

Allen-Bradley

Safety PLC controllers are easy-to-use with drag and drop programming

GuardPLC 1200 and GuardPLC 2000 provide scalable safety control solutions. Both are easily programmed using RSLogix Guard software

Product Profile

The evolution of Safety Control Systems

During the 1960s through the 1970s, the machine control industry made the transformation from relay based logic to programmable logic controllers, commonly referred to as PLCs. This enabled the control engineer to create systems with extremely high productivity, flexibility and reliability, and revolutionized the machine control market. The continual evolution and consolidation of safety standards between Europe, North America and Asia has given rise to new practices in the application of safety on the factory floor. New classes of products such as safety relays and safety switches have become familiar fixtures in the automation arena. Now, just as the PLC changed the way standard machine control logic was accomplished, the Safety PLC is changing the face of functional safety for machine control.

A proven safety record at Rockwell Automation

Rockwell Automation is no stranger to meeting manufacturers' safety needs. Some of Rockwell's earliest safety products included emergency stops in the early 1900s. In the 1960s, the Bulletin 1040 was created for

clutch-brake control for mechanical stamping presses and the Allen-Bradley 700P control relay with mechanically linked contacts allowed in 1979. Throughout the 1970s and 80s, Allen-Bradley, now part of Rockwell Automation, manufactured programmable controllers that featured unalterable core memory for unprecedented safety. Today, safe startup and shutdown of igniters is provided by Rockwell Automation's burner management control systems. GuardPLC™ 1200 and 2000 Series Safety controllers take Rockwell Automation into their next generation of safety systems.

Primary Applications

Allen-Bradley safety controllers address a wide range of applications where safety is paramount, including robot weld/cell control, mechanical stamping press control, material handling systems, and packaging machines. In addition, Rockwell Automation will address safety requirements for amusement rides, ski lifts, burner management, and safety/emergency shutdown systems.



Bringing Together Leading Brands in Industrial Automation

Product Overview

The GuardPLC System is a state of the art safety system that combines a flexible safety-based programmable controller designed to meet a wide variety of safety applications with a graphically orientated programming tool designed to operate with Microsoft Windows NT4.0® or Windows 2000 Professional®.

The GuardPLC System complies with several of the latest global safety standards, and is certified by TÜV Product Services in accordance with IEC 61508, the standard for Functional Safety in Programmable Electronic Systems. The GuardPLC system can be used to support applications up to Safety Integrity Level 3 (SIL3) without restrictions.

The GuardPLC System consists of the two main components:

- The controller (two different types are available), and associated I/O.
- The Programming and Configuration Tool. Network communications between the programming and configuration tool and the controllers utilizes Ethernet.

Controllers and software are tightly integrated, and the flexibility of The GuardPLC System provides the appropriate level of support for safety solutions with minimum development costs.

GuardPLC 1200

The GuardPLC 1200 is a safety-related compact Programmable Electronic System (PES), which is designed in accordance with IEC 61131. Despite its small size it complies with the requirements for a control system with the highest safety integrity level (SIL3) according IEC 61508.

The GuardPLC 1200 includes a power supply, CPU, Watchdog, 20 digital inputs, 8 digital outputs plus 2 counters and communication ports, all incorporated in a rugged plastic housing.

The GuardPLC 1200 is designed for smaller applications that require functional safety, and that can be serviced with a fixed number of I/O points. The compact size of the GuardPLC 1200 combined with DIN rail mounting allows deployment even under cramped space conditions.

GuardPLC 2000

The GuardPLC 2000 is a safety-related Programmable Electronic System (PES), which is easily expanded, and provides the ultimate in scaleable safety control systems. In addition, the GuardPLC 2000 System is simple to program.

It is designed in accordance with IEC 61131 and can be utilized in control systems with the highest safety integrity level (SIL3). Testable inputs and outputs together with a watchdog guarantee fail-safe operation.

The GuardPLC 2000 Controller consists of a rack, power supply, CPU with communication ports, and I/O modules. Up to 6 CPU-testable I/O modules may be added to the basic GuardPLC 2000, including digital input and output channels, analog input and output channels, timers and supplemental communication ports. The GuardPLC 2000 can, for example, provide up to 144 digital inputs and 96 digital outputs.

Typical applications for the GuardPLC 2000 are press and burner controls. Programming is accomplished with the RSLogix Guard Programming and Configuration Software.

