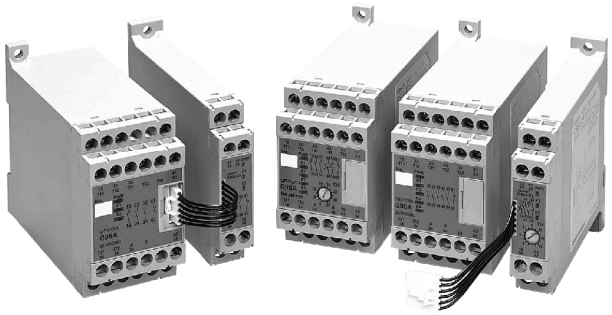
OMRON

# Two-Hand Controller

# G9SA-TH

## 45-mm Wide Two-hand Control Circuit

- Two-hand Controller, easy-to-connect Expansion Units available
- Positive, force-guided contacts
- DIN-rail mounting and panel mounting available



## Ordering Information

| Item | Main contacts | Auxiliary contact | OFF-delay contacts | Number of input channels | OFF-delay time | **Part number** |
|---|---|---|---|---|---|---|
| Two-hand controller | 3PST-NO | SPST-NC | — | 1 or 2 | — | **G9SA-TH301** |
| Expansion unit | 3PST-NO | SPST-NC | — | — | — | **G9SA-EX301** |
| Expansion unit with OFF-delay timer | — | SPST-NC | 3PST-NO | — | 7.5 s | **G9SA-EX031-T075** |
| | | | | | 15 s | **G9SA-EX031-T15** |
| | | | | | 30 s | **G9SA-EX031-T30** |

## Specifications

### ■ RATINGS

| Part number | Power input | | Inputs | Contacts (Resistive load: cos $\phi$ =1) | |
|---|---|---|---|---|---|
| | Rated voltage | Power consumption (See Note 1.) | Input current (See Note 2.) | Rated load (See Note 3.) | Rated carry current |
| G9SA-TH301 | 24 VAC/VDC $^{+10\%}_{-15\%}$ | 1.7 W max. (60 Hz) | 40 mA max. | 250 VAC, 5 A | 5 A |
| G9SA-EX301 | — | — | — | | |
| G9SA-EX301-T□ | — | — | — | | |

**Note: 1.** When an Expansion Unit is connected, the power consumption is increased by 2 VA/2 W max.

**2.** When an Expansion Unit is connected, the input current is increased by 30 mA max.

**3.** When multiple Units are mounted close together, the rated current will be 3 A.

## ■ CHARACTERISTICS

| | | |
|---|---|---|
| Contact resistance | | 100 mΩ max. (Measurement conditions: 5 VDC, 1 A, voltage drops) |
| Operating time | (Rated voltage operation, does not include bounce time) | 30 ms max. |
| Response time (See Note 2.) | | 10 ms max. |
| Insulation resistance | Between different outputs | 100 MΩ |
| | Between inputs and outputs | |
| | Between power input and outputs | |
| Dielectric strength | Between different outputs | 2,500 VAC, 50/60 Hz for 1 min. |
| | Between inputs and outputs | |
| | Between power input and outputs | |
| Vibration resistance | | 10 to 55 Hz, 0.75-mm double amplitude |
| Shock resistance | Destruction | 300 $m/s^2$ (approx. 30G) |
| | Malfunction | 100 $m/s\ s^2$ (approx. 10G) |
| Life expectancy | Mechanical | 5,000,000 operations min. (at approx. 7,200 operations/hr) |
| | Electrical | 100,000 operations min.<br>(at the rated load and approx. 1,800 operations/hr) |
| Ambient temperature | Operating | -25°C to 55°C (-13°F to 131°F) no icing |
| | Storage | -25°C to 55°C (-13°F to 131°F) no icing |
| Ambient humidity | Operating | 35% to 85% RH |
| | Storage | 35% to 85% RH |
| Weight | | G9SA-TH301: Approx. 210g<br>G9SA-EX301/EX031-T□: Approx. 130g |

**Note:** 1. The values listed above are initial values.

2. The response time is the time it takes for the NO contacts to open after the coil voltage is turned OFF.

## ■ APPROVED STANDARDS

EN954-1

EN60204-1

EN574 (G9SA-TH301)

