

Flexible safety unit

G9SX

the logical alternative for safety control



Advanced Industrial Automation

OMRON

Omron's G9SX is an innovative, flexible safety unit that provides a clever solution for partial and complete safeguarding the machine control. Using microprocessor technology, the G9SX provides a transparent and logical connection throughout your system that enables you to shut down any segmentation according to your machine's safety layout.

The flexible way to design-in safety

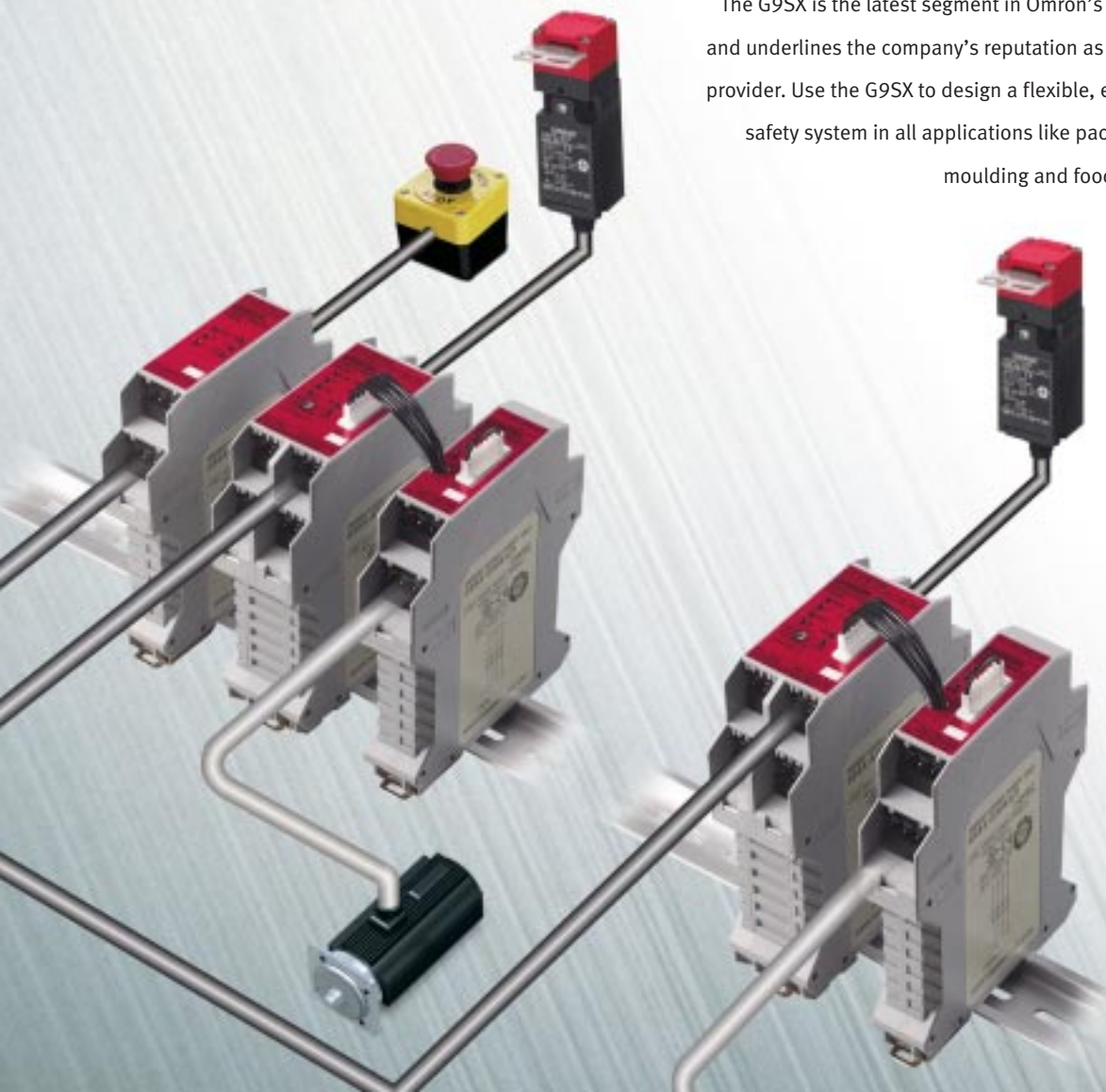
The G9SX increases your productivity by enabling you to isolate a faulty process within your machine instead of having to switch off the entire system, which minimises production losses and downtime.

It features LED indicators to reduce troubleshooting time and support diagnostic maintenance.

The G9SX lets you expand your system easily without having to completely re-design safety circuits.

And while the G9SX uses a hardwired logical connection based on microprocessor technology, there is no programming or special training involved.

