

# Safety Interlock Switches

## D4GL

SpeedSPEC

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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 (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
		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
		0.27	0.27		

#### Solenoid Coil Characteristics

Item	Type	24 VDC
Rated operating voltage (100% ED)		24 VDC ±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

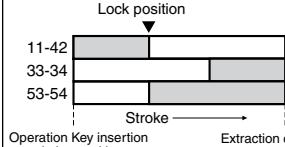
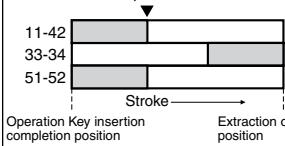
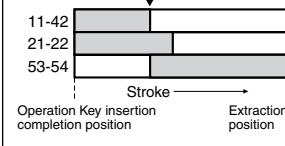
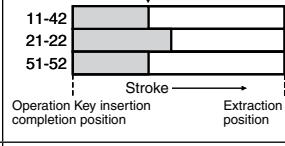
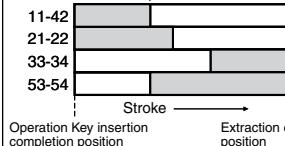
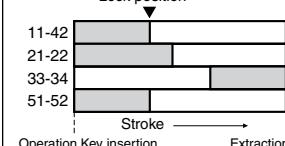
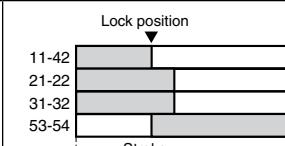
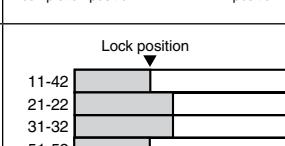


## Connections

### 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).

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Model	Contact (door open/closed detection and lock monitor)	Contact form		Operating pattern	Remarks
		Door open/ closed detection	Lock monitor		
D4GL-□AF□-□	1NC/1NO + 1NC/1NO	Door open/ closed detection Zb 11 33 — 12 34 41 53 — 42 54	Lock monitor Zb 11 33 — 12 34 41 53 — 42 54		Only NC contact 11-12 has a certified direct opening mechanism. The terminals 11-42, 33-34, and 53-54 can be used as unlike poles.
D4GL-□BF□-□	1NC/1NO + 2NC	Door open/ closed detection Zb 11 33 — 12 34 41 51 — 42 52	Lock monitor Zb 11 33 — 12 34 41 51 — 42 52		Only NC contact 11-12 has a certified direct opening mechanism. The terminals 11-42, 33-34, and 51-52 can be used as unlike poles.
D4GL-□CF□-□	2NC + 1NC/1NO	Door open/ closed detection Zb 11 21 — 12 22 41 53 — 42 54	Lock monitor Zb 11 21 — 12 22 41 53 — 42 54		Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. The terminals 11-42, 21-22, and 53-54 can be used as unlike poles.
D4GL-□DF□-□	2NC + 2NC	Door open/ closed detection Zb 11 21 — 12 22 41 51 — 42 52	Lock monitor Zb 11 21 — 12 22 41 51 — 42 52		Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. The terminals 11-42, 21-22, and 51-52 can be used as unlike poles.
D4GL-□EF□-□	2NC/1NO + 1NC/1NO	Door open/ closed detection Zb 11 21 — 12 22 41 53 — 42 54	Lock monitor Zb 11 21 — 12 22 41 53 — 42 54		Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. The terminals 11-42, 21-22, 33-34, and 53-54 can be used as unlike poles.
D4GL-□FF□-□	2NC/1NO + 2NC	Door open/ closed detection Zb 11 21 — 12 22 41 51 — 42 52	Lock monitor Zb 11 21 — 12 22 41 51 — 42 52		Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. The terminals 11-42, 21-22, 33-34, and 51-52 can be used as unlike poles.
D4GL-□GF□-□	3NC + 1NC/1NO	Door open/ closed detection Zb 11 21 — 12 22 31 32 41 53 — 42 54	Lock monitor Zb 11 21 — 12 22 31 32 41 53 — 42 54		Only NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. The terminals 11-42, 21-22, 31-32, and 53-54 can be used as unlike poles.
D4GL-□HF□-□	3NC + 2NC	Door open/ closed detection Zb 11 21 — 12 22 31 32 41 51 — 42 52	Lock monitor Zb 11 21 — 12 22 31 32 41 51 — 42 52		Only NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. The terminals 11-42, 21-22, 31-32, and 51-52 can be used as unlike poles.





