For an Integrated Architecture, Take Control With Logix.
Everyday you face a new challenge.

On the plant floor, it’s shortening the length of program development. Reducing spare-parts inventories. Spending less time for training and less money for maintenance. All while you try to satisfy top floor demands. Like reducing time to market. Producing product with zero defects. Or creating production lines that are more flexible.
Take Control with Logix

Until now, control systems used for process, discrete, drive or motion control were unique to the application. If you combined more than one of these types, you simply patched over the differences between two systems with communication gateways and/or expensive, custom software. The resulting “system” required multiple sets of controls, I/O, and programming packages, and multiple teams of process engineers, control engineers, maintenance personnel and/or information technology specialists.

Today, manufacturers demand a single set of engineering tools to improve integration across a facility or multiple facilities while removing the data gymnastics that have typically been required to capture data.

Rockwell Automation's Integrated Architecture allows manufacturers to replace isolated cells of activity with a single coordinated system. The result? Better information flow that removes complex and time-consuming filters, providing real-time data for effective decision making to employees across the enterprise.

Allen-Bradley Logix platforms provide a single control architecture for discrete, drives, motion and process control of complex analog and batch applications.

Now, with Rockwell Automation’s Integrated Architecture that includes Logix for control, NetLinx for open networking and ViewAnyWare for visualization, e-manufacturing becomes more than a buzzword. Now remote customer order entry to manufacturing to product delivery becomes a reality.

The open approach provided with Rockwell Automation’s Integrated Architecture offers an immediate return:

- Reduce integration costs
- Lower total cost of ownership
  – less training
  – fewer spare parts
  – more efficient maintenance
- Higher quality and productivity
- Information enabled architecture
  – seamless communications from shop floor to top floor
  – RSBizWare
  – asset management

ControlLogix™
a high-performance, multi-processing platform

ProcessLogix™
a cost-effective, hybrid distributed control system (DCS) for process applications

SoftLogix™
PC-based control from the PLC leader

DriveLogix™
Combines the power of AC drive technology with a high performance Logix engine

FlexLogix™
FLEX I/O expanded to include distributed control

CompactLogix™
For smaller, machine-level applications
Logix platforms allow you to return, project after project, to a completely integrated plantwide control system. Each time, you’ll have the freedom to choose the control platform best suited for your application. You’ll select from the high-performance ControlLogix and SoftLogix, to the DIN-rail mounted FlexLogix platform, and the small, value-based CompactLogix platform.

You’ll be able to recoup your earlier investments in programming, training and hardware in the RSLogix 5000 programming package. Because the programs you create can be re-used in whole or in part with any of these platforms, across a broad range of applications, including sequential, motion, process and drives control. And you’ll program these controllers in the same programming environment.

Using the same instruction set. The result; reduced complexity in an architecture that’s easier to design, operate, and maintain. With Logix platforms, you’ll be able to tackle applications ranging from a handful of I/O points to those with thousands of I/O points.

All Logix platforms make use of the NetLinx open networks architecture. Using networks that include EtherNet/IP, ControlNet, and DeviceNet, you can control, configure and collect information from Logix platforms.

Enhanced productivity. Consistency. Flexibility. All leading to a lower total cost of ownership. From a world leader in automation solutions. Able to offer a broad range of automation products together with consultation and support throughout every phase of your project with global backup services, asset management and worldwide distribution network.

With Logix, you’ve got everything under control.
A versatile control architecture like Logix should be supported by an equally versatile communication architecture. It is. We call it NetLinx and it provides common protocol, services and features to the EtherNet/IP, ControlNet and DeviceNet networks. As a result, information can be communicated seamlessly throughout the plant, from shop floor to top floor, and to and from the Internet for e-business applications.

The NetLinx architecture, created specifically for industrial automation, provides the ability to control, configure and collect data on a single network, thus simplifying your plant communications. Both time-critical communications, such as I/O and interlocking, and messages are supported without impacting performance of the network. Since EtherNet/IP, ControlNet and DeviceNet use the same protocol and architecture, all devices can communicate on a network or even across networks without translation or special programming. The NetLinx architecture enables you to choose the type of network, media and topology the application requires, and mix and match NetLinx based networks without adding complexity or sacrificing performance. You can control and configure devices and collect data anytime or any place in the system. The result is a single system designed specifically for your needs.

**INCREASE YOUR NETWORKING FREEDOM**

The NetLinx Communication Architecture allows you to configure and control devices and collect data from a single point across multiple networks.

The NetLinx architecture is future-proof

- The protocol and services are used on Ethernet TCP/IP and CAN, both commercially available technologies. It can readily be applied to the next commercially accepted network and integrated into existing plant systems
- ControlNet managed by ControlNet International (CI), DeviceNet managed by the Open DeviceNet Vendors Association (ODVA) and EtherNet/IP managed by both CI and ODVA are supported by more than 500 vendor companies. You have choices of vendors and products that have been tested for conformance
- Link your plant networks to your business networks and Internet using the NetLinx architecture
- View your system and devices from any place at any time. Take control of your operations
Add Devices While Maintaining Performance
System designers can add devices and maintain performance by scheduling the data within the established network update time on ControlNet. The devices can be configured to operate at different update rates and maximize the use of the bandwidth. This feature of the NetLinx network architecture allows more devices to be placed on the ControlNet network without creating a negative impact on performance.

A key reason for the high performance found in the ControlLogix and ProcessLogix platforms in particular is a chassis backplane that operates as a very fast network and minimizes translation requirements to processors, I/O, and communications modules that include an intelligent backplane interface. For that reason, no processor or additional programming is needed to perform bridging and routing of I/O – on the communication modules required to move data from network to network.
An Information Enabled Architecture
To remain competitive in today’s global marketplace, you need the right information, in the right place, at the right time. Rockwell Automation offers a ViewAnyWare strategy that provides hardware and software visualization solutions.

