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CSM_Z_DS_E_4_6

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Best-selling Basic Switch Boasting High Precision and Wide Variety



- A wide range of variations in contact form for your selection: basic, split-contact, maintained-contact, and adjustable contact gap types.
- A series of standard models for micro loads is available.
- A series of molded terminal-type models incorporating safety terminal protective cover is available.

Be sure to read Safety Precautions on page 26 and Safety Precautions for All Basic Switches.

Model Number Structure

Configuration



Basic Models

General-purpose

- A variety of actuators is available for a wide range of application.
- The contact mechanism of models for micro loads is a crossbar type with gold-alloy contacts, which ensures highly reliable operations for micro loads.
- Contact Gap:
 - H2: 0.20 mm (extra-high-sensitivity)
 - H: 0.25 mm (high-sensitivity, micro voltage current load)
 - G: 0.5 mm (standard)
 - E: 1.8 mm (high-capacity)

Drip-proof

- These Switches use a rubber boot on the actuator and adhesive fill between the case and cover to increase resistance to drips.
- Models with drip-proof terminal protective covers and molded terminals with resin filling are also available.

Split-contact Models

- This type is identical in construction to the general-purpose basic switch except that it has two pairs of simultaneous acting contacts by splitting moving contacts.
- Since the moving contacts are connected to a common terminal, either parallel or series connection is possible.
- Highly reliable micro load switching is ensured if the model is used as a twin-contact switch.

Maintained-contact Models

- The maintained-contact type has a reset button at the bottom of the switch case, in addition to the pushbutton (plunger) located on the opposite side of the reset button. Use these buttons alternately.
- Since the Switch has greater pretravel than overtravel, it is suitable for use in reversible control circuits, manual reset circuits, safety limit circuits, and other circuits which are not preferable for automatic resetting. (For further details, refer to individual datasheets.)



Z-_____ $\overline{(1)}\overline{(2)}\overline{(3)}\overline{(4)}$ $\overline{(5)}$

Basic Models

(1) Ratings

01 : 0.1 A (micro load)

Model Number Legend

: 15 A 15 (2) Contact Gap

- H2 : 0.20 (extra-high-sensitivity) н : 0.25 mm (high-sensitivity, micro load) G : 0.5 mm (standard)
- Е : 1.8 mm (high-capacity)

(3) Actuator

(0) Adda		21
None	:	Pin plunger
S	:	Slim spring plunger
D	:	Short spring plunger
К	:	Spring plunger (medium OP)
K3	:	Spring plunger (high OP)
Q3	:	Panel mount plunger (low OP)
Q	:	Panel mount plunger (medium
		OP)
Q8	:	Panel mount plunger (high OP)
Q22	:	Panel mount roller plunger
Q21	:	Panel mount cross roller
		plunger
L	:	Leaf spring (high OF)
L2	:	Roller leaf spring
W21	:	Short hinge lever
W	:	Hinge lever (low OF)
W3	:	Hinge lever (medium OF)
W32	:	Hinge lever (high OF)
W4	:	Low-force hinge lever
W44	:	Long hinge lever
W78	:	Low-force wire hinge lever
		(low OF)
W52	:	Low-force wire hinge lever
		(high OF)
W22	:	Short hinge roller lever
W2	:	Hinge roller lever
W25	:	Hinge roller lever (large roller)
W49	:	Short hinge cross roller lever
W54	:	Hinge cross roller lever
W2277	:	Unidirectional short hinge
		roller lever (low OF)
М	:	Reverse hinge lever
M22	:	Reverse short hinge roller
		lever
M2	:	Reverse hinge roller lever
NJ	:	Flexible rod (high OF)
NJS	:	Flexible rod (low OF)
(4) Degre	e	of Protection
None	:	General-purpose
55	:	Drip-proof
		(not include the terminals)
A55	:	Drip-proof
<u></u>		(including the terminals)
(5) Tormi	n	ale

(5) Terminals

None	: Solder terminal
В	: Screw terminal

- В (with toothed washer)
- B5V : Screw terminal with terminal cover (for Z-15G A55 only)
- Note: For combinations of models, Ordering Information on page 3 to 6.

Standard Models (Drip-proof Type/Molded Terminals)

Z-⊡55-	$M \square \square \square M$
(1)	(2)(3) (4)
(1) Drip-	proof Type
(2) Lead	Outlets
None	: VSF
19	: VCT
(3) Direc	tions of Lead
Outlets (See following L Type
diagram	s.) 🔊 🐨
L	: Left
R	: Right
D	: Descending
(4) Leng	th of Lead
Outlets	
1	:1m
3	: 3 m
Split-con	tact Models
Z-10F (1)(2)(3]Y-B 1)(4) (5)
(1) Rating	gs
10	: 10 A (split-contact models)

(2) Contact Gap

F : 1 mm (high-capacity)

(3) Actuator

- None : Pin plunger
- S : Slim spring plunger
- D : Short spring plunger
 - : Panel mount plunger
- Q Q22 : Panel mount roller plunger
- : Hinge lever W
- W22 : Short hinge roller lever
- W2 : Hinge roller lever
- : Reverse short hinge roller M22 lever
- (4) Construction
 - Υ : Split-contact models

(5) Terminals

В

- : Screw terminal
 - (with toothed washer)

Maintained-contact Models

R Type

Z- '	15	·E		R
	(1)	(2)	(3)	(4)

D Type

(1) Ratings

- : 15 A 15
- (2) Contact Gap
- Е : 1.8 mm (high capacity)
- (3) Actuator
- None : Pin plunger
- S : Slim spring plunger
- W : Hinge lever

(4) Structure

R : Maintained-contact models

Main Unit

Basic Models (General-purpose)