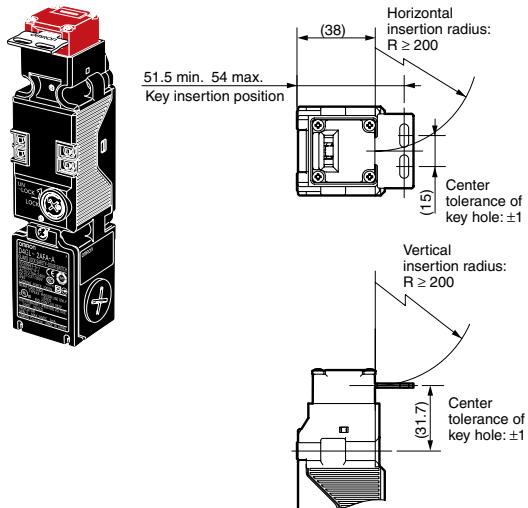
## Dimensions and Operating Characteristics (continued)

(mm)

## With Operation Key Inserted

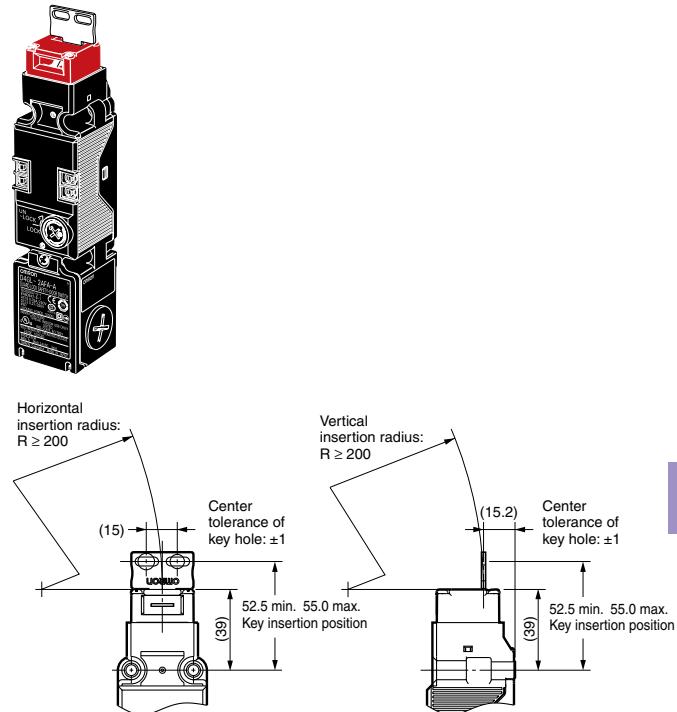
## D4GL + D4DS-K1

(with Front-inserted Operation Key)



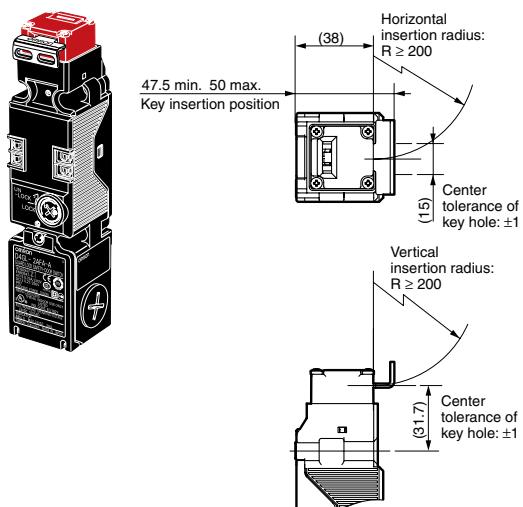
## D4GL + D4DS-K1

(with Top-inserted Operation Key)

