

# Safety Interlock Switches

# D4GL



## Guard Lock Safety-Door Switch

- Vertically mounting guard lock safety-door switch ideal for limited installation space
- Selectable operation key insertion direction
- Slim safety-door switch with an electromagnetic lock or unlock mechanism
- Built-in switches with multiple-contact construction are available
- A key holding force of 1,000 N minimum
- Can be used for either standard loads or microloads
- Lineup includes models with a conduit size of M20
- Variety of metallic heads available



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## Specifications

### Standards and EC Directives

Conforms to the following EC Directives:

- Machinery Directive
- Low Voltage Directive
- EN 1088
- EN 60204-1
- GS-ET-19

### Certified Standards

| Certification body | Standard                                   | File No.                                 |
|--------------------|--------------------------------------------|------------------------------------------|
| TÜV SÜD            | EN 60947-5-1<br>(certified direct opening) | Consult your representative for details. |
| UL *1              | UL 508, CSA C22.2 No.14                    | E76675                                   |
| CQC (CCC)          | GB14048.5                                  | 2003010305064264                         |
| KOSHA *2           | EN60947-5-1                                | 2007-26                                  |

\*1. Certification for CSA C22.2 No. 14 is authorized by the UL mark.

\*2. Only certain models have been certified.

### Certified Standard Ratings

TÜV (EN 60947-5-1), CCC (GB14048.5)

| Item                         | Utilization category | AC-15  | DC-13  |
|------------------------------|----------------------|--------|--------|
| Rated operating current (Ie) |                      | 0.75 A | 0.27 A |
| Rated operating voltage (Ue) |                      | 240 V  | 250 V  |

Note: Use a 10 A fuse type gl or gG that conforms to IEC 60269 as a short-circuit protection device.

UL/CSA (UL 508, CSA C22.2 No. 14)  
C300

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 2.5 A         | 15          | 1.5   | 1,800             | 180   |
| 240 VAC       |               | 7.5         | 0.75  |                   |       |

Q300

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 125 VDC       | 2.5 A         | 0.55        | 0.55  | 69                | 69    |
| 250 VDC       |               | 0.27        | 0.27  |                   |       |

### Solenoid Coil Characteristics

| Item                              | Type | 24 VDC               |
|-----------------------------------|------|----------------------|
| Rated operating voltage (100% ED) |      | 24 VDC $\pm$ 10%     |
| Current consumption               |      | Approx. 200 mA       |
| Insulation Class                  |      | Class F (130°C max.) |

### Indicator Characteristics

| Item                | Type | LED          |
|---------------------|------|--------------|
| Rated voltage       |      | 24 VDC       |
| Current consumption |      | Approx. 3 mA |
| Color (LED)         |      | Orange/Green |

## Connections

### Contact Form

Indicates conditions where the Key is inserted and the lock is applied. Terminals 12 and 41 are connected internally (as per BIA GS-ET-19).

| Model       | Contact<br>(door open/closed<br>detection and lock<br>monitor) | Contact form                      |                 | Operating pattern | Remarks                                                                                                                                                              |
|-------------|----------------------------------------------------------------|-----------------------------------|-----------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                | Door open/<br>closed<br>detection | Lock<br>monitor |                   |                                                                                                                                                                      |
| D4GL-□AF□-□ | 1NC/1NO + 1NC/1NO                                              |                                   |                 |                   | Only NC contact 11-12 has a certified direct opening mechanism. (→)<br>The terminals 11-42, 33-34, and 53-54 can be used as unlike poles.                            |
| D4GL-□BF□-□ | 1NC/1NO + 2NC                                                  |                                   |                 |                   | Only NC contact 11-12, has a certified direct opening mechanism. (→)<br>The terminals 11-42, 33-34, and 51-52 can be used as unlike poles.                           |
| D4GL-□CF□-□ | 2NC + 1NC/1NO                                                  |                                   |                 |                   | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, and 53-54 can be used as unlike poles.                |
| D4GL-□DF□-□ | 2NC + 2NC                                                      |                                   |                 |                   | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, and 51-52 can be used as unlike poles.                |
| D4GL-□EF□-□ | 2NC/1NO + 1NC/1NO                                              |                                   |                 |                   | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, 33-34, and 53-54 can be used as unlike poles.         |
| D4GL-□FF□-□ | 2NC/1NO + 2NC                                                  |                                   |                 |                   | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, 33-34, and 51-52 can be used as unlike poles.         |
| D4GL-□GF□-□ | 3NC + 1NC/1NO                                                  |                                   |                 |                   | Only NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, 31-32, and 53-54 can be used as unlike poles. |
| D4GL-□HF□-□ | 3NC + 2NC                                                      |                                   |                 |                   | Only NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. (→)<br>The terminals 11-42, 21-22, 31-32, and 51-52 can be used as unlike poles. |

