Safety relay units

G9SE Series

- Ultra slim size: 17.5 mm and 22.5 mm
- Screwless terminals
- LED status indicators

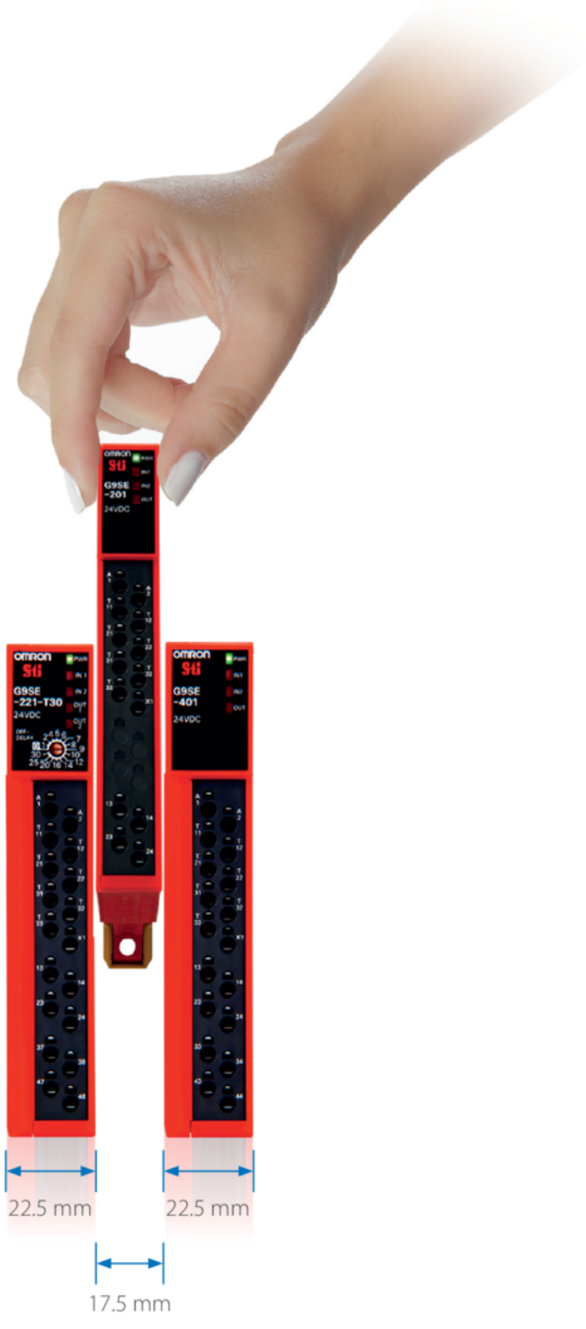
industrial.omron.eu/g9se

A standalone approach to safety applications

The G9SE series of safety relay units offer a standalone approach for safety applications.

Benefits:

- Slim design saves mounting space.
- Screwless terminals reduce installation time.
- LED status indicators provide quick and clear distinction of operational status and errors.
- Fast response time.



Ultra slim size: 17.5 mm and 22.5 mm

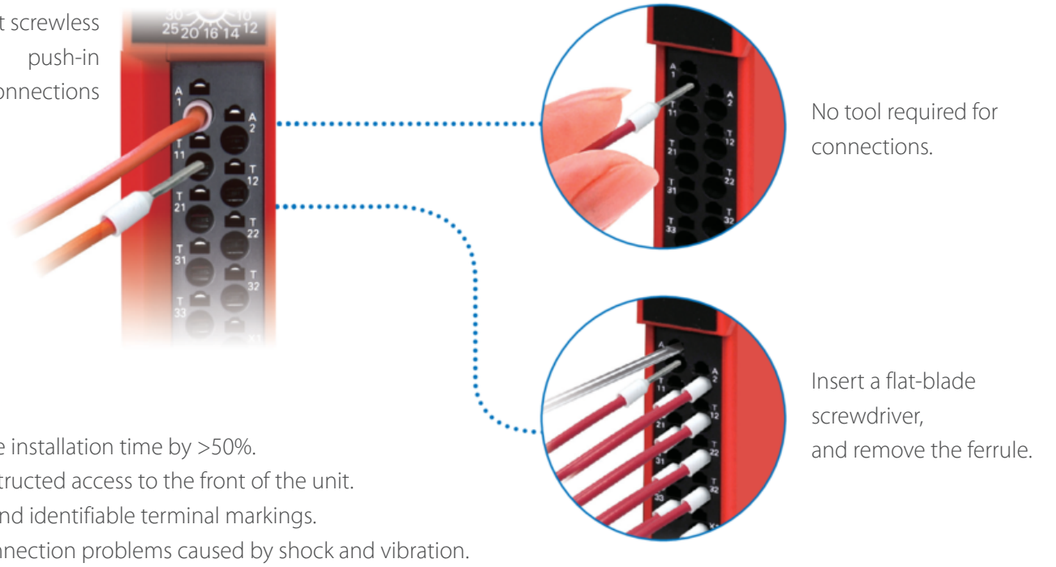
The G9SE, is the thinnest safety relay unit in the industry*.