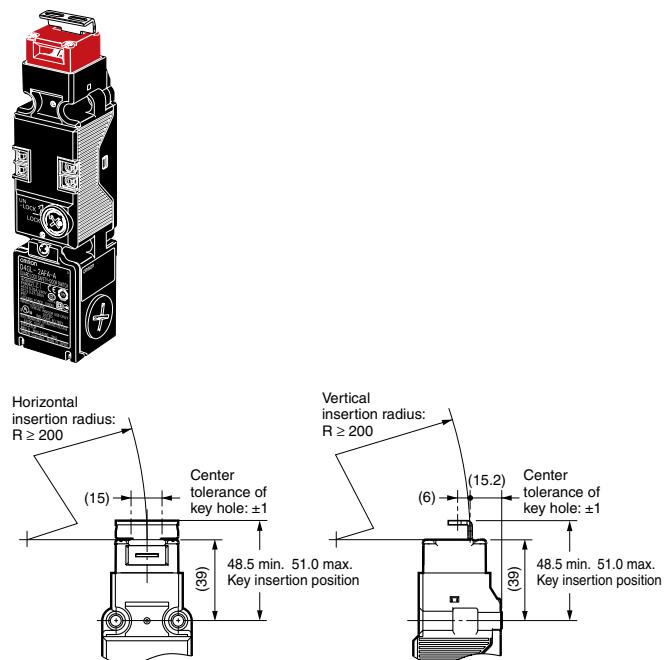


## D4GL + D4DS-K2

(with Front-inserted Operation Key)



## D4GL + D4DS-K2



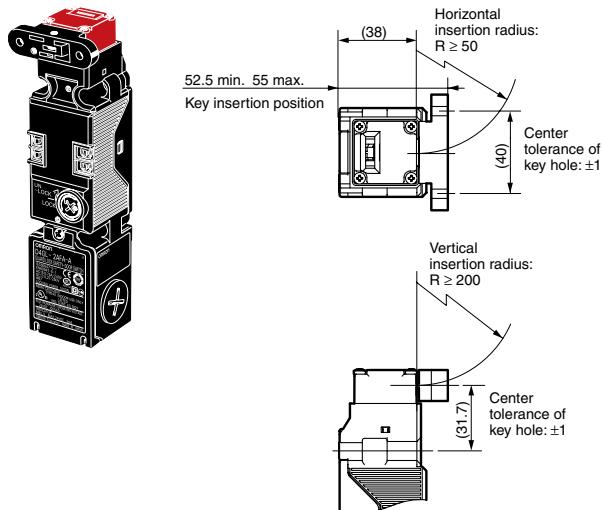
## Dimensions and Operating Characteristics (continued)

(mm)

## With Operation Key Inserted

D4GL + D4DS-K3

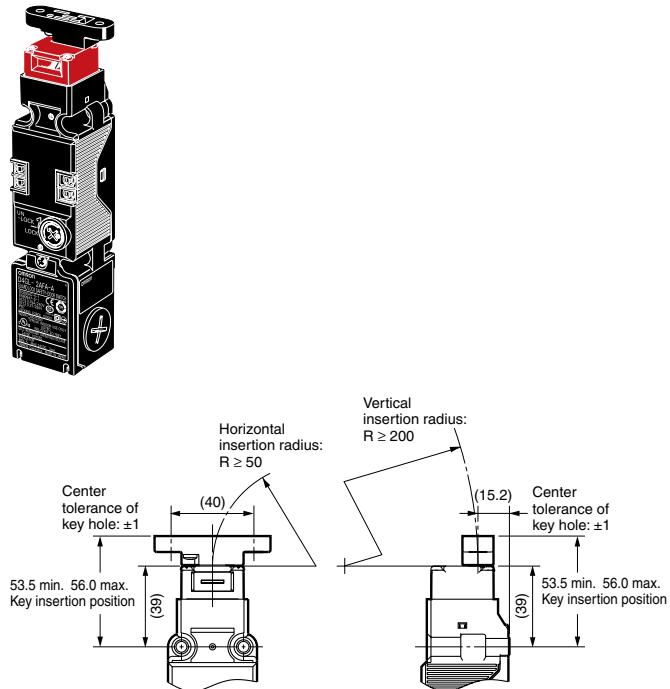
(with Front-inserted Operation Key)



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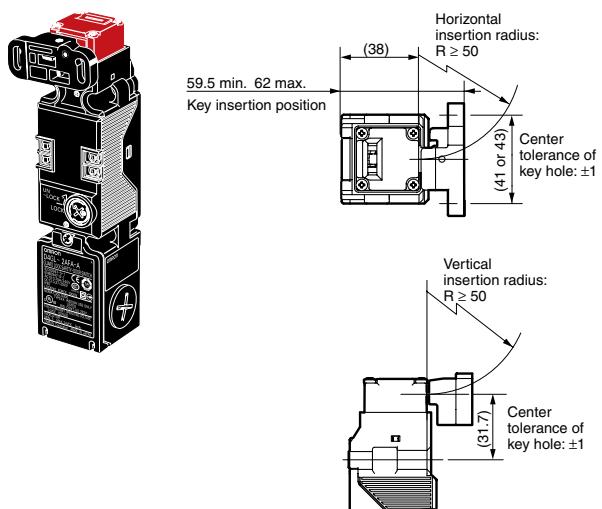
D4GL + D4DS-K3