UL508

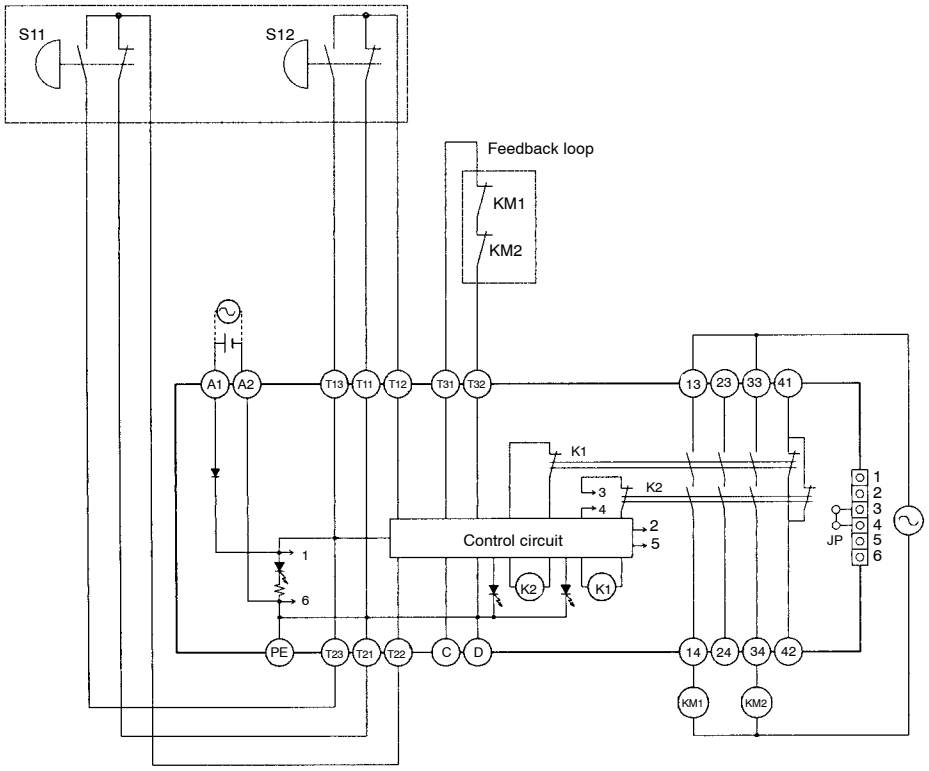
CSA22.2 No. 14

EMI: EN55011 group 1 class A

EMS: EN50082-2 group 1

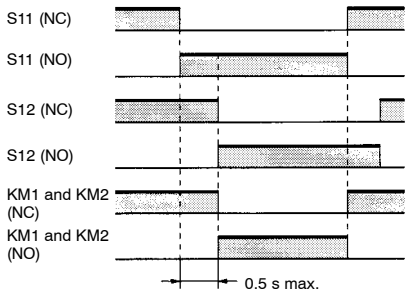
# Application Examples

## ■ G9SA-TH301 (24 VDC) WITH 2-HAND 2-CHANNEL INPUTS/AUTO-RESET




**S11, S12**: Two-hand pushbutton switches
**KM1 and KM2**: Magnetic Contactor

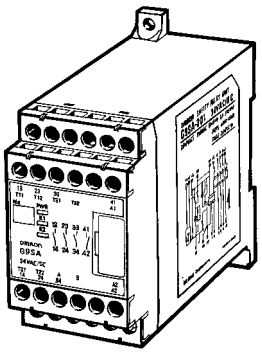
### Timing Chart

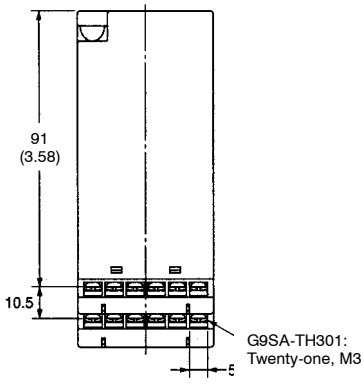


# Dimensions

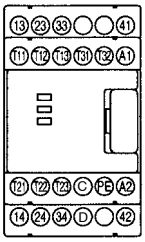
Unit: mm (inch)

