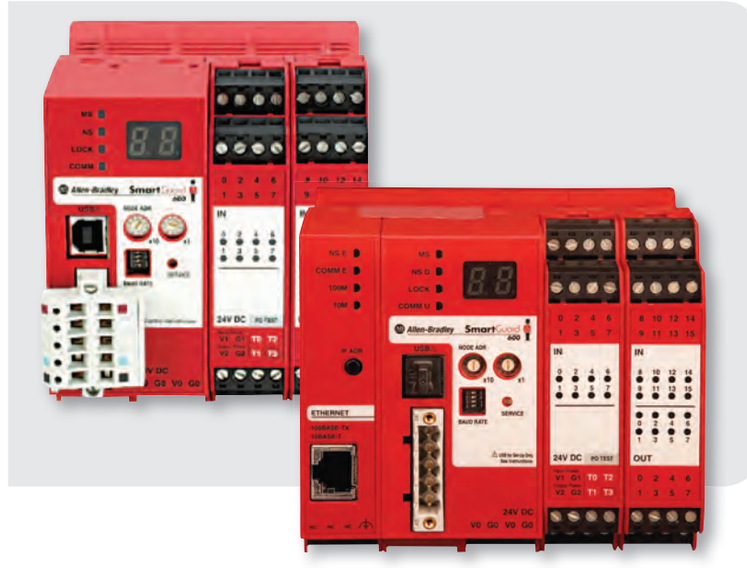
Automate de sécurité SmartGuard™ 600

Le SmartGuard 600 est un automate de sécurité programmable conçu pour les applications de sécurité qui nécessitent un programme logique complexe et qui leur fournit des fonctions de sécurité évoluées. Il possède 16 entrées de sécurité, 8 sorties de sécurité, 4 sources de test par impulsion, un port EtherNet/IP™ en option. Une connexion DeviceNet est également incluse afin de recevoir la communication standard et CIP Safety. La configuration et la programmation se font via EtherNet/IP, DeviceNet ou le port USB intégré.

Le SmartGuard 600 fonctionnant comme maître de sécurité sur DeviceNet, vous pouvez utiliser les modules d'E/S Guard I/O™ de Rockwell Automation® pour augmenter le nombre de dispositifs de sécurité que le SmartGuard 600 peut commander. Il peut également réaliser une interconnexion de sécurité entre des automates GuardLogix® ou d'autres automates de sécurité SmartGuard. Selon le choix qui est fait entre EtherNet/IP et DeviceNet, d'autres dispositifs tels que des PLC ou des IHM standard peuvent lire des données à partir du SmartGuard 600 pour réaliser une interconnexion, des diagnostics ou un dépannage de niveau système.

La programmation se fait avec le logiciel RSNetWorx™ pour DeviceNet™. Une fois RSNetWorx démarré, vous pouvez ouvrir un éditeur qui vous permet d'écrire des programmes de blocs fonctionnels pour l'automate de sécurité SmartGuard 600. Aucun autre logiciel de programmation n'est nécessaire. Grâce à dix instructions d'application de sécurité, plus une douzaine d'instructions logiques et de temporisation, vous pouvez écrire des programmes de commande de sécurité simples et puissants.



Le SmartGuard 600 peut être utilisé dans des applications de sécurité telles que :

- Arrêt d'urgence
- Barrière immatérielle
- Barrière de sécurité
- Commande bimanuelle
- Commande multizone
- Protection de périmètre

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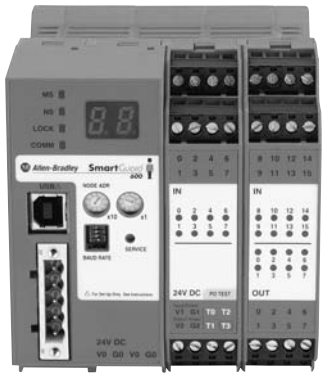
SmartGuard™ 600 Controller

Overview



Description

The SmartGuard 600 safety controller is a programmable safety controller designed for safety applications that require some complex logic allowing for more advanced safety functionality. It features 16 safety-rated inputs, 8 safety-rated outputs, 4 pulse test sources and an optional EtherNet/IP™ port. To support both standard CIP and CIP safety, a DeviceNet™ connection is also included. Configuration and programming is accomplished on EtherNet/IP, DeviceNet, or through the built-in USB port.