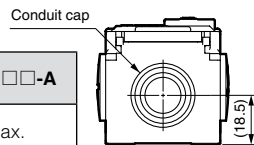
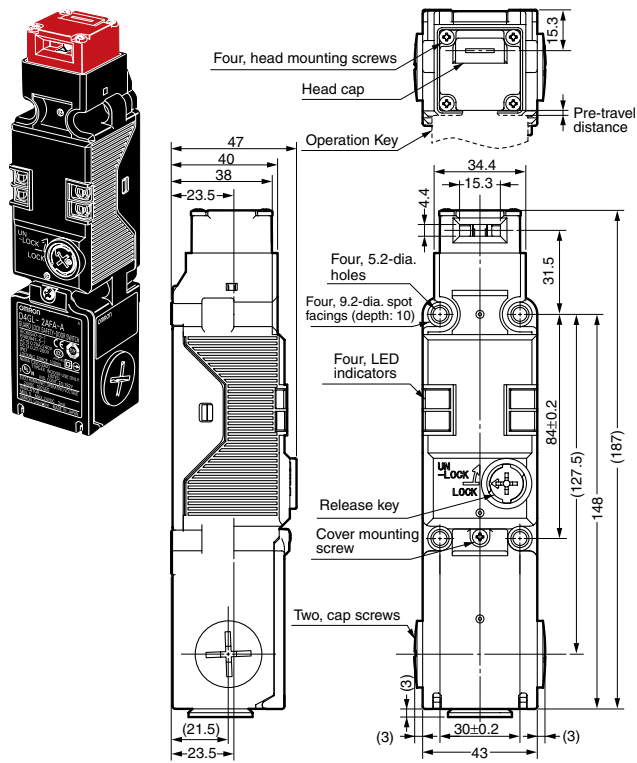
(mm)

## Dimensions and Operating Characteristics

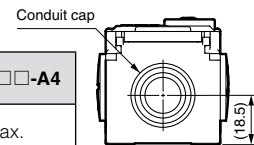
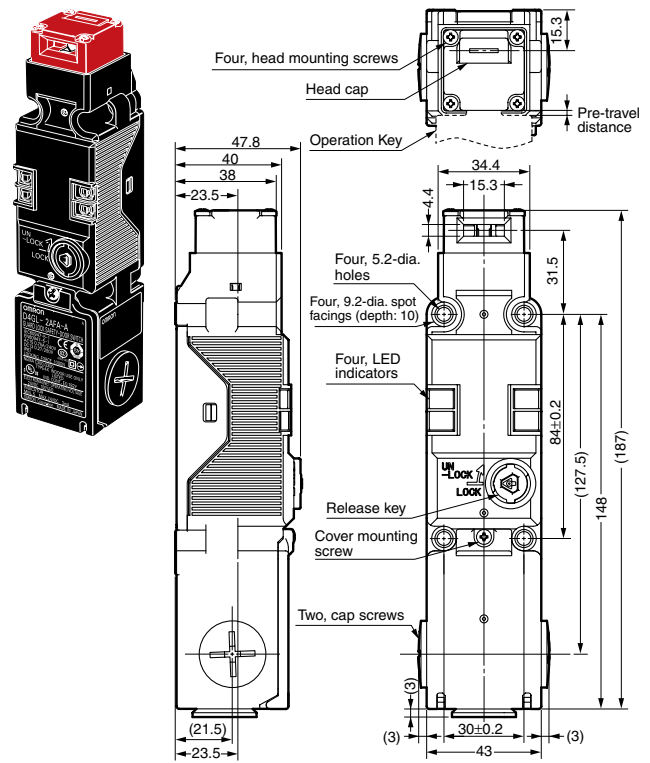
## Switches

D4GL-□□□□-A

D4GL-□□□□-A4



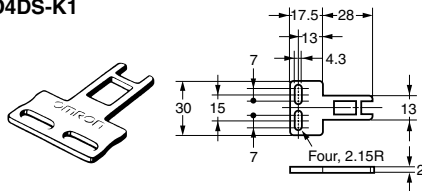
| Operating characteristics    | D4GL-□□□□-A |
|------------------------------|-------------|
| Key insertion force          | 15 N max.   |
| Key extraction force         | 40 N max.   |
| Pre-travel distance          | 10 mm max.  |
| Movement before being locked | 4 mm min.   |



