix and third party controllers, FactoryTalk Historian, third party Historians, and Alarms & Events History.
- Aggregates and analyzes the information into web-based reports leading to greater manufacturing effectiveness and IT agility.
- Pre-configured reports, trends, and dashboards to get started quickly and easily.
- Targeted to single location applications with up to 50 named users and 5 concurrent users.
- May be upgraded to FactoryTalk VantagePoint EMI for access to general purpose database sources and unlimited number of users, and extensive multi-plant applications.

FactoryTalk® VantagePoint EMI



- FactoryTalk VantagePoint EMI is Business Intelligence for Manufacturing. It includes all the connectivity to manufacturing systems that FactoryTalk VantagePoint does, plus it allows access to database and transaction systems that provide business context for manufacturing data. FactoryTalk VantagePoint EMI scales to multiple manufacturing sites and thousands of users, enabling manufacturing and business users to gain better insight into manufacturing issues with greater IT agility.
- Provides direct connectivity to FactoryTalk Live Data sources and FactoryTalk Historian, plus 3rd party sources via OPC DA and HDA connectors.
- Additional connectivity available to databases (e.g. MSSQL, ORACLE) and transaction systems (e.g. SAP, via Netweaver or R3 connectors).
- Scalable to thousands of users across multiple manufacturing plants/sites.
- Expanded security to accommodate additional user roles.
- Extended, customizable functionality for the portal and reports.

Software At-A-Glance

Production Management

FactoryTalk® Batch



- Integrates all facets of batch automation and process management for the highest level of batch-to-batch consistency
- Provides efficient, flexible, and consistent batch processing
- Instructions can include multimedia content, such as equipment photos and video files that demonstrate best practices

Rockwell Software Industry & Segment Solutions



Specific industry applications and solutions meet the challenges faced by companies in the automotive, biofuels, chemical, cement minerals & mining, consumer packaged goods, and life sciences industries. Software applications address:

- Operations Manufacturing Intelligence helps
 - Improve financial performance of production operations
 - Increase operational flexibility to meet changing market demands
 - Enable faster, more accurate identification of opportunities for improved decisions
- Real-time Compliance & Sustainability helps
 - Reduce environmental and product compliance risks & costs (air, water, brand)
 - Improve resource efficiencies (energy, raw materials, human)
 - Reduce waste
- Model Predictive Control & Optimization helps
 - Improve product quality
 - Reduce raw material consumption and costs
 - Increase first-pass yields and optimize throughput

PlantPAx™ Process System Workstations

PlantPAx
Process Automation System

- Visualization Server workstations provide PlantPAx system functionality for human interface and data server roles pre-installed on industrially hardened computer hardware.
- Operator Workstations provide PlantPAx system functionality for operator workstation clients pre-installed on industrially hardened computer hardware.
- Helps eliminate the need to specify, purchase, and install appropriate hardware and software for your PlantPAx system by leveraging pre-installed system workstations.
- Configuration guide and consolidated activation files speeds up initial configuration and licensing for key system roles.

Software At-A-Glance

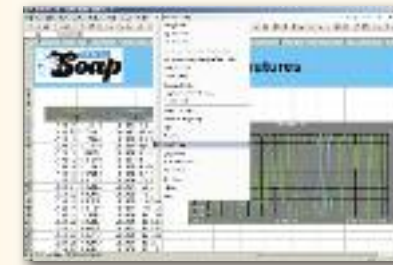
Data Management

FactoryTalk® Gateway



- Translates FactoryTalk live data to industry-standard OPC protocol
- Facilitates free exchange of real-time data between a mix of products from third-party automation and information-level vendors for improved enterprise-wide interoperability
- Preferred integration with the Logix Control Platform enables you to pass Logix tags to other supplier applications
- Provides easy configuration via FactoryTalk core components

FactoryTalk® Historian



- FactoryTalk Historian is a multi-tiered solution for machine, plant and enterprise-wide data collection and analysis
- Helps increase quality, reduce waste and improve control by harnessing volumes of control data and presenting it in a usable format
 - Eases regulatory compliance by enabling quick access to on-line production records
 - Simple data configuration and analysis to help ensure the right people receive the information needed to make the best business decisions
 - Available as a 1756 module enabling high speed data collection across the Logix backplane (Machine Edition) or as stand alone server for larger scale applications (Site Edition)
 - Includes FactoryTalk VantagePoint client for web-based reporting and analysis

FactoryTalk® Transaction Manager





- Provides a platform to integrate and build the solutions needed by linking control systems to database systems
- Logs data to customer database configurations
- Downloads set points from your database to your controllers
- Uses time-based or event-driven transactions

Logix Programmable Automation Controllers At-A-Glance

	ControlLogix® 	GuardLogix 	CompactLogix™ L4x 	CompactLogix™ L3x 
Disciplines	Multiple	Multiple	Multiple	Multiple
Discrete	Yes	Yes	Yes	Yes
Motion				
Indexing	Yes	Yes	Yes	Yes
Coordinated	Yes	Yes	Yes	—
Kinematics	Yes, L6x	—	No	No
Process				
Simple Unit	Yes	Yes	Yes	Yes
Complex/Multi Unit	Yes	Yes	—	—
Batch				
Basic Sequencing	Yes	Yes	Yes	Yes
Comprehensive Batch Management	Yes	Yes	—	—
Drive				
Stand alone	Yes	Yes	Yes	Yes
Coordinated Drive	Yes	Yes	Yes	—
Safety	GuardLogix	SIL 1, SIL 2, SIL 3, PL e	GuardLogix	—
Backup Solutions				
Redundancy	Yes	Yes	No	No
Output Switching	Yes	Yes	Yes	Yes
EZ Backup on DeviceNet	Yes	Yes	Yes	Yes
Programming				
Software Languages	RS Logix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart	RS Logix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart	RSLogix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart	RSLogix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart
Memory				
Maximum Non-Volatile	32M CompactFlash	8M standard / 3.75M safety CompactFlash	3M CompactFlash	1.5M CompactFlash
Communication				
Built-in CIP Network	—	—	—	• EtherNet/IP • ControlNet™
Modular Options	• EtherNet/IP • 2-port EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink • Hart • FOUNDATION™ fieldbus • 3rd party	GuardLogix L61S, L62S, L63S • EtherNet/IP • 2-port EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O GuardLogix L43S, L45S • EtherNet/IP • ControlNet • DeviceNet • SynchLink • HART • FOUNDATION™ fieldbus • SERCOS • Integrated motion on Ethernet	• EtherNet/IP • ControlNet • DeviceNet	DeviceNet
Serial Port	Yes	Yes	Yes	Yes
Max Network Connections	250	250	64	32
Certifications	UL, CSA, C-Tick, CE, ATEX, Marine	GuardLogix L61S, L62S, L63S • UL, CSA, C-Tick, CE, ATEX, Marine • SIL 1, SIL 2, SIL 3, PL e GuardLogix L43S, L45S • UL, CSA, C-Tick, CE	UL, CSA, C-Tick, CE	UL, CSA, C-Tick, CE, Marine
Operating Temperature	• 0°C to 60°C • -25°C to +70°C (XT Modules)	• 0°C to 60°C • -32°F to 140°F	0°C to 60°C	0°C to 60°C
Selection Guide	1756-SG001	—	1769-SG001	1769-SG001

Logix Programmable Automation Controllers At-A-Glance

	CompactLogix™ L2x 	SoftLogix™ 	DriveLogix™ 
Disciplines	Multiple	Multiple	Multiple
Discrete	Yes	Yes	Yes
Motion			
Indexing	Yes	—	—
Coordinated	—	—	—
Kinematics	No	No	No
Process			
Simple Unit	Yes	—	Yes
Complex/Multi Unit	—	—	—
Batch			
Basic Sequencing	—	—	—
Comprehensive Batch Management	—	—	—
Drive			
Stand alone	Yes	—	—
Coordinated Drive	—	Yes	Yes
Safety	—	—	Yes
Backup Solutions			
Redundancy	No	No	No
Output Switching	Yes	No	No
EZ Backup on DeviceNet	Yes	No	No
Programming			
Software Languages	RSLogix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart	RSLogix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart • Sequential Function Chart • External Routines (via C/C++)	RSLogix 5000 • Ladder Logic • Structured Text • Function Block • Sequential Function Chart
Memory			
Maximum Non-Volatile	512K None	Minimum PC: Pentium 4, 1.6GHz, 64M RAM PC	1.5M CompactFlash
Communication			
Built-in CIP Network	EtherNet/IP	Depends on PC	—
Modular Options	DeviceNet	• EtherNet/IP • ControlNet • DeviceNet	• EtherNet/IP • ControlNet • DeviceNet
Serial Port	Yes	Yes	Yes
Max Network Connections	32	128	32
Certifications	UL, CSA, CE	UL, CSA, CE ¹	UL, CSA, CE
Operating Temperature	0°C to 60°C	0°C to 60°C ¹	0°C to 60°C
Selection Guide	1769-SG001	1769-SG001	—