* as of April 2015.

Screwless terminals

The screwless front terminals save time and effort by offering better visibility when making connections.

Fast screwless push-in connections



No tool required for connections.

Insert a flat-blade screwdriver, and remove the ferrule.

Benefits:

- Reduce installation time by >50%.
- Unobstructed access to the front of the unit.
- Clear and identifiable terminal markings.
- No connection problems caused by shock and vibration.

LED status indicators

When the G9SE detects an error, such as a short circuit or a broken wire, the indicators will signal where the error has occurred. This minimizes downtime as it helps to identify the cause when equipment stops.

Input Error

Short circuit between safety inputs

Output Error

Fault of internal relay

Output Error

OFF-delay setting error

Applications

Shrink wrap machine - Packaging line

The G9SE monitors an E-Stop safety function according to EN ISO 13850. Once the E-Stop is pressed the G9SE will immediately bring the machine to the safe state by quickly transmitting a signal between the safety components.

Safety control

Safety relay unit
G9SE

Safety control

Emergency
stop switch
A22E

Escalator / Elevator

The G9SE fulfill the requirements for EN 81-1 and EN 81-2 which is needed to cover the lift, elevator and escalator applications.

Safety control

Safety relay unit
G9SE

Emergency stop

Emergency
stop switch
A22E

Door position and
open/close detection

Safety limit switch
D4B
Small safety limit switch
D4N/D4F

G9SE range

3 different models of the G9SE are available to meet your safety application requirements. These models provide options for different safety output configurations and adjustable OFF-delay times. All models are compatible with a variety of safety devices such as E-stops, door switches and opto sensors.

G9SE-201

- E-Stop
- Door switch
- Opto sensor
- 2 safety output contacts

G9SE-401

- E-Stop
- Door switch
- Opto sensor
- 4 safety output contacts

G9SE-221-T05/T30

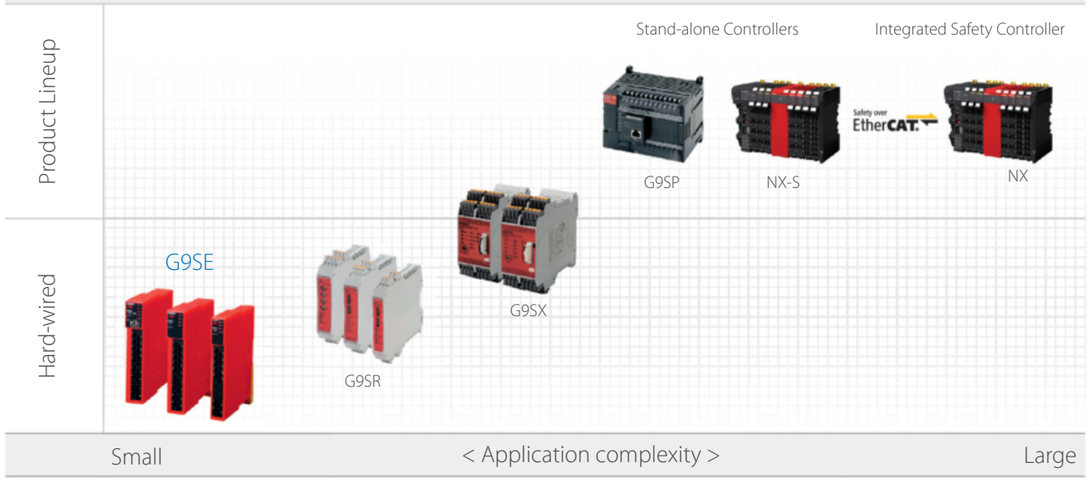
- E-Stop
- Door switch
- Opto sensor
- 2 safety output contacts
- 2 safety OFF delay contacts

The G9SE is in compliance with with the following standards:
EN ISO13849-1: 2008 PL e Safety Category 4, IEC/EN 60947-5-1, IEC/EN 62061 SIL3, EN 81-1, EN81-2, UL508, CAN/CSA C22.2 No.14.

The G9SE completes our comprehensive product lineup to fulfill every safety application.