Since the SmartGuard 600 safety controller is a safety master on the DeviceNet network, you can use Rockwell Automation Guard I/O™ modules to expand the number of safety devices the SmartGuard 600 controller can control. It can also perform safety interlocking between a GuardLogix or other SmartGuard 600 controllers. With your choice of EtherNet/IP™ or DeviceNet™ communication, other devices such as standard PLCs and HMIs can read data out of the SmartGuard 600 controller for system-level diagnostics and troubleshooting.

Use RSNetWorx™ for DeviceNet™ software to configure the network and program the controller. From within RSNetWorx for DeviceNet software, you can launch an editor that lets you write function block programs for the SmartGuard 600 controller. No additional programming software is required. With ten safety application instructions, plus another dozen logic and timing instructions, you can write powerful, yet simple safety control programs.

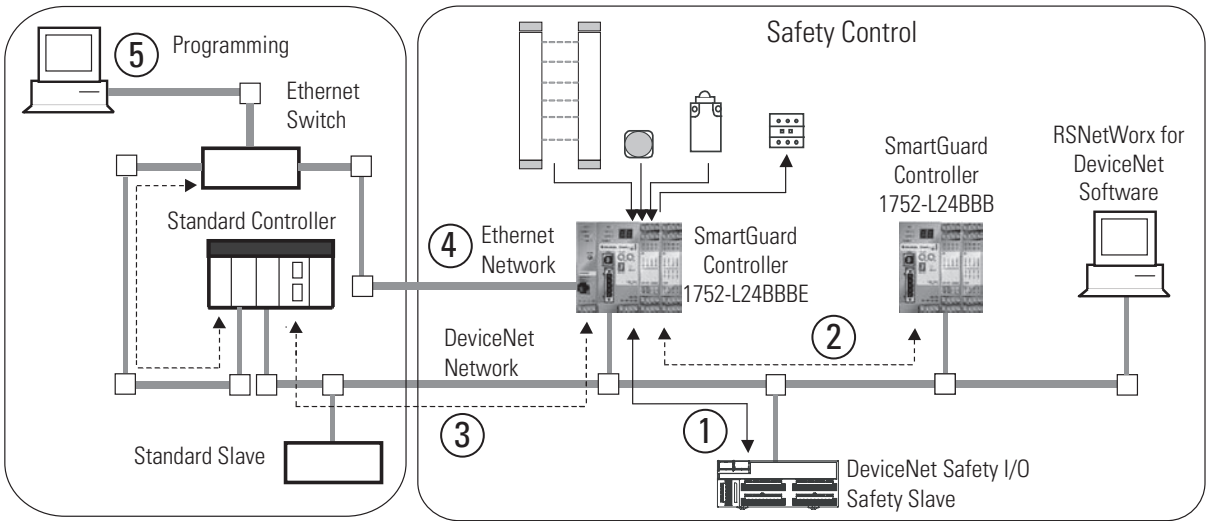
Benefits

- Small, cost-effective, intelligent safety controller
- Ideal mid-level safety controller when the application is too complex for a safety relay, yet too simple for a full-sized safety PLC
- Use the DeviceNet network to distribute safety I/O and integrate into a standard control system
- Use RSNetWorx for DeviceNet software for configuration and programming — no special programming software required

Networking with SmartGuard 600 Controllers

The SmartGuard 600 controller can function simultaneously as a DeviceNet safety master, DeviceNet safety slave, and DeviceNet standard slave as well as an EtherNet/IP target (see network illustration).