	Classification		Standard	High-sensitivity	Extra-high sensitivity	High-capacity	Micro load
Actuator	Contac	t gap	G (0.5 mm)	H (0.25 mm)	H2 (0.20 mm)	E (1.8 mm)	H (0.25 mm)
	Termina	al *1	Model	Model	Model	Model	Model
Pin plunger	_	。	Z-15G	Z-15H	Z-15H2	Z-15E	Z-01H
r in plunger		宜	Z-15G-B	Z-15H-B	Z-15H2-B	Z-15E-B	Z-01H-B
Slim opring plungor	Α	。	Z-15GS	Z-15HS			Z-01HS
Sinn spring plunger		臣	Z-15GS-B	Z-15HS-B			Z-01HS-B
Short spring	0	。	Z-15GD	Z-15HD		Z-15ED	Z-01HD
plunger	_	臣	Z-15GD-B	Z-15HD-B		Z-15ED-B	Z-01HD-B
	Low	。	Z-15GQ3				
Panel mount	OP	Ē	Z-15GQ3-B				
plunger	Medium		Z-15GQ	Z-15HQ		Z-15EQ	Z-01HQ
豆	OP	宜	Z-15GQ-B	Z-15HQ-B		Z-15EQ-B	Z-01HQ-B
	High	。	Z-15GQ8				
	OP	Ē	Z-15GQ8-B				
Panel mount roller	Ш	。	Z-15GQ22	Z-15HQ22		Z-15EQ22	
plunger	革	Ē	Z-15GQ22-B	Z-15HQ22-B		Z-15EQ22-B	
Panel mount cross	ம	。	Z-15GQ21	Z-15HQ21		Z-15EQ21	
roller plunger	표	宜	Z-15GQ21-B	Z-15HQ21-B		Z-15EQ21-B	
Loof coring	/	。	Z-15GL				
	₽	臣	Z-15GL-B				
Pollor loof spring	Q	。	Z-15GL2				
noller lear spring	≠	宜	Z-15GL2-B				
Short hings lover	-	。	Z-15GW21				
Short ninge lever	0.5	臣	Z-15GW21-B				
	Low	。	Z-15GW	Z-15HW			
18	OP	豆	Z-15GW-B	Z-15HW-B			
Hinge lever	Medium	。	Z-15GW3				
<u>.</u>	OP	宜	Z-15GW3-B				
	High	。	Z-15GW32				
	OP	Ē	Z-15GW32-B				
Low-force hinge	/	。	Z-15GW4	Z-15HW24			
lever		臣	Z-15GW4-B	Z-15HW24-B			
Low-	Low	。		Z-15HW78			
forcewire	OP	宜		Z-15HW78-B			
hinge	High			Z-15HW52			
	OP	Ā		Z-15HW52-B			
Short hinge roller	Q	0	Z-15GW22	Z-15HW22		Z-15EW22	Z-01HW22
lever		Ē	Z-15GW22-B	Z-15HW22-B		Z-15EW22-B	Z-01HW22-B
Short hinge cross	個		Z-15GW49				
roller lever		Ē	Z-15GW49-B				
	Stan-		Z-15GW2	Z-15HW2			
Hinge roller	dard	Ē	Z-15GW2-B	Z-15HW2-B			
	Large		Z-15GW25				
	roller	臣	Z-15GW25-B				
Hinge cross roller	nh	0	Z-15GW54				
lever		Ē	Z-15GW54-B				
Unidirectional	Darallol	0	Z-15GW2277				
roller lever	i aranei	宜	Z-15GW2277-B				
	1		Z-15GM				
Reverse hinge lever *2		Ĭ	Z-15GM-B				
Boverse short			Z-15GM22				
hinge roller lever *2	P	ेत्र जि	Z-15GM22-B				
Devenes him	<u></u>		7,15GM2				
Reverse hinge	P	6	2-13GW/2				
		4	2-15GM2-B				

*1. | : Solder terminal 语: Screw terminal *2. The pin plungers of reverse-type models are continuously pressed by the actuator levers with compression coil springs and the pin plungers are freed by operating the levers. Reverse-type models are highly vibration- and shock-resistive because the pin plungers are normally pressed.

Minimum Order Lot

The following models are available at the minimum order lot specified below. Orders must be placed per lot.

Classification Actuator	Standard	High-sensitivity	Minimum order lot (pcs)
Short spring plunger	Z-15GD-B		
Panel mount plunger	Z-15GQ Z-15GQ-B Z-15GQ8-B		
Panel mount roller plunger	Z-15GQ22 Z-15GQ22-B		
Panel mount cross roller plunger	Z-15GQ21-B	-	
Short hinge lever	Z-15GW21-B		
Hinge lever	Z-15GW Z-15GW-B	-	10
Low-force hinge lever	Z-15GW4-B	Z-15HW24-B	
Low-force hinge wire lever		Z-15HW78-B	
Short hinge roller lever	Z-15GW22 Z-15GW22-B		
Hinge roller lever	Z-15GW2 Z-15GW2-B	-	
Reverse short hinge roller lever	Z-15GM22-B	_	
Reverse hinge roller lever	Z-15GM2-B		

Split-contact Models

	Conta	ct gap	F (1.0 mm)
Actuator	Termin	al *1	Model
Pin nlunger		。	
r in plunger		Ē	Z-10FY-B
Slim spring plunger	Α		
onn opring plunger		臣	Z-10FSY-B
Short spring plunger	_	0	
Short spring plunger	A	圉	Z-10FDY-B
	ட	٥	
Panel mount plunger	보	ीर्म	Z-10FQY-B
Panel mount roller	<u> </u>	0	
plunger		ीर्ज	Z-10FQ22Y-B
Hinge lever	/	0	
Thinge level		ीर्ज	Z-10FWY-B
Short hinge roller	ø	0	
lever		重	Z-10FW22Y-B
1 Parana and Parana	۵		
Hinge roller lever		圅	Z-10FW2Y-B
Reverse short hinge	P		
roller lever *2		臣	Z-10FM22Y-B

*1. 😸 : Solder terminal 冱 : Screw terminal

*2. The pin plungers of reverse-type models are continuously pressed by the actuator levers with compression coil springs and the pin plungers are freed by operating the levers. Reverse-type models are highly vibration- and shock-resistive because the pin plungers are normally pressed.