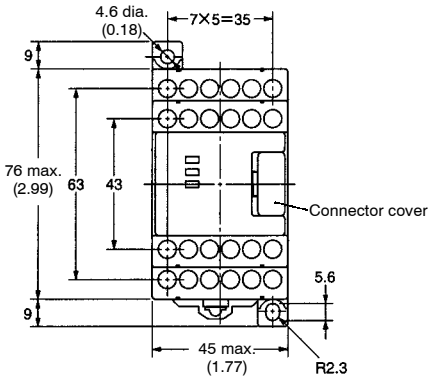
## ■ G9SA-TH301

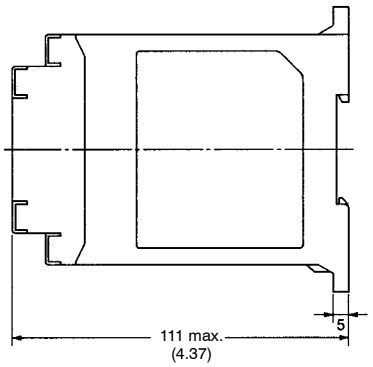




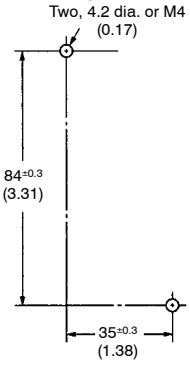

**Terminal Arrangement**



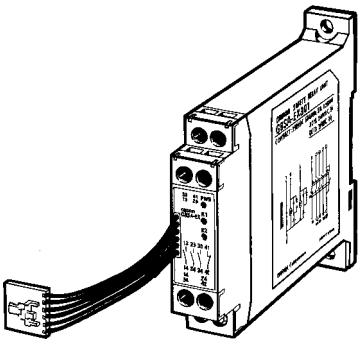



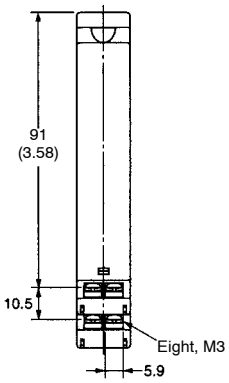




**Mounting Holes**

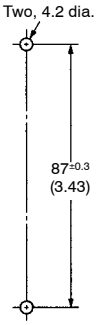


## ■ G9SA-EX301
## G9SA-EX031-T□



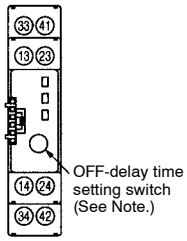


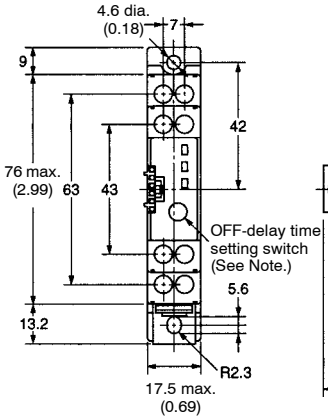

**Mounting Holes**

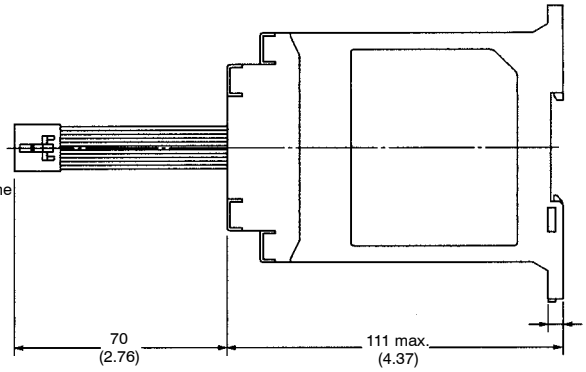



**Terminal Arrangement**

G9SA-EX301
G9SA-EX031-T□




**Note:** The OFF-delay time setting switch is found on the G9SA-EX031-T□ only.

# Installation

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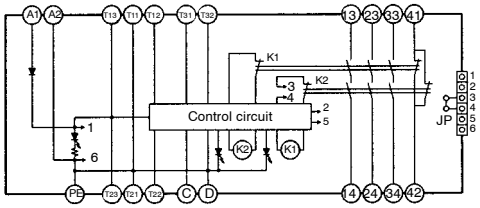
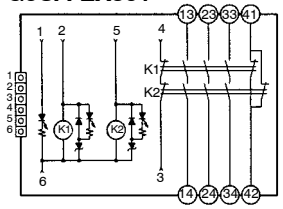
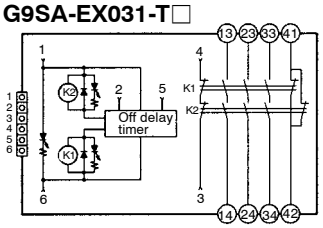
**G9SA-TH301 (24 VAC/VDC)**




**G9SA-EX301**




**G9SA-EX031-T□**



# Precautions

## ■ WIRING

Turn OFF the G9SA before wiring the G9SA to avoid electric shock. Do not touch the terminals of the G9SA while the power is turned ON.

Use the following to wire the G9SA.
Stranded wire: 0.75 to 1.5 $mm^2$ 16 to 18 AWG
Solid wire: 1.0 to 1.5 $mm^2$ 16 to 18 AWG

Tighten each screw to a torque of 0.78 to 1.18 N•m (8 to 12 kgf•cm), or the G9SA may malfunction or generate heat.

PE is a ground terminal.

When a machine is grounded at the positive, the PE terminal should not be grounded.

## ■ MOUNTING EXPANSION UNITS

Turn OFF the G9SA before connecting the Expansion Unit.

When an Expansion Unit is being used, remove the connector cover from the G9SA Safety Relay (G9SA-TH301) and insert the connector of the Expansion Unit's connector cable.

## ■ APPLICABLE SAFETY CATEGORY (EN954-1)

All G9SA-series Relays meet the requirements of Safety Category 4 of the EN954-1 standards when they are used as shown in the examples provided by OMRON. The Relays may not meet the standards in some operating conditions.

The applicable safety category is determined from the whole safety control system. Make sure that the whole safety control system meets EN954-1 requirements.

## ■ INSTALLING MULTIPLE UNITS

When installing multiple Units close to each other, the rated current will be 3 A. Do not apply a current higher than 3 A.

**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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