The G9SX is the latest segment in Omron's safety product portfolio and underlines the company's reputation as a total safety solutions' provider. Use the G9SX to design a flexible, expandable and reliable safety system in all applications like packaging, semiconductor, moulding and food processing industries.



The G9SX flexible safety unit range

Basic unit G9SX-BC

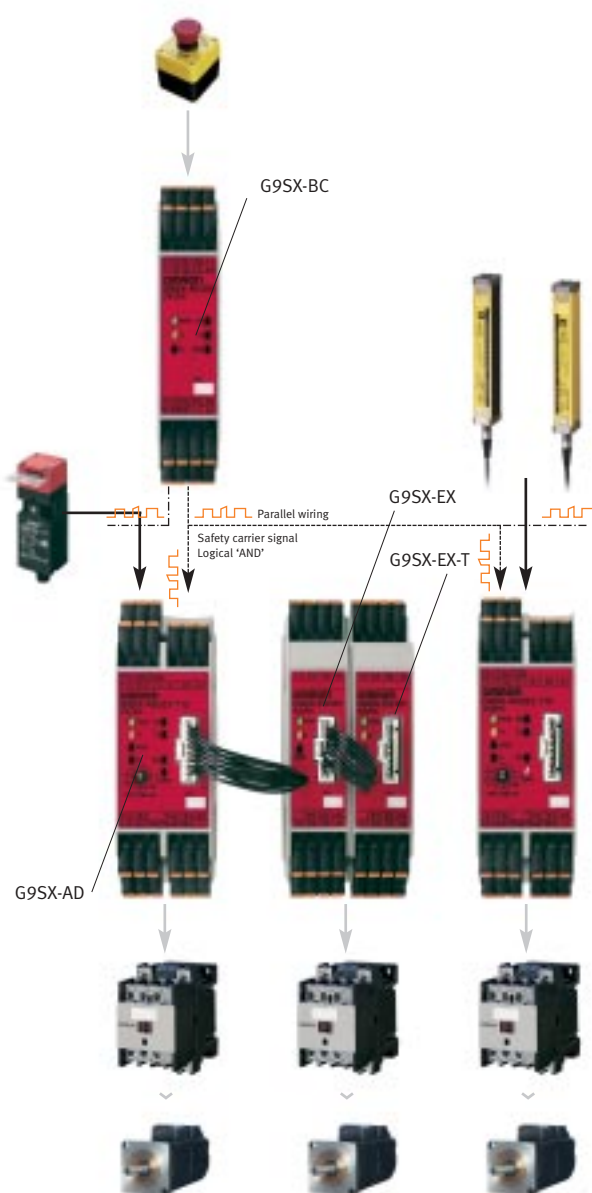
This unit contains two solid state safety (instantaneous) outputs, two logical “AND” outputs, two auxiliary monitoring outputs and six LED indicators. On its own, it performs an emergency stop function to shut down the entire machine. The basic unit is used to control the primary safety function like the overall E-Stop. Using the 22,5mm unit you can achieve up to eight separate paths, and this corresponds to up to 16 relay outputs in conventional technology.

Advanced unit G9SX-AD

This compact, 35mm unit can be logically connected to the G9SX-BC and other G9SX-AD to provide precise shutdown of individual sections in a machine. Each advanced unit contains five solid state safety outputs (two of which can be used with off-delay), one logical “AND” output, two auxiliary monitoring outputs and eight LED indicators. You can connect up to four advanced units in parallel to one logical “AND” output as your safety requirements grow. The advanced units give you more precise control over the safety section you want to stop, without affecting the total process.

Expansion unit G9SX-EX

This unit is ideal for use in complex machines that require multiple safety output paths (Instantaneous or time delayed). Each expansion unit provides you with four relay outputs, and you can connect up to five expansion units together to one advanced unit to provide up to 25 outputs. Three LED indicators and one auxiliary output support diagnosis and maintenance. And because each unit is just 22,5mm wide, you save on both wiring and space.





Features and benefits

Unique! Logical connection

The G9SX uses microprocessor technology to manage a unique, hardwire-based dynamic 'safety carrier signal' that forms a logical connection between it and other flexible safety units. The 'safety carrier signal' produces an easy parallel-wired structure of logical 'AND' connections to determine a partial or complete shutdown. The 'safety carrier signal' provides a continuous system check to ensure safety integrity at all times. With the logical connection feature, even complex machines can be easily segmented for more precise shut down during faultfinding or machine maintenance, with minimum impact on downtime and productivity.

Advanced diagnostics and trouble-shooting functionality

The G9SX features a number of LEDs that indicate the entire status of the system, including power supply, safety inputs and outputs, feedback input, logical 'AND' connection, and error status. This provides a clear image of what's happening for easy diagnostics and troubleshooting. The auxiliary outputs highlight the system status (output and error) to your control system to provide full transparency and displays where the fault area occurs.