¹PC-dependant

I/O At-A-Glance

	Chassis I/O		On - Machine I/O			
	ControlLogix® 1756	Compact I/O™ 1769	ArmorPoint® 1738	ArmorBlock®/ ArmorWeldBlock 1732	ArmorBlock® Guard 1732 DS	Embedded 1799
I/O Type	TTL, 24, 48, 125V DC; 24, 120, 230V AC, relay, analog, HART and high speed analog, counting, PLS, temperature, motion, sercos interfaces, SOE	24V DC, 120/230V AC, relay, digital, analog, temperature, combo, speciality	• 1738: 24V DC, 120/230V AC, dual ports, DeviceLogix, relay, digital, analog, temperature, speciality, serial: • 1732: 24V DC, digital	• 24V DC, digital, safety • PLe, SIL 3, Cat 4 Safety	10-30V DC	
Channel Density	4 - 32	2 - 32	2 points configurable	8 or 16 points, (WeldBlock 16 only)	8 - 16 points	10-16
Network/PLC Communications	• Local I/O to ControlLogix • Distributed on EtherNet/IP and ControlNet (from ControlLogix controller)	• Local I/O to MicroLogix 1500 and CompactLogix • Distributed I/O on DeviceNet	EtherNet/IP, ControlNet, DeviceNet, other	EtherNet/IP, DeviceNet, other	DeviceNet	DeviceNet
RIUP Rating	Yes	No	No	Yes	Yes	Yes
Removable Terminal Blocks	Yes	Yes	Yes	No	No	Yes
Mounting Options	Chassis	DIN rail	On-Machine (IP69K), Panel	On-Machine (IP69K)	IP67	On-Machine, Embedded
Protected Outputs	Yes	Yes	Yes	Yes	Yes	Yes
Distinctions	Wide variety of termination styles: spring-clamp or screw-clamp	May be used as local or distributed I/O for CompactLogix	• Configurable to any combination of I/O • Direct connect to ArmorStart • Bus expansion cables to extend I/O up to 12 meters • 8mm, 12mm, 23mm, 25 pin D-shell, Quick Disconnect • 2-port EtherNet/IP adapter for linear and ring topologies	• WeldBlock resists effects of weld slag and magnetic fields—ideal for end-of-arm robotic applications • 2-port EtherNet/IP adapter for linear and ring topologies • CIP Sync inputs functionality	• Electronically keyed • Flash upgradable • Short circuit protected outputs • Short circuit detection • Open wire detection muting • Rotary address switches • Additional configurable outputs (pulse test etc.)	• DeviceLogix Smart Component Technology allows local control • Low Cost • Zone Interlocking Parameter (ZIP) enabled
Selection Guide	1756-TD002	1769-SG002	1738-SG001	1732-SG001	1732DS-IN001	1799-SG001

Ethernet Media

	1585D M12 D Code Connectivity	1585J RJ45 Connectivity	1585B Variant 1 Connectivity
Applications	<ul style="list-style-type: none"> Compatible with IP67 ArmorBlock and ArmorPoint products High Flex up to 10 million flex cycles for robotic applications Cabinet to cabinet connectivity Resistant to high vibration, shock, chemicals Shielded and unshielded cables 	<ul style="list-style-type: none"> Compatible with Stratix Ethernet switches Industrial rated patchcords with ruggedized strain relief Shielded and unshielded cables Available in standard (PVC), high flex (TPE, PUR) or plenum (PVC) cable jackets 300V and 600V 	
Operating Temperature	-40 to 60°C	-20 to 60°C	-40 to 70°C
Ratings	IP67 Cat 5e	IP20 Cat 5e	
Certifications	UL CM, cULus, CM; Standard TIA 568-B	UL CMR, CMG; cULus, CMG; Standard TIA 568-B	UL CM, cULus, CM; Standard TIA 568-B
MICE Rating	M3I3C3E3	M1I1C1E3	

I/O At-A-Glance

	In - Cabinet I/O				
	FLEX™ 1794	FLEX Ex™ 1797	POINT I/O™ 1734	CompactBlock™ LDX 1790	CompactBlock™ Guard I/O™ 1791 DS/ES
I/O Type	24/48V DC, 120/220V AC extreme temperature relay, digital, analog, temperature, thermocouple, speciality, counters/encoders	Digital (NAMUR), 24V DC, analog, temperature, frequency	• 1734: 24V DC, 120/230V AC, relay, digital, analog, temperature, speciality, serial • 1734D: 85/132V AC, 24V DC, combination • SIL 3, CAT 4 Safety	Digital, analog relay, thermocouple, RTD	• Digital 24V DC • PLe, SIL 3, Cat 4 Safety
Channel Density	4-32 points	4-16 points	1-8 points, self configurable	4-32 points	8-16 points
Network/PLC Communications	EtherNet/IP, ControlNet, DeviceNet, Remote I/O, other	• ControlNet (fiber hub or coax barrier) • Flexbus Isolator to EtherNet/IP, ControlNet, DeviceNet and Remote I/O	EtherNet/IP ControlNet, DeviceNet, OPC/DDE Data Monitoring, other	DeviceNet, other	EtherNet/IP, DeviceNet
RIUP Rating	Yes	Yes	Yes	Yes	Yes
Removable Terminal Blocks	Yes	Yes	Yes	No	Yes
Mounting Options	Panel, DIN rail	Panel, DIN rail	DIN rail	Panel, DIN rail	DIN rail
Protected Outputs	Yes	Not necessary due to Intrinsic Safety	Yes	No	Yes
Distinctions	• HART analog modules • Power supplies • Wide variety of termination styles	• HART analog modules • Intrinsically safe • No IS barrier, explosion-proof or purged enclosures required • Power supplies	• Self-configuring for any combination of inputs/outputs • Channel level diagnostics • DeviceLogix Smart Component Technology allows local control • 2-port EtherNet/IP adapter for linear and ring topologies	• Small footprint • Choice of quick-connect using D-shell terminal modules	• Electronically keyed • Flash upgradable • Short circuit protected outputs • Short circuit detection • Open wire detection muting • Lamp control/monitoring
Selection Guide	1794-SG002	1794-SG002	1734-SG001	1790-SG001	1791DS-IN002


Ethernet Media

	1585A Accessories	1585 Insulation Displacement Technology	1585-C* Cable Spools
Applications	<ul style="list-style-type: none"> Transition from IP20 environment to IP67 Stratix switch to Armor I/O Custom assembly and installation 	<ul style="list-style-type: none"> Insulation Displacement Technology utilized with M12 D Code and RJ45 connectors RJ45 IDC connector provides secure and reliable installation M12 D Code Field Attachable Connectors in Male and Female Custom assembly and installation 	<ul style="list-style-type: none"> Standard industrial rated, High Flex, Plenum rated spools Shielded and unshielded cables Twisted pair formation allows for high performance, balance, and noise immunity Custom assembly and installation Unshielded: 2 and 4 pair TPE, 4 pair PVC, 4 pair plenum Shielded: 4 pair PVC, 2 and 4 pair PUR
Operating Temperature	-20 to 85°C	-20 to 60°C	-40 to 75°C
Ratings	IP20 to IP67 Cat 5e	IP20 Cat 6	Cat 5e
Certifications	UL, cUL	UL, cUL	UL CMR; CMG; cUL, CMG; Standard TIA 568-B
MICE Rating	M1I1C1E2	M1I1C1E3	M3I3C3E3