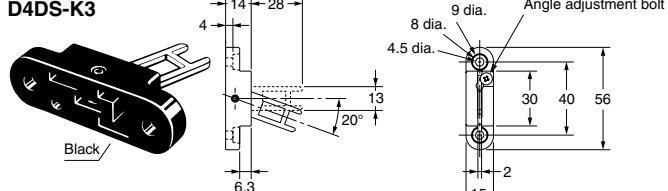
| Operating characteristics    | D4GL-□□□□-A4 |
|------------------------------|--------------|
| Key insertion force          | 15 N max.    |
| Key extraction force         | 40 N max.    |
| Pre-travel distance          | 10 mm max.   |
| Movement before being locked | 4 mm min.    |

## Operation Keys

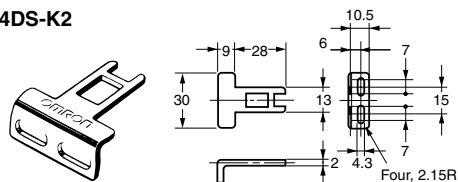
D4DS-K1



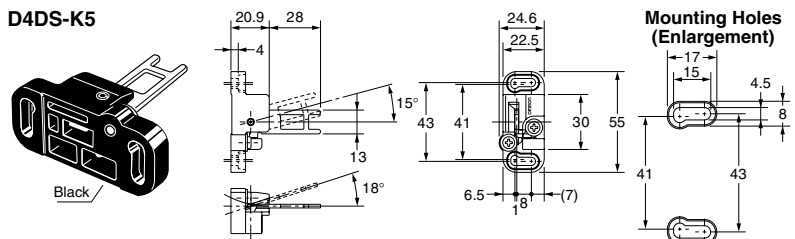
D4DS-K3



D4DS-K2



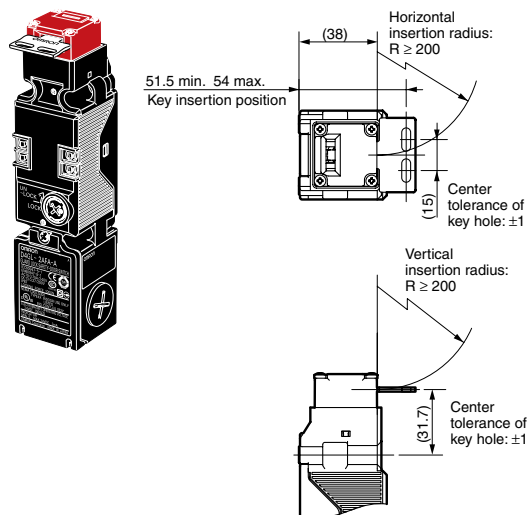
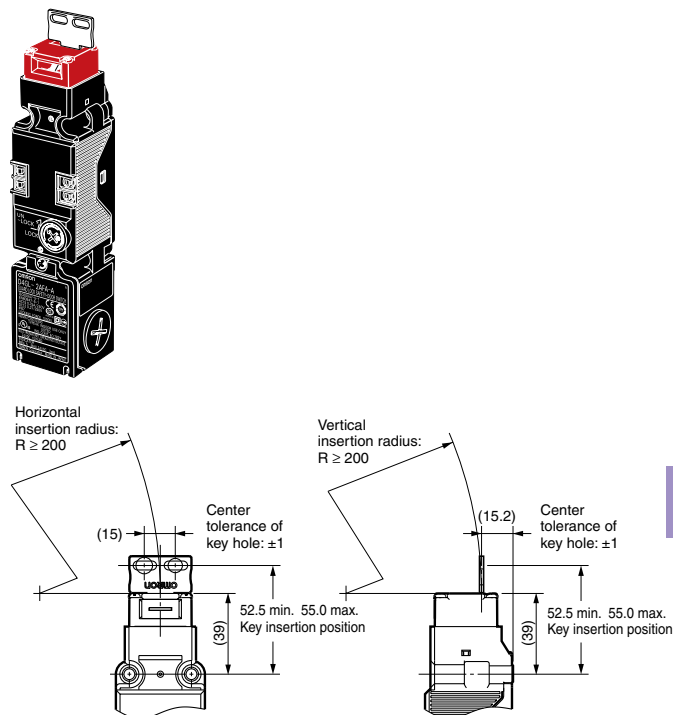
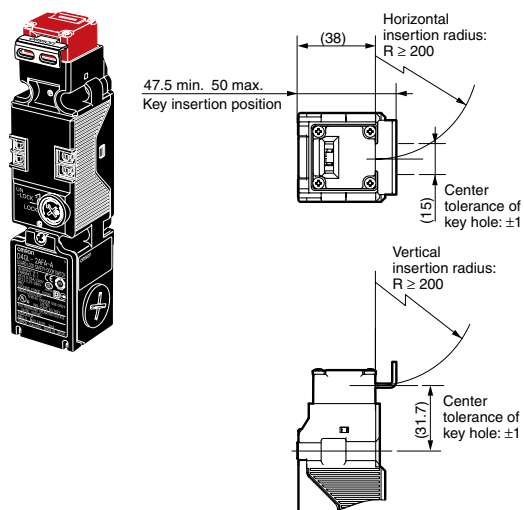
D4DS-K5

