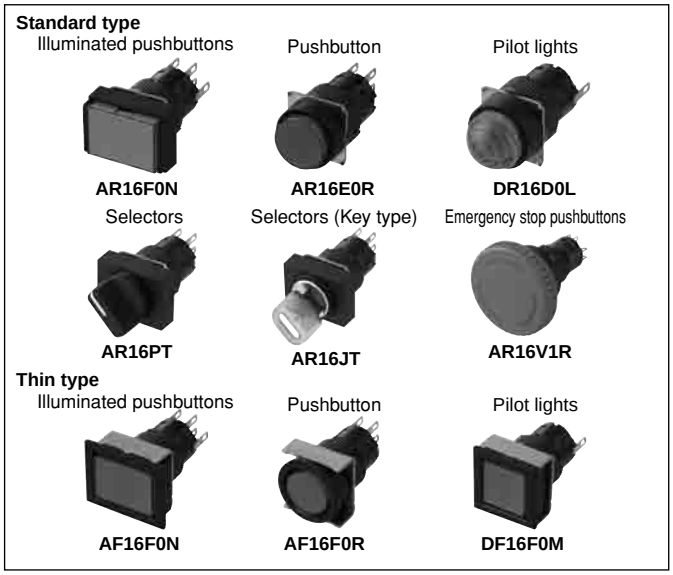
- An integrated structure with built-in contacts that can reduce control panel depth.
- A wide variety of sockets are available to simplify wiring.

- Thin type and Standard types available for your control panel design. Select an optimum one to match your control panel design.

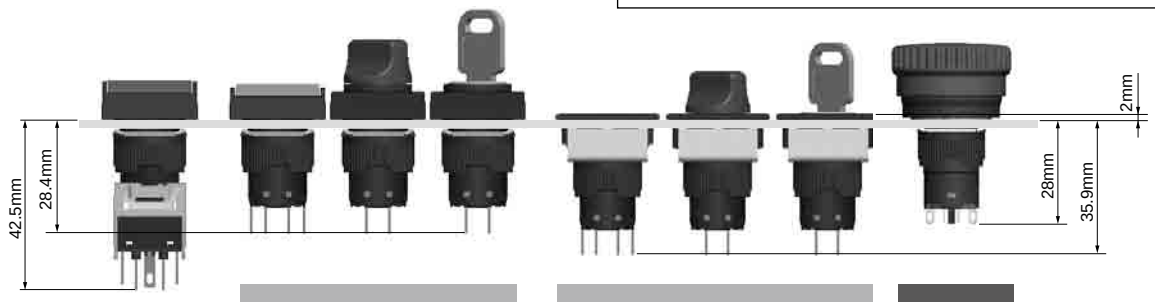


■ Features

Supporting smaller and thinner operator's panels

A structure that integrates operator and contacts to reduce panel-mounting depth. Terminals extending to the rear of the switch ensure easy wiring work.

- Standard type : 28.4mm deep
- Thin type : 35.9mm deep
- Emergency stop : 28mm deep

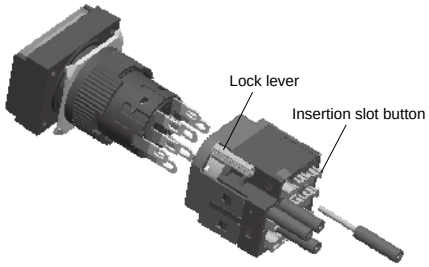


AH164, 5 series (Contact separated type) | AR16, DR16 series (Standard type) | AF16, DF16 series (Thin type) | AR16V series (Emergency stop pushbutton switches)

A wide variety of sockets reduce wiring work

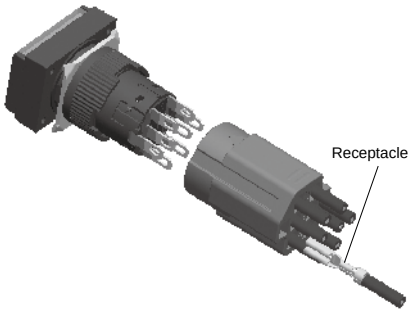
Switches combine with a variety of sockets to simplify wiring.

• Fast-connection socket



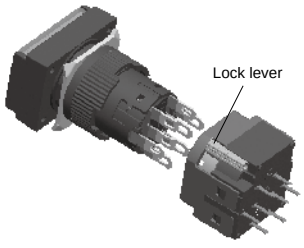
- Applicable as a fast-connection terminal switch by combining the socket with a switch.
- Easily wired by simply removing the wire sheath and inserting the wires while pressing the insertion slot button (no soldering required).
- Incorporates a branch terminal for easy branching.

• Connector socket



- Applicable as a connector by combining the socket with receptacles.
- The socket holds the receptacles, making it easy to connect the receptacle to the switch with a single operation.

• Socket for PC board



- Applicable as a switch for PC board by combining the socket with a switch.
- Pattern wiring reduces the number of wiring man-hour and helps prevent faulty wiring.

Safety

- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving untill the button in pushed and locked. (See page 04/180)

Degree of protection

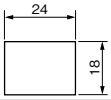
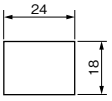
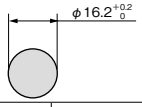
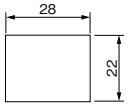
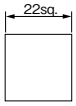
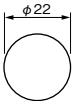
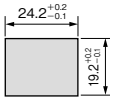
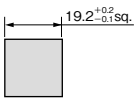
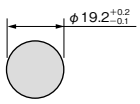
The operator has IP65 protection for smooth operation without advere effects from oil, water, or dusts.

Approvals

For further information related to approved type, see page 04/130 to 04/135

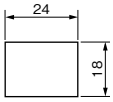
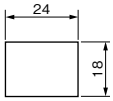
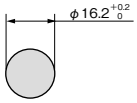
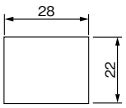
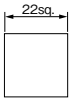
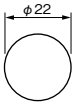
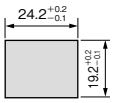
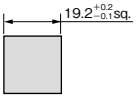
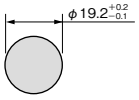
Note : commanded switches shipped as aeticiles to China must conform to the Product Quality Law. Check with your Fuji Electric representative.

■ Illuminated pushbutton switches

Operator			Flush rectangular		Flush rectangular with guard		Flush square		Extended round		Flush round	
Operator action			Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate
Standard type	Type		**AR16F0N**	**AR16F5N**	**AR16G0N**	**AR16G5N**	**AR16F0M**	**AR16F5M**	**AR16E0L**	**AR16E5L**	–	–
	Appearance										–	
	See page		04/143		04/143		04/143		04/143			
	Bezel (mm)										–	
	Panel cutting (mm)											
Thin type	Type		**AF16F0N**	**AF16F5N**	–	–	**AF16F0M**	**AF16F5M**	–		**AF16F0L**	**AF16F5L**
	Appearance				–				–			
	See page		04/155				04/155				04/155	
	Bezel (mm)				–				–			
	Panel cutting (mm)				–				–			
Legend plate (mm)			19.6×13.6		19.6×13.6		13.6sq.		ϕ13.6		ϕ13.6	
Bezel color			Black									
Button color (transparent)			Green, Red, White [*1], Yellow, Orange, Blue									
LED lamp	Color		Green, Red, Orange, Yellow, Amber, Blue									
	Lamp voltage		6V AC/DC, 12V AC/DC, 24V AC/DC									
Contact arrangement			SPDT, 2PDT									
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)									
Mechanical durability			Momentary action: 1 million operations Alternate action: 250,000 operations									
Electrical durability			100,000 operations (220V AC 0.7A)									
Degree of protection (Operator)			IP65									
Type of terminal			Tab (#110) / solder dual-use terminal									
Accessories	Protective cover [*2]		○ [*3]		–		○ [*3]		○		–	
	Dust-proof cover		○ [*4]		–		○ [*4]		○		–	
	Terminal cover		○		○		○		○		○	
	Socket	Quick connection	○		○		○		○		○	
		Connector use	○		○		○		○		○	
		PC board use	○		○		○		○		○	
	Panel plug		○		○		○		○		○	

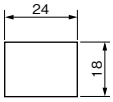
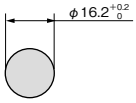
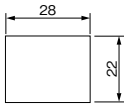
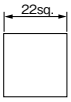
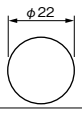
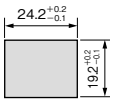
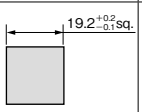
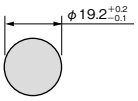
Notes: [*1] A combination of the translucent button and the white legend plate comes to white.
[*2] The protective cover and button of the thin type are made of an integral structure.
[*3] The protective cover of the thin type is available for momentary action only.
[*4] Available for standard type only.