Product Line-up

Hardwired and programmable safety control



The Functional Safety Type Approved test mark has been granted for the G9SE series by the TÜV Rheinland Group. This product has been examined and meets defined safety levels to protect individuals, the environment and goods of value.

TÜVRheinland CERTIFIED
Functional Safety Type Approved
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Safety control that meets every requirement

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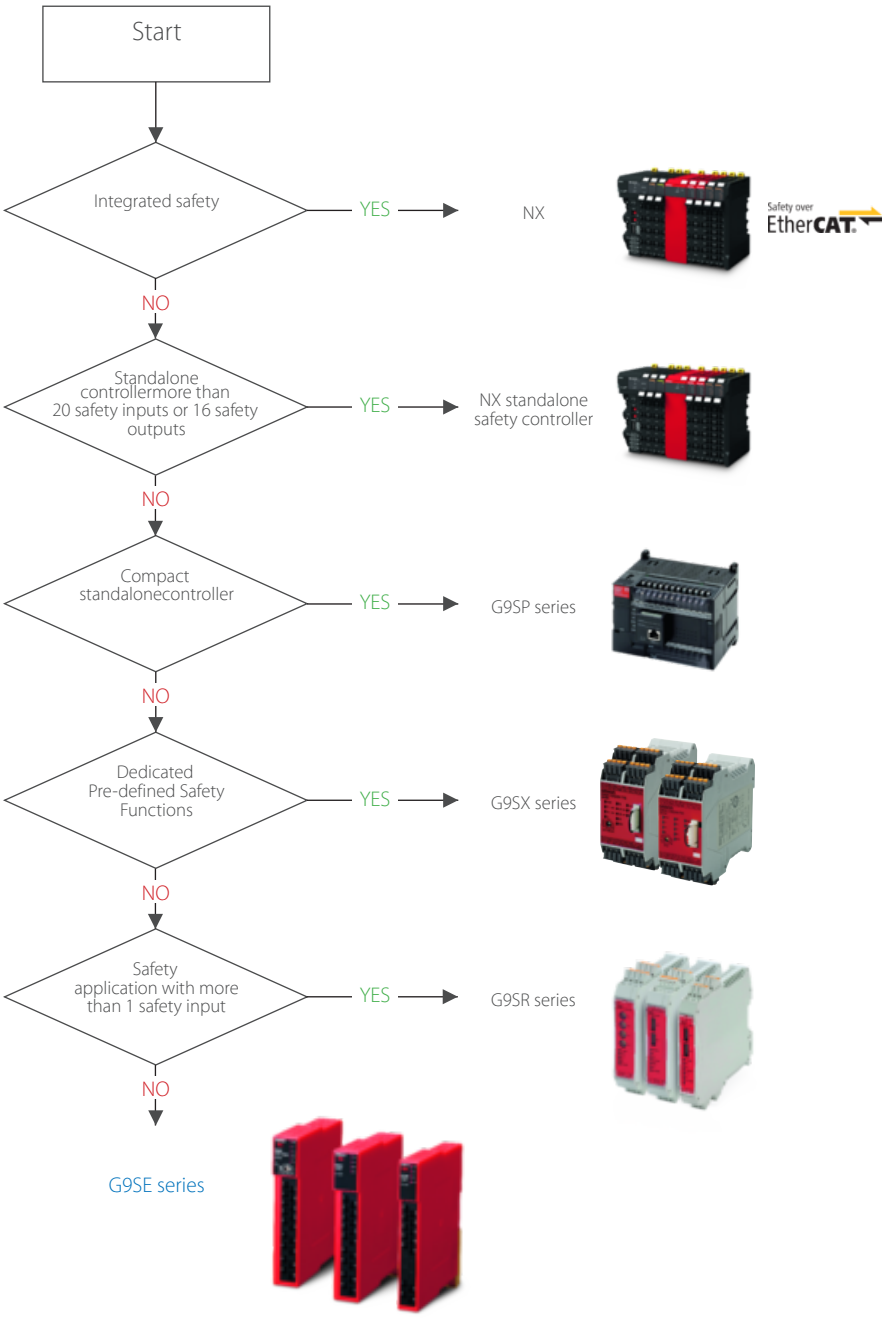
The wide safety relay and controller range on offer ensures that there is always the right product available for your machine, whatever the application. Make the perfect choice from just five product families using the quick selection guide.



Compact safety relay units for general safety monitoring applications

G9SE-family offers a complete line-up of compact units. Modules with two safety contacts, four safety contacts and OFF-delay timing are available on slim-size housing.