Note: Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

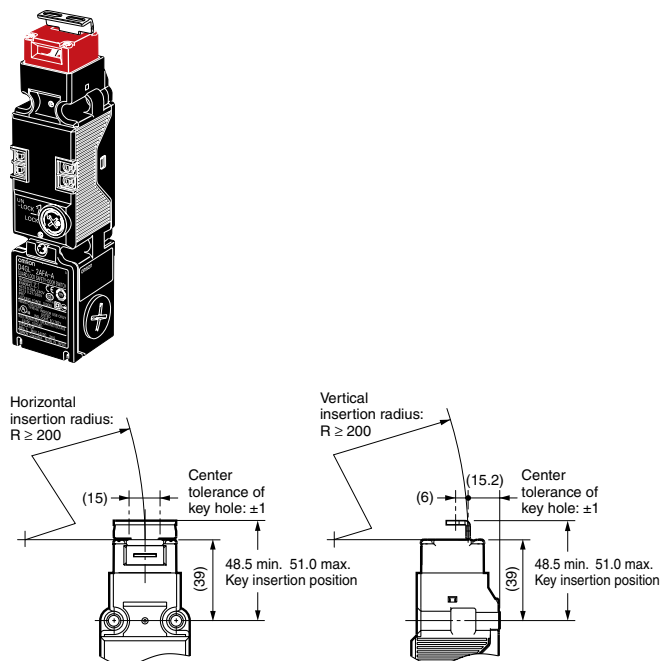
## Dimensions and Operating Characteristics (continued)

(mm)

## With Operation Key Inserted

D4GL + D4DS-K1  
(with Front-inserted Operation Key)D4GL + D4DS-K1  
(with Top-inserted Operation Key)D4GL + D4DS-K2  
(with Front-inserted Operation Key)