■ Pushbutton switches

Operator			Flush rectangular		Flush rectangular with guard		Flush square		Extended round		Flush round	
Operator action			Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate
Standard type	Type		**AR16F0T**	**AR16F5T**	**AR16G0T**	**AR16G5T**	**AR16F0S**	**AR16F5S**	**AR16E0R**	**AR16E5R**	–	–
	Appearance										–	
	See page		04/145		04/145		04/145		04/145			
	Bezel (mm)										–	
	Panel cutting (mm)											
Thin type	Type		**AF16F0T**	**AF16F5T**	–	–	**AF16F0S**	**AF16F5S**	–		**AF16F0R**	**AF16F5R**
	Appearance				–				–			
	See page		04/157				04/157				04/157	
	Bezel (mm)				–				–			
	Panel cutting (mm)				–				–			
Legend plate (mm)			19.6×13.6		19.6×13.6		13.6sq		ϕ13.6		ϕ13.6	
Button color (transparent)			Black									
Button color			Green, Red, Black [*1], White [*2], Yellow, Orange, Blue									
Contact arrangement			SPDT, 2PDT									
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)									
Mechanical durability			Momentary action: 1 million operations Alternate action: 250,000 operations									
Electrical durability			100,000 operations (220V AC 0.7A)									
Degree of protection (Operator)			IP65									
Type of terminal			Tab (#110) / solder dual-use terminal									
Accessories	Protective cover [*3]		○ [*4]		–		○ [*4]		○		–	
	Dust-proof cover		○ [*5]		–		○ [*5]		○		–	
	Terminal cover		○		○		○		○		○	
	Socket	Quick connection	○		○		○		○		○	
		Connector use	○		○		○		○		○	
		PC board use	○		○		○		○		○	
	Panel plug		○		○		○		○		○	

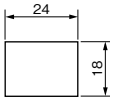
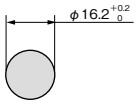
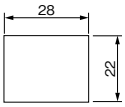
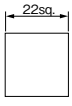
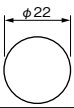
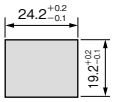
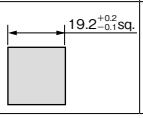
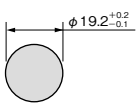
Notes: [*1] A combination of the translucent button and the black legend plate comes to black button.
[*2] A combination of the translucent button and the white legend plate comes to white button.
[*3] The protective cover and button of the thin type are made of an integral structure.
[*4] The protective cover of the thin type is available for momentary action only.
[*5] Available for standard type only.

■ Pilot lights

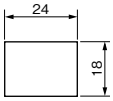
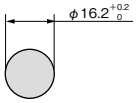
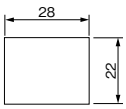
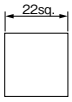
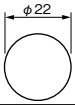
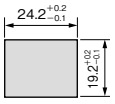
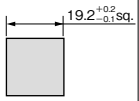
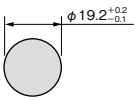
Lens shape			Flush rectangular	Flush square	Extended round	Flush round	Dome
Standard type	Type		**DR16F0N**	**DR16F0M**	**DR16E0L**	–	**DR16D0L**
	Appearance					–	
	See page		04/147	04/147	04/147		04/147
	Bezel (mm)					–	
	Panel cutting (mm)						
Thin type	Type		**DF16F0N**	**DF16F0M**	–	**DF16F0L**	–
	Appearance				–		–
	See page		04/159	04/159		04/159	
	Bezel (mm)				–		–
	Panel cutting (mm)				–		–
Legend plate (mm)			19.6×13.6	13.6sq	ϕ13.6	ϕ13.6	–
Bezel color			Black				
Button color (transparent)			Green, Red, White [*1], Yellow, Orange, Blue				
LED lamp	Color		Green, Red, Orange, Yellow, Amber, Blue				
	Lamp voltage		6V AC/DC, 12V AC/DC, 24V AC/DC				
Degree of protection (Lens)			IP65				
Type of terminal			Tab (#110) / solder dual-use terminal				
Accessories	Terminal cover		○	○	○	○	○
	Socket	Quick connection	○	○	○	○	○
		Connector use	○	○	○	○	○
		PC board use	○	○	○	○	○
	Panel plug		○	○	○	○	○

Note: [*1] A combination of the translucent lens and the white legend plate comes to white lens (except for dome type).

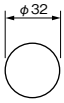
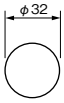
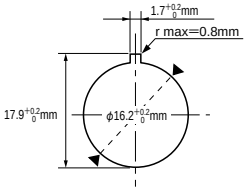
■ Selector switches (Knob type)

Operator			Knob with rectangular bezel	Knob with square bezel	Knob with round bezel
No. of position			2-position, 3-position	2-position, 3-position	2-position, 3-position
Operator action			Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return
Standard type	Type		**AR16PT**	**AR16PS**	**AR16PR**
	Appearance				
	See page		04/149	04/149	04/149
	Bezel (mm)				
	Panel cutting (mm)				
Thin type	Type		**AF16PT**	**AF16PS**	**AF16PR**
	Appearance				
	See page		04/161	04/161	04/161
	Bezel (mm)				
	Panel cutting (mm)				
Bezel color			Black		
Color of knob			Black		
Contact arrangement			SPDT, 2PDT		
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)		
Mechanical durability			250,000 operations		
Electrical durability			100,000 operations (220V AC 0.7A)		
Degree of protection (Operator)			IP65		
Type of terminal			Tab (#110) / solder dual-use terminal		
Accessories	Terminal cover		○	○	○
	Socket	Quick connection	○	○	○
		Connector use	○	○	○
		PC board use	○	○	○
	Panel plug		○	○	○

■ Selector switches (Key type)

Operator			Key with rectangular bezel	Key with square bezel	Key with round bezel
No. of position			2-position, 3-position	2-position, 3-position	2-position, 3-position
Operator action			Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return
Standard type	Type		**AR16JT**	**AR16JS**	**AR16JR**
	Appearance				
	See page		04/152	04/152	04/152
	Bezel (mm)				
	Panel cutting (mm)				
Thin type	Type		**AF16JT**	**AF16JS**	**AF16JR**
	Appearance				
	See page		04/164	04/164	04/164
	Bezel (mm)				
	Panel cutting (mm)				
Bezel color			Black		
Key removable position			Left (A), Left/Right (B), Left/Center/Right (C), Right (D), Center (E), Center/Right (F), Left/Center (G)		
No. of key types			6 (A, B, C, D, E, F)		
Contact arrangement			SPDT, 2PDT		
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)		
Mechanical durability			250,000 operations		
Electrical durability			100,000 operations (220V AC 0.7A)		
Degree of protection (Operator)			IP65		
Type of terminal			Tab (#110) / solder dual-use terminal		
Accessories	Terminal cover		○	○	○
	Socket	Quick connection	○	○	○
		Connector use	○	○	○
		PC board use	○	○	○
	Panel plug		○	○	○