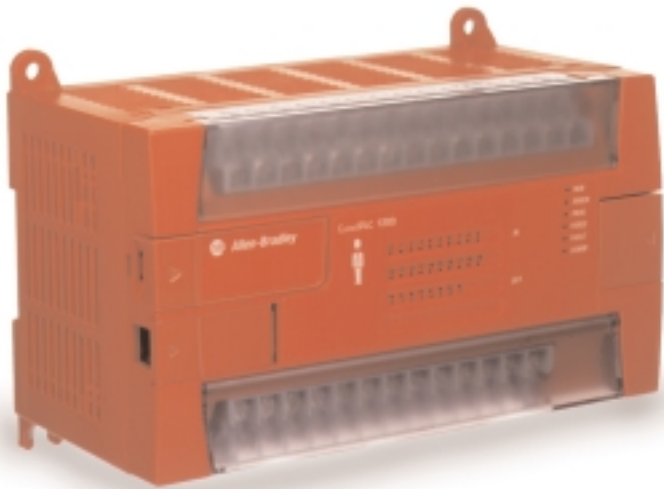
RSLogix Guard™

Development and testing of programs for both the GuardPLC 1200 and the GuardPLC 2000 is done with RSLogix Guard, our programming and configuration tool.

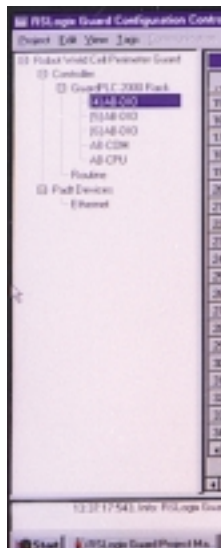
Since RSLogixGuard is based on graphical elements, there is no need to learn a cryptic programming language. Simply design your logic using pre-defined elements such as AND-gates, OR-gates, numerical functions, counters, and timers to list only a few, and connect inputs and outputs with lines using your mouse.

Once RSLogix Guard has been configured for the chosen controller, input and output variables are defined in a Tag List to establish the link between hardware and software.

After the program developer selects the appropriate logical elements, subsequent programming is as easy as drawing lines with the mouse. Using the Function



GuardPLC 1200. Ideal for smaller applications. DIN rail mounting, small size simplify installation.



Block Designer, the developer simply "wires" the inputs and outputs of the logical elements and makes connections to the real hardware by way of the user-defined variables.

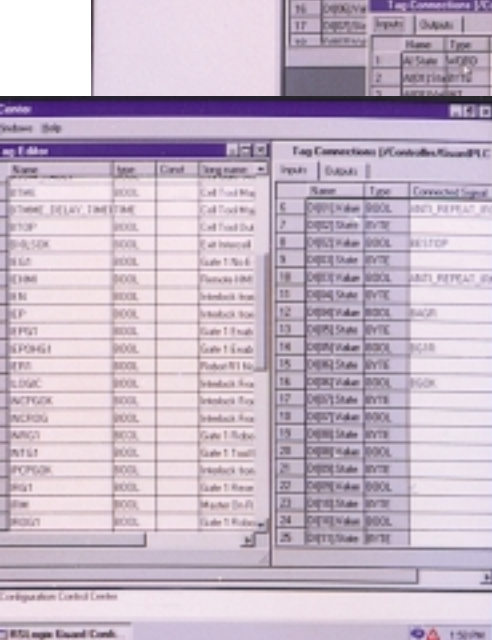
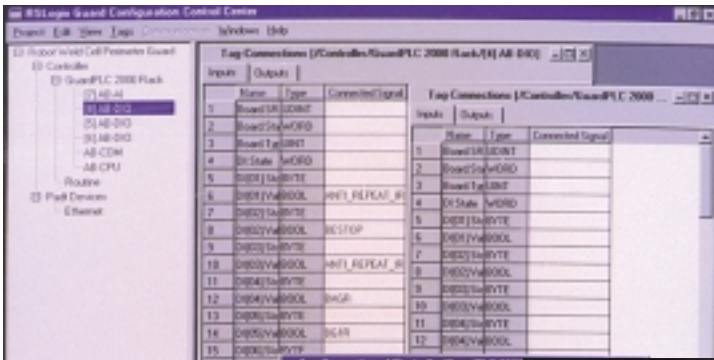
The compiler built into RSLogix Guard then converts the graphical program into code that can be executed by the CPU. By means of the Control Panel – one of the many functions of RSLogix Guard – the program is downloaded into the controller, where it is stored in non-volatile memory.

After reception of a start command from RSLogix Guard, the CPU is reset and re-started with the new program. For diagnosis and debugging, RSLogix Guard can be used to display the status of the CPU, the Communication and I/O Modules, the Force Mode, and to obtain information about the Application Program.