The ViewAnyWare strategy bridges the gap between machine-level operator interface devices and supervisory-level Human Machine Interface (HMI) solution, maximizing Rockwell Automation’s proven expertise in Allen-Bradley electronic operator interface products and industrialized PC hardware, and Rockwell Software’s supervisory control software. It provides interoperability and a common development environment across products. The result? A scalable and unified suite of monitoring and control solutions for use virtually anywhere in your manufacturing enterprise—offering you faster application development and implementation, higher productivity and flexibility, and overall lower costs.

Solid Solutions
ViewAnyWare solutions support an operator interface that closely matches the application, offer integration capabilities for lower cost and better performance, provide backward compatibility and forward-friendly features, and act as a single source of accountability for hardware, software, and networking portions of the application.

Rockwell Automation’s RSBizWare solutions provide the services, tools and applications that enable you to seamlessly link your business systems with your plant-floor systems, giving you the ability to analyze real-time manufacturing data. Using this integrated architecture, you will realize significant business process improvements by combining manufacturing automation systems with information systems.

Rockwell Automation’s ViewAnyWare strategy reduces the Total Cost of Ownership (TCO) and improves productivity by offering: a common look, feel, and navigation, scalability across platforms, and portability of your application.

ViewAnyWare: A Scalable Architecture

- A common development environment that supports application reuse and portability
- Scalability from simple graphic displays to highly sophisticated supervisory systems
- Compatibility with the full range of Allen-Bradley hardware platforms, from highly optimized embedded systems to open, Intel-based industrial computers
- Compatibility with Rockwell Software’s open, flexible, visualization software technologies
- An open and flexible architecture founded on Microsoft’s DNA for Manufacturing
RSLogix 5000 software offers a single programming environment for ControlLogix, FlexLogix, CompactLogix, SoftLogix, and DriveLogix. It permits programmers, system integrators and OEMs to reduce development time and maximize reuse of code.

Because RSLogix 5000 is compatible with multiple Logix platforms, you spend less time learning programming packages. With RSLogix 5000, you can blend ladder logic with function block programs. And just as important, you can combine applications such as process, motion, sequential, and drives control. New features can be downloaded via software and firmware, making them available across all Logix platforms without expensive hardware upgrades.

**Reduce Application Development Time and Maximize Reuse of Programming Code**

RSLogix 5000 software is symbol-based, and is highly independent of the system hardware.

Symbolic, application-specific names like ‘fill temperature’ make it easy for you to learn new applications. Since these names are stored within the controller, data is accessible by tag name for faster troubleshooting, even at remote facilities where source code may not be available.

By adding application-specific instructions, for example in motion control, programming time is greatly reduced. Often a single instruction replaces several lines of code.
With RSLogix 5000, you'll create reusable program modules. Each time you reuse the program module you simply associate it with its companion I/O and system data. We call this feature 'tag aliases'.

Applications you create with RSLogix 5000 use IEC 1131-3 compliant symbolic data addressing. This, along with the ability to create user defined structures and multiple data scopes, gives you the ability to tightly couple the Logix5000's memory layout to the application. The result? Self-documented code providing an intuitive environment with improved readability and reduced application development and support costs.

Use a Programming Environment That's More Intuitive
RSLogix 5000 software offers programmers convenient drag-and-drop editing, a relaxed editor for modifying multiple rungs of logic simultaneously, and logic entry via the keyboard or point-and-click interface. The programming environment also makes it easier to maintain sophisticated control applications.

By representing the controller environment in an easily understood tree configuration, applications can be reduced to small, easily understood parts while maintaining overall program organization.

Less effort is required for set-up, configuration and system maintenance using the advanced I/O configuration and management tools in RSLogix 5000 software.

In a world of ever-changing software, RSLogix 5000 tools offer a stable programming environment. It complies with IEC-1131 programming standards. A Windows NT environment provides drag and drop, and cut and paste capabilities. And RSLogix 5000 retains features common to RSLogix 5 and RSLogix 500 used with PLC and SLC controllers. With RSLogix 5000, you'll create libraries of standard routines you can reuse on future applications.

RSLogix 5000 includes the RSWho browsing tool. This makes going on-line merely a point-and-click away and network configuration and paths are viewable on screen.

More efficient diagnostic monitoring is made possible with this RSLogix 5000 trending tool that monitors values as they change on a Logix controller.
Function Block Programming

That’s Flexible
With Logix, Function Block Diagram (FBD) routines are stored on the Logix controller as native FBD routines. Since all sheet layout information, block positions, pin visibility, and wiring information is stored on the controller, RSLogix 5000 software permits you to upload and view FBD routines without having the original source program. This greatly simplifies field maintenance of applications.

Function Block That’s Integrated
You don’t have to learn special software to use Function Block Programming. The FBD editor is an integral part of RSLogix 5000. You can easily program in both ladder and FBD within the same controller, sharing data between those routines via the common RSLogix 5000 database. That allows you to program different portions of your applications with the most appropriate editor.

Use a context sensitive element toolbar to insert a function block instruction.
The function blocks you create automatically generate documentation that is stored on the controller where it can be accessed long after development for troubleshooting and maintenance.

Automatically Generate Documentation and Visualization
The RSLogix 5000 Function Block Editor is well suited for time-pressed programmers. Each function block instruction has an associated data structure pre-specified. This saves you considerable programming time and effort. In addition, you can tailor the configurable function blocks to meet your application requirements. Another productivity enhancing feature includes the ability to reference and modify tag data from the logic used in other routines.

Passing values between functions is as easy as point-and-click and visible pins can be connected to other blocks to pass values between functions.

Several instructions including Enhanced PID and Totalization come with ActiveX® faceplates. These faceplates can be dropped into ActiveX container applications such as RSView, quickly and economically integrating operator control with FBD logic.