■ Emergency stop pushbutton switches

Operator		Illuminated push-lock (32mm dia)	Illuminated push-lock (40mm dia)	Push-lock (32mm dia)	Push-lock (40mm dia)
Operator action		Turn reset or pull-reset		Turn reset or pull-reset	
Type		**AR16V0L**	**AR16V1L**	**AR16V0R**	**AR16V1R**
Appearance					
See page		04/182	04/182	04/182	04/182
Button size (mm)					
Panel cutting (mm)					
Button color		Red			
LED lamp	Color	Red		—	
	Lamp voltage	6V AC/DC, 12V AC/DC, 24V AC/DC		—	
Contact arrangement		1NC, 1NO+1NC, 2NC, 1NO+2NC, 3NC, 1NO+3NC, 4NC			
Contact ratings		120V AC 0.3A (AC-15), 24V DC 0.7A (DC-13), 240V AC 0.3A (AC-15), 125V DC 0.15A (DC-13)			
Mechanical durability		100,000 operations			
Electrical durability		100,000 operations (AC-15, AC-13, AC-12, DC-13, DC-12)			
Degree of protection (Operator)		IP65			
Type of terminal		Solder use terminal			
Accessories	Terminal cover	○	○	○	○
	Name plate (Emergency stop)	○	○	○	○

■ Contact ratings

• UL/CSA

• AC (COSø = 0.35)

Contact rating code	120V		240V	
	Making current	Breaking current	Making current	Breaking current
D300	3.6A	0.6A	1.8A	0.3A

• TÜV (EN60947-5-1), CCC (GB14048.5), JIS C 8201-5-1

Type of switches	Conventional free air thermal current Ith	Rated operational current Ie				
		Rated operational voltage Ue	AC		DC	
			AC-13 (Inductive load)	AC-12 (Resistive load)	DC-13 (Inductive load)	DC-12 (Resistive load)
Illuminated pushbutton switch Pushbutton switch Selector switch	5A	24V	–	–	0.7A *1	1A
		120V	1A	1.5A	–	–
		125V	–	–	0.15A *1	0.2A
		240V	0.7A	1A	–	–

Note: *1 $T_{0.95}$=21ms

■ Specifications (indoor use)

Item		• Illuminated pushbutton switch, pushbutton switch	• Selector switch	• Pilot lights
Rated insulation voltage Ui		250V AC/DC		
Durability	Mechanical	Momentary action: 1 million operations Alternate action: 250,000 operations	Maintained: 250,000 operations Spring/manual return: 250,000 operations Spring return: 250,000 operations	–
	Electrical	100,000 operations (at 220V AC 0.7A)		–
Operating frequency		1200 operations/hour (On-load factor: 40%)		–
Withstand voltage	Between live section and grounding	2000V AC, 1 minute		
	Between opposite polarity live sections	2000V AC, 1 minute		–
Insulation resistance		100MΩ or more (500V DC megger)		
Rated impulse withstand voltage Uimp		2.5kV		
Conditional short-circuit current		1000A		
Short-circuit protective device		gG 2A (IEC60269 Fuse)		
Pollution degree		3		
Vibration		Resonance: frequency 10 to 55Hz, double amplitude 1.0mm Constant: frequency 16.7Hz, double amplitude 3mm		
Shock		Malfunction durability; 100m/s^2 Mechanical durability; 500m/s^2		
Operational ambient temperature		–10 to +55°C (no icing or no condensation)		
Storage temperature		–40 to +70°C		
Relative humidity (inside control panel)		45 to 85%RH (–5 to + 40°C) (no icing or no condensation)		
Degree of protection of operating (displaying) section		IP65 (dust-proof, water jet proof): IEC 60529		
Degree of protection of terminal section		IP2X (Fast-connection socket: AR6S690, Connector socket: AR6S691-C or Terminal cover: AR2Y261, At the connection)		

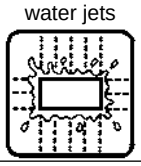
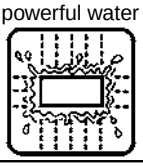
■ Specifications (Socket)

Item	Fast-connection socket	Connector socket	Socket for PC board
Rated insulation voltage Ui	250V AC/DC		60V AC/DC
Conventional free air thermal current Ith	3A	5A	3A
Rated impulse withstand voltage Uimp	2.5kV		0.5kV
Withstand voltage (Between live section and grounding)	2000V AC, 1 minute		1000V AC, 1 minute
Insulation resistance	100MΩ or more (500V DC megger)		
Operational ambient temperature	-10 to +55°C (no icing or no condensation)		
Storage temperature	-40 to +70°C		
Relative humidity	45 to 85%RH (-5 to +40°C) (no icing or no condensation)		
Pollution degree	3		

■ Degree of protection

• The table below shows the degree of protection stipulated by IEC (International Electrotechnical Commission) standard (IEC 60529).

IP– 6 5

Class	Degree of protection against human contact or penetration by a foreign object		Degree of protection against ingress of water	
5		• Normal operation secured even if the dust that can pass through screen of 75μm mesh invades.	Protection against water jets 	• Protected against water jet from all directions. • Water projected by nozzle (6.3mm-inner dia.) from all directions at 29.4kPa for 3min at a distance of 3m.
6		• The dust which can pass through screen of 75μm mesh shall not invade.	Protection against powerful water 	• Protected against powerful water jet from all directions. • Water projected by nozzle (12.5mm-inner dia.) from all directions at 98kPa for 3min at a distance of 3m.

■ Contact reliability

FUJI has confirmed that the product can be used in 1mA circuit conditions at 5V AC or DC. The operable range, however, may vary depending on the operational ambient conditions and type of load.

■ Lamp ratings and current consumption

• Illuminated pushbutton switch, Pilot lights

Applied method	Lamp operational voltage	High-brightness LED lamp		
		Type	Lamp rated voltage	Current consumption
without transformer	6V AC/DC	**DR6L695-A□**	6V AC/DC	Green, Blue: 11mA AC, 7.5mA DC Red, Amber: 9mA AC, 7.5mA DC Orange: 10mA AC, 8.5mA DC Yellow: 30mA AC, 26mA DC
	12V AC/DC	**DR6L695-B□**	12V AC/DC	Green, Red, Amber, Blue: 7.5mA AC, 7.5mA DC Orange: 9mA AC, 8.5mA DC Yellow: 11mA AC, 8.5mA DC
	24V AC/DC	**DR6L695-E□**	24V AC/DC	Green, Red, Amber, Blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 9mA AC, 8.5mA DC

Note: A box □ indicates the luminous color. For details, see the "Combination of Illuminated pushbutton / pilot light color and LED lamp luminous color".

■ Combination of Illuminated pushbutton / pilot light color and LED lamp luminous color

Illuminated pushbutton / pilot light color (lens color)		Luminous color of high-brightness LED lamp	
	Type		Type
Green	G	Green	**DR6L695-■G**
Red	R	Red	**DR6L695-■R**
White	W	Orange	**DR6L695-■W**
Yellow	Y	Yellow	**DR6L695-■Y**
Orange	A	Amber	**DR6L695-■A**
Blue	S	Blue	**DR6L695-■S**

Note: [*1] A box ■ indicates the lamp operational voltage. For details, see the "Lamp ratings and current consumption".

■ LED durability

Type of lamp	Durability (reference)	Judgment criterion
LED lamp	Approx. 30000h	When the brightness is less than 50% of initial value.

Note: The durability of LED lamp is a mean value in all colors.

■ Standard approved

UL508	cUL File No.E44592
CSA C22.2 No.14	
TÜV: EN60947-5-1	Pushbutton, Illuminated pushbutton: R50116757 Selector: R50116759 Pilot lights: R50116762
CCC: GB14048.5	Switches (except pilot ligths): 2003010305071068 Pilot lights: 2003010305071044

■ Standard models approved by international standards

The standard models of AR16 and DR16, AF16 and DF16 series of the ϕ16 Command Switches meet UL / CSA requirements, China Compulsory Certification (CCC) standards, and TÜV EN standards, thus ensuring easier direct or indirect export to North America and European countries with no safety standard concerns.

