



Think
again.



CompactLogix

Allen-Bradley
RELIANCE ELECTRIC DODGE
ROCKWELL SOFTWARE
Rockwell Automation

Logix Operating System

The advanced, multi-discipline control engine

The Logix control engine included in all Logix5000 controllers, is the result of Allen-Bradley's three decades of leadership in programmable control technology. Packed with revolutionary features never before available in commercial programmable controllers, the Logix control engine simplifies development, integration and operation of all control applications, from simple dedicated controls to large, multiprocessor architectures with 1,000s of controlled points. Logix features include:

Advanced memory model

- Tag-based memory structure, with tag database managed in real-time by the operating system
- Full support of IEC data structures, including user-defined data types – to reflect the equipment being controlled, thereby reducing abstraction efforts and improving maintainability
- Transparent OPC data access to the entire tag database

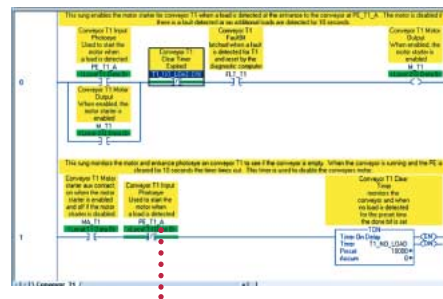
Multidiscipline instruction set

Over 180 advanced instructions to address the most challenging applications with sequential control, regulatory process control, precision position control and coordinated speed control

- Complex applications require less instructions, resulting in shorter programs that are easier to apply and execute faster
- A single Logix controller can do the job of multiple dedicated PLC, motion or process controllers with better performance and reduced costs

Advanced development tools

- A single development environment for sequential, process, drive and motion control applications. Tasks, programs and routines are represented in simple, graphical tree views, with IEC-61131-3-compliant user interface
- Advanced Ladder Diagram, Function Block Diagram, Sequential Function Chart and Structured Text editors provide a standard, intuitive, easy to use programming interface
- Drag-and-drop support to move instructions, lines of code, routines and even complete programs simplifies reusability of code



Advanced ladder diagram for efficient development and management of Boolean logic.

The most complex control algorithms are easy to develop and debug with the next generation Structured Text Language.

```

if collision then
  speed := 0;
  brake := ON; /* ON is an enumerated type */
end_if;

if (gate = CLOSED) and
  (prop = 0) and (temp > 200.0) then /* CLOSE is an enumerated type */
  control_state := active; /* active is an enumerated type */
else
  control_state := hold; /* hold is an enumerated type */
end_if;

if not then
  d := 1;
  until m = b+d then
    d:=2;
  until a = b-d then
    d:=3;
  else
    d:=4;
  end_if;

set_setting of
  speed := 10.0; /* value 1 */
  speed := 20.4; /* value 2 */
  speed := 30.0; /* value 3 and 4 */
  speed := 50.0; /* value 5 through 8 */
  output_A := 1;
end_of;
  
```

Describe the sequential operation of machines or processes with no effort using the most flexible SFC editor on the market.

The screenshot displays the Logix5000 software interface. On the left is the 'Controller Organizer' showing a hierarchical tree of components like 'MainTask', 'Program Tags', and 'Data Types'. The central area shows the 'Data Type' editor for a structure named 'Location', with fields for 'Name', 'Location', and 'Description'. On the right, the 'Function Block Diagram' editor shows a network of function blocks connected by lines, with a note indicating 'Line 1 must be started and latching before the rest of the process can begin'.

Everything in the system is easily accessible via the graphical Controller Organizer.

Use your own data structures to simplify application development and improve data access.

Develop sophisticated process and speed control loops with the high-performance Function Block Diagram editor.