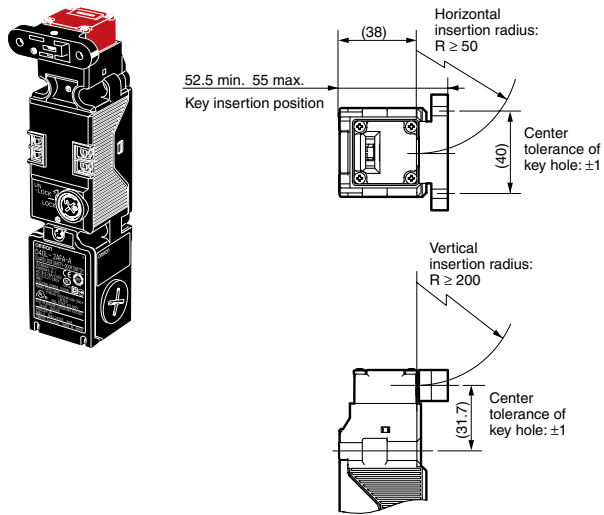
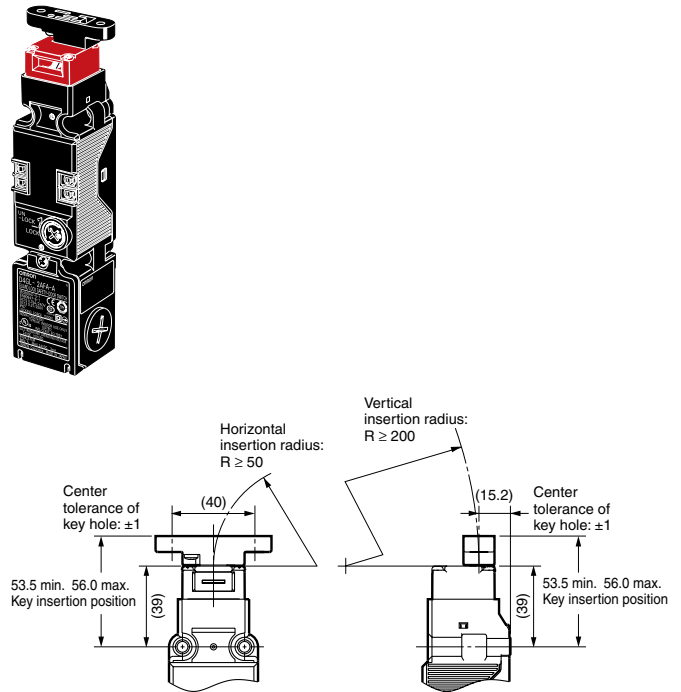
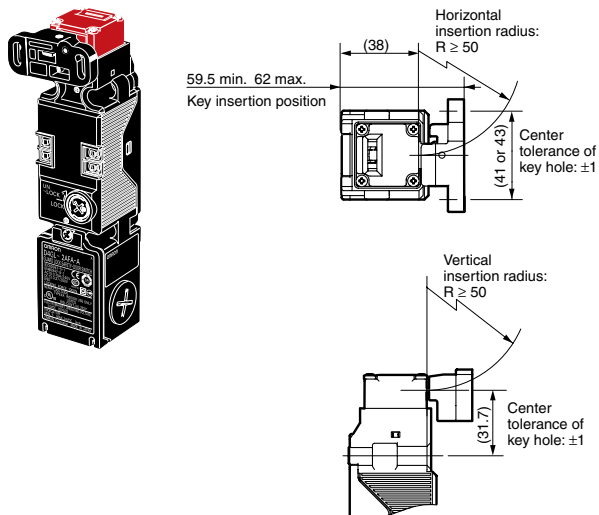
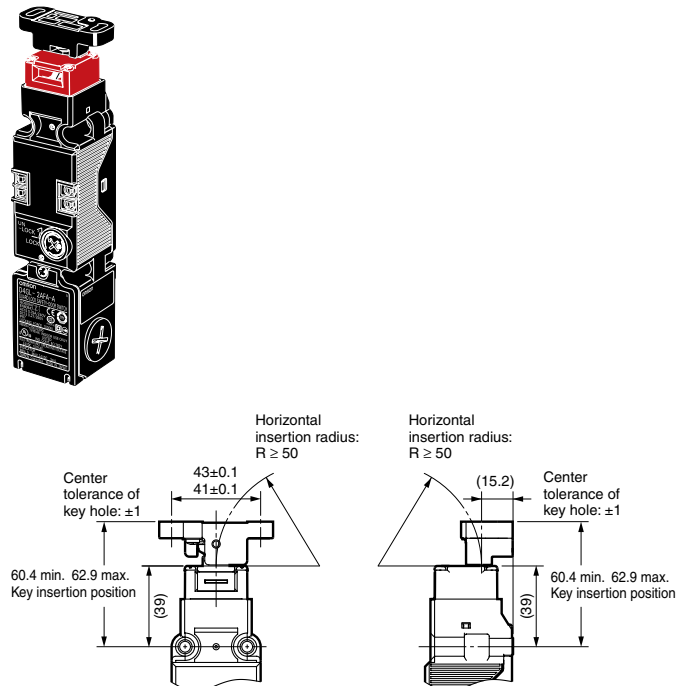
## D4GL + D4DS-K2