PanelView Plus Operator Interface At-A-Glance

	PanelView™ Plus 400	PanelView™ Plus 600
		
Display Type	<ul style="list-style-type: none"> Grayscale Passive Matrix, (FSTN 32 level grayscale) Color Active Matrix (TFT 18 bit color) 	<ul style="list-style-type: none"> Grayscale Passive Matrix, (FSTN 32 level grayscale) Color Active Matrix (TFT 18 bit color)
Display Size	<ul style="list-style-type: none"> Grayscale: 77 x 58 mm (3.7 in) 320 x 240 resolution Color: 71 x 53 mm 320 x 240 resolution 	112 x 84 mm (5.5 in) 320 x 240 resolution
Operator Input	<ul style="list-style-type: none"> Keypad (Grayscale or Color) Keypad and Touch Screen (Color only) 	<ul style="list-style-type: none"> Keypad Touch Screen Keypad and Touch Screen
Real-Time Clock Memory Options	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month 	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month
Available Flash/RAM	Standard 64 MB/64 MB, Not Expandable	Standard 64 MB/64 MB, Not Expandable
Network Communications	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current spec. Optional DH+/DH-485, ControlNet modules 	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current spec. Optional DH+/DH-485, ControlNet modules
Power Requirements	18-30V DC or 85-264V AC @ 47-63 Hz	18-30V DC or 85-264V AC @ 47-63 Hz
Programming Software	FactoryTalk View Machine Edition	FactoryTalk View Machine Edition
Environmental Operating Temperature	0 - 55°C (32 - 131°F)	0 - 55°C (32 - 131°F)
Ratings	NEMA 12, 13, 4X, IP54, IP65	NEMA 12, 13, 4X, IP54, IP65
Certifications	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC
Cutout Dimensions	Keypad or Keypad and Touch Screen: 123x156mm (4.86x6.15 in.)	<ul style="list-style-type: none"> Keypad or Keypad and Touch Screen: 142x241mm (5.61x9.50 in.) Touch Screen Only: 123x156mm (4.86x6.15 in.)
PanelView Plus differentiators	<ul style="list-style-type: none"> Premier integration with Integrated Architecture - Reduce programming time with ControlLogix native addressing and ability to browse directly to Logix tags without creating a separate database. Simplify development time with pre-engineered faceplates for specific applications (motion, process, drives) Common development software - FactoryTalk View Machine Edition comes installed and activated on all terminals. Save design time with global objects that can be developed once and reused throughout the system. Design Simplification - Reduce inventory requirements and costs with modular hardware designs. Simplify future design configurations with terminal hardware scalability. 	
Selection Guide	VIEW-SG001	VIEW-SG001

PanelView Plus Operator Interface At-A-Glance

	PanelView™ Plus 700, PanelView Plus CE 700	PanelView™ Plus 1000, PanelView Plus CE 1000	PanelView™ Plus 1250, PanelView Plus CE 1250	PanelView™ Plus 1500, PanelView Plus CE 1500
				
Display Type	Color Active Matrix (TFT 18 bit color)	Color Active Matrix (TFT 18 bit color)	Color Active Matrix (TFT 18 bit color)	Color Active Matrix (TFT 18 bit color)
Display Size	132 x 99 mm (6.5 in) 640 x 480 resolution	211 x 158 mm (10.4 in) 640 x 480 resolution	246 x 184 mm (12.1 in) 800 x 600 resolution	304 x 228 mm (15.1 in) 1024 x 768 resolution
Operator Input	<ul style="list-style-type: none"> Keypad Touch Screen Keypad and Touch Screen 	<ul style="list-style-type: none"> Keypad Touch Screen Keypad and Touch Screen 	<ul style="list-style-type: none"> Keypad Touch Screen Keypad and Touch Screen 	<ul style="list-style-type: none"> Keypad Touch Screen Keypad and Touch Screen
Real-Time Clock	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month 	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month 	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month 	<ul style="list-style-type: none"> Battery-backed time clock timestamps critical data Accuracy +/- 2 minutes per month
Memory Options Available Flash/RAM	<ul style="list-style-type: none"> PanelView Plus Standard Memory: 64MB Flash/64MB RAM; Extended Memory: 128 MB/128 MB (for full color bitmaps or recording data) PanelView Plus CE Standard Memory: 128 MB Flash/RAM; Extended Memory: 256 MB Flash/RAM 	<ul style="list-style-type: none"> PanelView Plus Standard Memory: 64MB Flash/64MB RAM; Extended Memory: 128 MB/128 MB (for full color bitmaps or recording data) PanelView Plus CE Standard Memory: 128 MB Flash/RAM; Extended Memory: 256 MB Flash/RAM 	<ul style="list-style-type: none"> PanelView Plus Standard Memory: 64MB Flash/64MB RAM; Extended Memory: 128 MB/128 MB (for full color bitmaps or recording data) PanelView Plus CE Standard Memory: 128 MB Flash/RAM; Extended Memory: 256 MB Flash/RAM 	<ul style="list-style-type: none"> PanelView Plus Standard Memory: 64MB Flash/64MB RAM; Extended Memory: 128 MB/128 MB (for full color bitmaps or recording data) PanelView Plus CE Standard Memory: 128 MB Flash/RAM; Extended Memory: 256 MB Flash/RAM
Network Communications	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current specification Optional DH+/DH-485, ControlNet modules 	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current specification Optional DH+/DH-485, ControlNet modules 	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current specification Optional DH+/DH-485, ControlNet modules 	<ul style="list-style-type: none"> Ethernet, RS-232, 1 or 2 USB depending on current specification Optional DH+/DH-485, ControlNet modules
Power Requirements	<ul style="list-style-type: none"> 18-30V DC 85-264V AC @ 47-63 Hz 	<ul style="list-style-type: none"> 18-30V DC 85-264V AC @ 47-63 Hz 	<ul style="list-style-type: none"> 18-30V DC 85-264V AC @ 47-63 Hz 	<ul style="list-style-type: none"> 18-30V DC 85-264V AC @ 47-63 Hz
Programming Software	FactoryTalk View Machine Edition	FactoryTalk View Machine Edition	FactoryTalk View Machine Edition	FactoryTalk View Machine Edition
Environmental Operating Temperature	0 - 55°C (32 - 131°F)	0 - 55°C (32 - 131°F)	0 - 55°C (32 - 131°F)	0 - 55°C (32 - 131°F)
Ratings	NEMA 12, 13, 4X, IP54, IP65	NEMA 12, 13, 4X, IP54, IP65	NEMA 12, 13, 4X, IP54, IP65	NEMA 12, 13, 4X, IP54, IP65
Certifications	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC	cUL certified; UL listed; Class I, Div 2, Groups A,B,C,D; Class II, Div 2, Groups F, G, Class III, T4, Class I Zone 2 Group IIC
Cutout Dimensions	<ul style="list-style-type: none"> Keypad or Keypad and Touch Screen: 167 x 264mm (6.57 x 10.39 in.) Touch only: 154 x 220mm (6.08 x 8.67 in.) 	<ul style="list-style-type: none"> Keypad or Keypad and Touch Screen: 224 x 375mm (8.8 x 14.75 in.) Touch only: 224 x 305mm (8.8 x 12 in.) 	<ul style="list-style-type: none"> Keypad or Keypad and Touch Screen: 257 x 390mm (10.11 x 15.35 in.) Touch only: 257 x 338mm (10.11 x 13.29 in.) 	<ul style="list-style-type: none"> Keypad or Keypad and Touch Screen: 305 x 419mm (12 x 16.5 in.) Touch only: 305 x 391mm (12 x 15.4 in.)
PanelView Plus differentiators	<ul style="list-style-type: none"> Premier integration with Integrated Architecture - Reduce programming time with ControlLogix native addressing and ability to browse directly to Logix tags without creating a separate database. Simplify development time with pre-engineered faceplates for specific applications (motion, process, drives) Common development software - FactoryTalk View Machine Edition comes installed and activated on all terminals. Save design time with global objects that can be developed once and reused throughout the system. Design Simplification - Reduce inventory requirements and costs with modular hardware designs. Simplify future design configurations with terminal hardware scalability. 			
Selection Guide	VIEW-SG001	VIEW-SG001	VIEW-SG001	VIEW-SG001