NetLinx

The strategy for seamless, reliable communications – from shop floor to top floor

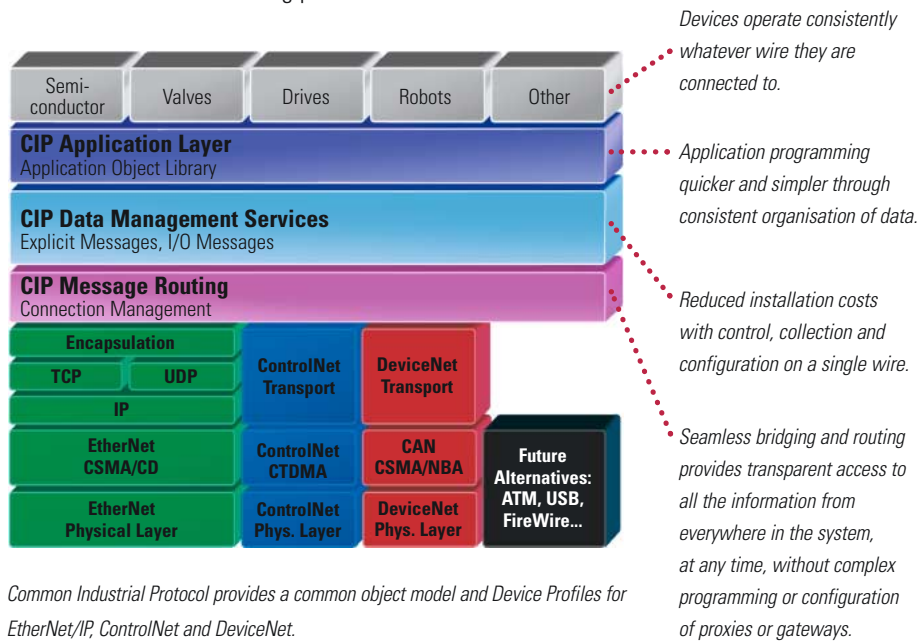
Our NetLinx open architecture provides unprecedented efficiency and performance that is easily tailored to specific applications.

NetLinx encompasses all the components necessary to provide seamless communications throughout your enterprise – from plant floor devices, to manufacturing control systems, to business systems and the Internet.

NetLinx is 'wire-independent'

With NetLinx you can select hardware and software components and media according to your specific application. NetLinx brings together these outstanding communication technologies, into a single integrated system:

- **EtherNet/IP** extending your ethernet for information and control
- **ControlNet** for robust and deterministic control and configuration
- **DeviceNet** for networking plant floor devices



Common Industrial Protocol provides a common object model and Device Profiles for EtherNet/IP, ControlNet and DeviceNet.

NetLinx has a common object model

Whichever network you choose, the device profile remains the same – a valve is a valve. Similarly, a message is a message because exactly the same objects are used.

Both application and product developers maintain a consistent user experience across all NetLinx 'wires'



CIP's Wire Independence, a Worked Example

A large manufacturing facility has three main areas: a process area, packaging hall and warehousing. The different plant areas are connected together on an Ethernet network. There are multiple controllers within each area connected on ControlNet. The control engineers have responsibility for the entire control system and therefore want to be able to monitor different parts of the plant from a central point. The powerful communications structure of our Integrated Architecture allows them to browse around the control system and monitor PLC programs and even detailed device parameters like acceleration time on a PowerFlex drive. Through configuration of a single message instruction, the control engineer is also able to extract the same data from the drive, without caring whether it is connected to an EtherNet/IP, ControlNet or DeviceNet segment! The data is addressed the same way in the same place in each case.

Rockwell Automation is committed to open, vendor-independent solutions.

NetLinx makes full use of technologies from ControlNet International, ODVA and OPC Foundation.



CompactLogix System

The CompactLogix system provides all the power and ease of integration of the Logix family of controllers to small and medium size applications requiring cost effective control solutions.