Maintained-contact Models

Actuator	Model	
Pin plunger		Z-15ER
Slim spring plunger	<u> </u>	Z-15ESR
Hinge lever		Z-15EWR

Basic Models (Drip-proof Models Standard, Microload)

Classification			Star	Micro load		
Contact gap		G (0.5 mm)		H (0.25 mm)		
Drip-proof terminal protective cover		Not provided	Provided	Not provided		
Actuator	Termina	al *1	Model	Model	Model	
Din nlungor		。	Z-15G55		Z-01H55	
r in plunger		宜	Z-15G55-B	Z-15GA55-B5V	Z-01H55-B	
Short spring plunger	0	0	Z-15GD55		Z-01HD55	
	<u> </u>	宜	Z-15GD55-B		Z-01HD55-B	
	Low		Z-15GK55			
Spring plunger	OP	臣	Z-15GK55-B			
	High		Z-15GK355			
	OP	臣	Z-15GK355-B	Z-15GK3A55-B5V		
Panel mount plunger	പ		Z-15GQ55			
r aner mount plunger	Æ	宜	Z-15GQ55-B	Z-15GQA55-B5V		
Panel mount roller	M		Z-15GQ2255			
plunger	呂	宜	Z-15GQ2255-B	Z-15GQ22A55-B5V		
Panel mount cross						
roller plunger	Ħ	臣	Z-15GQ2155-B	Z-15GQ21A55-B5V		
Les d'en alue a			Z-15GL55			
Leaf spring		臣	Z-15GL55-B			
Dellanda of constant	Q		Z-15GL255			
Roller lear spring		宜	Z-15GL255-B			
Oh and him and haven			Z-15GW2155			
Short ninge lever		臣	Z-15GW2155-B			
	/		Z-15GW4455			
Long ninge lever	.	重	Z-15GW4455-B	Z-15GW44A55-B5V	-	
	/		Z-15GW55			
ninge level		宜	Z-15GW55-B	Z-15GWA55-B5V		
Short hinge roller lever	Q	。	Z-15GW2255		Z-01HW2255	
Short hinge roher level	<u> </u>	臣	Z-15GW2255-B	Z-15GW22A55-B5V	Z-01HW2255-B	
Hingo rollor lovor	ଭ	。	Z-15GW255			
		臣	Z-15GW255-B	Z-15GW2A55-B5V		
Unidirectional short	$\rightarrow Q$		Z-15GW227755			
hinge roller lever		宜	Z-15GW227755-B	Z-15GW2277A55-B5V		
Reverse hinge lever *2	-		Z-15GM55			
heverse hinge level 2		臣	Z-15GM55-B			
Reverse short hinge	Q		Z-15GM2255			
roller lever *2		臣	Z-15GM2255-B			
Reverse hinge roller	Ŵ	。	Z-15GM255			
lever *2		臣	Z-15GM255-B			
Flexible rod (coil spring) *3		٥	Z-15GNJ55			
		宜	Z-15GNJ55-B			

*1. 📙 : Solder terminal 宴 : Screw terminal *2. The pin plungers of reverse-type models are continuously pressed by the actuator levers with compression coil springs and the pin plungers are freed by operating the levers.

*3. The tip is made of resin.

Minimum Order Lot

The following models are available at the minimum order lot specified below.

Orders must be placed per lot.

	Classification	Standard	Minimum order
Actuator	Contact gap	G (0.5 mm)	lot (pcs)
Short spring plur	nger	Z-15GD55-B	
Spring plunger		Z-15GK55-B	
		Z-15GW4455-B	
Hinge lever		Z-15GW55	
		Z-15GW55-B	10
Chart hinne veller lever		Z-15GW2255	
Short hinge rolle	lever	Z-15GW2255-B	
Hinge roller lever		Z-15GW255-B	
Flexible rod (coil	spring)	Z-15GNJ55-B	

Basic Models (Drip-proof Models Hi	ligh-sensitivity)
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Classi	Classification			
Cont	H (0.25 mm)			
Drip-proof terminal protectiv	Not provided			
Actuator Te	rminal *	Model		
Flexible rod		Z-15HNJS55		
(steel wire)	臣	Z-15HNJS55-B		

* [。]: Solder terminal 冱: Screw terminal

Specifications

Ratings (Basic, Split-contact and Maintained contact Models)

Z-15 (Except Micro Load and Flexible Rod Models)

	Item	Non-inductive load (A)				Inductive load (A)			
		Resisti	ve load	Lamp load		Inductive load		Moto	r load
Contact gap	Rated voltage	NC	NO	NC	NO	NC	NO	NC	NO
G, H, H2, E	125 VAC 250 VAC 500 VAC*	15 (10) * 15 (10) * 10		3 2.5 1.5	1.5 1.25 0.75	15 (10) * 15 (10) * 6		5 3 1.5	2.5 1.5 0.75
G	8 VDC 14 VDC 30 VDC 125 VDC 250 VDC	15 15 6 0.5 0.25		3 3 0.5 0.25	1.5 1.5 1.5 0.5 0.25	15 10 5 0.05 0.03		5 5 0.05 0.03	2.5 2.5 2.5 0.05 0.03
H, H2	8 VDC 14 VDC 30 VDC 125 VDC 250 VDC	15 15 2 0.4 0.2		3 3 2 0.4 0.2	1.5 1.5 1.4 0.4 0.2	15 10 1 0.03 0.02		5 5 1 0.03 0.02	2.5 2.5 1 0.03 0.02
E	8 VDC 14 VDC 30 VDC 125 VDC 250 VDC	1 1 0. 0	5 5 5 75 .3	3 3 0.75 0.3	1.5 1.5 1.5 0.75 0.3	1 1 0. 0.	5 5 0 4 2	5 5 0.4 0.2	2.5 2.5 2.5 0.4 0.2

* Figures in parentheses are for the Z-15HW52, Z-15HW78(-B) and Z-15H2(-B) models, the AC ratings of these models are 125 and 250 V only.