(with Top-inserted Operation Key)



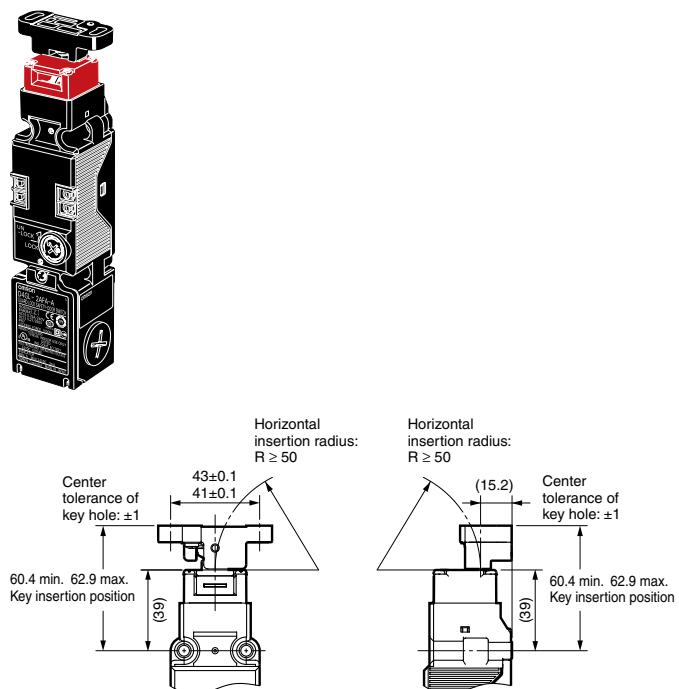
D4GL + D4DS-K5

(with Front-inserted Operation Key)



D4GL + D4DS-K5

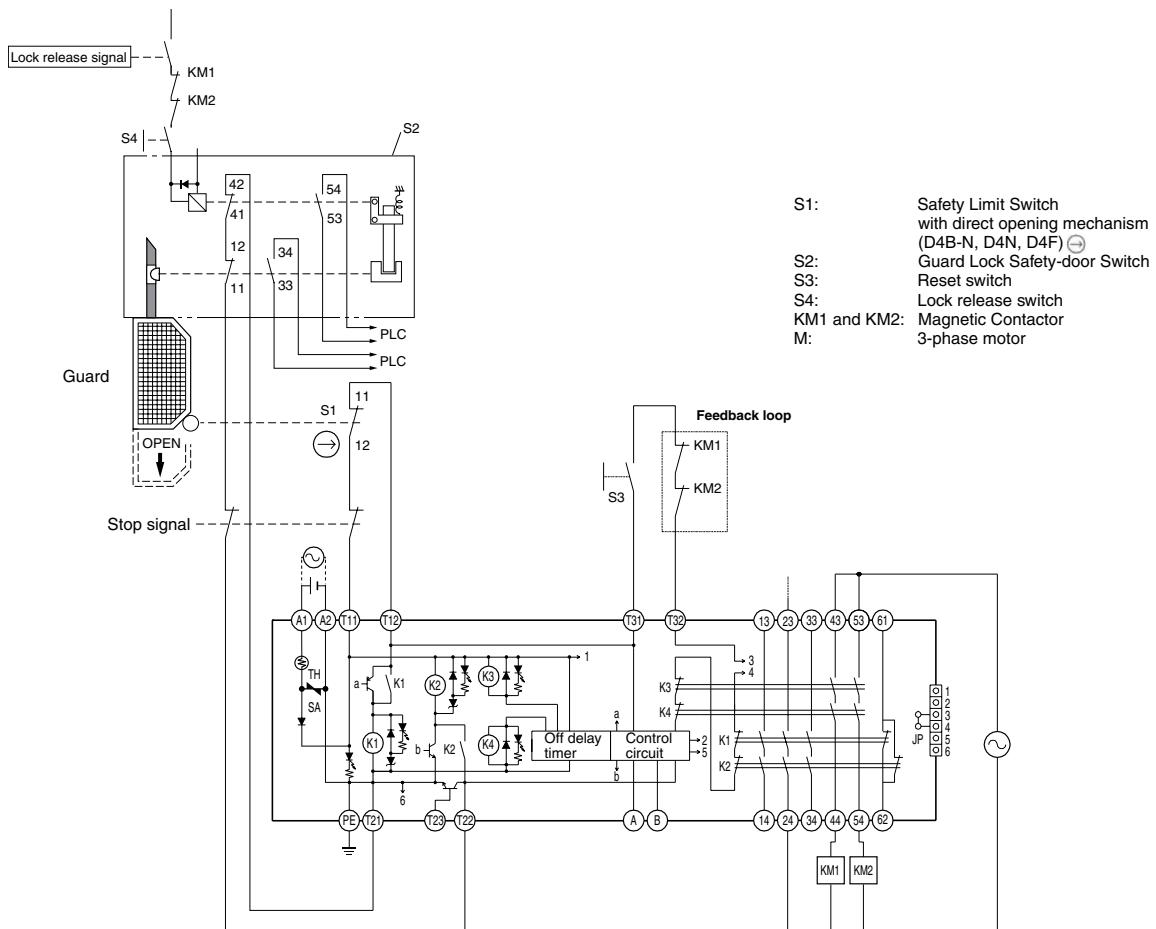
(with Top-inserted Operation Key)