With a user memory of up to 1.5Mb, integrated serial, EtherNet/IP or ControlNet channels, modular DeviceNet communications and local I/O capacity of up to 30 I/O modules, CompactLogix inherits all the advanced features of the latest generation of Logix controllers, including:

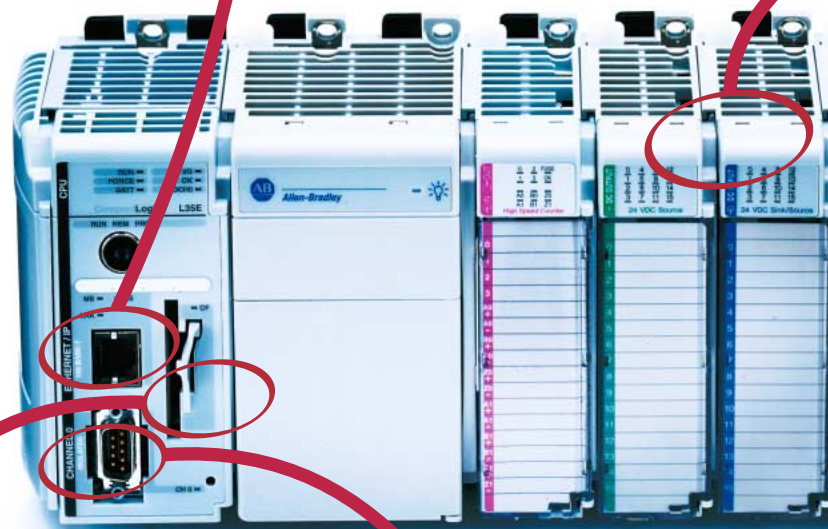
- High-performance Logix CPU with integrated floating-point coprocessor for exceptionally fast control and information processing
- Rich multi-discipline instruction set for high-speed sequential, process, motion and drives control
- Multi-tasking real-time operating system
- Tag-based, IEC-61131-3 compliant, memory model that supports user-defined, multi-dimension data structures
- RSLogix5000 development environment with state of the art implementations of the IEC-61131-3 Ladder Diagram, Sequential Function Chart, Structured Text and Function Block Diagram languages

EtherNet/IP Port

The integrated 10/100 Mbps EtherNet/IP channel in the L32E and L35E processors supports up to 32 simultaneous high-speed EtherNet/IP connections for distributed I/O. Sensors and actuators, such as PowerFlex drives and real-time data, interlock with other EtherNet/IP controllers such as ControlLogix or FlexLogix and share high-speed data with HMI systems such as PanelView or RSVIEW. This simplifies the immediate integration of CompactLogix-based applications in large scale manufacturing architectures.

The EtherNet/IP channel can also be used for high speed upload/download of data, online configuration and TCP/IP web services such as remote diagnostics and email messaging.

For applications requiring higher level of determinism, the L35C processor features a redundant 5Mbps ControlNet port that supports scheduled communications to other Logix controllers, distributed I/O and other plantfloor devices and peer-to-peer messaging for program editing, upload/download of programs and data exchange with other controllers and computers.



Compact Flash Port

Removable CompactFlash memory card for non-volatile storage of application code and data





Compact I/O

CompactLogix is equipped with Compact I/O – a “PLC®-style” expandable I/O platform that lets users take advantage of the modularity of larger control platforms in a low-cost platform. The modular and rackless design of the CompactLogix controller makes it DIN rail or panel-mountable, providing space savings of 20 to 40 percent over traditional mounting styles. The Compact I/O high-performance serial bus allows for very fast 1 millisecond I/O updates, providing the throughput required in high-speed manufacturing applications



DeviceNet Scanner

The 1769-SDN DeviceNet scanner modules provide connectivity to the wide range of DeviceNet-compatible products from multiple vendors. Each 1769-SDN module supports up to 64 DeviceNet nodes with advanced features like ADR (Automatic Device Replacement) and remote configuration and data collection from the EtherNet/IP and ControlNet networks



Serial Port

CompactLogix processors also feature a rugged RS-232 serial port (two in the L31 model) allowing connection using DH-485, DF1 or ASCII protocols to devices such as programming terminals, modems, barcode readers, weigh scales or printers.