• Illuminated pushbutton switches

AR16 F0N − C2 E3 G

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape and action

Operator shape	Code			
	Standard type		Thin type	
	Momentary	Alternate	Momentary	Alternate
Flush rectangular	**F0N**	**F5N**	**F0N**	**F5N**
Flush rectangular with guard	**G0N**	**G5N**	**–**	**–**
Flush square	**F0M**	**F5M**	**F0M**	**F5M**
Extended round	**E0L**	**E5L**	**–**	**–**
Flush round	**–**	**–**	**F0L**	**F5L**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

Color of button

Color	LED color	Code
Green	Green	**G**
Red	Red	**R**
White *1	Orange	**W**
Yellow	Yellow	**Y**
Orange	Amber	**A**
Blue	Blue	**S**

Note: • The button is transparent in color.
*1: A combination of the transparent lens and the white legend plate comes to white.

Lamp operational voltage and light source

Applied method	Voltage	Code
		LED
Without transformer	6V AC/DC	**A3**
	12V AC/DC	**B3**
	24V AC/DC	**E3**

• Pushbutton switches

AR16 F0T − C2 R

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape and action

Operator shape	Code			
	Standard type		Thin type	
	Momentary	Alternate	Momentary	Alternate
Flush rectangular	**F0T**	**F5T**	**F0T**	**F5T**
Flush rectangular with guard	**G0T**	**G5T**	**–**	**–**
Flush square	**F0S**	**F5S**	**F0S**	**F5S**
Extended round	**E0R**	**E5R**	**–**	**–**
Flush round	**–**	**–**	**F0R**	**F5R**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

Color of button

Color	Code
Green	**G**
Red	**R**
Black *1	**B**
White *2	**W**
Yellow	**Y**
Orange	**A**
Blue	**S**

Notes: • The button is transparent in color.
*1: A combination of the transparent button and the black legend plate comes to black.
*2: A combination of the transparent button and the white legend plate comes to white.

Note: The manufacturing range varies depending on the model. For details, see “Types and dimensions” of this catalog.

• **Pilot lights**

DR16 D0L – E3 W

Product category

Category	Code
Standard type	**DR16**
Thin type	**DF16**

Lens shape

Lens shape	Code	
	Standard type	Thin type
Flush rectangular	**F0N**	**F0N**
Flush square	**F0M**	**F0M**
Extended round	**E0L**	**–**
Flush round	**–**	**F0L**
Dome	**D0L**	**–**

Color of lens

Color	LED color	Code
Green	Green	**G**
Red	Red	**R**
White *1	Orange	**W**
Yellow	Yellow	**Y**
Orange	Amber	**A**
Blue	Blue	**S**

Note: ・The lens is transparent in color.
*1 : A combination of the transparent lens and the white legend plate comes to white (except for dome type).

Lamp operational voltage and light source

Applied method	Voltage	Code
		LED
Without transformer	6V AC/DC	**A3**
	12V AC/DC	**B3**
	24V AC/DC	**E3**

Note: The terminal used is a tab (#110) and solder dual-use terminal.

Note: The manufacturing range varies depending on the model. For details, see “Types and dimensions” of this catalog.

• Selector switches (Knob type)

AR16 PT − 2 C1 B

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape

Operator shape	Code
Knob with rectangular bezel	**PT**
Knob with square bezel	**PS**
Knob with round bezel	**PR**

Color of knob

Color	Code
Black	**B**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT *1	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

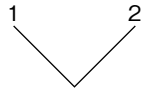
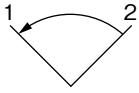
Note: *1 2-position model only available

No. of positions and operator action

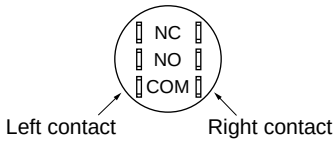
No. of positions	Operator action	Code
2-position (90°)	Maintained	**2**
	Spring return (Right to left)	**0**
3-position (45°)	Maintained	**3**
	Spring/manual return (Left to center)	**6**
	Spring/manual return (Right to center)	**7**
	Spring return (Left or right to center)	**1**

• Key position and contact operation

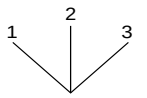
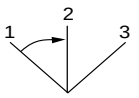
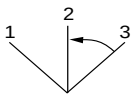
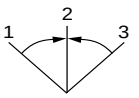
2-position

Operator action (View form the front)		Contact arrangement	Contact unit			Operator position *2	
2	0					1	2
		SPDT	Left	COM	NC	●	
					NO		●
		2PDT	Left	COM	NC	●	
					NO		●
			Right	COM	NC	●	
					NO		●
Maintained/90°	Spring return/90°						

Terminal arrangement
View from the terminal side (the back)



3-position

Operator action (View form the front)				Contact arrangement	Contact unit			Operator position *2		
3	6	7	1					1	2	3
				2PDT	Left	COM	NC			
							NO			●
					Right	COM	NC			
							NO	●		
Maintained/each 45°	Spring/manual return/each 45°	Spring/manual return/each 45°	Spring return/each 45°							

Note: *2 ●, ▬: means the contact closed (ON).

• Selector switches (Key type)

AR16 JT − 3 E C2 A

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape

Operator shape	Code
Key with rectangular bezel	**JT**
Key with square bezel	**JS**
Key with round bezel	**JR**

No. of positions and operator action

No. of positions	Operator action	Code
2-position (90°)	Maintained	**2**
	Spring return (Right to left)	**0**
3-position (45°)	Maintained	**3**
	Spring/manual return (Left to center)	**6**
	Spring/manual return (Right to center)	**7**
	Spring return (Left or right to center)	**1**

Types of key

Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

Note: *1 "A" is standard.

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT *2	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

Note: *2 2-position model only

Key removable position

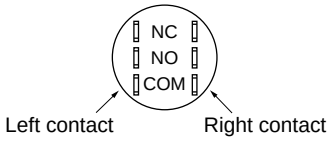
Key removable position	Applicable operator action 2	0	3	6	7	1	Code
Left	○	○	○	–	○	–	**A**
Left and right	○	–	○	–	–	–	**B**
Left, center and right	–	–	○	–	–	–	**C**
Right	○	–	○	○	–	–	**D**
Center	–	–	○	○	○	○	**E**
Center and right	–	–	○	○	–	–	**F**
Left and center	–	–	○	–	○	–	**G**

• Key position and contact operation

2-position

Operator action (View form the front) 2	0	Contact arrangement	Contact unit			Operator position *3 1	2
1 2	1 2	SPDT	Left	COM	NC	●	
					NO		●
		2PDT	Left	COM	NC	●	
					NO		●
			Right	COM	NC	●	
					NO		●
Maintained/90°	Spring return/90°						

Terminal arrangement
View from the terminal side (the back)



3-position

Operator action (View form the front) 3	6	7	1	Contact arrangement	Contact unit			Operator position *3 1	2	3
1 2 3	1 2 3	1 2 3	1 2 3	2PDT	Left	COM	NC		▬	
							NO			●
					Right	COM	NC			▬
							NO	●		
Maintained/each 45°	Spring/manual return/each 45°	Spring/manual return/each 45°	Spring return/each 45°							

Note: *3 ●, ▬: means the contact closed (ON).