- As a DeviceNet safety master (1), the SmartGuard 600 controller can control up to 32 Guard I/O modules. These 1791DS and 1732DS modules are the same distributed safety I/O modules used with GuardLogix controllers.
- As a DeviceNet safety slave (2), the SmartGuard 600 controller looks like distributed safety I/O to a safety master. A GuardLogix or another SmartGuard safety master can read and write safety data to the SmartGuard slave controller. This lets you perform distributed safety control through the interlocking of multiple controllers via CIP Safety on DeviceNet networks.
- As a DeviceNet standard slave (3), the SmartGuard 600 controller can look like a standard distributed I/O module and respond to explicit messages so that standard DeviceNet masters like ControlLogix, SLC 500, or PLC-5 controllers or an HMI can read and write information to and from the SmartGuard 600 controller. This facilitates coordination with your standard PLC application, including displaying safety system information on an HMI.
- As an EtherNet/IP standard target (4), the SmartGuard 600 controller communicates with an Ethernet/IP standard originator, such as a CompactLogix or MicroLogix controller or an HMI device.
- As a limited EtherNet/IP bridge device (5), the SmartGuard 600 controller lets programming tools bridge to DeviceNet to view and program the SmartGuard 600 controller and configure other DeviceNet devices.



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SmartGuard™ 600 Controller

Overview

Configuration and Programming

You can program and configure the SmartGuard 600 controller through its USB port, through a DeviceNet connection or through an Ethernet connection. The SmartGuard's USB port has limited pass-through capabilities, letting you configure other devices on DeviceNet networks. You can use any type of A-to-B connection USB cable that supports USB 1.x or 2.0. Alternatively, you can connect to the SmartGuard controller through its DeviceNet port via a PCD card or a PC connected to an EtherNet/IP-to-DeviceNet linking device or gateway. You can also connect the 1752-L24BBBE SmartGuard controller to a PC's Ethernet port using a Category 5 Ethernet cable.

Safety System Management

Multiple system management tools are built into the SmartGuard 600 controller and RSNetWorx for DeviceNet software.

- You can password-protect the entire SmartGuard 600 controller so you cannot download any changes without the password. You can also password-protect the program with a separate password, to help prevent unauthorized edits to the program.
- Each safety device contains a configuration signature that changes any time the DeviceNet configuration or SmartGuard program changes, even if it is changed back to its original state. The configuration signature can be read by external devices, such as standard PLCs, HMI, or asset management software, to determine whether the configuration or program has been changed.
- Lastly, you can use the Safety Device Verification Wizard in RSNetWorx for DeviceNet software to safety-lock the SmartGuard 600 controller. Safety-locking via the Safety Device Verification Wizard verifies that the offline and online configuration and program are identical and provides documentation that you can keep in your files to show that the controller has not been tampered with.

Typical Applications

The SmartGuard 600 controller is positioned between a safety relay system and a safety PLC. It is ideally sized for applications that cannot be solved with safety relays, or are very cumbersome to solve with relays, but are not complex enough for a traditional safety PLC like a GuardLogix® or GuardPLC™ controller.

- Applications where a safety relay solution (or configurable safety relay solution) is just too complex
- Applications that require distributed safety I/O and/or network integration with a standard PLC
- Applications where GuardLogix or GuardPLC controllers seem too big (or are not cost-effective)
- Applications that require multi-zone control
- Complex light curtain applications; for example, implementing light curtain muting when a robot is not in the operator load zone and monitoring an enable pendant that lets the operator enter the zone with the robot present.

Catalog Numbers and Related Products

Cat. No.	Product Description
1752-L24BBB	SmartGuard 600 Safety Controller
1752-L24BBBE	SmartGuard 600 Controller with EtherNet/IP
9357-DNETL3	RSNetWorx for DeviceNet✶
9355-WAB100ENE	RSLinx Classic (Lite)❄

✶ 1752-L24BBB requires version 8 (minimum) or version 9.1 (recommended); 1752-L24BBBE requires version 9.1 or later

❄ 1752-L24BBB requires version 2.51 or later; 1752-L24BBBE requires version 2.55 or later

Specifications

Environmental Specifications and Certifications

Cat. No.	1752-L24BBB	1752-L24BBBE
Operating Temperature	-10…55 °C (14…131 °F)	
Non-Operating Temperature	-40…70 °C (-40…158 °F)	
Relative Humidity	10…95% noncondensing	
Vibration	0.35 mm @ 10…57 Hz 5 g @ 57…500 Hz	5 g @ 10…500 Hz
Shock, Operating	15 g	
Certifications✶	UL, CE, C-Tick, cULus Class I Div 2 Hazardous, UL NRGF, NFPA 79, certified by TÜV for Functional Safety up to SIL 3, and PLe/Cat. 4	

✶ When product is marked. See the Product Certification link at http://www.ab.com/certification for Declarations of Conformity, Certificates, and other certification details.