Default tag names and the tag structure are specific to the type of function block used.
Equally Powerful in Traditional Continuous Process Application, Batch Process or Web Process

In addition to process control capabilities, the Function Block Diagramming editor includes a function library that makes it much easier to apply the Logix controller to process and drives applications, while reducing the need to write large amounts of custom code. It also includes a set of drives control instructions well suited for such applications as tension regulation, dancer control, draw control, and winder/rewinder control.

As a result, the same Logix controller and RSLogix 5000 programming software you use for sequential, motion, and process control can handle drive systems control needs ranging from sectional control to highly-distributed and demanding system applications.

And for coordinated drive system applications we offer the PowerFlex 700S DriveLogix drive with an embedded Logix engine.

The 1756-DM module offers connectivity to Reliance Distributed Power System (DPS) drives. The 1756-SYNC module allows high speed coordination between ControlLogix and PowerFlex 700S DriveLogix drives.
Over recent years, programmable logic controllers have become extremely capable process controllers. The range of available analog I/O and HMI devices has been greatly expanded, and today’s processors combine powerful math capabilities with their legendary discrete competence.

With the Function Block editor in RSLogix 5000, we provide an extensive library of process functions that simplify writing closed-loop control applications. Each process function is the equivalent of several lines of RLL code, and often supports extremely complex logic.

Using the RSLogix 5000 process function library, you won’t waste valuable time coding process control functions. Instead you’ll quickly configure application strategies that are easier to debug, install, operate, and maintain.

Logix-based process control is further simplified using the pre-configured operator faceplates in RSLogix 5000. These faceplates can be dropped into any ActiveX container such as RSView visualization software, often eliminating the need to create custom operator screens. And because RSLogix 5000 is used to program all the Logix platforms, process capabilities are easily scaled to work with smaller Logix platforms like FlexLogix.

Keep Your Process Running with Redundant Logix Processors and Power Supplies

Large batch and continuous process applications can’t afford control system downtime. Optional ControlLogix hardware redundancy modules support fully-redundant controller architectures with no additional programming required. Programs are automatically cross-loaded, first to the primary, then to the backup controller system. At this point, all you’ll need to create a redundant system is to insert System Redundancy Modules into each of two identical controller chassis.

Then, if the primary controller fails, control is automatically switched to the backup system. Highest priority functions are guaranteed a ‘bumpless transfer’ during control switchover, extremely important for process control applications.

Optional redundant power supplies help assure distributed controllers and I/O chassis keep running in the event of primary power supply failure.

Using high-performance ControlLogix processors, you’ll be able to implement extremely sophisticated, redundant process control solutions. And with specialty I/O modules such as the Configurable Flow Meter Module and the High Resolution Analog Module, you’ll be able to use ControlLogix across a wider range of applications.

ProcessLogix is available for applications where a DCS control system is desirable.
Logix takes a new approach to integrating motion and sequential control that results in faster application development and integration, higher system performance, and greater ease of start-up and maintenance. Where other control systems require multiple controllers and programming packages, the Logix approach is fully integrated, with these functions performed by a single controller and programming software. Motion control functions are embedded in RSLogix 5000 programming software and in the ControlLogix and SoftLogix controllers.

Having a single, integrated package makes maintenance and troubleshooting easier because the same programming environment is used for both motion and sequential control during development and operation of the system.

**Distributed Processing Heightens System Performance and Integration**

The Logix approach to motion control employs synchronized, distributed processing to provide a motion solution offering heightened performance and integration. Both the ControlLogix and SoftLogix controllers execute ladder-based motion commands and a motion trajectory planner while the servo module(s) provide connectivity to the servo drives via a fiber optic (SERCOS interface) or a +/- 10V analog interface. Benefits of this approach include:

- Precise motor position and velocity control resulting from a fast 200 microsecond fine planner, position loop and velocity loop closure for all axes
- Modular processing, including the ability to add Logix controllers for additional processing power
- Control as many as 32 axes from a single Logix controller application program

An 8-axis SERCOS interface module provides the drive connectivity and control over a fiber optic ring. Standard features of the SERCOS interface module include:

- Each module supports 8 drives
- Supports high resolution, multi-turn, absolute feedback
- 250 microsecond fine planner, position loop, and velocity loop closure
- 2 high-speed, 1 microsecond registration inputs per axis

In ControlLogix, the 2-Axis analog module provides the drive connectivity and control using an analog interface. Standard features of the module include:

- 2 channels of 4MHz quadrature encoder input and 16-bit analog outputs
- 4 high-speed 1 microsecond registration position latches
- 200 microsecond fine planner, position loop and velocity loop closure

Access and drive configuration is made easy using RSLogix 5000's motion configuration wizard and configuration of a CAM profile can be accomplished easily with RSLogix 5000 software.
The SoftLogix two axis motion card provides:

- 2 channels of +/-10 volt velocity or torque command output
- 2 channels of 4Mhz quadrature encoder input
- 4 high-speed 1 microsecond registration position latches
- 200 microsecond fine planner, position loop and velocity loop closure

The SoftLogix two axis motion card (1784-PM02AE) plugs into the PC’s PCI slot to provide connectivity to servo actuators for up to 32 axes in any mix of virtual, consumed, servo, and feedback-only. As many as 8 may be servo and/or feedback-only axes.

RSLogix 5000 programming software is the only programming software needed to fully configure and program an integrated Logix motion solution. Software motion features automate what was often a manual motion control development process. Features include:

- Wizard-driven axis and drive configuration and commissioning
- Drive hookup diagnostics and auto-tuning
- Ladder-based application programming, including 32 motion control commands
- Online editing and monitoring
- Graphical CAM profiling tools
- Graphical in-line trending

Logix provides an integrated programming environment for both motion and sequential control that enables faster development of application programs, higher performance, more complete integration, and improved ease of maintenance.