1. Standard type, AR16 and DR16
■ Illuminated pushbutton switches (LED illuminated)

• Type number system

AR16 F0N – C2 E3 G

- AR16 F0N: Product category: Standard type; Operator shape and action
- C2: Contact arrangement and terminal
- E3: Lamp operational voltage and light source
- G: Color of button

• Type

Operator	Appearance (Standard type)	Lamp operational voltage	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AR16F0N, F5N**	6V AC/DC	SPDT	**AR16F0N-C1A3□**	**AR16F5N-C1A3□**
			2PDT	**AR16F0N-C2A3□**	**AR16F5N-C2A3□**
		12V AC/DC	SPDT	**AR16F0N-C1B3□**	**AR16F5N-C1B3□**
			2PDT	**AR16F0N-C2B3□**	**AR16F5N-C2B3□**
		24V AC/DC	SPDT	**AR16F0N-C1E3□**	**AR16F5N-C1E3□**
			2PDT	**AR16F0N-C2E3□**	**AR16F5N-C2E3□**
Flush rectangular with guard	**AR16G0N, G5N**	6V AC/DC	SPDT	**AR16G0N-C1A3□**	**AR16G5N-C1A3□**
			2PDT	**AR16G0N-C2A3□**	**AR16G5N-C2A3□**
		12V AC/DC	SPDT	**AR16G0N-C1B3□**	**AR16G5N-C1B3□**
			2PDT	**AR16G0N-C2B3□**	**AR16G5N-C2B3□**
		24V AC/DC	SPDT	**AR16G0N-C1E3□**	**AR16G5N-C1E3□**
			2PDT	**AR16G0N-C2E3□**	**AR16G5N-C2E3□**
Flush square	**AR16F0M, F5M**	6V AC/DC	SPDT	**AR16F0M-C1A3□**	**AR16F5M-C1A3□**
			2PDT	**AR16F0M-C2A3□**	**AR16F5M-C2A3□**
		12V AC/DC	SPDT	**AR16F0M-C1B3□**	**AR16F5M-C1B3□**
			2PDT	**AR16F0M-C2B3□**	**AR16F5M-C2B3□**
		24V AC/DC	SPDT	**AR16F0M-C1E3□**	**AR16F5M-C1E3□**
			2PDT	**AR16F0M-C2E3□**	**AR16F5M-C2E3□**
Extended round	**AF16E0L, E5L**	6V AC/DC	SPDT	**AR16E0L-C1A3□**	**AR16E5L-C1A3□**
			2PDT	**AR16E0L-C2A3□**	**AR16E5L-C2A3□**
		12V AC/DC	SPDT	**AR16E0L-C1B3□**	**AR16E5L-C1B3□**
			2PDT	**AR16E0L-C2B3□**	**AR16E5L-C2B3□**
		24V AC/DC	SPDT	**AR16E0L-C1E3□**	**AR16E5L-C1E3□**
			2PDT	**AR16E0L-C2E3□**	**AR16E5L-C2E3□**

Note: • See page 04/144 for the outline dimensions.

• Button color

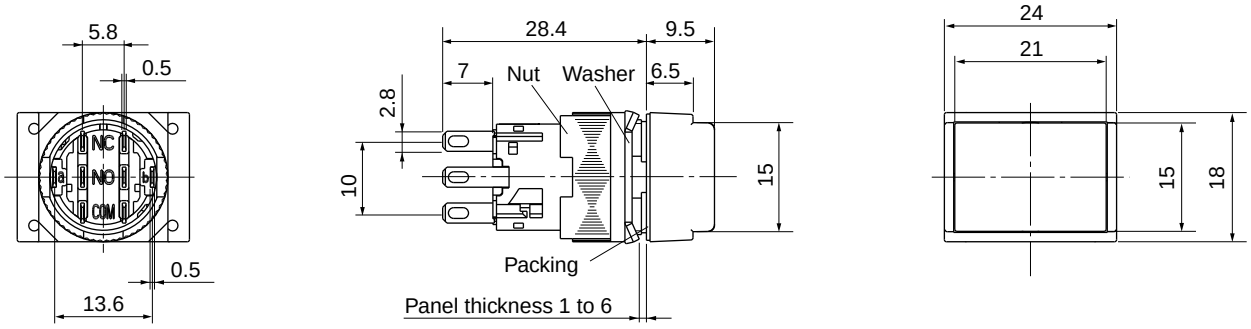
Replace the □ mark by the color code

Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

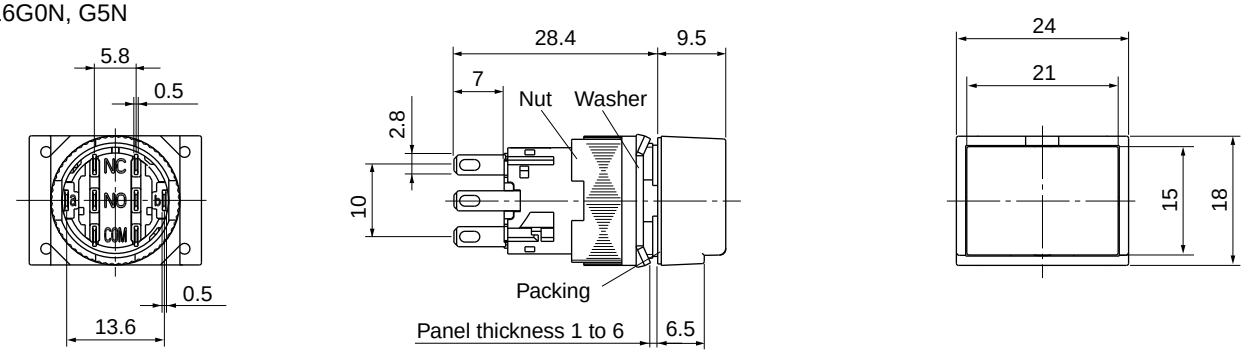
Note: *1 A combination of the transparent button and the white legend plate comes to white.

• Dimensions, mm

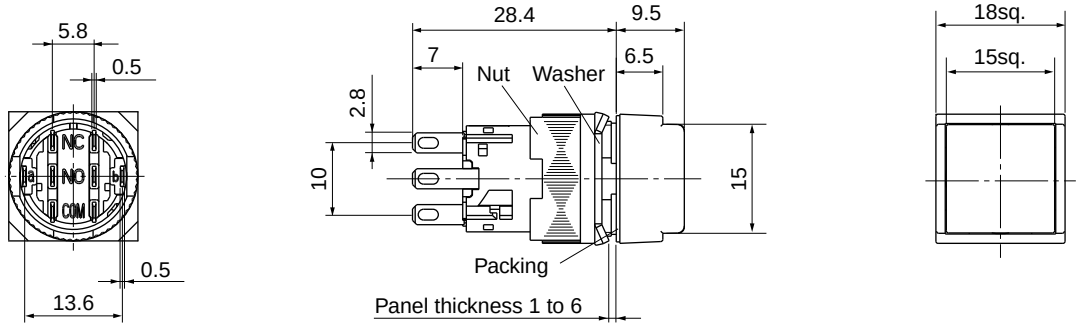
Flush rectangular
AR16F0N, F5N



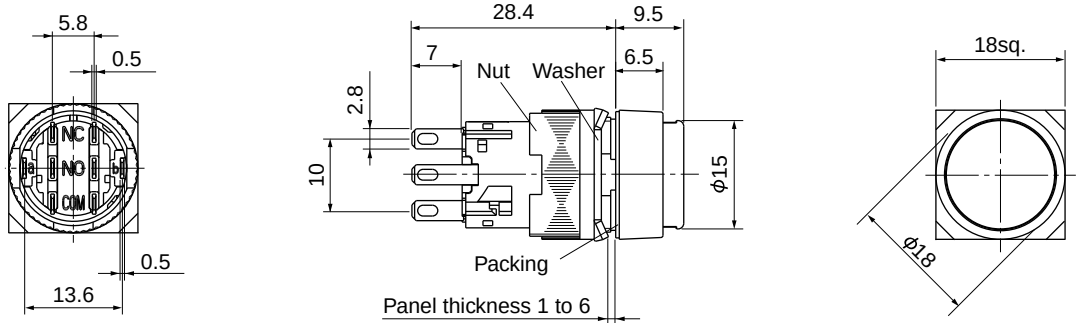
Flush rectangular with guard
AR16G0N, G5N



Flush square
AR16F0M, F5M



Extended round
AR16E0L, E5L



■ Pushbutton switches

• Type number system

AR16 F0T – C2 G

- AR16: Product category: Standard type
- F0T: Operator shape and action
- C2: Contact arrangement and terminal
- G: Color of button

• Type

Operator	Appearance (Standard type)	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AR16F0T, F5T**	SPDT	**AR16F0T-C1□**	**AR16F5T-C1□**
		2PDT	**AR16F0T-C2□**	**AR16F5T-C2□**
Flush rectangular with guard	**AR16G0T, G5T**	SPDT	**AR16G0T-C1□**	**AR16G5T-C1□**
		2PDT	**AR16G0T-C2□**	**AR16G5T-C2□**
Flush square	**AR16F0S, F5S**	SPDT	**AR16F0S-C1□**	**AR16F5S-C1□**
		2PDT	**AR16F0S-C2□**	**AR16F5S-C2□**
Extended round	**AR16E0R, E5R**	SPDT	**AR16E0R-C1□**	**AR16E5R-C1□**
		2PDT	**AR16E0R-C2□**	**AR16E5R-C2□**

Note: • See page 04/146 for the outline dimensions.