## Dimensions and Operating Characteristics (continued)

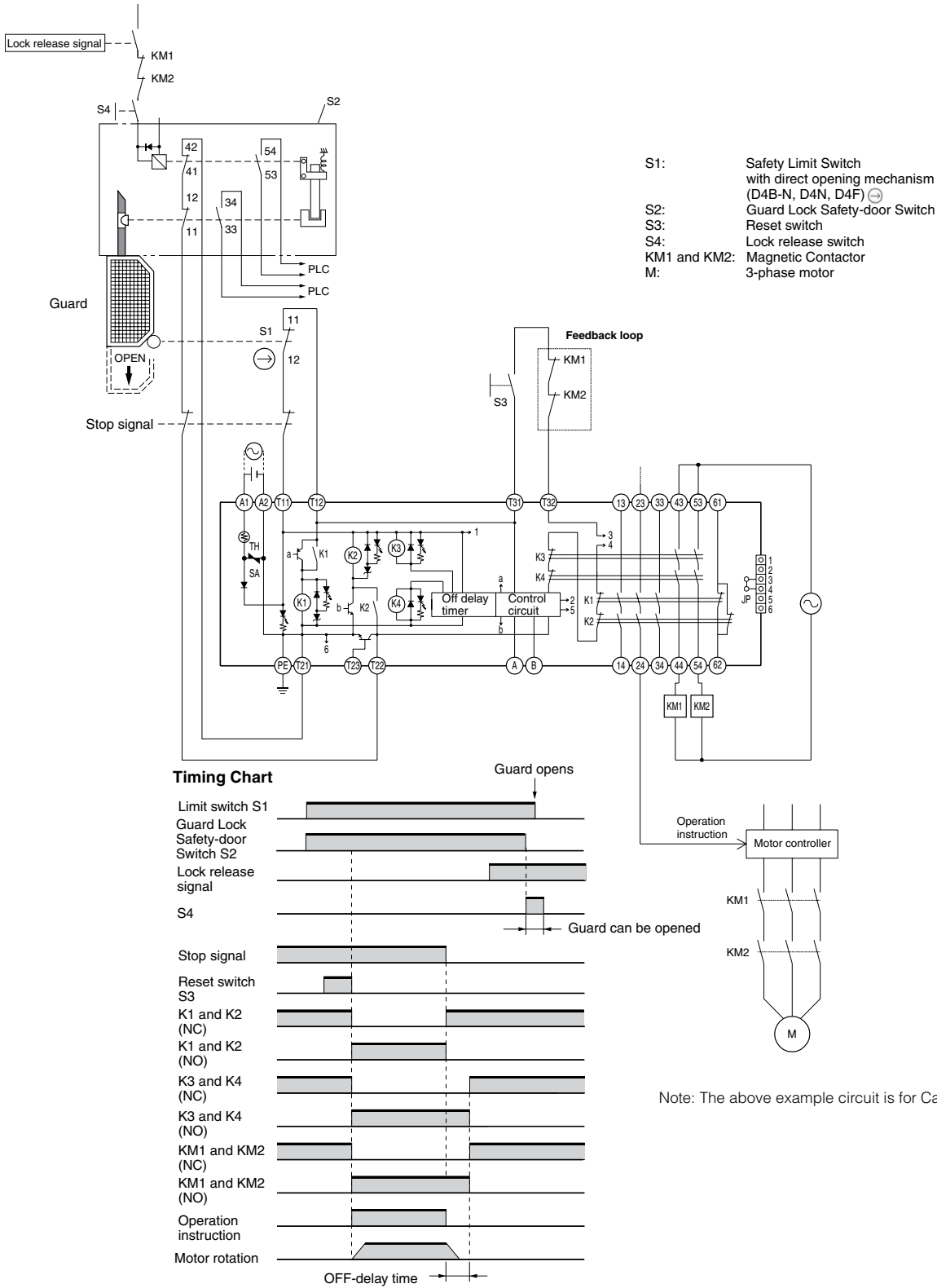
(mm)

## With Operation Key Inserted

D4GL + D4DS-K3  
(with Front-inserted Operation Key)D4GL + D4DS-K3  
(with Top-inserted Operation Key)D4GL + D4DS-K5  
(with Front-inserted Operation Key)D4GL + D4DS-K5  
(with Top-inserted Operation Key)

Application Examples

G9SA-321-T + D4GL-□AFA-□ (Mechanical Lock Type)  
Circuit Diagram (Manual Reset)