Z-15 (Flexible Rod Models)

	No	n-induct	ive load	(A)	Inductive load (A)				
Rated voltage	Resistive load		Lamp load		Inductive load		Motor load		
	NC	NO	NC	NO	NC NO		NC	NO	
125 VAC	15		2	1	-	7	2.5	2	
250 VAC	15		1	0.5	5		1.5	1	
8 VDC	1	5	2	1	7		3	1.5	
14 VDC	1	5	2	1	7		3	1.5	
30 VDC	2	2		1	1		1	0.5	
125 VDC	0	0.4		0.4	0.	03	0.03	0.03	
250 VDC	0	.2	0.2	0.2	0.02		0.02	0.02	

Z-10F

	Item	No	n-induct	ive load	(A)	Inductive load (A)			
		Resistive load		Lamp load		Inductive load		Motor load	
Contact gap	Rated voltage	NC	NO	NC	NO	NC	NO	NC	NO
Series connec- tion	125 VAC 250 VAC	10 10		4 2.5	2 1.5	6 6		5 3	2.5 1.5
	30 VDC 125 VDC 250 VDC	10 1 0.6		4 1 0.6	2 1 0.6	6 0.1 0.05		6 0.1 0.05	3 0.1 0.05
Parallel connec- tion	125 VAC 250 VAC	6 6		3 2.5	1.5 1.25	4 4		4 2	2 1
	30 VDC 125 VDC 250 VDC	6 0.6 0.3		4 0.6 0.3	2 0.6 0.3	4 0.1 0.05		6 0.1 0.05	3 0.1 0.05

Minimum Order Lot

The following models are available at the minimum order lot specified below.

Orders must be placed per lot

Classification	High-sensitivity	Minimum order
Flexible rod (steel wire)	Z-15HNJS55-B	10

Z-01H

Poted voltage	Resistive load (A)				
naleu voltage	NC	NO			
125 VAC	0.	.1			
8 VDC	0.	.1			
14 VDC	0.	.1			
30 VDC	0.	.1			

Note: 1. The above current ratings are the values of the steady-state current.

- 2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
- 3. Lamp load has an inrush current of 10 times the steady-state current.
- 4. Motor load has an inrush current of 6
- times the steady-state current. 5. The normally closed and normally open ratings of reverse hinge lever models are opposite to each other.
- 6. The AC ratings of molded terminals are 125 and 250 V only.
- 7. The ratings values apply under the following test conditions:
- (1) Ambient temperature: 20±2°C
- (2) Ambient humidity: 65±5%RH (3) Operating frequency: 20 operations/min

Use the switch within the operating range.



	Z-01H	Z-15□, Z-10FY
Minimum applicable load	5 VDC 1 mA	5 VDC 160 mA

Certified Standard Ratings

Ask your OMRON representative for information on certified models. UL/CSA (General ratings only)

Rated Model voltage	Z-15	Z-10F	Z-01H
125 VAC	15A 1/8HP	6A 1/10HP	0.1A
250 VAC	15A 1/4HP	6A 1/8HP	
480 VAC	15A	6A	
30 VDC			0.1A
125 VDC	0.5A	0.6A	
250 VDC	0.25A	0.3A	

TÜV (EN61058-1)

Rated voltage Model	Z-15H	Z-15G□	Z-01H					
250 VAC	15 A	15 A						
125 VAC			0.1 A					
30 VDC			0.1 A					

CCC (GB/T14048.5)

Rated Model voltage	Z-15H	Z-15G	Z-01H
250 VAC	15 A	15 A	
125 VAC			0.1 A
30 VDC			0.1 A

Characteristics

Item	Classifica- tion	Z-15 (except micro load and flexible rod)	Z-01H	Z-15 (flexible rod)	Z-10F	Z-15H2			
Operating spe	ed	0.01 mm to 1 m/s *1		1 mm to 1 m/s	0.1 mm to 1 m/s *1	0.01 mm to 1 m/s			
Operating	Mechanical	240 operations/min		120 operations/min	240 operations/min	240 operations/min			
frequency	Electrical	20 operations/min							
Insulation res	istance	100 M Ω min. (at 500 VD	C)						
Contact resist	tance	15 m Ω max. (initial value)	50 m Ω max. (initial value)	15 m Ω max. (initial value)	25 m Ω max. (initial value)	15 mΩ max. (initial value)			
Dielectric strength		Between contacts of same polarity Contact gap G: 1,000 VAC, 50/60 Hz for 1 min Contact gap H: 600 VAC, 50/60 Hz for 1 min Contact gap E: 1,500 VAC, 50/60 Hz for 1 min Between current-carrving metal parts and ground, and beth		Between contacts of same polarity Between contacts of same polarity<		Between contacts of same polarity 600VAC, 50/60Hz for 1min 0/60 Hz for 1 min			
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm dou	uble amplitude *5	10 to 20 Hz, 1.5-mm double amplitude *5 10 to 55 Hz, 1.5-mm double amplitude *5					
Shock	Destruction	1,000 m/s ² max.							
resistance	Malfunction	300 m/s ² max. *2 *5		50 m/s ² max. *5	300 m/s ² max. *3 *5	100 m/s ² max.			
Durability	Mechanical	Contact gap G, H: 20,00 Contact gap E: 300,000	0,000 operations min. operations	1,000,000 operations min.	500,000 operations min. *1	20,000,000 operations min.			
Durability	Electrical	Contact gap G, H: 500,0 Contact gap E: 100,000	000 operations min. operations min.	100,000 operations min.	100,000 operations min.	500,000 operations min.			
Degree of	General-purpose	IP00							
protection	Drip-proof	Equivalent to IP62 (exce	ept terminals)						
Degree of pro against electr	tection ic shock	Class I							
Proof tracking index (PTI)		175							
Ambient operat-	General-purpose	-25°C to 80°C (with no i	cing)						
ing temperature	Drip-proof	–15°C to 80°C (with no i	cing)						
Ambient operat-	General-purpose	35% to 85%RH							
ing humidity	Drip-proof	35% to 95%RH							
Weight		Approx 22 to 58 g		Approx 42 to 48 g	Approx 34 to 61 a	Approx 22 g			

*1. The values are for the plunger models. (For the lever models, the values are at the plunger section.) (Consult your OMRON representative for other models.) *2. The values are for the Z-15G pin plunger. *3. The values are for the Z-10FY-B.