Four Step Motion Control

1. Insert ControlLogix 8-Axis SERCOS, 2-Axis Servo analog or SoftLogix motion card and wire to field devices.

2. Use RSLogix 5000 software to name and configure each motion axis and drive.

3. Use RSLogix 5000 software to develop a program using any of 32 motion instructions.

4. Download application program to controller and run.
ControlLogix at-a-glance:
- Modular, high-performance control platform suited for sequential, process, drive, and motion control
- Mix multiple processors, networks, and I/O without restrictions
- Uses the same RSLogix 5000 programming environment and Logix control engine as other Logix controllers
- Connects to the NetLinx open networks architecture
- Wide range of analog, discrete and specialty I/O

ControlLogix sets a new standard for the PLC to provide the high performance your application requires in an easy-to-use environment.

The ControlLogix controller, with three memory options ranging up to 7.5Mbyte supports intensive process applications, and provides fast processing of motion instructions. The memory options allow you to specify the appropriate controller for your application.

The ControlLogix platform offers a superior approach to control, one that places communications at the core to combine processing power, flexibility and ease of use.

The high performance of the ControlLogix platform is due in part to the ControlLogix backplane which operates as a very fast ControlNet network. ControlLogix processors, I/O, or communications modules have the intelligence to act like independent nodes on that network. As a result, multiple processors, communication modules, and I/O can be mixed without restrictions. No processor is needed to perform bridging and routing of I/O, and as your system grows, ControlNet permits distributing control to additional chassis.

The ControlLogix platform fits easily within existing plant communication systems, with communication modules for DeviceNet, ControlNet, and EtherNet/IP along with other networks, including Data Highway Plus and Remote I/O.
A variety of wiring termination options are available for your ControlLogix I/O modules. Removable Terminal Blocks (RTBs) come in both spring clamp and screw clamp styles. They are also compatible with Allen-Bradley Bulletin 1492 Wiring Systems which include Wiring Cables and Interface Modules (IFMs) as shown.

ControlLogix is a high performance, easy-to-use controller.

- A single platform for sequential, process, drive or motion control to reduce system complexity.
- ControlLogix is multi-tasking, reducing the number of controllers needed. Troubleshooting is faster. And multiple periodic tasks can be triggered differently to achieve higher levels of performance.
- Multiple ControlLogix processors can reside in a single chassis for future expansion.
- ControlLogix uses RSLogix 5000 programming software for maximum program reusability.
- An extensive library of process and drives functions makes it easy to create complex closed loop and drives control functions. Stored in native form on the ControlLogix controller, functions are extremely easy to view and maintain and are supported on other Logix control platforms.
- Data within each ControlLogix is easily shared for real time data exchange, and improved data sharing with reduced development time and startup costs.
- A wide range of analog, digital and specialty I/O modules to meet your application demands.

- Communications modules can be added as needed for a variety of networks.
- A non-volatile memory option is available so programs can be saved without a battery.
- ControlLogix complies with international standards and can be shipped worldwide.

Redundant ControlLogix

Optional hardware redundancy modules support a fully-redundant controller architecture. A self-learning feature means redundancy requires no additional programming. Programs are automatically cross-loaded from the primary to the backup controller, so redundancy requires only a pair of Redundancy Modules and two identical controller configurations. Optional redundant power supplies keep your ControlLogix systems running in the event of primary power supply failure.

The ControlLogix controller offers highly integrated motion control. You have only one software tool to learn and one program to maintain for both motion and sequential control.
Tight integration between the programming software, controller, and I/O reduces development time and cost at commissioning and during normal operation. ProcessLogix and SoftLogix platforms also make use of this powerful range of I/O.

During commissioning, ControlLogix I/O allows you to be more productive:
- RSLogix 5000 software provides diagnostic screens so you can configure, diagnose, and fine tune the system
- An analog I/O module wizard allows you to configure each channel, including range selection, alarming, filtering and scaling, without mechanical switches or jumpers
- A discrete I/O wizard allows each discrete channel to be configured independently for change-of-state input behavior and output state during a fault

During normal operation, ControlLogix I/O modules help keep your systems up and running:
- Both standard and specialty modules offer fault detection (self-diagnosing) at the module-level
- RSLogix 5000 provides I/O monitor and fault data
- Electronic keying assures that a module replacement is the correct type and revision
- The exact match option guarantees that a replaced module is an exact match, critical for agency-certified pharmaceutical and other applications
- The compatible keying option allows replacing a module with one that is identical except for revision level, without immediately reconfiguring the entire system
- Selectable time-stamping of control and diagnostic data helps measure process improvement
- Producer/consumer technology decreases traffic and increases bandwidth

**Producer/Consumer I/O Model**

- **Input Modules**
- **ControlLogix Controllers**
- **Output Modules**

I/O modules produce data on an as-needed basis, increasing the speed and efficiency of communication while lessening the burden typically assumed by a controller.
During maintenance and troubleshooting, ControlLogix I/O modules can provide the data needed to prevent or to quickly solve plant floor problems:

- Diagnostic modules detect broken wire, loss of field power and no-load conditions
- You can request module identification data (such as catalog number, series/revision) on demand
- Flash memory allows module firmware upgrades to be performed by the end-user
- Electronic fusing on select modules allows resetting via software
- Removal-and-insertion-of modules under power (RIUP) means faster and more efficient maintenance with no interference to the application process when servicing ancillary or non-critical connections

A Wide Selection of I/O
ControlLogix offers over 40 chassis-based I/O modules, including the following types:

- Isolated and non-isolated digital I/O, including 120VAC, 120/240VAC, 24V dc, electronically fused and relay outputs, sink/source capabilities
- Field side diagnostic digital I/O, including 120 vac and 24V dc
- Isolated and non-isolated analog I/O
- Temperature sensing inputs, including thermocouple and RTD
- Specialty I/O, including high speed counter, programmable limit switch and configurable flow meter modules with totalization and prover functions

Setup of I/O modules takes less time with these RSLogix 5000 module-specific configuration screens.