Industrial Monitors and Computers At-A-Glance

	Performance Industrial Monitors 6186M	Standard Monitors 6176M	Integrated Display Computers 6181P/F	Integrated Display Computers with Keypad 6180P
				
Display Type Resolution	<ul style="list-style-type: none"> 12.1" (308 mm) 1Color Active Matrix TFT, 800 x 600 (native mode) 262K colors 15.0" (381 mm) Color Active Matrix TFT, 1024 x 768 (native mode), 16.2M colors 17.0" (432 mm) Color Active Matrix TFT, 1280 x 1024 (native mode), 16.7M colors 19.0" (482.6 mm) Color Active Matrix TFT, 1280 x 1024 (native mode), 16.7M colors 	<ul style="list-style-type: none"> 15-inch (381 mm) Color Active Matrix TFT, 1024 x 768, 16.7M colors 17-inch (431.8 mm) Color Active Matrix TFT, 1280 x 1024 (native mode), 16.7M colors 19-inch (482.8 mm) Color Active Matrix TFT, 1280 x 1024 (native mode), 16.7M colors 	<ul style="list-style-type: none"> 12" Color TFT, 800x600T, 24-Bit resolution* 15" Color TFT, 1024x768, 24-Bit resolution 17" Color TFT, 1280x1024, 24-Bit resolution 	<ul style="list-style-type: none"> 12.1" Color TFT, 800x600 15" Color TFT, 1024x768, 24-Bit resolution
Bezel Type	<ul style="list-style-type: none"> 12.1" - Aluminum 15", 17", 19" - Aluminum and Stainless Steel 	<ul style="list-style-type: none"> Panel Mount: Aluminum Alloy Vesa Mount: Plastic (steel reinforced) 	<ul style="list-style-type: none"> 12" Aluminum 15", 17" - Standard: Aluminum, Performance: Aluminum or Stainless Steel 	Aluminum
Touch Screen Option	Resistive Antiglare screen	Resistive Touchscreen	Resistive Antiglare screen	Resistive Antiglare screen
USB Hub	2 USB 2.0, 1-front accessible (Aluminum only)	2 USB 2.0	N/A	N/A
Video Input	VGA and DVI	VGA and DVI	N/A	N/A
Processor Type	N/A	N/A	<ul style="list-style-type: none"> Standard: Celeron M 1.06 GHz Performance: Core Duo 1.2 GHz 	<ul style="list-style-type: none"> Standard: 1.86GHz Celeron M; Performance: 2.0 GHz Core 2 Duo
RAM	N/A	N/A	<ul style="list-style-type: none"> Standard: 512 MB DDR2 Performance: 1 GB DDR2 (expansion up to 4GB) 	<ul style="list-style-type: none"> Standard: 512MB; Performance: 1GB (expansion up to 4GB)
Hard Drive	N/A	N/A	<ul style="list-style-type: none"> 40 GB (rotating drive models) 2.5 SATA 8 GB (solid state models) Compact Flash 	80 GB 3.5" SATA (ability to add second drive)
Operating Systems	N/A	N/A	Windows XP Professional	Windows XP Professional
Removable Media	N/A	N/A	<ul style="list-style-type: none"> Standard: None Performance: DVD-RW 	<ul style="list-style-type: none"> Standard: 3.5" floppy drive, DVD/CD-RW; Performance: 3.5" floppy drive, DVD-RW/CD-RW
Power Requirements	<ul style="list-style-type: none"> AC: 90...264V AC, autoranging; 47...63Hz DC: 9V DC or 360V DC 	90...264V AC, autoranging; 47...63Hz	<ul style="list-style-type: none"> 90-264V AC, autoranging; 47-63 Hz 18-32V DC option (performance only) 	90...264V AC, 18...32V DC
Network Communications	N/A	N/A	<ul style="list-style-type: none"> Performance: 2 PS/2 (keyboard/mouse), 4 USB 2.0 (rear accessible), 1 USB 2.0 (front accessible Aluminum bezel only), 2 Ethernet 10/100/1000M ports, 1 parallel port, 2 serial ports, 1 DVI-I, audio in/out and mic Standard: 4 USB 2.0, 2 Ethernet 10/100/1000M ports, 1 serial port, audio in/out and mic 	2 serial ports, 1 parallel port, 6 USB 2.0 ports, 2 Ethernet 10/100/1000M ports, 1 DVI-1
Operating Temperature	<ul style="list-style-type: none"> 0-55°C (32 - 131°F) -12" and 15" 0-50°C (32 - 122°F) -17" and 19" 	0 - 45°C (32 - 113°F)	<ul style="list-style-type: none"> Standard: 0-50° C (32-122° F) Fanless Performance: 0-50° C (32-122° F) (17") Fanless Performance: 0-55° C (32-131° F) (12 & 15") Fanless 	0 - 55°C (32 - 131°F)
Ratings	NEMA Types 1/12/4/4X, IP66	NEMA Types 1/12/4, IP66	NEMA 1/12/4/ (4X on stainless only), IP66	NEMA 1/4/12, IP66
Certifications	<ul style="list-style-type: none"> cULus Listed, CE Mark, C-Tick, Class 1 Div 2 Class I Division 2 ratings for hazardous locations 	cULus listed, CE Mark, C-Tick	<ul style="list-style-type: none"> Standard: cULus Listed, CE marked, C-tick Performance: cULus Listed, CE marked, C-tick 	cULus Listed, CE Mark, C-Tick
Vibration-Operating	2 g, swept sine 10...500Hz	1 g peak, swept sine 10...500Hz	<ul style="list-style-type: none"> 1.0 g (rotating media) 1.5 g (solid state media) 	1 g peak, 10...500Hz
Selection Guide	VIEW-SG001	VIEW-SG001	VIEW-SG001	VIEW-SG001

*Non-display computer version available

Industrial Computers At-A-Glance





	Compact Non-Display Computer 200R	Non-Display Computer 650R	Non-Display Computer 750R/1450R	Non-Display Computer for hazardous locations 1200P (6181H)
				
System Components/Expansion Slots	1 Compact Flash (type 2)	2 full-length PCI, 1 half-length PCI, 1 full-length ISA	<ul style="list-style-type: none"> 750R Machine mount: 3 half-length PCI, 1 PCI Express (x1) 1450R Rack mount: 1 full-length PCI, 4 half-length PCI, 1 PCI Express (x1), 2 ISA Slots (Legacy model), 	2 half-length PCI, 1 CompactFlash (Type 2)
Processor Type	1 GHz Celeron M	<ul style="list-style-type: none"> Performance: 2.0 GHz Core Duo Advanced: Core 2 Duo 1.66 GHz 	<ul style="list-style-type: none"> Standard: Celeron 2.66GHz; Performance: Pentium 4 3.0GHz; Advanced: Pentium 4 3.0GHz 	Pentium 4, 2.0 GHz
RAM	<ul style="list-style-type: none"> Standard: 512 MB Performance: 1 GB (expandable up to 2 GB) 	<ul style="list-style-type: none"> Performance: 1 GB (DDR2) Advanced: 4 GB (DDR2) 	<ul style="list-style-type: none"> Standard: 512MB (DDR2); Performance: 1GB (DDR2); Advanced 2GB (DDR2) 	1 GB DDR
Hard Drive	40 GB 2.5" SATA (rotating media models) 8GB Compact Flash (solid state media)	<ul style="list-style-type: none"> Performance: 80 GB, 3.5" SATA Advanced: 2-160GB, 3.5" SATA 	<ul style="list-style-type: none"> Standard/Performance: 80GB HDD, 3.5" SATA; Advanced: 160GB HDD, 3.5" SATA 	8 GB solid state drive
Operating System	Windows XP Professional	Windows 2003 Server	Windows XP Professional	Windows XP Professional
Removable Media	Compact Flash (Type 2 Hot Swappable)	DVD-RW/CD-RW Drive	<ul style="list-style-type: none"> Standard: Slim CD-ROM drive Performance: Slim DVD/CD-RW drive; Advanced: Slim DVD-RW/CD-RW 	N/A
Power Requirements	100...240V AC, autoranging, 9...36V DC	90...264V AC, autoranging; 47...63Hz	90...264V AC, autoranging; 47...63Hz	18...32V DC
Network Communications	Standard: 1 Serial port, 2 PS/2 ports, 1 VGA port, Ethernet 10/100/1000 Port Performance: 2 serial ports, 2 Ethernet 10/100/1000 ports, 4 USB 2.0 ports, audio line out	2 serial ports, 1 PS/2 keyboard, 1 PS/2 mouse, 2 serial ports, 2 Ethernet 10/100/1000 ports, 1 parallel port, 1 VGA port, 4 USB 2.0 ports, audio line in/out, mic, DVI-I	2 serial ports, 1 PS/2 keyboard, 1 PS/2 mouse, 2 Ethernet 10/100/1000M ports, 1 parallel port, 1 VGA port, audio line in/out, mic	4 serial ports, 2 PS/2 ports (keyboard/mouse), 1 parallel port, 2 USB 2.0 ports, Ethernet 10/100M port, 1 VGA port, audio line in/out, mic
Operating Temperature	0-55°C (32-131°F) Fanless	0 - 55°C (32 - 131°F)	0 - 45°C (32 - 113°F)	0...50°C (32...122°F)
Ratings	NEMA Type 1	NEMA Type 1	NEMA Type 1	NEMA Type 1, 12, 4, IEC IP66
Certifications	cULus Listed, CE Mark, C-Tick	cULus Listed, CE Mark, C-Tick	cULus Listed, CE Mark, C-Tick	cULus Listed, CE marked, C-Tick; Class I Division 2
Selection Guide	VIEW-SG001	VIEW-SG001	VIEW-SG001	VIEW-SG001