Controller Specifications

Cat. No.	1752-L24BBB	1752-L24BBBE
Supply Voltage	20.4…26.4V DC (24V DC, -15…10%)	20.4…26.4V DC (24V DC, -15…10%)
Input Voltage Range	11…25V DC DeviceNet Specification	11…25V DC DeviceNet Specification
DeviceNet Current (mA)	15 mA	15 mA
Current Consumption	230 mA @ 24V DC	280 mA @ 24V DC
Digital Inputs		
Number of Digital Inputs	16	16
Voltage, On-State Input, Min.	11V DC	11V DC
Voltage, Off-State Input, Max.	5V DC	5V DC
Current, Off-State Input, Max.	1 mA	1 mA
Current, On-State Input, Nom.	4.5 mA	4.5 mA
Digital Outputs		
Number of Digital Outputs	8	8
Output Current Rating	0.5 A	0.5 A
Voltage, Off-State Output, Max.	1.2V	1.2V
Leakage Current, Off-State Output, Max	0.1 mA	0.1 mA
Pulse Test Sources		
Number of Pulse Test Sources	4	4
Pulse Test Output Current	0.7 A	0.7 A
Pulse Test Voltage, Off-State Output, Max.	1.2V	1.2V
Pulse Test Output Leakage Current, Max.	0.1 mA	0.1 mA
General		
Dimensions (HxWxD), Metric	99.0 x 90.4 x 131.4 mm	99.0 x 113.0 x 131.4 mm
Dimensions (HxWxD), Imperial	3.90 x 3.56 x 5.18 in.	3.90 x 4.48 x 5.18 in.
Weight, Metric	470 g	575 g
Weight, Imperial	1.03 lb	1.27 lb

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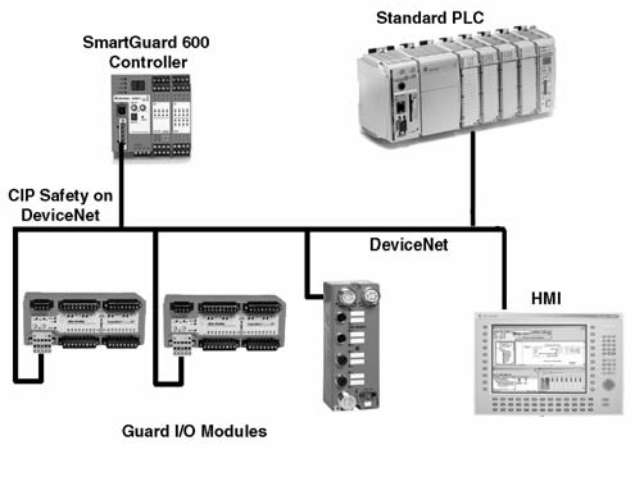
Typical SmartGuard 600 System Architectures



SmartGuard 600 controller (1752-L24BBB) on a DeviceNet network.

RSNetWorx™ for DeviceNet™ Software Description

RSNetWorx™ for DeviceNet™ software is the premier configuration software for your Open DeviceNet Vendor Association DeviceNet network; it provides configuration management and diagnostic features, and it is one of the most advanced DeviceNet network management software packages available today. RSNetWorx Software for DeviceNet Network helps you achieve maximum productivity with your DeviceNet installations.

You can quickly define the devices on your DeviceNet network and the input/output exchanges that take place through this simple software interface.

RSNetWorx for DeviceNet software supports configuration of DeviceNet Safety devices. A Safety Device Verification Wizard guides you through the verification and configuration locking process and provides a report listing the configuration information for all of the safety devices on the network.