• Button color

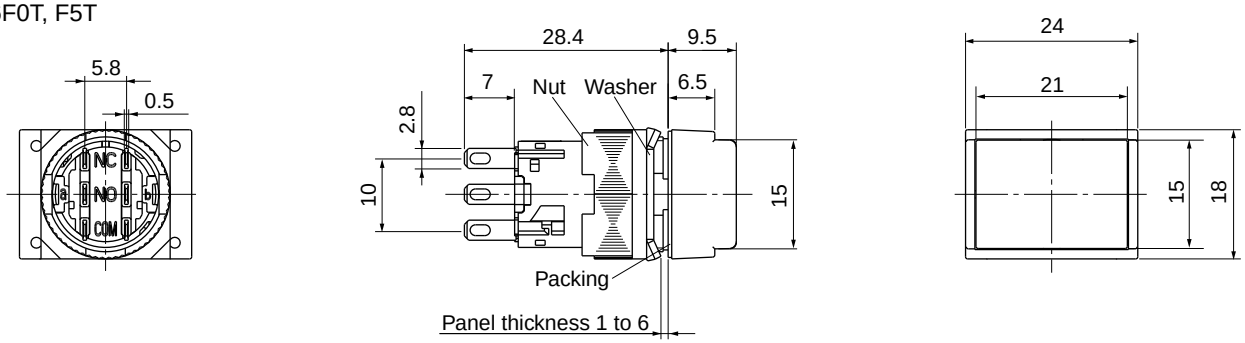
Replace the □ mark by the color code

Color	Green	Red	Black	White	Yellow	Orange	Blue
Code	G	R	B *1	W *2	Y	A	S

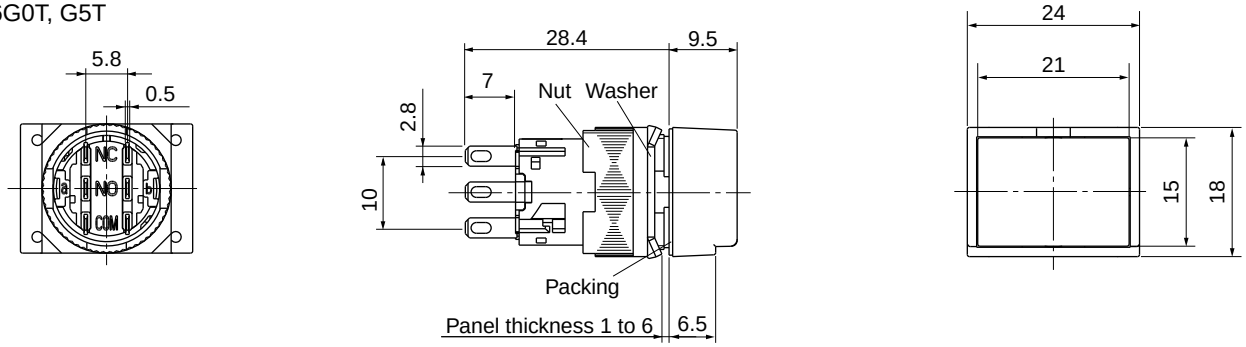
Notes: *1 A combination of the transparent button and the black legend plate comes to black.
*2 A combination of the transparent button and the white legend plate comes to white.

• Dimensions, mm

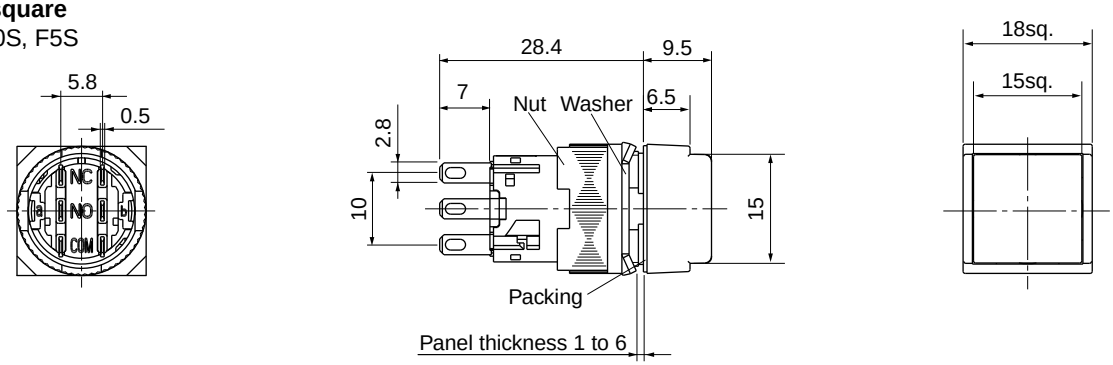
Flush rectangular
AR16F0T, F5T



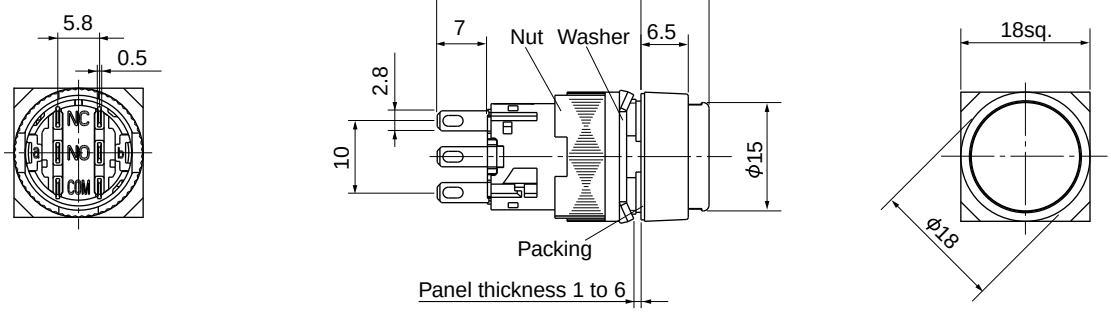
Flush rectangular with guard
AR16G0T, G5T



Flush square
AR16F0S, F5S



Extended round
AR16E0R, E5R



■ Pilot lights (LED illuminated)

• Type number system

DR16 D0L – E3 W

- DR16: Product category: Standard type
- D0L: Lens shape
- E3: Lamp operational voltage and light source
- W: Color of lens

• Type

Lens	Appearance (Standard type)	LED lamp operational voltage	Type
Flush rectangular	**DR16F0N**	6V AC/DC	**DR16F0N-A3**☐
		12V AC/DC	**DR16F0N-B3**☐
		24V AC/DC	**DR16F0N-E3**☐
Flush square	**DR16F0M**	6V AC/DC	**DR16F0M-A3**☐
		12V AC/DC	**DR16F0M-B3**☐
		24V AC/DC	**DR16F0M-E3**☐
Extended round	**DR16E0L**	6V AC/DC	**DR16E0L-A3**☐
		12V AC/DC	**DR16E0L-B3**☐
		24V AC/DC	**DR16E0L-E3**☐
Dome	**DR16D0L**	6V AC/DC	**DR16D0L-A3**☐
		12V AC/DC	**DR16D0L-B3**☐
		24V AC/DC	**DR16D0L-E3**☐

Note: • See page 04/148 for the outline dimensions.