Kinetix® Servo Motors and Actuators At-A-Glance

	TL-Series Low Inertia Motors	MP-Series Low Inertia Motors	MP-Series Food Grade Motors	MP-Series Stainless Steel Motors	HPK-Series High Power Motors
					
Key Features and Applications	<ul style="list-style-type: none"> Compact, low inertia product family optimized for cost-sensitive applications JIS or NEMA mount options 	<ul style="list-style-type: none"> Low inertia motor with high dynamic performance in a compact size Offers the widest range of frame sizes, torque points and options 	<ul style="list-style-type: none"> Low inertia motor for use in light duty food and beverage applications MP-Series Stainless Steel Motors are recommended for meat, poultry and dairy 	<ul style="list-style-type: none"> For high pressure, highly caustic conditions Applications include meat and poultry, raw food handling, life sciences and consumer products 	<ul style="list-style-type: none"> The precision of a servo motor combined with the high power and cost effectiveness of an induction motor
Voltage / Travel & Speed	<ul style="list-style-type: none"> 230 V windings up to 6000 RPM 	<ul style="list-style-type: none"> 230 and 460 V windings up to 8000 RPM 	<ul style="list-style-type: none"> 230 and 460 V windings up to 5000 RPM 	<ul style="list-style-type: none"> 230 and 460 V windings up to 5000 RPM 	<ul style="list-style-type: none"> 460 V windings base speed options of 1500 and 3000 RPM
Feedback Options	<ul style="list-style-type: none"> High-resolution serial feedback with multi-turn capability (requires battery back-up) 2000 line incremental encoder 	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option Incremental and resolver limited frame sizes 	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option 	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option 	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option
Continuous Stall Torque/Force	<ul style="list-style-type: none"> 0.096 – 5.42 Nm (0.85 – 48 lb-in) 	<ul style="list-style-type: none"> 0.26 – 163 Nm (2.3 – 1442 lb-in) 	<ul style="list-style-type: none"> 1.58 – 19.4 Nm (14 – 172 lb-in) 	<ul style="list-style-type: none"> 3.6 – 21.5 Nm (32 – 190 lb-in) 	<ul style="list-style-type: none"> 96 – 607 Nm (849 – 5371 lb-in)
Selection Guide	GMC-SG001	GMC-SG001	GMC-SG001	GMC-SG001	GMC-SG001

	MP-Series Medium Inertia Motors	RDD-Series Rotary Direct Drive Motors	MP-Series Integrated Linear Stages	MP-Series/TL-Series Electric Cylinders	LDL-Series / LDC-Series Linear Motors
					
Key Features and Applications	<ul style="list-style-type: none"> Medium inertia for inertia matching and smooth performance IP67 environmental protection with optional shaft seal 	<ul style="list-style-type: none"> Bearingless, blind bore design for mounting directly to load. Improves system performance by eliminating mechanical transmission components 	<ul style="list-style-type: none"> Pre-aligned axis Factory supplied cable management Pick and place Material handling Laser and water jet cutting 	<ul style="list-style-type: none"> Stainless steel rod actuators Ready to install electromechanical solutions Volumetric filling, web guides, parts clamping, (inserting, diverting, etc.) Flexible positioning for parts, tools, set works, etc. 	<ul style="list-style-type: none"> High speed Highly servo responsive No mechanical wear items Long travel material handling Large format gantries Case packers, re-pitchers, palletizers Form, fill and seal
Voltage / Travel & Speed	<ul style="list-style-type: none"> 230 and 460 V windings up to 6000 RPM 	<ul style="list-style-type: none"> 460 V windings up to 6000 RPM 	<ul style="list-style-type: none"> 230 and 460 V Velocities up to 5 m/s (197 in/s) with direct drive models 	<ul style="list-style-type: none"> 230 and 460 V stroke lengths up to 800 mm 	<ul style="list-style-type: none"> 230 and 460 V up to 10 m/s and 10 gs
Feedback Options	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option Resolver 	<ul style="list-style-type: none"> Absolute high-resolution feedback with multi-turn option 	<ul style="list-style-type: none"> Direct drive model with incremental 5 micron resolution Ballscrew driven model with absolute high-resolution multi-turn 	<ul style="list-style-type: none"> Ballscrew/servo motor driven with high resolution multi-turn absolute 	<ul style="list-style-type: none"> User supplied
Continuous Stall Torque/Force	<ul style="list-style-type: none"> 2.2 – 62.8 Nm (19.5 – 555 lb-in) 	<ul style="list-style-type: none"> 8.2 – 426 Nm (72.5 – 3770 lb-in) 	<ul style="list-style-type: none"> Direct drive model with peak forces to 601 N (135 lb) Ballscrew model with peak forces to 1212 N (273 lb) 	<ul style="list-style-type: none"> Peak thrust to 2500 N 	<ul style="list-style-type: none"> Peak thrust to 5446 N
Selection Guide	GMC-SG001	GMC-SG001	GMC-SG001	GMC-SG001	GMC-SG001


Kinetix Servo Drives At-A-Glance






	Kinetix 2000	Kinetix 6000	Kinetix 6200	Kinetix 6500
				
Continuous Output Current (A rms)	1.0 - 9.5	3.7 - 34	4 - 49	4 - 49
Continuous Power Output	0.3 kW - 3 kW	1.2 - 22 kW	1.2 - 22 Kw	1.2 - 22 Kw
Input Volts	230 V AC single and 3 phase	<ul style="list-style-type: none"> 195 - 265 V AC 3 phase 324 - 528 V AC 3 phase 	324 - 528 V AC 3 phase	324 - 528 V AC 3 phase
Network	SERCOS Interface	SERCOS Interface	SERCOS Interface	EtherNet/IP with CIP Motion
I/O	Enable (1), Over Travel (2), Home (1), Registration Inputs (2)	Enable (1), Over Travel (2), Home (1), Registration Inputs (2)	Regeneration OK (1), Enable (1), Over Travel (2), Home (1), Registration Inputs (2)	Regeneration OK (1), Enable (1), Over Travel (2), Home (1), Registration Inputs (2)
Safety Function Support (built-in)	N/A	EN-954-1 Category 3, IEC61508 SIL3 safe-off and prevention against unexpected restart	<ul style="list-style-type: none"> S0 version: EN-954-1 Category 3, IEC61508 SIL3 safe-off S1 version: EN-954-1 Category 3, IEC61508 SIL3 Advanced Safety features: safe door monitor, enable switching, safe speed monitor 	<ul style="list-style-type: none"> S0 version: EN-954-1 Category 3, IEC61508 SIL3 safe-off S1 version: EN-954-1 Category 3, IEC61508 SIL3 Advanced Safety features: safe door monitor, enable switching, safe speed monitor
Servo Motor/ Actuator compatibility	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, TL-Series motors, MP-Series Linear Stages, LDL/LDC-Series Linear Motors, MP-Series/TL-Series Electric Cylinders	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, RRD-Series Direct Drive Motors, TL-Series Motors, MP-Series Linear Stages and Electric Cylinders, LDL/LDC-Series Linear Motors,	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, MD-Series Direct Drive Motors, TL-Series Motors, MP-Series Linear Stages and Electric Cylinders, LDL/LDC-Series Linear Motors	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, RDD-Series Direct Drive Motors, TL-Series Motors, MP-Series Linear Stages and Electric Cylinders, LDL/LDC-Series Linear Motors
Selection Guide	GMC-SG001	GMC-SG001	GMC-SG001	GMC-SG001