- Simple front side wiring using screw-less terminals.
- 17.5 or 22.5 mm width to save mounting space
- 15 ms max. response time
- Safe OFF delay function up to PLe
- Easy maintenance with status indicators
- Approved standards:
  EN ISO13849-1: 2008 PLe Safety Category 4, IEC/EN 60947-5-1, IEC/EN 62061 SIL3, EN 81-1, EN81-2, UL508, CAN/CSA C22.2 No.14

Ordering information

Safety outputs		Auxiliary outputs *1	Max. OFF-delay time *2	Rated voltage	Order code
Instantaneous	OFF-delayed				
DPST-NO	–	1 PNP transistor output	–	24 VDC	G9SE-201
4PST-NO					G9SE-401
DPST-NO	DPST-NO		5 s		G9SE-221-T05
DPST-NO	DPST-NO		30 s		G9SE-221-T30

*1 PNP transistor output
*2 The OFF-delay time can be set in 16 steps as follows:
T05: 0/0.1/0.2/0.3/0.4/0.5/0.6/0.7/0.8/1/1.5/2/2.5/3/4/5 s
T30: 0/1/2/4/5/6/7/8/9/10/12/14/16/20/25/30 s

Specifications

Ratings

Power Input

Item	G9SE-201	G9SE-401	G9SE-221-T_
Rated supply voltage	24 VDC		
Operating voltage range	–15% to 10% of rated supply voltage		
Rated power consumption *1	3 W max.	4 W max.	

*1 Power consumption of loads not included.

Outputs

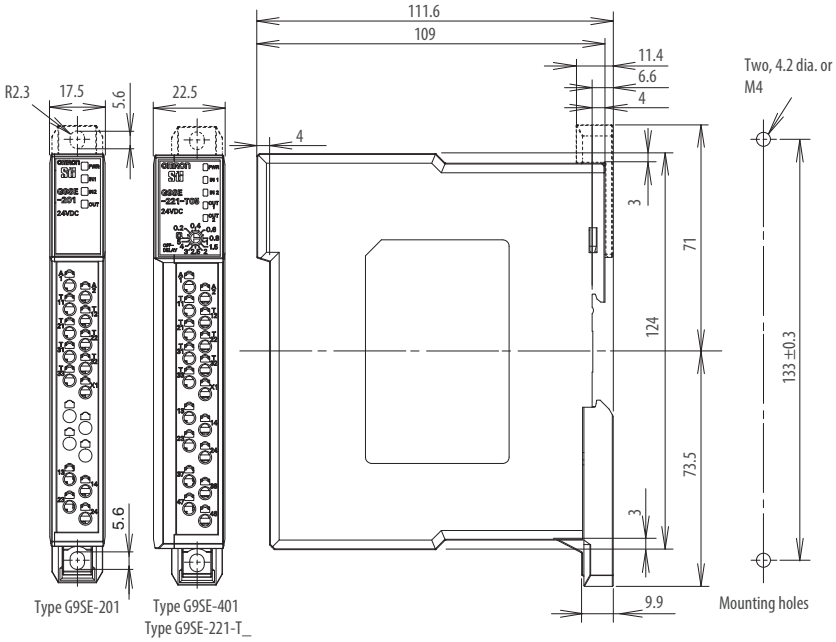
Item	G9SE-201	G9SE-401	G9SE-221-T_
Safety output OFF-delayed safety output	Contact output 250 VAC 5 A 30 VDC 5 A (resistance load)		
Auxiliary output	PNP transistor output Load current: 100 mA DC max.		

Characteristics

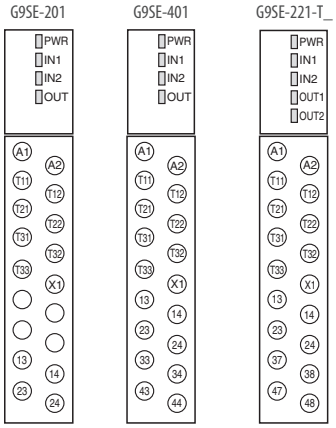
Item		G9SE-201	G9SE-401	G9SE-221-T_
Operating time (OFF to ON state) *1		100 ms Max. *2		
Response time (ON to OFF state) *3		15 ms Max.		
Inputs	Input current	5 mA Min.		
	ON voltage	11 VDC Min.		
	OFF voltage	5 VDC Max.		
	OFF current	1 mA Max.		
	Maximum cable length	100 m Max.		
	Reset input time	250 ms Min.		
Contact outputs	Contact resistance *4	100 mΩ		
	Mechanical durability	5,000,000 operations Min.		
	Electrical durability	50,000 operations Min.		
	Switching specification Inductive load (IEC/EN60947-5-1)	AC15: 240 VAC 2 A DC13: 24 VDC 1.5 A		
	Minimum applicable load	24 VDC 4 mA		
	Conditional short-circuit current (IEC/EN60947-5-1)	100A *5		
Surrounding air temperature		–10 to 55°C (No freezing or condensation)		