1756 diagnostic modules include detection of point-level faults such as broken wire, loss of field power and no load conditions. The controller organizer provided in RSLogix 5000 software indicates module fault conditions.
SOFTLOGIX: PUT INFORMATION AT THE CENTER OF YOUR CONTROL ARCHITECTURE

SoftLogix at-a-glance:
• Integrated Motion Control
• Platform independence (whitebox, industrial computer, laptop, etc.)
• Network agility – connection to open networks, including DeviceNet and ControlNet
• Customization – Data access, virtual backplane toolkit
• Support for multiple I/O interfaces, including ControlLogix I/O
• Uses the same RSLogix 5000 programming software and Logix control engine as the other Logix platforms

All The Information You Need
With SoftLogix all the information you need for analysis, display, programming and control can be placed on an industrial or desktop computer. SoftLogix5800 combines a high performance Logix control engine with the power and openness of your PC. The result? A reliable open, PC-based control solution that provides improved flexibility, connectivity and information integration.

With SoftLogix5800, you can truly link the production area “shop floor” with the front office “top floor.” Control, motion, Human Machine Interface (HMI), and information processing now come together in an integrated solution for lower total cost of system integration and increased productivity.

SoftLogix for PC-Based Control
A typical SoftLogix system starts with a virtual chassis application running on a Pentium based computer. The virtual chassis “houses” the processors and communication cards that interface to other Logix processors as well as I/O. Application debugging and system start up is now made easier through the use of simulator modules (1789-SIM) provided with SoftLogix for use in the virtual chassis.

Imagine a warehouse with a conveyor loop connecting incoming materials and outgoing shipments. Data read by a bar code reader must be compared with the MES database information, to determine the state of a diverter switch on the conveyor for sorting materials. I/O is scattered across wide distances. Execution time and network response time is critical. The solution? SoftLogix, combined with RSView on an industrial (such as the Allen-Bradley 6180 family) or personal computer. SoftLogix5800 provides the widest choice of commercially available I/O, easily bridges the gap between control and information worlds, while delivering a world class application solution.

Maximum Choice, Maximum Flexibility
SoftLogix allows for integration of third party networks or applications through the use of Virtual Backplane Toolkit available through the Rockwell Automation Encompass Program.

Future releases of SoftLogix will allow you to integrate your program with external routines written in C or another language. Then add the network or select the I/O that best fits your application.

Find New Uses For Your Logix Investment
SoftLogix uses the same Logix control engine (in soft form) and RSLogix 5000 programming software as the other Logix controller platforms. It also works with 1756 and other I/O modules. An elegant choice when your application calls for blending soft control into a traditional Logix environment.
Integrate Motion Control From Your PC

Motion control is built into the SoftLogix5800 control engine, for faster development and easier start-up and maintenance. Unlike control systems that require multiple controllers and programming packages, the Logix approach is fully integrated, using a single controller and programming software. SoftLogix executes motion commands and provides motion trajectory planner, while the 2-Axis Servo card executes a fine planner and closes a position and velocity loop using serial communications over RS-232 to interface with barcode and motion devices.

SoftLogix5800 provides an easily-integrated, high performance motion system with higher levels of performance than traditional PC based motion controllers. It executes motion commands and generates motion profiles directly on the native PC processor. This "SoftMotion" approach permits you to apply the speed and power of today’s PC's to solve the most demanding applications.

A Single Window For Control

The SoftLogix chassis monitor provides a window to all SoftLogix functions, including configuring, controlling, and collecting data via optional ControlNet, DeviceNet, or Motion Control interface cards. The chassis monitor also permits processor mode to be changed, and allows you to view system status.

Begin by adding a new device profile – for devices such as network cards or I/O modules.

Create a complete I/O device tree using RSLogix 5000 to configure I/O parameters such as diagnostic data, alarm levels, and faults.

Then develop your complete control program with RSLogix 5000. With three versions of SoftLogix, match your application with the most cost-effective platform.

- SoftLogix5860 supports a maximum of 16 slots in the virtual chassis plus 6 instances of the Logix engine and motion control
- SoftLogix5830 supports up to 5 slots in the virtual chassis plus 2 instances of the Logix engine and 1 axis of motion control
- SoftLogix5810 supports up to 2 slots in the virtual chassis plus one instance of the Logix engine
Distributing control drastically reduces field wiring and heightens performance because it places the controller and I/O close to the machine or process being controlled. To achieve this, the FlexLogix platform distributes control without the compromises common to other solutions.

FlexLogix uses the same Logix control engine and RSLogix 5000 programming software found in other Logix platforms. FLEX I/O, the compact, DIN-rail mounted I/O found in thousands of industrial applications, is the perfect companion to this capable controller. FlexLogix supports the RSLogix 5000 function block library, making this an ideal, inexpensive multi-loop controller.