• Lens color

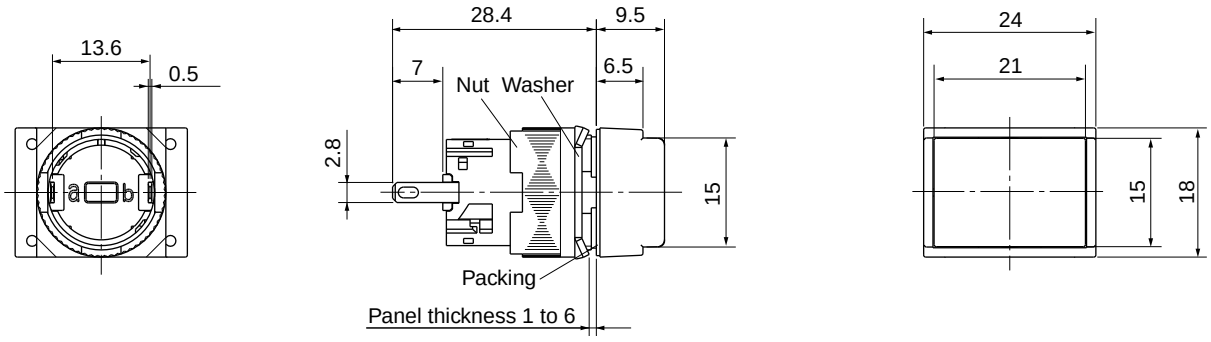
Replace the ☐ mark by the color code

Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *[1]	Y	A	S

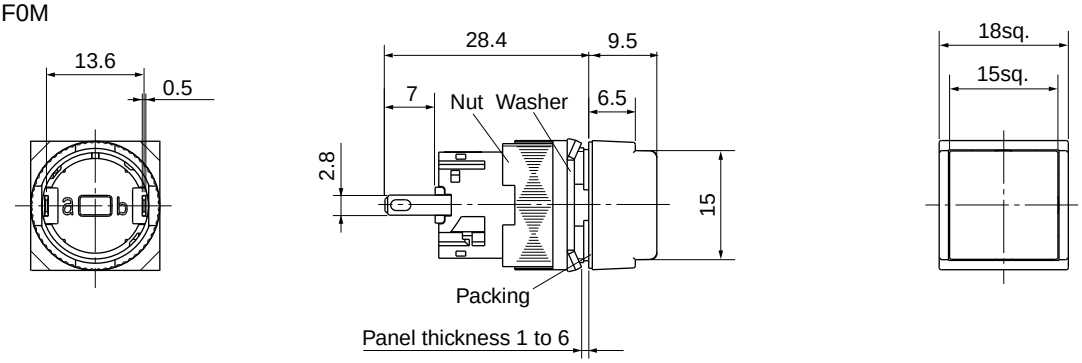
Note: *[1] A combination of the transparent lens and the white legend plate comes to white (except for dome type).

• Dimensions, mm

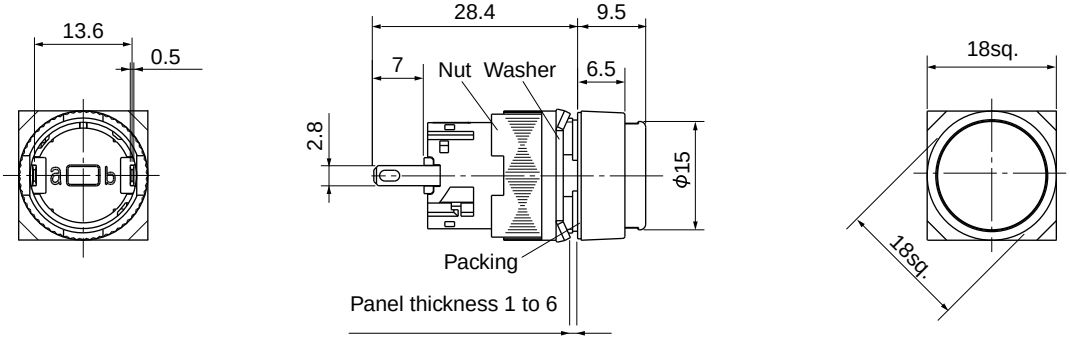
Flush rectangular
DR16F0N



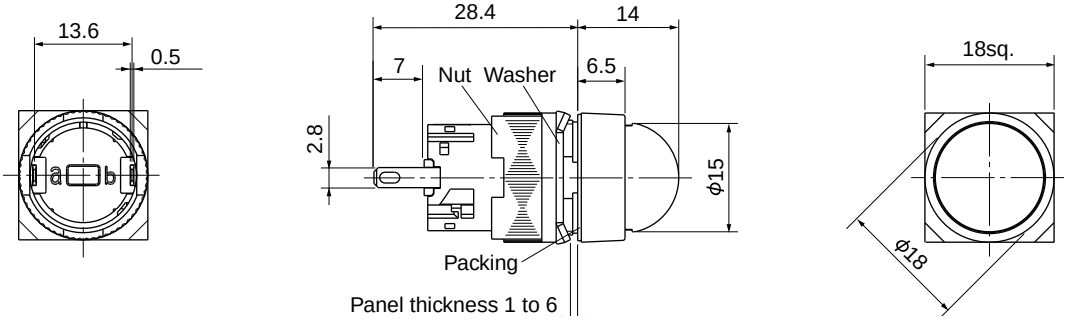
Flush square
DR16F0M



Extended round
DR16E0L



Dome
DR16D0L



■ Selector switches (Knob type)

• Type number system

AR16 PT – 2 C2 B

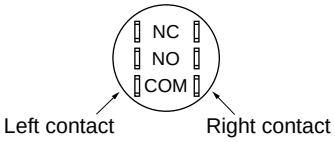
- Product category: Standard type
- Operator shape
- No. of positions and operator action
- Contact arrangement and terminal
- Color of knob: Black

• Type

2-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type		Contact operation			
			1 2 Maintained/90°	1 2 Spring return/90°	Contact unit *1		Operator position *2	
							1	2
Knob with rectangular bezel/**AR16PT**	2-position	SPDT	**AR16PT-2C1B**	**AR16PT-0C1B**	Left	COM – NC ● / NO ●	●	
			AR16PS-2C1B	**AR16PS-0C1B**				
			AR16PR-2C1B	**AR16PR-0C1B**				●
Knob with square bezel/**AR16PS**		2PDT	**AR16PT-2C2B**	**AR16PT-0C2B**	Left	COM – NC ● / NO ●	●	
			AR16PS-2C2B	**AR16PS-0C2B**				●
Knob with round bezel/**AR16PR**			**AR16PR-2C2B**	**AR16PR-0C2B**	Right	COM – NC ● / NO ●	●	
								●

Note: *1 Terminal arrangement of contact (View from the terminal side (the back)).



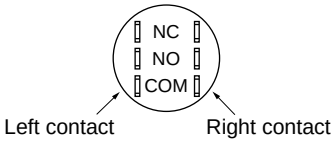
*2 ●: Means the contact closed (ON).

• See page 04/151 for the outline dimensions.