*4. The values are for the pin plunger. The durability for models other than the pin plunger is 10,000,000 min. *5. Malfunction: 1 ms max.

Contacts Specification

Item Classification		Z-15	Z-01H	Z-10F	
Contacto	Shape	Rivet	Single crossbar	Rivet	
Contacts	Material	Silver	Gold alloy	Silver	
Inruch ourrent	NC	30 A max.	0.1 A max.	40 A max.	
	NO	15 A max.	0.1 A max.	20 A max.	

Engineering Data Mechanical Durability (Z-15G)



Electrical Durability (Z-15G)







Rubber packing (improves sealing between switch housing and terminal cover)

☐ Terminal protective covers are sold separately for maintenance purposes, which can be, however, used with the Z-□-B5V models only. For details, refer to page 22.

Dimensions

Panel Mount Roller Plunger

12.5^{+0.2}dia.

5+

When mounting the Switch to a panel, use a tightening torque of 2.94

to 4.9 N·m for the hexagonal nuts on the actuator.

12.5^{+0.2} dia.

Panel Mount Plunger

Mounting

Use M4 screws with plane washers and spring washers to mount the Switch. Tighten each mounting screw securely to a torque of 1.18 to 1.47 $N{\cdot}m.$



Basic Models General-purpose and Split-contact Models

Terminals



Dimensions and Operating Characteristics

The models, illustrations, and graphics are for screw-terminal models (-B). The "-A" at the end of the model number for solder terminal models has been omitted. For details of the terminals, see above.

Pin Plunger Z-15G-B Z-15H2-B Z-15H-B	Z-15E- Z-01H- Z-10FY	В В (-В	PT 0P 4.2************************************	* 23.3:0.25 + 23.3:0.25 + 4.36*0.1 + 25.4:0.1 + 49.2	4.2 ^{+0.075} dia. hole	2.3 dia. 2.3 SR * 2.3 SR * 2.4 9,2 17.45:02 Stainless-steel plunger	2		
×1 ⊕ ·····	e	Operating Characteristics	Model	Z-15G-B	Z-15H2-B	Z-15H-B	Z-15E-B	Z-01H-B	Z-10FY-B
		Operating force	OF	2.45 to 3.43 N	1.96 to 2.5 N	1.96 to 2.75 N	6.12 to 7.85 N	2.45 N max.	4.46 to 7.26 N
		Release force	RF min.	1.12 N	1.12 N	1.12 N	1.12 N	0.78 N	1.12 N
		Pretravel	PT max.	0.4 mm	0.3 mm	0.3 mm	0.8 mm	0.5 mm	0.8 mm
		Overtravel	OT min.	0.13 mm	0.13 mm	0.13 mm	0.13 mm	0.13 mm	0.13 mm
		Movement Differential	MD max.	0.05 mm	0.005 to 0.008 mm	0.025 mm	0.13 mm	0.04 mm	0.1 mm
		Operating Position	n OP		I	15.9±0	.4 mm		I
Slim Spring	Plunge	r				+ - 5.2 dia.			
	7.0410	o p	PT	+ 23.3±0.25	•				
Z-15GS-B	Z-01H	2-B	+			H			
Z-15HS-B	Z-10F	SY-B			4.2 ^{+0.075} / _{-0.025} dia. hole		-		
A			4.2+0				-		

OT min.

MD max.

OP





1.6 mm

0.05 mm

1.6 mm

0.025 mm

28.2±0.5 mm

1.6 mm

0.05 mm

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

Z-10FSY-B

4.46 to 7.26 N

1.12 N

0.8 mm

1.6 mm

0.1 mm









** The pin plungers of reverse-type models are continuously pressed by the actuator levers with compression coil springs and the pin plungers are freed by operating the levers. Reverse-type models are highly vibration- and shock-resistive because the pin plungers are normally pressed.
Note: Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

Terminals (Molded Terminals: Refer to page 21.)

Without Terminal Protective Cover



Note: With reverse action models (Z-15GM), the positions of NO and NC terminals are reversed.

Dimensions and Operating Characteristics

The above illustration is for model without terminal protective cover.





	Z-15GD55-B	Z-01HD55-B
OF max.	5.30 N	3.63 N
RF min.	1.12 N	0.78 N
PT max.	1.8 mm	1.9 mm
OT min.	1.6 mm	1.6 mm
MD max.	0.06 mm	0.06 mm
OP	21.5±0.5 mm	

Spring Plunger -17 dia Z-15GK55-B РТ 11.9SR ' +23.3±0.25 7.15 dia 4.2 +0.075 dia. hole ÓF 23.9 OF max. 5.30 N 9.2 RF min. PT max. 1.12 N 4.2+0.075 2.3 mm 4.36^{+0.1}_{-0.05} dia OT min. MD max. 1.6 mm 17.45±0.2 11.9 0.06 mm -25.4±0.1 -* Stainless-steel plunger 49.2 OP 28.2±0.5 mm Z-15GK355-B -17 dia 11.9SR +23.3±0.25 8.35 dia 4.2 +0.075 dia. hole

23.5

9.2

17.45±0.2

* Stainless-steel plunger

OF max.	5.30 N
RF min.	1.12 N
PT max.	2.4 mm
OT min.	3.5 mm
MD max.	0.06 mm
OP	37.8±1.2 mm

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

4.2+0.075

4.36^{+0.1}_{-0.05} dia

49.2

-25,4±0.1

11.9

Panel Mount Plunger Z-15GQ55-B





OF max.	5.30 N
RF min.	1.12 N
PT max.	1.8 mm
OT min.	5.5 mm
MD max.	0.06 mm
OP	21.8±0.8 mm

Note: Do not use the M12 mounting screw and the case mounting hole at the same time, or the case may be damaged.