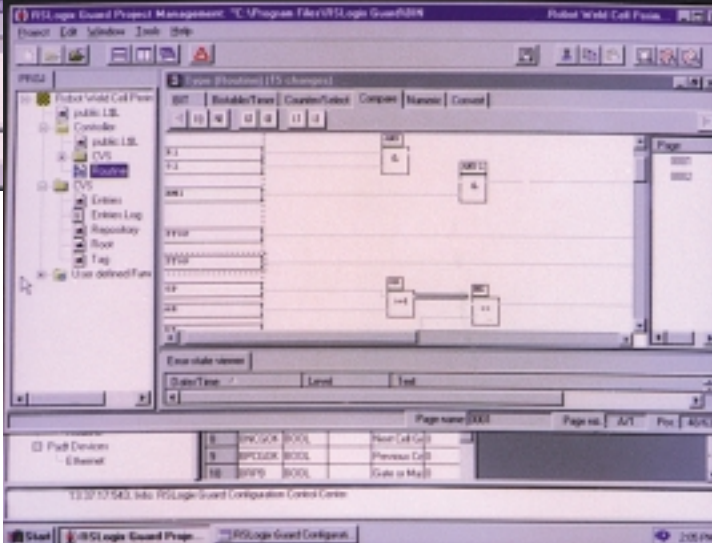


GuardPLC 2000. Simple to program, and easily-expanded, to handle a wide range of safety control applications.

Using this screen the programmer or developer can perform basic configurations, enter tag names, populate or proliferate rack slots, set up communications, and assign diagnostic tags.



This screen used to configure I/O, define state values, and associate tags with specific I/O points.



This screen serves as the "drag and drop" pallet where the developer drags function blocks onto the screen, and ties input and outputs to the logical functions developed using the screen.

Technical Specifications

GuardPLC 1200

No. of Safety Related Digital Inputs:	20 (not electrically insulated)
Nominal Input Voltage:	24VDC (10V - 30V)
No. of Safety Related Digital Outputs:	8 (not electrically insulated)
Output Voltage Range:	18.4V ... 26.8V
Output Current:	2A per Channel
No. of Safety Related Counters:	2
Inputs per Counter:	3 (Input A, Input B, Gate/Reset)
Counter Resolution:	24 bit
Input Frequency:	Max. 100kHz
Supply Voltage (L+):	24 V DC (+20/-15)%, \leq 15% ripple
Storage Temperature :	-40° C... +85° C without backup battery
Operating Temperature:	0° C... +60° C
Width / Height / Depth:	90Hx160Wx87D(mm)

GuardPLC 2000

No. of Safety Related Digital Inputs per Plug-in Module:	24 (electrically insulated)
Nominal Input Voltage:	24VDC (10V - 30V)
No. of Safety Related Digital Outputs per Plug-in Module:	16 (electrically insulated with output signal read-back)
Output Voltage Range:	18.4V ... 26.8V
Output Current:	2A per Channel (overload protected) max. 8A per Plug-in Module
No. of Safety Related Analog Inputs per Plug-in Module:	8 single ended or 4 differential(electrically insulated)
Input:	0 – 10.25VDC , – 10.25VDC to +10.25DCV 0 – 20.5mA (with shunt)
Resolution:	12 bit
Impedance:	> 5kOhms
Accuracy:	1%
Over Voltage Protection:	30V
No. of Safety Related Analog Outputs per Plug-in Module:	8 (electrically insulated; combined in four groups)
Output:	0 – 10.25VDC , – 10.25VDC to +10.25VDC 0 – 21mA @ 600 Ohms
Resolution:	12 bit
Impedance:	< 600 Ohms
Accuracy:	1%
Over Voltage Protection:	30V
No. of Safety Related Counters:	2
Inputs per Counter:	3 (Input A, Input B, Gate/Reset)
Counter Resolution:	24 bit
Input Frequency:	Max. 1MHz
No. of Digital Outputs:	4
Output:	18.4VDC – 26.8VDC @ 0.5A (overload protected)
<i>Plug-in Modules can not be exchanged while the controller is in operation!</i>	
Supply Voltage (L+):	24 V DC (+20/-15)%, \leq 15% ripple
Power Rating:	30 A max.
Storage Temperature :	-40° C... +85° C without backup battery
Operating Temperature:	0° C... +60° C
Width / Height / Depth:	278Hx208.5Wx202.75D(mm) 340H including mount tabs

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Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741
Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733