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## Ordering

### Model Number Structure

#### Switch

D4GL - ☐ ☐ ☐ ☐ - ☐ ☐

**1 2 3 4 5 6**

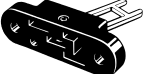
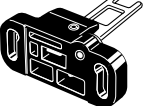
- 1** Conduit Size
  - 1: Pg13.5
  - 2: G1/2
  - 4: M20
- 2** Built-in Switch (with Door Open/Closed Detection Switch and Lock Monitor Switch Contacts)
  - A: 1NC/1NO (slow-action contacts) + 1NC/1NO (slow-action contacts)
  - B: 1NC/1NO (slow-action contacts) + 2NC (slow-action contacts)
  - C: 2NC (slow-action contacts) + 1NC/1NO (slow-action contacts)
  - D: 2NC (slow-action contacts) + 2NC (slow-action contacts)
  - E: 2NC/1NO (slow-action contacts) + 1NC/1NO (slow-action contacts)
  - F: 2NC/1NO (slow-action contacts) + 2NC (slow-action contacts)
  - G: 3NC (slow-action contacts) + 1NC/1NO (slow-action contacts)
  - H: 3NC (slow-action contacts) + 2NC (slow-action contacts)
- 3** Head Mounting Direction and Material
  - F: Four mounting directions possible (Front-side mounting at shipping)/plastic
  - D: Four mounting directions possible (Front-side mounting at shipping)/metal
- 4** Door Lock and Release
  - A: Mechanical lock/24 VDC solenoid release
  - G: 24 VDC solenoid lock/mechanical release
- 5** Indicator
  - A: 24 VDC (orange/green LED indicator)
- 6** Release Key Type
  - Blank: Standard release key
  - 4: Special Release Key
- 7** NPT, 1/2"-14 NPT Conduit
  - Adapter included
  - (Applicable to M20 Conduit models only)
  - Note: To specify 1/2" NPT adapter, add "-NPT" to end of model code.

#### Operation Key

D4DS-K ☐

**1**

- 1** Operation Key Type
  - 1: Horizontal mounting
  - 2: Vertical mounting
  - 3: Adjustable mounting (horizontal)
  - 5: Adjustable mounting (horizontal/vertical)

| Type                                                                                                                              | Model   |
|-----------------------------------------------------------------------------------------------------------------------------------|---------|
| Horizontal mounting<br>                        | D4DS-K1 |
| Vertical mounting<br>                          | D4DS-K2 |
| Adjustable mounting (horizontal)<br>           | D4DS-K3 |
| Adjustable mounting (horizontal/vertical)<br> | D4DS-K5 |

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For information on the D4GL-SK10-LK Slide Key, see page G215.

## Ordering (continued)

### List of Models

Switches with certified direct opening mechanisms (Operation Keys are sold separately)

| Head Material | Release Key Type | Solenoid Voltage/Indicator                      | Lock and Release Types              | Contact Configuration<br>(door open/closed detection switch and lock monitor switch contacts)<br>(slow action)<br>Certified direct opening NC contact | Conduit size              | Model           |
|---------------|------------------|-------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------|
| Plastic       | Standard         | Solenoid: 24 VDC<br>Orange/Green LED:<br>24 VDC | Mechanical lock<br>Solenoid Release | 1NC/1NO+1NC/1NO                                                                                                                                       | M20                       | D4GL-4AFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4AFA-A-NPT |
|               |                  |                                                 |                                     | 1NC/1NO+2NC                                                                                                                                           | M20                       | D4GL-4BFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4BFA-A-NPT |
|               |                  |                                                 |                                     | 2NC+1NC/1NO                                                                                                                                           | M20                       | D4GL-4CFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4CFA-A-NPT |
|               |                  |                                                 |                                     | 2NC+2NO                                                                                                                                               | M20                       | D4GL-4DFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4DFA-A-NPT |
|               |                  |                                                 |                                     | 2NC/1NO+1NC/1NO                                                                                                                                       | M20                       | D4GL-4EFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4EFA-A-NPT |
|               |                  |                                                 |                                     | 2NC/1NO+2NC                                                                                                                                           | M20                       | D4GL-4FFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4FFA-A-NPT |
|               |                  |                                                 |                                     | 3NC+1NC/1NO                                                                                                                                           | M20                       | D4GL-4GFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4GFA-A-NPT |
|               |                  |                                                 |                                     | 3NC+2NC                                                                                                                                               | M20                       | D4GL-4HFA-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4HFA-A-NPT |
|               |                  |                                                 | Solenoid lock<br>Mechanical Release | 1NC/1NO+1NC/1NO                                                                                                                                       | M20                       | D4GL-4AFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4AFG-A-NPT |
|               |                  |                                                 |                                     | 1NC/1NO+2NC                                                                                                                                           | M20                       | D4GL-4BFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4BFG-A-NPT |
|               |                  |                                                 |                                     | 2NC+1NC/1NO                                                                                                                                           | M20                       | D4GL-4CFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4CFG-A-NPT |
|               |                  |                                                 |                                     | 2NC+2NO                                                                                                                                               | M20                       | D4GL-4DFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4DFG-A-NPT |
|               |                  |                                                 |                                     | 2NC/1NO+1NC/1NO                                                                                                                                       | M20                       | D4GL-4EFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4EFG-A-NPT |
|               |                  |                                                 |                                     | 2NC/1NO+2NC                                                                                                                                           | M20                       | D4GL-4FFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4FFG-A-NPT |
|               |                  |                                                 |                                     | 3NC+1NC/1NO                                                                                                                                           | M20                       | D4GL-4GFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4GFG-A-NPT |
|               |                  |                                                 |                                     | 3NC+2NC                                                                                                                                               | M20                       | D4GL-4HFG-A     |
|               |                  |                                                 |                                     |                                                                                                                                                       | M20 with 1/2" NPT adaptor | D4GL-4HFG-A-NPT |