FlexLogix uses NetLinx for communication to other devices on ControlNet, with DeviceNet and EtherNet/IP connectivity available in the near future. A FlexLogix system will include most or all of these elements:

- FlexLogix Controller
- Communication Card
- FLEX or FLEX Ex I/O Modules
- FLEX Extender Cable
- FLEX Power Supply

**FlexLogix at-a-glance:**
- Adds local control to FLEX I/O to reduce wiring
- Provides a distributed architecture less vulnerable to a single point of failure
- Reduce startup and simplified maintenance because control resides close to the machine
- Uses the same RSLogix 5000 programming environments and Logix control engine as other Logix controllers
- Connects to the NetLinx open networks architecture for more efficient network communications and increased throughput

**FlexLogix is as simple as one, two three . . .**

**One: Choose the Memory Size You Need**
- FlexLogix5433 (64Kbyte fixed memory)
- FlexLogix5434 (512Kbyte fixed memory)

**Two: Select the Communications You Want**
- Two slots for optional communication cards offer you connection to the NetLinx architecture over ControlNet or, in the near future, DeviceNet and EtherNet/IP.
- Fiber optic ControlNet communication cards permit FlexLogix systems to communicate over this intrinsically safe medium, while providing high immunity to EMI and RFI noise ingress. These cards are offered in a single fiber, non-redundant version, and in a dual fiber, redundant version.
- Built-in RS-232 port enables connection to a local programming or serial device

**Three: Determine How Much I/O You Want to Control**
As a distributed controller, the FlexLogix system is optimized for applications of 128 to 512 points of I/O. You determine whether these I/O points are controlled:
- Locally, from one or two DIN rails. A local adapter module (1794-FLA) on the second rail links the two I/O rails.
- Remotely, over a ControlNet network or, in the near future, DeviceNet or EtherNet IP.

In general, local control is faster because communication does not require sending messages across a network. Remote communication speeds will vary based on the type of network and system configuration.
In a centralized control architecture a master controller scans for I/O data. Centralized control is inherently communication intensive and a single controller failure could shut down the entire system.

A distributed control architecture has these advantages:

- I/O data is handled locally and transmitted only when an event occurs, creating a less communication intensive architecture
- Control does not depend on a single master controller, creating an architecture less vulnerable to a single point of failure
- Control resides close to the machinery, establishing multiple control zones for modularity that reduces startup and increases the ease of maintenance

Choose between two memory sizes, the 84 Kbyte FlexLogix5433 controller or the 512Kbyte 5434 controller.

You can choose up to two optional daughter cards for ControlNet or, in the near future, EtherNet/IP or DeviceNet networks.
FLEX I/O ELIMINATES SPACE, WIRING, AND BUDGETARY CONSTRAINTS

FLEX I/O combines a terminal strip with an I/O interface to eliminate terminal blocks and reduce wiring. Today, FlexLogix supports thirty-three 1794 FLEX modules and six 1797 FLEX Ex modules. FLEX I/O modules are placed directly onto a terminal base near the device being controlled, reducing the length of wiring between device and I/O. The compact size of FLEX I/O enables the use of panels that are smaller in size and are closer to the device.

FLEX Ex mounts directly into the hazardous area, eliminating the need for separate IS barriers/isolators, long wiring runs in hardened conduit or bulky explosion proof enclosures.

The I/O options provided by the FLEX family of I/O continues to expand. A number of terminal bases are available, including NEMA screw, spring clamp, fused, temperature (for cold junction compensation) and grounded.

Traditionally, controller I/O modules must be wired to a terminal strip, which is then wired to field devices.

FLEX I/O combines a terminal strip with an I/O interface to eliminate terminal blocks and reduce wiring.

Up to 8 local FLEX I/O blocks connected to the FlexBus local connector on the FlexLogix controller (1794-L33 or 1794-L34)

Up to 8 additional FLEX I/O blocks connected to the FLEX local adapter (1794-FLA)

Additional FLEX I/O on ControlNet
The following types of FLEX I/O modules can be controlled both locally and remotely by the FlexLogix controller:

- Communication Adapters: ControlNet and ControlNet Redundant
- 120V ac: Input/Output and Isolated Input/Output
- 220V ac: Input/Output, 8 point
- 24V dc: Input/Output and Sink/Source Input/Output, Protected, Electronically Fused, 8 and 16 point
- 48V dc: Sink/Source Input/Output, 16 point
- 24V dc Analog: Selectable Input/Output, 4 and 8 point
- 24V dc Isolated Analog: 4 point
- Relay: Sink/Source, 8 point
- Thermocouple/mV Input: 24V dc
- Frequency Input: 24V dc

The following types of FLEX Ex modules can be remotely controlled by the FlexLogix controller over a ControlNet network:

- Communication Adapter: ControlNet Redundant
- Digital Modules: Ex NAMUR
  16 Sink Input, Ex 4 Source Output
- Analog Modules: Ex 8 Input
  16 bit, Ex 8 Output 13 bit
- Frequency Input Module:
  2-Channel Ex High Resolution
- Thermocouple/mV Input Module:
  Ex 8 Input 16 bit

FLEX I/O can also be used with ControlLogix, SoftLogix, and DriveLogix controllers.

Currently all FLEX I/O and FLEX Ex are supported except for:

- 1794-IR8, IT8, -VHSC, -ID2, IP4
- FLEX Integra
- Third party modules

**FLEX Ex mounts directly into the hazardous area, eliminating the need for separate IS barriers/isolators, long wiring runs in hardened conduit or bulky explosion proof enclosures.**

FLEX I/O at-a-glance:

- FLEX I/O mounts vertically or horizontally, and may be placed in a continuous stack or in two segments
- You can mount the system onto a standard DIN rail or onto a wall or panel
- The FlexLogix controller can be located nearby or remotely from the machine and the FLEX I/O it controls

The result: more efficient plant floor wiring, system startup, and maintenance.
CompactLogix is a small, powerful Logix-based control system. Combined with Compact I/O, the CompactLogix platform is perfect for tackling smaller, machine-level control applications with unprecedented power and scalability.

CompactLogix is ideal for systems that require stand-alone control. Think OEM applications. Think skid-mounted equipment. Think every place you need economical, reliable control.

Small, yes. However, CompactLogix can handle some very daunting control tasks with a flexible I/O structure that can handle the most ambitious machine-level control applications.

**Scalable to Meet Application Requirements**

You have a choice of two control processors, so you can scale the system perfectly with your application.