Extended operating life through solid state outputs

Unlike conventional relays, the safety outputs of the G9SX-BC and G9SX-AD are solid state, so there are no mechanical parts to wear out. This design is very effective for frequent switching cycles.

Expandable with up to 25 outputs per segment

The G9SX-EX expansion unit has four safety relay outputs. Up to five expansion units can be easily connected together per switching path to provide up to 25 outputs if required (20 relay outputs and five electronic outputs), giving you the highest system integrity and fail-safe operation for your system.

Choice of terminals

The G9SX offers a choice of terminals: a screw-less spring-type or screw type. These terminals feature plug-in wiring connectors that are easily detachable for fast and easy maintenance.

Meeting all safety requirements

The G9SX is approved according to SIL 3 (IEC/EN 61508) and can be used in systems up to Category 4 (EN954-1).



Complete safety solutions – anywhere in the world!

Omron has recognised that in a dynamic market, the only way to be a valuable partner is to offer total system solutions. That's why we have introduced the G9SX flexible safety unit. And this is just part of Omron's

complete Safety concept to provide technologies and solutions that can seamlessly be integrated and networked to save you time as a machine builder, no matter where in the world you are!

The D4 series safety door switch ensures that hazardous movements are stopped, as long the door remains open. Depending on the application, an interlock switch keeps the door closed and safe until the process is in a condition to stop without damaging goods.

The DST1 DeviceNet safety remote modules support efficient wiring and control safety-related signals in parallel with standard messaging. The status of the safety device is available in the standard PLC for diagnosis. The smart slave features supports preventive maintenance and provides a highly reliable safety solution.

Omron offers a wide range of HMI solutions to manage machine status and enter process data. If the safety system switches off the machine or a problem occurs, the HMI displays instructions on what the user should do to get the machine back in service and ensure safe operation. The G9SX auxiliary output support this concept. The smart platform supports preventive maintenance too to support high availability and reliability.

Photoelectric switches, from miniature sizes up to highly precise laser displacement sensors, ensure accurate and reliable signals to control your process and quality.

Clever connection concepts like Plug-and-Play controllers for safety sensors and intelligent DeviceNet safety remote I/O modules support easy installation and maintenance. These concepts support the integrity of the entire safety concept.

OMRON PLC systems provide you with the highest performance in the smallest size. Supporting smart platform functionality, the PLC gives you excellent control of your machine. Via DeviceNet the whole status of the safety system is transparent.

Inverters and servos from Omron provide reliable and powerful muscles for your application. In combination with Omron safety systems, the machine can be stopped safely even if it is an Emergency stop condition or just a door being opened for maintenance.

The NE1A 'Safe Network controller' is the heart of the safety networking system. Via an appropriate number of local I/Os and using DeviceNet safety communication, the Safe Network controller can control all safety-related functions. It handles diagnostics and traces the proper function of maintenance relevant parameters. This very compact device saves space in the cabinet and provides superior features for a highly productive safety solution.

Safety light curtains for type 2 and type 4 support complex functions like blanking and muting. Using these features, goods can be processed without hindrance in a well-designed safety concept.

Intelligently combined E-Stop buttons with useful accessories support the total safety solution from OMRON.

The S8 range of power supplies ensures a constant and reliable power source for your control system. Depending on the series, they can support diagnosis and preventive maintenance.

G9S A and G9SB safety modules provide dedicated safety functions. In addition to the conventional safety relay units, there are 'intelligent safety units' that define a new area of applications. The G9SX intelligent safety units have a unique and clever dynamic logical combination facility. They gain transparency and reliability by reducing wiring and space.



Features and benefits

	Model	Logical “AND” connection	Solid state safety outputs		Safety relay outputs		Auxiliary feedback outputs	
Basic Unit			Instant-aneous	Time delayed	Instant-aneous	Time delayed	Monitor (X1)	Monitor (X2)
Detachable screw terminals	G9SX-BC202-RT	2 “AND” outputs to connect up to	2	No	No	No	Yes	Yes
Detachable spring-cage terminals	G9SX-BC202-RC	8 Advanced units	2	No	No	No	Yes	Yes
Advanced unit								
Detachable screw terminals	G9SX-AD322-T15-RT	1 “AND” input and 1 “AND” output to connect up to	3	2	No	No	Yes	Yes
Detachable spring-cage terminals	G9SX-AD322-T15-RC	4 Advanced units	3	2	No	No	Yes	Yes
Expansion unit								
Detachable screw terminals	G9SX-EX401-RT	No	No	No	4	No	No	Yes
	G9SX-EX041-T-RT		No	No	No	4	No	Yes
Detachable spring-cage terminals	G9SX-EX401-RC		No	No	4	No	No	Yes
	G9SX-EX041-T-RC		No	No	No	4	No	Yes

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