	Kinetix 300	Ultra 3000	Kinetix 7000
			
Continuous Output Current (A rms)	2 - 12	<ul style="list-style-type: none"> 2.5-65A (230 V) 7-47A (460 V) 	40 - 248
Continuous Power Output	<ul style="list-style-type: none"> 0.4-0.8 kW (115 V), 0.4-1.7kW (230V) Single Phase 0.5-3 kW (230 V), 1-3 kW (460V) 3 Phase 	<ul style="list-style-type: none"> 0.25-1.5 kW (115 V), 0.5-3 kW (230V) Single Phase 1.5-11 kW (230 V), 3-22 kW (460V) 3 Phase 	112kW - 150 kW
Input Volts	<ul style="list-style-type: none"> 115-240 V AC single phase 230-480 V AC 3 phase 	<ul style="list-style-type: none"> 115-240 V AC single phase 230-480 V AC 3 phase 	<ul style="list-style-type: none"> 380 - 480 V AC 3 phase Common bus configurations from 450-750 V DC with a regenerative power supply
Network	EtherNet/IP	SERCOS Interface	SERCOS Interface
I/O	Enable (1), Over Travel (2), Registration Input (1) assignable inputs (8) Ready Out (1) assignable outputs (4) Analog input differential (1) Analog output, single ended (1)	Enable (1), Over Travel (2), Home (1), Registration Inputs (2)	Enable (1), Over Travel (2), Home (1), Registration Inputs (2)
Safety Function Support (built-in)	Category 3 safe-off	N/A	EN-954-1 Category 3, IEC61508 SIL3 safe-off and prevention against unexpected restart
Servo Motor/ Actuator compatibility	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, TL-Series Motors, MP-Series Linear Stages and MP-Series/TL-Series Electric Cylinders	MP-Series Low Inertia, Food Grade, Stainless Steel and Medium Inertia Motors, MP-Series Linear Actuators and Electric Cylinders, LDL/LDC-Series Linear Motors	Synchronous permanent magnet and asynchronous motors including HPK-Series, MP-Series Low Inertia and Medium Inertia Motors, RRD-Series Direct Drive Motors
Selection Guide	GMC-SG001	GMC-SG001	GMC-SG001

Intelligent Motor Control At-A-Glance




Variable Speed Control

	PowerFlex® 4M	PowerFlex® 4	PowerFlex® 40	PowerFlex® 400	PowerFlex® 40P
					
Ratings	0.2 – 11 kW (0.25 – 15 Hp) 120, 240, 480 Volts	0.2 – 3.7 kW (0.25 – 5 Hp) 120, 240, 480 Volts	0.4 – 11 kW (0.5 – 15 Hp) 120, 240, 480, 600 Volts	2.2 – 110 kW (3 – 150 Hp) 240, 480 Volts	0.4 – 11 kW (0.5 – 15 Hp) 240, 480, 600 Volts
Motor Control	• Volts/Hertz • Slip Compensation	• Volts/Hertz • Slip Compensation	• Volts/Hertz • Sensorless Vector Control • Slip Compensation	• Volts/Hertz • Slip Compensation • Auxiliary Motor Control	• Volts/Hertz • Sensorless Vector Control • Slip Compensation or Encoder Trim • Position Regulator Mode
Safety	N/A	N/A	N/A	N/A	Safe Torque Off
Step Logic	N/A	N/A	8 Steps biased on Time	N/A	8 Steps biased on Time or Position
Communications	Integral RS 485 (Modbus RTU) Optional: DeviceNet, EtherNet/IP, ControlNet and other 3rd party	Integral RS 485 (Modbus RTU) Optional: DeviceNet, EtherNet/IP, ControlNet and other 3rd party	Integral RS 485 (Modbus RTU) Optional: DeviceNet, EtherNet/IP, ControlNet and other 3rd party	Integral RS 485 (Modbus RTU), Metasys N2 & P1-FLN Optional: DeviceNet, Ethernet/IP, ControlNet and other 3rd party	Integral RS 485 (Modbus RTU) Optional: DeviceNet, EtherNet/IP, ControlNet and other 3rd party
Selection Guide	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002







	PowerFlex® 70	PowerFlex® 700	PowerFlex® 753	PowerFlex® 700S	PowerFlex® 755
					
Ratings	0.37 – 37 kW (0.5 – 50 Hp) 240, 480, 600 Volts	0.37 – 500 kW (0.5 – 700 Hp) 240, 480, 600 Volts	0.75 – 250 kW (0.5 – 350 Hp) 480 Volts	0.75 – 800 kW (1 – 1250 Hp) 240, 480, 600 Volts	0.75 – 250 kW (0.5 – 350 Hp) 480 Volts
Motor Control	• Volts/Hertz • Sensorless Vector Control with FORCE™ Technology	• Volts/Hertz • Sensorless Vector • Flux Vector Control with FORCE™ Technology • Adjustable Voltage Mode	• Vector Control with FORCE Technology • Sensorless Vector Control • Slip Compensation • Torque Regulation • Volts/Hertz	• Volts/Hertz • Sensorless Vector Control with FORCE™ Technology • Permanent Magnet Control	• Volts/Hertz • Sensorless Vector Control with FORCE™ Technology • Permanent Magnet Control
I/O	Fixed on board I/O	Fixed on board I/O	3 Mechanical slots w/ ability to accept any combination of available I/O options	Fixed on board I/O	5 Mechanical slots w/ ability to accept any combination of available I/O options
Control	–	–	Embedded DeviceLogix	DriveLogix Optional	Embedded DeviceLogix
Safety	Safe Torque Off	N/A	• Safe Torque Off • Safe Speed Monitor	Safe Torque Off	• Safe Torque Off • Safe Speed Monitor
Communications	Optional: • DeviceNet • EtherNet/IP • ControlNet and other 3rd party	Optional: • DeviceNet • EtherNet/IP • ControlNet and other 3rd party	Optional: • DeviceNet • EtherNet/IP • ControlNet and other 3rd party	Optional: • DeviceNet • EtherNet/IP • ControlNet and other 3rd party	Built-in EtherNet/IP Optional: • DeviceNet • ControlNet and other 3rd party
Selection Guide	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002	PFLEX-SG002

Intelligent Motor Control At-A-Glance

Packaged Motor Control

	Centerline 2100 Low Voltage, NEMA	Centerline 2500 Low Voltage, IEC	Centerline 1500 Medium Voltage, NEMA
			
Rating	Up to 690 V	800-4000 A	1200, 2000, 3000 A
Network Interfaces	• EtherNet/IP • ControlNet • other 3rd party	• EtherNet/IP • ControlNet • other 3rd party	• EtherNet/IP • ControlNet • other 3rd party
Built-in Network	DeviceNet • Preconfigured and Pretested • All Class 1 cabling (600V, 8A rated)	DeviceNet • Preconfigured and Pretested • All Class 1 cabling (600V, 8A rated) • Network connection made in test position	DeviceNet • Preconfigured and Pretested • All Class 1 cabling (600V, 8A rated)
IntelliCENTER Software	• Improved uptime with better diagnostics • Enhanced personnel safety with remote access capability • Better manage assets with electronic documentation • Enhanced integration tools - Automatic tag generation for RSLogix 5000 - Easy plug-ins for HMI screens	• Improved uptime with better diagnostics • Enhanced personnel safety with remote access capability • Better manage assets with electronic documentation • Enhanced integration tools - Automatic tag generation for RSLogix 5000 - Easy plug-ins for HMI screens	• Improved uptime with better diagnostics • Enhanced personnel safety with remote access capability • Better manage assets with electronic documentation • Enhanced integration tools - Automatic tag generation for RSLogix 5000 - Easy plug-ins for HMI screens
Selection Guide	2100-CA001	2500-SG001	1500-SG001