- The CompactLogix5320 is optimized for stand-alone duty. It supports up to 128 local I/O points.
- The CompactLogix5330 supports up to 16 I/O modules, and interfaces to DeviceNet, EtherNet/IP, or DH-485 networks.

**Utilizes Popular Compact I/O Modules**

CompactLogix takes full advantage of the power and flexibility of Compact I/O. These rackless I/O modules offer superior functionality and high value at an extremely competitive price. With both analog and digital modules available, the CompactLogix platform is easily integrated into systems with a variety of input and output requirements.

**A member of the highly-scalable Logix family of controllers**

CompactLogix integrates easily with other members of the Logix family of controllers. This versatile controller is programmed using RSLogix 5000, just like other members of the Logix controller family. So if you are running SoftLogix or ControlLogix, you can easily duplicate and scale existing programs to run on CompactLogix.

CompactLogix. A cost-effective, yet powerful, small, modular Logix solution.
**A SMALL CONTROLLER THAT FITS YOUR SYSTEM**

CompactLogix connects easily to DeviceNet and EtherNet/IP.

### Expansive Communication Capabilities

CompactLogix controllers communicate to SLC controllers and PanelView operator interfaces over the Allen-Bradley DH-485 network, and easily connect to DeviceNet and EtherNet/IP via a network interface module. CompactLogix’s full duplex master/remote communications capabilities provide SCADA application support.

That’s a lot of power in a very small, economical package. It comes with the power of the Logix architecture with the space efficiencies of Compact I/O.

- Each CompactLogix processor provides a built-in RS-232-C port that supports DF1 and half-duplex protocols, DH-485 protocol, and ASCII.
  
  The RS-232-C ports can be used for direct connection of a programming, operator interface device, or connection to a network interface module, and support dial-in remote programming.

  CompactLogixS330 provides 2 RS-232-C ports for expansive communication capabilities.

  - **ASCII** – a full ASCII command set for the RS-232-C port allows CompactLogix to read and write with ASCII devices such as barcode readers, weigh-scales and printers.
  
  - **DH-485** – connect to a DH-485 network through our Advanced Interface Converter (1761-NET-AIC).
    The DH-485 network can connect up to 32 devices. The communication port provides peer-to-peer communication.
  
  - **DeviceNet** – Connect to a DeviceNet network of up to 64 devices through our DeviceNet Interface (1761-NET-DNI). The DeviceNet interface provides slave I/O, peer-to-peer, and program upload/download capability.
  
  - **EtherNet/IP** – Connect to an Ethernet network through our EtherNet/IP interface (1761-NET-ENI). The EtherNet/IP interface provides peer-to-peer and program upload/download capability.
Because of its compact size, wide variety of available modules, flexible mounting options and quick start up and replacement, Compact I/O provides a cost-effective solution for applications ranging from petrochemical to material handling.

**1769 Compact I/O**

The Compact I/O family offers innovation and flexibility in a unique, patented I/O platform. It provides superior performance, functionality, and ease of use.

- Compact I/O is optimized for use with Allen-Bradley MicroLogix and CompactLogix controllers, and can function as distributed I/O with the appropriate network adapter like DeviceNet.
- Priced competitively, this is the I/O platform for the cost-conscious manufacturer.
- Rack type features in a rackless design reduces costs and replacement parts inventory.
- A unique patented bus connector is movable to allow easy module exchange or replacement, and is a key element of the front insertion and removal feature. The ability to mix module types further expands its application spectrum.
- 16 point I/O high density in a small package permits Compact I/O to fit into a 4-inch (102 mm) deep enclosure.
- Flexible world-class mounting options permit DIN rail or panel mounting.
- Removable terminal blocks, finger-safe covers, speed module replacement and meet world-wide market needs.
- Individual point diagnostic LED’s for ease of troubleshooting.
- Software keying to prevent placing a module in an incorrect position.
- UL, CUL (CSA) and CE certified; Class 1 Div 2 Hazardous Environment Class rated.
The Allen-Bradley PowerFlex 700S DriveLogix AC Drive, a version of the PowerFlex 700 AC drive with embedded Logix, will offer optimized integration for demanding drive control and drive system applications. The PowerFlex 700S DriveLogix will combine the performance and control of PowerFlex AC drives with the high-performance Logix engine to produce a highly functional, cost-effective drive and control solution. This drive will be configurable for Sensor or Sensorless Field Oriented Control, Brushless Permanent Magnet or Volts per Hertz operation. With the embedded Logix controller, RSLogix 5000 software, and the NetLinx open network architecture, PowerFlex 700S DriveLogix will make the most of your installation and training investments.

**Re-use Existing Networks and I/O**

With FLEX I/O, one local DIN rail can be connected to the PowerFlex 700S DriveLogix for additional field device interface.

The PowerFlex family of drives offer a dedicated internal communications option through the NetLinx open network architecture including DeviceNet and ControlNet and also supports Universal Remote I/O, RS485 DFI and other established networks including Profinet and Interbus-S.

With the embedded Logix controller, you can choose one optional daughter card for ControlNet or in the near future, EtherNet/IP or DeviceNet networks.

**SynchLink a Drive-to-Drive Data Link**

The PowerFlex 700S DriveLogix drive will feature SynchLink, a high-speed, synchronous, drive-to-drive data link for transmitting synchronized drive and application data. SynchLink offers process coordination and performance beyond that of standard control networks, providing simplified control of advanced applications and improved production rates.