Panel Mount Roller Plunger Z-15GQ2255-B





Panel Mount Cross Roller Plunger Z-15GQ2155-B



11.9

* Stainless-steel spring lever

- 25.4±0.1 --

49.2

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

exceed 1.6 mm.

Roller Leaf Spring Z-15GL255-B



FP

46 ±0.8 t = 0.3* 4.2^{+0.075}_{-0.025} dia. hole OF ŧ 4.2 +0.075 4.36^{+0.1}_{-0.05} dia 11.9 -25.4±0.1 -49.2



OF max.	1.96 N
RF min.	0.14 N
OT *min.	1.6 mm
MD max.	1.3 mm
FP max.	31.8 mm
OP	28.6±0.8 mm

* When operating, be sure not to exceed 1.6 mm.

Short Hinge Lever Z-15GW2155-B





OF max.	1.86 N
RF min.	0.27 N
OT min.	2 mm
MD max.	1 mm
FP max.	25 mm
OP	19±0.8 mm

Long Hinge Lever Z-15GW4455-B 100P 26.2 10000 ¹20.2 16.9 ÓP 13.9 OF max. RF min. OT min. 0.88 N 0.14 N 4 9,2 5.6 mm 4.2+0.075 8 4.2^{+0.075}_{-0.025} dia. hole MD max. 3.5 mm 4.36^{+0.1}_{-0.05} dia FP OP max. 33 mm 17.45±0.2 -25.4±0.1 - 11.9 19±1.2 mm * Stainless-steel lever 49.2

Hinge Lever Z-15GW55-B







OF max.	0.98 N
RF min.	0.14 N
OT min.	5.6 mm
MD max.	2 mm
FP max.	28.2 mm
OP	19±0.8 mm



Hinge Roller Lever Z-15GW255-B





9,2

1.27 N 0.21 N 4 mm MD max. 1.6 mm max. 36.5 mm 30.2±0.8 mm

Unidirectional Short Hinge Roller Lever Z-15GW227755-B

34.1





Operating direction

OF ma	x. 1.77 N
RF mi	n. 0.49 N
OT mi	1. 2.4 mm
MD ma	x. 0.8 mm
FP ma	x. 43.6 mm
OP	41.3±0.8 mm

Reverse Hinge Lever * Z-15GM55-B





OF max.	1.96 N
RF min.	0.27 N
OT min.	5.6 mm
MD max.	0.89 mm
FP max.	23.8 mm
OP	19+0 8 mm

5.69 N 1.67 N

2 mm

0.28 mm

31.8mm

29.4±0.4mm

Reverse Short Hinge Roller Lever * Z-15GM2255-B





Reverse Hinge Roller Lever * Z-15GM255-B





* The pin plungers of reverse-type models are continuously pressed by the actuator levers with compression coil springs and the pin plungers are freed by operating the levers.

Flexible Rod (Coil Spring) Z-15GNJ55-B



OF max.	0.49 N
PT max.	(20 mm)
TT max.	40 mm

*1. Operation is possible in any direction other than the axial direction (indicated by the arrow ↓).
*2. Use only the area within the top 30 mm of the rod as the operating part. (Do not use the area that falls within 80 mm from the mounting hole as the operating part. Using this area may cause damage to the nylon rod.

Flexible Rod (Steel Wire) Z-15HNJS55-B



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

Basic Models (Drip-proof) with Terminal Protective Cover

Dimensions and Operating Characteristics

Pin Plunger Z-15GA55-B5V







OF max.	2.45 to 4.22 N
RF min.	1.12 N
PT max.	2.2 mm
OT min.	0.13 mm
MD max.	0.06 mm
OP	15.9±0.4 mm

Z-15GK3A55-B5V







OF max.	5.30 N
RF min.	1.12 N
PT max.	2.4 mm
OT min.	3.5 mm
MD max.	0.06 mm
OP	37.8±1.2 mm

Panel Mount Plunger Z-15GQA55-B5V









case mounting hole at the same time, or the case may be damaged.

case may be damaged.

Panel Mount Roller Plunger Z-15GQ22A55-B5V







OF 5 30 N max. 1.12 N RF min. РΤ max. 1.8 mm оτ min. 3.58 mm MD max 0.06 mm OP 33.4±1.2 mm Note: Do not use the M12 mounting screw and the case mounting hole at the same time, or the case may be damaged.

5.30 N

1.12 N

1.8 mm

3.58mm 0.06 mm

33.4±1.2 mm

mounting screw and the

case mounting hole at the same time, or the

case may be damaged.

OF max.

RF min.

PT max.

OT min.

MD max. OP

Note: Do not use the M12

Panel Mount Cross-roller Plunger Z-15GQ21A55-B5V







1. Stainless-steel roller	
2. Two hexagonal nuts ((3 t × 17 width across flats)



Basic Models (Drop-proof) with Modeled terminals

Molded Terminals





Size (mm) Lead wire	а	b	с
VSF	12	4	12
VCT	19	11	16

Lead Wire Specifications

Specifications Lead wire	Nominal cross sec- tional area (mm2)	Finished outer diameter (mm)	Connection to terminal	Length (m)
VSF (single-core, vinyl cord)		Approx. 3.1 dia.	Black: COM	
VCT (vinyl-insulated cable)	1.25	Three-core: approx. 10.5 dia.	White:NO Red: NC	1, 3

Note: 1. No models with molded terminals are approved by UL, CSA, or EN.