Fixed Speed Control

	193-EE (E1 Plus)	193-EC1 (E3)	193-EC2 (E3 Plus)	193-EC3 (E3 Plus)	825-P Modular Protection	SMC-Flex
						
Ratings	0.1...800 A	0.4...5000 A	0.4...5000 A	0.4...5000 A	0.5...5000 A	1...1250 A
Motor Control	• Solid-state • Standard Starter	• Microprocessor-Based • Standard Starter	• Microprocessor-Based • Standard Starter • Reversing Starter • Star/Delta (Two-Speed) Starter	• Microprocessor-Based • Standard Starter • Reversing Starter • Star/Delta (Two-Speed) Starter	• Microprocessor-Based • Standard Starter • Reversing Starter • Star/Delta (Two-Speed) Starter	• Soft Start • Current Limit Start • Kick Start Dual Ramp Start • Full Voltage Start • Linear Acceleration • Preset Slow Speed & Soft Stop with optional Pump & Braking control (Line & Delta Connected Squirrel-cage Induction Motors)
I/O	• 2 Inputs • 1 Output	• 2 Inputs • 1 Output	• 4 Inputs • 2 Outputs	• 4 Inputs • 2 Outputs	• Up to 5 Inputs • Up to 6 Outputs	4 functionally programmable on board output contacts (N.O. or N.C)
Communications	• DeviceNet Communication Module • EtherNet/IP Communication Module	DeviceNet & EtherNet/IP (with 1788-EN2DN Communication Bridge)	DeviceNet & EtherNet/IP (with 1788-EN2DN Communication Bridge)	DeviceNet & EtherNet/IP (with 1788-EN2DN Communication Bridge)	DeviceNet & EtherNet/IP (with 1788-EN2DN Communication Bridge)	• DeviceNet • ControlNet • EtherNet/IP • Remote I/O • RS-485-DF1 • InterBus (using Bulletin 20-COMM modules)
Selection Guide	EC-CA001	EC-CA001	EC-CA001	EC-CA001	EC-CA001	EC-CA001

Machine Monitoring and Protection System At-A-Glance

	XM[®]12X Protection & Condition Monitoring 	XM[®]16X Overall Value Monitoring 	XM[®]36X Temperature Monitoring 	XM[®]DYN Protection & Condition Monitoring 
Measurement	• XM-120: Standard Dynamic Measurement • XM-121: Low Frequency Dynamic Measurement • XM-122: gSE Vibration	• XM-160: Overall Vibration Measurement • XM-161: Overall Vibration Measurement w/ 4-20 mA Outputs • XM-162: Overall Vibration Measurement for eddy current probes	• XM-361: Universal Temperature • XM-362: Isolated Thermocouple	Standard dynamic measurement
Input Dynamic Channels	2	6	6	2
Input Tachometer	1	N/A	–	1
4-20mA Outputs	2	• XM-160: N/A • XM-161: 6 • XM-162: N/A	6	–
Buffered Outputs	3	6	–	–
Relays	1	N/A	–	–
Frequency Range	1 Hz - 20 kHz	• XM-160: 3 Hz - 5 kHz • XM-161: N/A • XM-162: 3 Hz - 5 kHz	–	.0167 to 20 kHz
Dynamic Range	90 dBfs	• XM-160: N/A • XM-161: 3 Hz - 5 kHz • XM-162: N/A	–	90 dBfs
High Pass Filter (No Integration)	• XM-120: 1, 5, 10, 40, 1 kHz • XM-121: .2, .8, 2, 4, 23.8 Hz • XM-122: N/A	3, 10 Hz	–	1, 5, 10, 40, 1 kHz
High Pass Filters (Integration)	• XM-120: 5, 10, 40, 1 kHz • XM-121: .8, 2, 4, 23.8 Hz • XM-122: 1, 5, 10, 40, 1 kHz	3, 10 Hz	–	5, 10, 40, 1 kHz
High Pass Filter Roll Off	• XM-120 and XM-121: -24 db per octave • XM-122: 5, 10, 40, 1 kHz	• XM-160: -24 db per octave • XM-161: -12 db per octave • XM-162: -12 db per octave	–	• -30 dB/octave (for 0.2 Hz) • All others -24 dB/octave
Low Pass Filters	XM-122: -24 db per octave	1k, 5 kHz	–	2 kHz
Spectra FMAX	10 Hz - 20 kHz	N/A	–	1 Hz - 20 kHz
gSE Spectra FMAX	XM-122: 10 Hz - 5 kHz	N/A	–	–
gSE High Pass Filters	XM-122: 200, 500, 1 k, 2 k, 5 kHz	N/A	–	–
Units	g, ips, mils, mm/s, um, psi, Pa, volt	g, ips, mils, mm/s, um, psi, Pa, volt	F, C	g, ips, mils, mm/s, um, psi, Pa, volt
Spectra	Yes	N/A	–	Yes
gSE Spectra	• XM-120 and XM-121: No • XM-122: Yes	N/A	–	–
Time Waveform	Yes	N/A	–	Yes
Simultaneous Time Waveform	Yes	N/A	–	Yes
Overall	RMS, Peak, Peak to Peak (true and calculated)	RMS, Peak, Peak to Peak (true and calculated)	–	RMS, Peak, Peak to Peak (true and calculated)
Bands per Channel	4	N/A	–	4
Gap	Yes	Yes (voltage)	–	Yes
Speed	Yes	N/A	–	Yes
1x, 2x, 3x Magnitude 1x, 2x Phase	Yes	N/A	–	Yes
Trend Buffers	Yes	Yes	Yes	–
Speed Buffer	Yes	N/A	–	–
Alarms	16	6	12	6
Configuration	Serial, DeviceNet	Serial, DeviceNet	Serial, DeviceNet	Serial, ControlNet, RSLogix 5000 AOP
Operating Temperature	-20°C to +65°C	-20°C to +65°C	–	-20°C to +70°C
Module Part Number	• XM-120: 1440-VST02-01RA • XM-121: 1440-VLF02-02RA • XM-122: 1440-VSE02-02RA	• XM-160: 1440-VDRS06-00RH • XM-161: 1440-VDRS06-06RH • XM-162: 1440-VDRP06-00RH	• XM-361: 1440-TUN06-00RE • XM-362: 1440-TTC06-00RE	1440-DYN02-01RJ
Terminal Base	1440-TB-A	1440-TB-H	1440-TB-E	1440-TBS-J
Network Communications	DeviceNet	DeviceNet	DeviceNet	ControlNet
Certifications	CE, C-Tick, ODVA, UL, EEX, CSA Class 1, Div 2 Groups A,B,C,D	CE, C-Tick, ODVA, UL, EEX, CSA Class 1, Div 2 Groups A,B,C,D	–	CE, C-Tick, UL, ATEX, CSA, Class 1 Div 2 groups A,B,C,D
Selection Guide	GMSI1-TD049	GMSI1-TD040	GMSI1-TD056	IMC-TD003