**PowerFlex 700S DriveLogix at-a-glance:**

- Selectable, high performance motor control algorithms
- Array of feedback options
- Embedded Logix engine supports multiple programming languages
- Uses same RSLogix programming environment and Logix control engine as other Logix controllers

The embedded Logix engine provides:

- Reduced communications traffic, since local drive and I/O data transmission is event-driven
- An architecture less vulnerable to single point failure that doesn’t depend on one master controller
- Machinery-resident control establishes multiple control zones reducing startup time and simplifying maintenance
ProcessLogix is a scalable, open control system for batch and process applications. ProcessLogix tightly integrates Human Machine Interface (HMI) with control functions and provides a server-based common database. The ProcessLogix solution can be easily integrated with other Logix platforms. It shares a common chassis with the ControlLogix platform and uses the NetLinx open network architecture to communicate over EtherNet/IP, ControlNet and DeviceNet to other Logix platforms and plant floor devices. Using ProcessLogix with other Logix controllers provides a complete plantwide solution to control materials handling, processing and packaging applications in a single, integrated architecture.

**Increased Reuse of Control System Components**

Logix crosses the boundary between distributed control systems used in process applications and the controls applied in discrete manufacturing. For process applications, ProcessLogix offers an HMI that is tightly integrated with control and a server-based database for data sharing among all ProcessLogix controllers. ProcessLogix and ControlLogix can be combined into a hybrid control system, with ProcessLogix focused on process control and ControlLogix providing loop control and high speed discrete and motion control and for ancillary operations. Because both ProcessLogix and ControlLogix use the same chassis, communication modules and I/O modules, the total number of components is greatly reduced. Sharing the same I/O data, both platforms can simultaneously reflect events on the plant floor.

**DCS Functionality With a PLC Price Profile**

ProcessLogix blends a powerful, open Microsoft Windows NT-based client/server system, controller, I/O, system engineering tools and networking capabilities into a suite of features and services never before available in such a cost-effective and flexible control architecture.

---

**ProcessLogix at-a-glance:**
- Scalable, open control system for batch and process applications (DCS)
- Tightly integrates HMI and control functions with a server-based common database
- Shares common hardware, network communications, and I/O with ControlLogix
- Provides connectivity to Allen-Bradley Panelview™ and Rockwell Software RSView32™
- Connects to the NetLinx open network architecture
Modular simplicity
The ProcessLogix server, station, engineering and operator tools operate as a single, optimized system. And since ProcessLogix uses the same chassis, I/O, power supply, communication modules and networks as ControlLogix, you can easily mix and match control capabilities to fit your application.

Redundancy where you need it
ProcessLogix can be expanded to include redundancy when required, reducing the risk of a process shutdown due to a single component failure.

Additional ProcessLogix features include:
• Integrated detail displays, custom graphics, alarms, history and reports
• Integrated deterministic networking
• Peer-to-peer messaging between controllers
• A common interface for process and discrete control
• Standard and user-definable application templates
• Hierarchical control development environment
• Easy, high speed connectivity to other Allen-Bradley controllers, including ControlLogix and PLC-5

Object based graphics provide a powerful interface for the ProcessLogix user:
• Group displays are a direct result of application development and monitor the status of I/O, network, controller and PID modules. Users can use standard or create custom per-point detail displays or both, for maximum flexibility.
If you’re currently using Allen-Bradley PLC-3, PLC-5 and SLC 500 or Reliance Electric AutoMax controllers, you will find that Logix offers a number of features that make the move forward easy:

- A translation tool in RSLogix 5000 allows you to reuse your investment in PLC-5 or SLC 500 programs. Arrays may be used to create virtual data tables like those found in PLC and SLC controllers, so those controllers can communicate to a Logix controller.
- The common look and feel of RSLogix 5, RSLogix500, RSLogix 5000 products provides you with a consistent interface to Allen-Bradley programmable controllers, resulting in reduced time, effort and expense of re-training.
- Full messaging support built into the Logix controller allows you to integrate the new technology into your existing control system.

Logix platforms are the foundation for an Integrated Architecture. Logix delivers:

- Superior reliability
- Product breadth
- Industry/application driven design
- OPEN technology
- Backward compatibility and forward migration
- The best value

Logix platforms are focused on lowering total cost of ownership and improving your manufacturing flexibility through:

- Scalable control architecture
- Common programming tools
- Common networking services
- Common view into the system

Integrating a Logix platform with existing systems is made easier with such features as data table mapping. This allows existing systems to communicate to a Logix controller as if it were another PLC or SLC controller.
Many Logix systems will consist of multiple subnetworks such as ControlLogix systems on ControlNet, PLC-5 or SLC systems on Data Highway Plus, and sensors on DeviceNet, as well as connections to EtherNet/IP.

Translation of existing PLC-5 or SLC programs to a Logix controller is easily accomplished with the translation tool built into RSLogix 5000. The tool automatically flags logic issues for review after initiating the translation process.
Global Manufacturing Solutions (GMS) at-a-glance:

- Customer Support – Fast, accurate answers to your day-to-day or emergency questions
- Asset Management – Manage working capital and manufacturing assets through services such as multi-vendor repair, remanufacturing and maintenance management, parts management, condition-based monitoring (CBM), computerized maintenance and management software (CMMS) consulting and implementation services, and enterprise asset management (EAM) services
- Training – High-level to traditional training on products, services and software solutions, as well as human performance services, in both automation and e-manufacturing solutions
- Engineering Services – Comprehensive consulting and project management, including centralized and remote/on-site engineering services
- Software and Manufacturing Business Solutions - Software architecture development and implementation

Allen-Bradley Logix Platforms are part of an Integrated Architecture that delivers:

- The confidence that your control system will stay up and running. The reuse of a common control engine, programming software, networking and hardware components means development of new applications is easier and maintenance and troubleshooting has been greatly simplified across the architecture.
- The flexibility to find the best fit with a range of hardware and software platforms
- The productivity enhancements that allow you react quickly to changes in your business with the ability to reuse program segments or tags for new applications.
- The lowest cost across the life of your control investment with a program translation tool built into the RSLogix 5000 programming software.

All trademarks, company names and product names referred to throughout this publication are for identification only and remain the property of their respective companies.