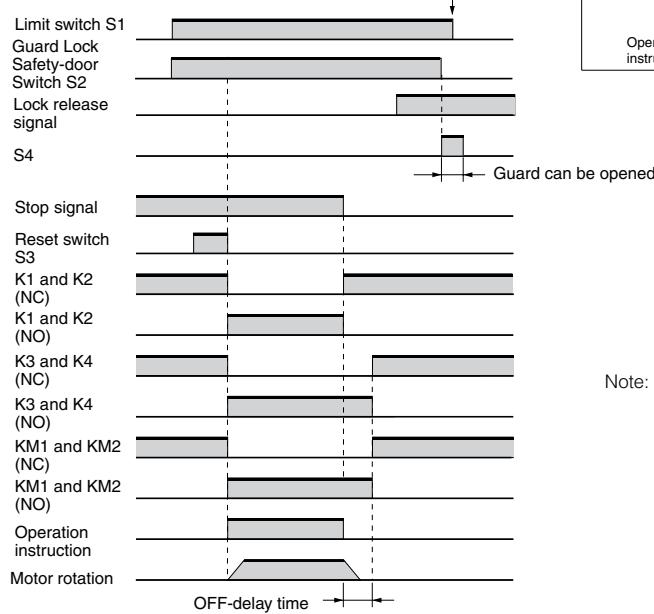
## Application Examples

### G9SA-321-T + D4GL-□AFA-□ (Mechanical Lock Type)

#### Circuit Diagram (Manual Reset)



Timing Chart



Note: The above example circuit is for Category 3.



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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.

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#### 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	D4DS-K1 
Vertical mounting	D4DS-K2 
Adjustable mounting (horizontal)	D4DS-K3 
Adjustable mounting (horizontal/vertical)	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 (door open/closed detection switch and lock monitor switch contacts) (slow action) Certified direct opening NC contact	Conduit size	Model
Plastic	Standard	Solenoid: 24 VDC Orange/Green LED: 24 VDC	Mechanical lock 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
			Solenoid lock Mechanical Release	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
				1NC/1NO+1NC/1NO	M20	D4GL-4AFG-A
					M20 with 1/2" NPT adaptor	D4GL-4AFG-A-NPT
			1NC/1NO+2NC	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	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	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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## 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 Orange/Green LED: 24 VDC	Mechanical lock 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
			Solenoid lock Mechanical Release	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
				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
			Solenoid lock Mechanical Release	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 Solenoid Release	2NC/1NO + 1NC/NO	M20 with 1/2" NPT adaptor	D4GL-4EDA-A4-NPT
			Solenoid lock Mechanical Release	3NC+1NC/1NO		D4GL-4GDG-A4-NPT
				2NC/1NO + 1NC/NO		D4GL-4EDG-A4-NPT

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