*1 The operating time is the time it takes for the safety contact to close after the safety inputs and feedback-reset input are turned ON. Not includes bounce time.
*2 This is in normal operation. When executing non-regular self-diagnosis for Safety output circuit, G9SE operating time become 500 ms max..
*3 The response time is the time it takes for the safety main contact to open after the safety input is turned OFF. Includes bouncetime.
*4 This is initial value using the voltage-drop method with 1 A at 5 VDC.
*5 Use an 8 A fuse that conforms to IEC 60127 as a short-circuit protection device. This fuse is not included with the G9SE.

Dimensions and terminal arrangement



Terminal arrangement and LED indicators



Application example

Application Overview

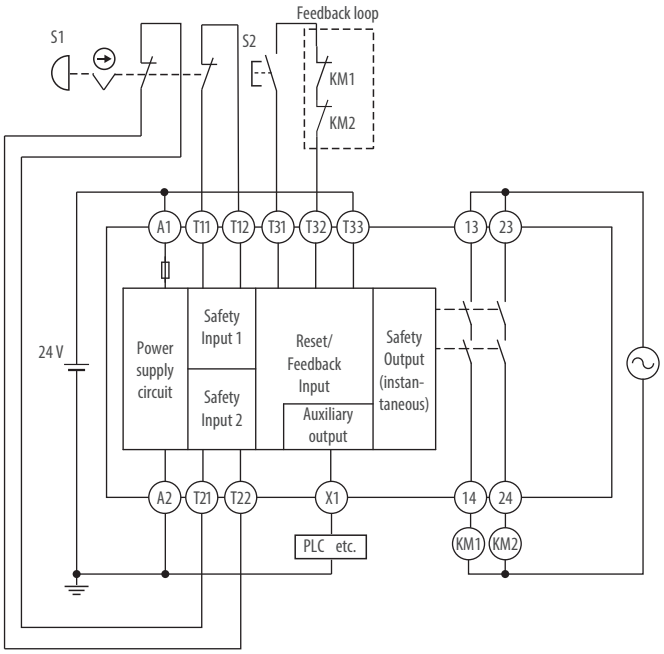
- Immediately removes power to Motor M when Emergency Stop Switch S1 is pressed.
- The power to Motor M is kept removed until Emergency Stop Switch S1 is released and Reset Switch S2 is pressed.

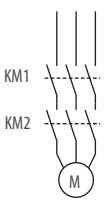
Evaluation example

PL/safety category	Model	Stop category	Reset
PLe/4 equivalent	Emergency stop pushbutton: A22E-M-02 (2NC contact) Push button switch (from Annex C of ISO 13849-1) Safety relay unit: G9SE-201 Contactor of rated load (from Annex C of ISO 13849-1)	0	Manual

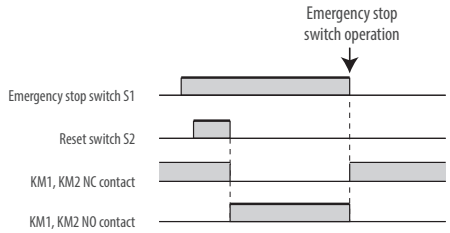
Note: The above PL is only the evaluation result of the example. The PL must be evaluated in an actual application by the customer after confirming the usage conditions.

Wiring Example





Timing chart



Device

S1: Emergency stop switch
S2: Reset switch
KM1, KM2: Contactor
M: 3-phase motor

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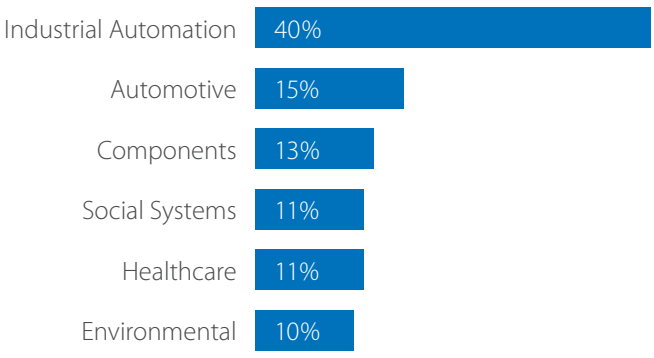

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