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(Continued on next page)



## Ordering (continued)

## List of Models (continued)

Switches with certified direct opening mechanisms (Operation Keys are sold separately) (continued)

| Head Material | Release Key Type    | Solenoid Voltage/Indicator                      | Lock and Release Types              | Contact Configuration (door open/closed detection switch and lock monitor switch contacts) (slow action) Certified direct opening NC contact | Conduit size              | Model            |
|---------------|---------------------|-------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| Plastic       | Special Release Key | Solenoid: 24 VDC<br>Orange/Green LED:<br>24 VDC | Mechanical lock<br>Solenoid Release | 1NC/1NO+1NC/1NO                                                                                                                              | M20                       | D4GL-4AFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4AFA-A4-NPT |
|               |                     |                                                 |                                     | 1NC/1NO+2NC                                                                                                                                  | M20                       | D4GL-4BFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4BFA-A4-NPT |
|               |                     |                                                 |                                     | 2NC+1NC/1NO                                                                                                                                  | M20                       | D4GL-4CFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4CFA-A4-NPT |
|               |                     |                                                 |                                     | 2NC+2NO                                                                                                                                      | M20                       | D4GL-4DFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4DFA-A4-NPT |
|               |                     |                                                 |                                     | 2NC/1NO+1NC/1NO                                                                                                                              | M20                       | D4GL-4EFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4EFA-A4-NPT |
|               |                     |                                                 |                                     | 2NC/1NO+2NC                                                                                                                                  | M20                       | D4GL-4FFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4FFA-A4-NPT |
|               |                     |                                                 |                                     | 3NC+1NC/1NO                                                                                                                                  | M20                       | D4GL-4GFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4GFA-A4-NPT |
|               |                     |                                                 |                                     | 3NC+2NC                                                                                                                                      | M20                       | D4GL-4HFA-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4HFA-A4-NPT |
|               |                     |                                                 | Solenoid lock<br>Mechanical Release | 1NC/1NO+1NC/1NO                                                                                                                              | M20                       | D4GL-4AFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4AFG-A4-NPT |
|               |                     |                                                 |                                     | 1NC/1NO+2NC                                                                                                                                  | M20                       | D4GL-4BFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4BFG-A4-NPT |
|               |                     |                                                 |                                     | 2NC+1NC/1NO                                                                                                                                  | M20                       | D4GL-4CFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4CFG-A4-NPT |
|               |                     |                                                 |                                     | 2NC+2NO                                                                                                                                      | M20                       | D4GL-4DFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4DFG-A4-NPT |
|               |                     |                                                 |                                     | 2NC/1NO+1NC/1NO                                                                                                                              | M20                       | D4GL-4EFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4EFG-A4-NPT |
|               |                     |                                                 |                                     | 2NC/1NO+2NC                                                                                                                                  | M20                       | D4GL-4FFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4FFG-A4-NPT |
|               |                     |                                                 |                                     | 3NC+1NC/1NO                                                                                                                                  | M20                       | D4GL-4GFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4GFG-A4-NPT |
|               |                     |                                                 |                                     | 3NC+2NC                                                                                                                                      | M20                       | D4GL-4HFG-A4     |
|               |                     |                                                 |                                     |                                                                                                                                              | M20 with 1/2" NPT adaptor | D4GL-4HFG-A4-NPT |
| Metal         | Special Release Key | 24 VDC                                          | Mechanical lock<br>Solenoid Release | 2NC/1NO + 1NC/NO                                                                                                                             | M20 with 1/2" NPT adaptor | D4GL-4EDA-A4-NPT |
|               |                     |                                                 | Solenoid lock                       | 3NC+1NC/1NO                                                                                                                                  |                           | D4GL-4GDG-A4-NPT |
|               |                     |                                                 | Mechanical Release                  | 2NC/1NO + 1NC/NO                                                                                                                             |                           | D4GL-4EDG-A4-NPT |

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Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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