RSNetWorx Software for DeviceNet contains the editor used to program the SmartGuard 600 controller. Once you have configured your network containing a SmartGuard 600 controller, you launch the editor, which lets you write function block programs. No additional programming software is needed!

Cat. No.	Description
9357-DNETL3	RSNetWorx for DeviceNet

Benefits

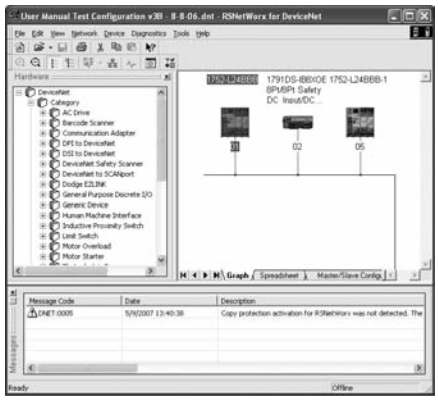
- Define the devices that are present on your network. You can either manually drag/drop devices/modules or go online to a DeviceNet network and let the software determine the devices/modules that are present.
- Define configuration settings for devices on the DeviceNet network through a convenient property page interface.
- Define the input/output information exchanges that you want to take place on the DeviceNet network.
- Access a comprehensive product tutorial to help you get the most value from the software as quickly as possible.
- Receive troubleshooting hints whenever error messages are presented, making you more productive.
- Configure and exchange data with DeviceNet Safety Scanner and DeviceNet Safety I/O nodes.
- Verify and lock safety devices for use in high-integrity safety systems.

System Requirements

RSNetWorx software can be used with these operating systems:

- Microsoft Windows Vista
- Microsoft Windows XP
- Microsoft Windows 2000

RSNetWorx for DeviceNet Software Examples

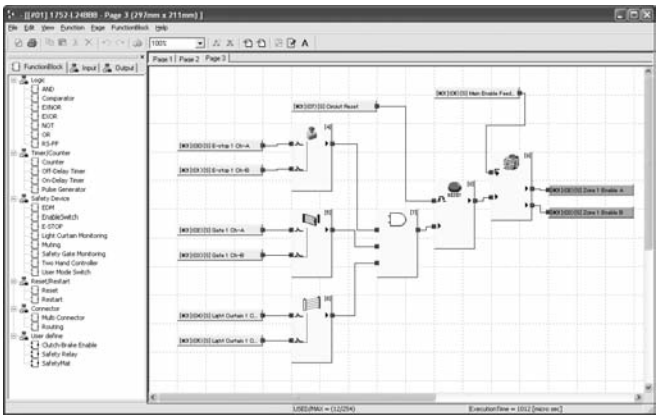


Use RSNetWorx for DeviceNet software to configure all of your DeviceNet devices, including SmartGuard 600 controllers and Guard I/O modules.

SmartGuard™ 600 Controller

RSNetWorx for DeviceNet Software/Guard I/O Modules

The Properties page for the SmartGuard 600 controller allows you to configure all of its parameters including I/O tags, I/O discrepancy times, connections to Guard I/O modules, and data that can be read by standard controllers or HMIs.



By clicking on the 'Logic' tab on the Properties dialog, RSNetWorx for DeviceNet software launches the editor for the SmartGuard 600 controller where you create your program using safety instructions, basic logic, timers, and counters. You also have the ability to create your own instructions.

Guard I/O™ Modules

When the SmartGuard 600 controller needs additional safety I/O points, you can control and monitor your safety device with Guard I/O. When used with SmartGuard controllers, Guard I/O communicates on DeviceNet using CIP Safety protocol. As a proven technology, Guard I/O detects failures at the I/O and field device level, while enhancing operator protection.

CompactBlock Guard I/O modules are available in IP20 (in-cabinet) form factor. ArmorBlock Guard I/O modules are IP67 (on-machine) form factor. POINT Guard I/O provides maximum I/O density in minimal panel space (used in conjunction with a 1734-PDN adapter on a DeviceNet network).

For more information on Guard I/O see page 5-137.