2. Molded terminals are not available on all models. Contact your OMRON representative for applicable products.

(Maintained-contact Models) Dimensions and Operating Characteristics



D Type

-- c

A Terminal Protective Cover, Actuators, and a Separator are available.

Drip-proof Terminal

Cover (Order Separately)

The Drip-proof Terminal Protective Cover is provided for maintenance for Z-DA55-B5V Switches.

Ordering Information

Name

Drip-proof Terminal

Protective Cover



0.6

51.6

·9→ ---- 29.5±1



Terminal Covers (Sold Separately)

The Terminal Covers can be attached to Z, A, X, and DZ Switches.

The Terminal Cover is secured with mounting screws and protects the casing and terminal wires from dust, vibration, or fingers, thus preventing terminal short-circuiting, ground faults, wire disconnection or improper connection, and electric shock accidents.

Terminal Covers made of phenol resin have five or six thin wall sections. These sections can be torn open for providing holes for lead cables at desired points.

A terminal cover can't be used in the case of using an actuator sold separately.

Operation Information

	Application	Soldering terminal use	Screw terminal use	Pomarks
Material	Mounting direction	Model		nemarks
Phenol resin	Side mounting	AP-A	AP-B	
Metal press mold	Side mounting	AP1-A	AP1-B	Used for AP-A and AP-B
Vinyl chloride	Side mounting	AP-Z		

Note: Use a Terminal Cover for screw terminals fir DZ-series Switches with soldering terminals.

Separator (Sold Separately)

Use a Separator when it is difficult to provide a sufficient insulation distance or when using the Switch near metal parts or copper wires.

Operation Information

Model	
SEPARATOR FOR Z	

(Unit: mm)

Dimensions (Unit: mm) Terminal Covers





Note: Each dimension has a tolerance of ± 0.4 mm unless otherwise specified.

Actuators (Sold Separately)

A Switch can be actuated by a cam or an appropriate object, in which case, use one of the following Actuators according to the application.

Ordering Information

Actuator		Application	Common to Z and X models
Hinge lever			XAA-1
Hinge roller lever	R		ZAA-2
	鱼	Short	ZAQ-3
Panel mount plunger		Medium	ZAQ-2
		Long	ZAQ-1
Panel mount roller plunger	Щ		ZAQ-22

Dimensions (Unit: mm) and Operating Characteristics

Note: These Actuators are not provided with Switches.





	Z-15G-B	X-10G-B		
OF max.	4.90 N	4.90 N		
RF min.	1.67 N	1.67 N		
OT min.	12.7 mm	12.7 mm		
MD max.	2.2 mm	3.3 mm		
FP max.	44.5±1.6 mm			
OP	40.4±1.6 mm			

Note: This Actuator can be used with the Z-15G(-B) and ZX-10G(-B). When mounting the Switch, set the overtravel to between 32% and 100%, taking into consideration the operating body and the distance between the Actuator and the dog.



Note: Each dimension has a tolerance of ± 0.4 mm unless otherwise specified.



Note: Each dimension has a tolerance of ±0.4 mm unless otherwise specified.

Safety Precautions

Refer to Safety Precautions for All Basic Switches.

Precautions for Safe Use

Terminal Connection

When soldering lead wires to the Switch, make sure that the capacity of the soldering iron is 60 W maximum. Do not take more than 5 s to solder any part of the Switch. The characteristics of the Switch will deteriorate if a soldering iron with a capacity of more than 60 W is applied to any part of the Switch for 5 s or more.

Operation

- Make sure that the switching frequency or speed is within the specified range.
 - If the switching speed is extremely slow, the contact may not be switched smoothly, which may result in a contact failure or contact welding.
 - 2.If the switching speed is extremely fast, switching shock may damage the Switch soon. If the switching frequency is too high, the contact may not catch up with the speed.

The rated permissible switching speed and frequency indicate the switching reliability of the Switch.

The life of a Switch is determined at the specified switching speed. The life varies with the switching speed and frequency even when they are within the permissible ranges. In order to determine the life of a Switch model to be applied to a particular use, it is best to conduct an appropriate durability test on some samples of the model under actual conditions.

 Make sure that the actuator travel does not exceed the permissible OT position. The operating stroke must be set to 70% to 100% of the rated OT.

Precautions for Correct Use

Mounting Location

- Do not use the switch alone in atmospheres such as flammable or explosive gases. Arcing and heat generation associated with switching may cause fires or explosions.
- Switches are generally not constructed with resistance against water. Use a protective cover to prevent direct spraying if the switch is used in locations subject to splashing or spurting oil or water, dust adhering.



 Install the switch in a location that is not directly subject to debris and dust from cutting. The actuator and the switch body must be protected from accumulated cutting debris and dirt.



- \bullet Do not use the switch in locations subject to hot water (greater than 60°C) or in water vapor.
- Do not use the switch outside the specified temperature and atmospheric conditions.

The permissible ambient temperature depends on the model. (Refer to the specifications in this catalog.) Sudden thermal changes may cause thermal shock to distort the switch and result in faults.



• Mount a cover if the switch is to be installed in a location where worker inattention could result in incorrect operation or accidents.