Stratix Ethernet Switch At-A-Glance

	Stratix 8000™ and Stratix 8300™ Managed Switch 	Stratix 6000™ Managed Switch 	Stratix 2000™ Unmanaged Switch 	Embedded Switch Technology 1783-ETAP 
Hardware Features				
Ports Per Module	• 6 and 10 port base versions • 8 port copper or fiber expansion versions	4 and 9 port versions	4 to 8	3
Total Max Ports	up to 26*	–	–	3
Fiber Ports	2-10*	9 port version has 1 fiber port	4 and 7 port versions have 1 fiber port	–
10/100 Copper Ports	4-24*	4 to 8 ports	3 to 8 ports	3
100 Base LC Fiber Ports	0-8*	–	4 and 7 port versions have 1 fiber port	–
SFP Slots	2**	9 port version has 1 SFP slot	–	–
10/100/1000 Copper Ports	2**	–	–	–
100Mbps Fiber Support	Yes	–	4 and 7 port only	–
1G Fiber Support	Yes	9 port version only	–	–
CompactFlash Memory	Yes	–	–	–
Software Features				
Cisco IOS	Yes	–	–	–
VLAN	Yes ****	Yes	–	Yes
Layer 3 VLAN and subnet routing	Yes, Stratix 8300 only	–	–	–
QoS	Yes	Yes	–	Yes
Bandwidth Threshold Alarming	Yes	Yes	–	Yes
STP/RSTP	Yes	–	–	Yes
REP (resilient Ethernet protocol)	Yes	–	–	–
DLR (device level ring)	–	–	–	Yes
MAC ID Port Security	Yes	Yes	–	–
DHCP per port	Yes	Yes	–	–
SNMP Support	Yes	–	–	–
Port Mirroring	Yes	Yes	–	Yes
Manual Configuration Speed and Duplex	Yes	Yes	–	Yes
IEEE 802.1x Security	Yes	–	–	–
IGMP Snooping and Query	Yes	Yes	–	Yes
EtherChannels	Yes	–	–	–
Smartports	Yes	–	–	–
Specifications				
Operating Temperature	-40 to 60° C	0 to 60° C	0 to 60° C	0 to 60° C
Environmental Rating	IP20	IP20	IP20	IP20
Dimensions	147mm H 152mm W 112mm D***	114mm H 51mm W 89mm D	108mm H 28 to 45mm W 127mm D	132mm H 56.7mm W 105.1mm D
Power Requirements	24V/48 V DC	8-48 V DC	10-35 V DC	24V DC
Certifications	cUL certified; Class I, Div 2, Groups A,B,C,D, CE, C-tick, EX, ODVA	cUL certified; ETL Class I, Div 2, Groups A,B,C,D, CE, C-tick, EX, ODVA	cUL certified; Class I, Div 2, Groups A,B,C,D, CE, C-tick, EX	cUL certified; Class I, Div 2, Groups A,B,C,D, CE, C-tick, EX, ODVA
Selection Guide	1783-IN005	1783-IN004	1783-IN001	1783-IN007

* Max port counts require expansion modules ** 2 ports each can be used for SFP or 10/100/1000 copper *** Modular product size will vary with expansion modules **** With additional trunking capabilities

Services and Support At-A-Glance

Training Services



Maximize your job and automation asset performance with the right technical knowledge.

- Knowledge assessments help you build your own training plan
- Instructor-led training provide hands-on experience from technical experts
- Web-based training presents technical content for self-directed, self-paced instruction
- Workstations allow you to reinforce and practice skills, train new employees and help transfer knowledge

Acquire continuing education units (CEUs) from IACET (International Association for Continuing Education and Training) certified courses.

For more information, visit: www.rockwellautomation.com/services/training

Online & Phone Support



Quickly resolve technical issues through our product support specialists and integrated online tools.

- TechConnectSM Support provides unlimited, real-time access to our global network of Customer Support Centers and technical resources
 - Three levels of phone and electronic support to meet your specific needs, based on number of sites and product families covered
- Utilize our Knowledgebase to proactively find solutions to technical questions more quickly and software patch downloads
 - Proactive email notifications for new and updated Knowledgebase articles, PSAs, product notices, software and firmware updates, obsolescence notices, and more
 - Access to the entire library of Knowledgebase articles and direct access to our support engineers, Chat and Support Forums are available with TechConnect Support

For more information, visit: www.rockwellautomation.com/services/onlinephone

MRO Asset Management

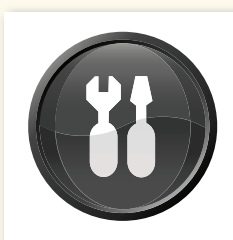


Proactively manage your MRO process spare parts inventory to help reduce unplanned downtime, extend equipment life and minimize repair and carrying costs.

- RAAMP[®] provides a proven methodology and a designated Asset Management Professional to optimize your inventory, simplify your repair transactions and drive cost savings.
- Spare Parts Management ensures your spare parts availability and helps to stabilize your budget with Rockwell Automation owned and managed inventory, fixed pricing and an in-service warranty on managed stock.

For more information, visit: www.rockwellautomation.com/services/assetmanagement

Repair Services

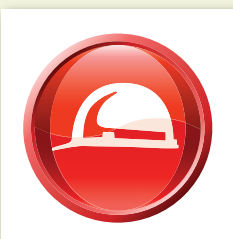


Minimize downtime and keep production lines running with quality repairs when you need them.

- Remanufacturing services puts each failed unit through a seven step, ISO certified remanufacturing process to restore the unit to "like new" or better condition, extending the life of your equipment
- Three delivery/warranty options:
 - Next Day / 24 Month Warranty
 - 3-5 Day / 18 Month Warranty
 - 2-3 Weeks / 12 Month Warranty
- Third party repair is available for all electric/electronic, mechanical and servo products

For more information, visit: www.rockwellautomation.com/services/repair

Onsite Support



Obtain Rockwell Automation field support professionals on as needed, scheduled or full-time basis to meet your specific needs.

- Repair and troubleshooting labor on an as needed or full-time basis to perform reactive and preventive tasks for your automation-related issues
- Extended parts and labor warranty includes reactive repair labor and replacement parts for your Rockwell Automation control equipment for up to five additional year
- Scheduled labor is available to quickly commission your Allen-Bradley drives, perform regular maintenance and to convert existing PLCs, drives and motors
 - quickly commission your Allen-Bradley drives
 - perform regular maintenance on your automation and related equipment
 - quickly convert your existing programmable controllers, drives and motors to new or different technologies

For more information, visit: www.rockwellautomation.com/services/onsite

Safety Services



Implementation and compliance of safety standards helps to reduce the risk of injuries, improve productivity and efficiency.

- Safety System Design and Integration Services provides the controls, integration, and start-up services
- Safety System Validation Services will help to provide proper safety system installation and functionality by evaluating circuit performance, fault tolerance, fault action, software logic, device application, device function and reset actions for all modes of operation
- Safety Assessments are your first step to creating a safety solution that will help you comply with current and emerging standards by providing consulting services for safety critical controls

For more information, visit: www.rockwellautomation.com/services/safety

Energy Services



Measure and analyze your energy usage with an Energy Assessment to determine actions necessary to create a sustainable production environment

- Energy related costs are controllable and if the proper steps are followed, you can achieve sustainable cost savings that show up on your bottom line
- The scope of an assessment scope is dependant on your manufacturing environment and sustainable production goals
- Assessments measure and analyze the energy usage for electricity, gas, water, air and steam with particular areas of focus (i.e., HVAC, boilers, metering)

For more information, visit: www.rockwellautomation.com/solutions/sustainability

Network & Security Services



Optimize your control network performance, reliability and security.

- Services are designed to support a project or system throughout its lifecycle
- Help assist you to reach necessary reductions in design and implementation costs, increase uptime and reduce future maintenance costs
- Consultants collaborate with you to help manage the differences between manufacturing and IT enterprises and their associated risks – done not only through technology, but policies, procedures and behavior

For each stage of the lifecycle – Assess, Plan/Design, Implement, Audit, Manage/Monitor, a wide range of offerings are available.

For more information, visit: www.rockwellautomation.com/services/networks

InSite Managed Services



Decrease your costs to support, manage and maintain your manufacturing convergence plans.

- Six separate components built on an infrastructure of advanced surveillance, diagnostics, knowledge management and hosting technologies
- Instant, global access to Rockwell Automation senior engineers, your dedicated InSite Primary Support Lead and team of application and process experts with detailed knowledge of your system(s)
- InSite fills support gaps, helps you manage risk and system complexities, enhance your system and provides information on-demand

For more information, visit: www.rockwellautomation.com/services/remote

Global Resources, Local Support



Providing the resources you need, when and where you need them, Rockwell Automation has an integrated, global network of ISO-certified repair centers, exchange hubs, field service professionals, IACET-recognized training centers, certified technical phone support centers and online tools.

We're Here to Help.