The CompactLogix Family

CompactLogix Processors 1769-	L31 ⁽¹⁾	L32E ⁽¹⁾	L35E	L35C ⁽¹⁾
User Memory	512 Kb	750 Kb	1,5 Mb	1,5 Mb
Task per processor	8 (1 continuous, 7 periodic)	8 (1 continuous, 7 periodic)	8 (1 continuous, 7 periodic)	8 (1 continuous, 7 periodic)
Communication ports	2			
Channel 0	Serial			
Interface	RS-232 Sub-D 9 pins			
Connector	DF1, DH-485, ASCII			
RS-232 protocols	Up to 38.4 Kbps			
Baud rate				
Channel 1	Serial	EtherNet/IP	EtherNet/IP	ControlNet
Interface	RS-232 Sub-D 9 pins	RJ45 or 10BaseT	RJ45 or 10BaseT	Redundant BNC
Connector	DF1, DH-485, ASCII	N/A	N/A	N/A
RS-232 protocols	Up to 38.4 Kbps	10/100 Mbps	10/100 Mbps	5 Mbps
Baud rate	No	Yes	Yes	Yes
Distributed I/O support	Yes ⁽⁴⁾	Yes	Yes	Yes
Drives support	Yes ⁽⁴⁾	Yes	Yes	Yes
Display devices support	Yes, multiple using the 1769-SDN scanner			
DeviceNet Local	No	Yes, multiple using the 1788-EN2DN	Yes, multiple using the 1788-EN2DN	Yes, multiple using the 1788-CN2DN
Remote	Profibus DP, AS-i: Modbus, Hart (not L31): DNP, Modbus TCP, IEC60870-5-104 (L32E, L35E only)			
Other networks⁽³⁾	Compact 1769 I/O			
Local I/O support				
Maximum local I/O modules	16 modules	16 modules	30 modules	30 modules
Maximum I/O banks	2	2	3	3
Distributed device support	Any I/O or device compatible with DeviceNet	Any I/O or device compatible with EtherNet/IP or DeviceNet	Any I/O or device compatible with EtherNet/IP or DeviceNet	Any I/O or device compatible with ControlNet or DeviceNet
NetLinx bridging & routing	Yes			
Non-volatile memory	Yes, removable CompactFlash			
On-line edit run time	Yes, multi-user			
Programming software	RSLogix5000, V12 or later			
Programming languages	IEC-61131-3: Ladder diagram, structured text, sequential function chart, function block diagram			
Data model	IEC-61131-3: Real time tag database			
Instruction set	Boolean, math & trig, motion control, drives control, file/word/bit management, process control, string management, statistical, filter, select/limit, program control, communications			
Compact 1769 I/O⁽²⁾				
Discrete modules	I/O Points	8, 16 & 32 points		
	Voltage	24 VDC, 110/220 VAC		
Analogy modules	I/O Points	2, 4 & 8 channels		
	Type	Current, voltage, thermocouples, resistance, RTD		
	Resolution	8/14 bits plus sign		
	Features	Individually configurable channels, on-board scaling, on-line configuration, over/under range detection, selectable power supply, direct output device operation during an abnormal condition, auto calibration of inputs, selectable input filters, selectable response to a broken input sensor, input modes both single-ended or differential		
Special Modules	High speed counter, DeviceNet scanner, DeviceNet adapter, scanport module, ASCII module			
3rd Party modules⁽³⁾	Profibus DP scanner/adapter, AS-i scanner, resolver, strain gauge, stepper, RIO adapter			

⁽¹⁾ Available 2nd quarter 2004 ⁽²⁾ Check availability before purchase ⁽³⁾ Available through 3rd party companies ⁽⁴⁾ In a point-to-point connection

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