- Subjecting the switch to continuous vibration or shock may result in contact failure or faulty operation due to abrasion powder and in reduced durability. Excessive vibration or shock will cause the contacts to operate malfunction or become damaged. Mount the switch in a location that is not subject to vibration or shock and in a direction that does not subject the switch to resonance.
- If silver contacts are used with relatively low frequency for a long time or are used with microloads, the sulfide coating produced on the contact surface will not be broken down and contact faults will result. Use a microload switch that uses gold contacts.
- Do not use the switch in atmospheres with high humidity or heat or in harmful gases, such as sulfide gas (H₂S, SO₂), ammonia gas (NH₃), nitric acid gas (HNO₃), or chlorine gas (Cl₂). Doing so may impair functionality, such as with damage due to contacting faults or corrosion.
- The switch includes contacts. If the switch is used in an atmosphere with silicon gas, arc energy may cause silicon oxide (SiO₂) to accumulate on the contacts and result in contact failure. If there is silicon oil, silicon filling, silicon wiring, or other silicon products in the vicinity of the switch, use a contact protection circuit to limit arcing and remove the source of the silicon gas.

Mounting

Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance. Electric shock or burning may occur.

Selecting Models

We recommend using Drip-proof Models (protection equivalent to IP62) in locations subject to floating dirt and dust. Other models do not have a protective structure.

Wiring

- Use wire sizes that are suitable to the applied voltage and carried current.
- If you use a soldering iron to solder the wires, do not allow the tip of the soldering iron to exceed 380°C. If a Switch is used with insufficient soldering, abnormal heat and burning may occur.
- Solder for no more than 5 s at 350°C and for no more than 3 s at 380°C. If heat is applied for too long, the case may melt, the lead wire coverings may be scorched, and other characteristics of the Switch may deteriorate.

Tightening

The suitable tightening torque for screw terminals is given below. Screw terminals except for those on Split-contact Models (Z-10FY-B): 0.78 to 1.18 N·m

Ścrew terminals on Split-contact Models (Z-10FY-B): 0.49 to 1.18 N·m

Operation

- Make sure that the switching speed and frequency are is within the specified ranges.
- 1. If the switching speed is extremely slow, the contacts may not be switched smoothly, which may result in a contact failure or contact welding.

 If the switching speed is extremely fast, switching shock may damage the Switch prematurely. If the switching frequency is too high, the contacts may not be able to keep up with the speed. The rated permissible switching speed and frequency indicate the switching reliability of the Switch.

The life of a Switch is determined at the specified switching speed. The life varies with the switching speed and frequency even when they are within the permissible ranges. Always conduct appropriate durability tests under actual conditions before using a Switch.

• Make sure that the actuator travel does not exceed the permissible OT position. The operating stroke must be set to 70% to 100% of the rated OT.

Panel Mount Switch (Z-15 Q , Z-01 Q)

- When mounting the panel mount plunger model with screws on a side surface, be careful of the dog angle and operation speed.
 Excessive dog angle or operation speed may damage the Switch.
- When using the panel mount plunger model mounted with screws on a side surface, be careful not to apply a large shock. Applying a shock exceeding 1,000 m/s² may damage the Switch.
- When using the panel mount plunger model mounted with screws on a side surface, remove the hexagonal nuts from the actuator.

High-sensitivity Switch (Z-15H)/

Extra-high-sensitivity Switch (Z-15H2)

- When using the Switch in a DC circuit, be sure to provide an arc suppressor as well because the small contact gap of the Switch may result in contact troubles.
- In an application where a high repeat accuracy is required, limit the current that flows through the Switch to within 0.1 A. Also, use a relay to control a high-capacity load if the Switch is connected to such a load. (In this case, the exciting current of the relay coil is the load of the Switch.)
- Do not apply a force of 19.6 N or higher to the pin plunger.
- Exercise care that the environment conditions such as temperature and humidity do not change abruptly.

Micro Load Applicable Range

Using a model for ordinary loads to open or close the contact of a micro load circuit may result in faulty contact. Use models that operate in the following range. However, even when using micro load models within the operating range shown here, if inrush current occurs when the contact is opened or closed, it may increase contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% (λ 60). The equation, λ 60 = 0.5×10⁻⁶/operations indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



Models with Drip-proof Terminal Cover (Z-□A55-B5V) Wiring

 To attach the Protective Cover to the case, hold the cover in almost parallel to the case and then push it to the case. If the cover is pushed diagonally, the rubber packing may slip off, degrading the sealability of the Switch.



• Use round solderless terminals having the following dimensions to connect leads to the terminals. Tighten the screws of terminals to a torque of 0.78 to 1.18 N·m. Use the terminal shown below.



Ζ

- A cable 8.5 to 10.5 mm in diameter can be
- applicable to the sealing rubber of the lead outlet of the Switch. A two-core or three-core VCT cable having a cross-sectional area of 1.25 mm² is especially suitable for this.
- Use M4 small screws with spring toothed washer are used as the terminal screws.

Drip-proof Switch (Z-255)

- The Switch is not perfectly oil-tight; so do not dip it in oil or water.
- The rubber boots are made from weather-resistive chloroprene rubber.
- Do not use Basic Switches in places with radical changes in temperature.
- Rubber boots and rubber caps will tend to harden at lower ambient temperatures. If an Actuator is used in a pressed state for an extended period of time at low temperatures, it may return slowly or it may not return at all. OMRON can provide special Actuators for use at low temperature with rubber boots or rubber caps made of silicon rubber, which has superior resistance to cold. Ask your OMRON representative for details.

Split-contact Switch (Z-10F Y)

The applicable current varies depending on how the contacts are used. If the Switch is connected in series, the Switch can endure a current 1.5 to 2 times higher than the current that can be applied in parallel connection.

Flexible Rod Switch (Z-15 NJ 55, Drip-proof)

- When the rod is fully swung, the Switch may operate when the lever returns, causing chattering. Use a circuit that compensates for chattering wherever possible.
- Do not switch the rod to the fullest extent when the Switch is to break a power circuit because such a practice may cause metal deposition to occur between the mating contacts of the Switch.

Other Precautions

 Do not apply excessive force with a screwdriver or other tool when attaching or removing the Protective Cover. Doing so may deform the Switch.



- The Drip-proof Terminal Protective Cover can be sued only with Switches with model numbers ending in "-B5V."
- Only the Terminal Protective Cover is available for maintenance.

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