3-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type		Contact operation		
			1 2 3 Maintained/each 45°	1 2 3 Spring return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with rectangular bezel/**AR16PT**	3-position	2PDT	**AR16PT-3C2B**	**AR16PT-1C2B**	Left	COM NC	▬
			AR16PS-3C2B	**AR16PS-1C2B**		COM NO	●
Knob with square bezel/**AR16PS**			**AR16PR-3C2B**	**AR16PR-1C2B**	Right	COM NC	▬
						COM NO	●
			1 2 3 Spring/manual return/each 45°	1 2 3 Spring/manual return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with round bezel/**AR16PR**			**AR16PT-6C2B**	**AR16PT-7C2B**	Left	COM NC	▬
			AR16PS-6C2B	**AR16PS-7C2B**		COM NO	●
			AR16PR-6C2B	**AR16PR-7C2B**	Right	COM NC	▬
						COM NO	●

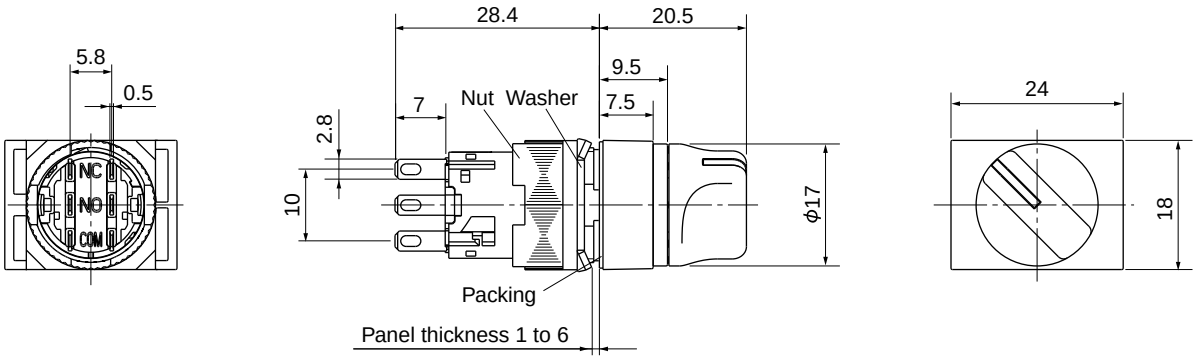
Notes: *1 Terminal arrangement of contact (View from the terminal side (the back)).



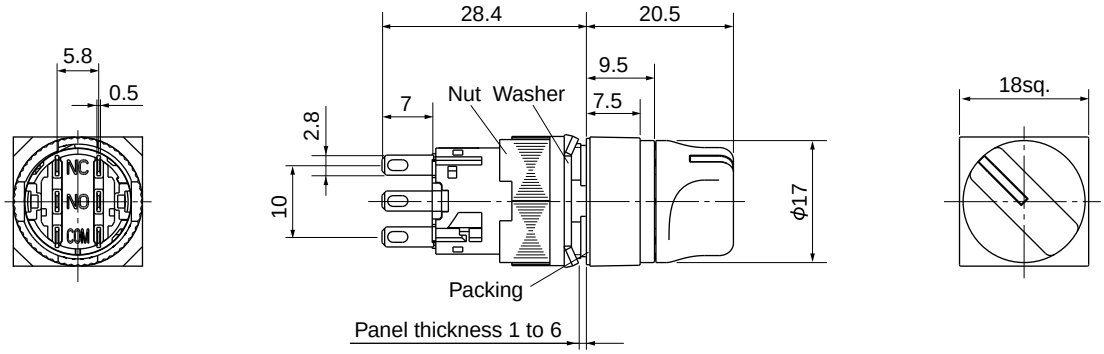
*2 ●, ▬: means the contact closed (ON).
• See page 04/151 for the outline dimensions.

• **Dimensions, mm**

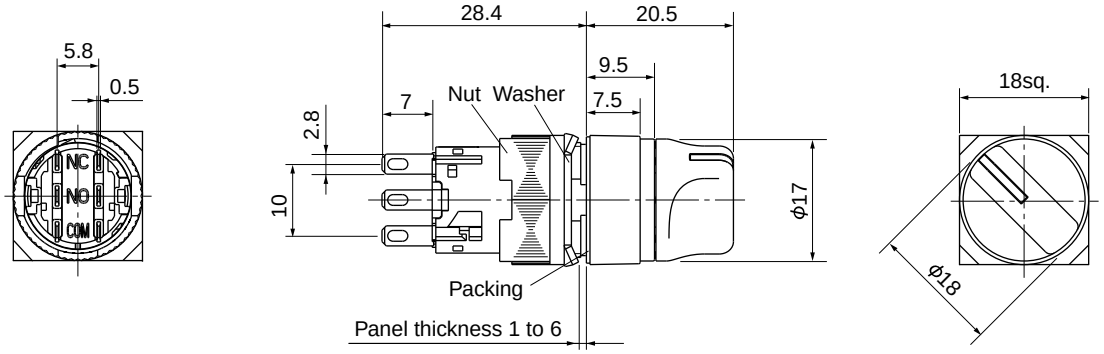
Knob with rectangular bezel
AR16PT



Knob with square bezel
AF16PS



Knob with round bezel
AF16PR



■ Selector switches (Key type)

• Type number system

AR16 JT – 2 B C2 A

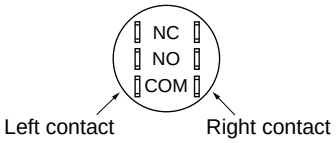
- Product category: Standard type
- Operator shape
- No. of positions and operator action
- Type of key
- Contact arrangement and terminal
- Key removable position

• Type

2-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type: 1 2 Maintained/90°	Type: 1 2 Spring return/90°	Contact operation: Contact unit *1		Operator position *2: 1	Operator position *2: 2
Key with rectangular bezel/**AR16JT**	2-position	SPDT	**AR16JT-2■C1A**	**AR16JT-0AC1A**	Left	COM NC	●	
			AR16JS-2■C1A	**AR16JS-0AC1A**		COM NO		●
			AR16JR-2■C1A	**AR16JR-0AC1A**				
Key with square bezel/**AR16JS**		2PDT	**AR16JT-2■C2A**	**AR16JT-0AC2A**	Left	COM NC	●	
			AR16JS-2■C2A	**AR16JS-0AC2A**		COM NO		●
Key with round bezel/**AR16JR**			**AR16JR-2■C2A**	**AR16JR-0AC2A**	Right	COM NC	●	
						COM NO		●

Notes: *1 Terminal arrangement of contact (View from the terminal side (the back)).



*2 ●: Means the contact closed (ON).

• See page 04/154 for the outline dimensions.

• Key removable position

Specify the key removal position in the square ■ mark.

Key removable position	Applied operator action 2	Applied operator action 0	Code
Left ⦸	○	○	**A**
Left•Right ⊗	○	–	**B**
Left ⊘	○	–	**D**

○: Available –: Not available

• Type of key

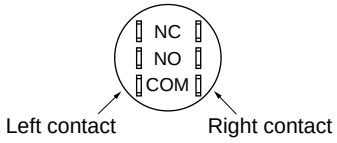
Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

3-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type		Contact operation		
			1 2 3 Maintained/each 45°	1 2 3 Spring return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Key with rectangular bezel/**AR16JT**	3-position	2PDT	**AR16JT-3■C2A**	**AR16JT-1EC2A**	Left	COM NC	▬
			AR16JS-3■C2A	**AR16JS-1EC2A**	Left	COM NO	●
Key with square bezel/ **AR16JS**			**AR16JR-3■C2A**	**AR16JR-1EC2A**	Right	COM NC	▬
					Right	COM NO	●
			1 2 3 Spring/manual return/each 45°	1 2 3 Spring/manual return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Key with round bezel/ **AR16JR**			**AR16JT-6■C2A**	**AR16JT-7■C2A**	Left	COM NC	▬
			AR16JS-6■C2A	**AR16JS-7■C2A**	Left	COM NO	●
			AR16JR-6■C2A	**AR16JR-7■C2A**	Right	COM NC	▬
					Right	COM NO	●

Notes: *1 Terminal arrangement of contact (View form the terminal side (the back)).



*2 ●, ▬: Means the contact closed (ON).
• See page 04/154 for the outline dimensions.

• Key removal position

Specify the key removal position in the square ■ mark.

Key removable position	Applied operator action 3	6	7	1	Code
Left	○	–	○	–	**A**
Left•Right	○	–	–	–	**B**
Left•Center•Right	○	–	–	–	**C**
Right	○	○	–	–	**D**
Center	○	○	○	○	**E**
Center•Right	○	○	–	–	**F**
Left•Center	○	–	○	–	**G**

○ : Available –: Not available

• Type of key

Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

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Information subject to change without notice
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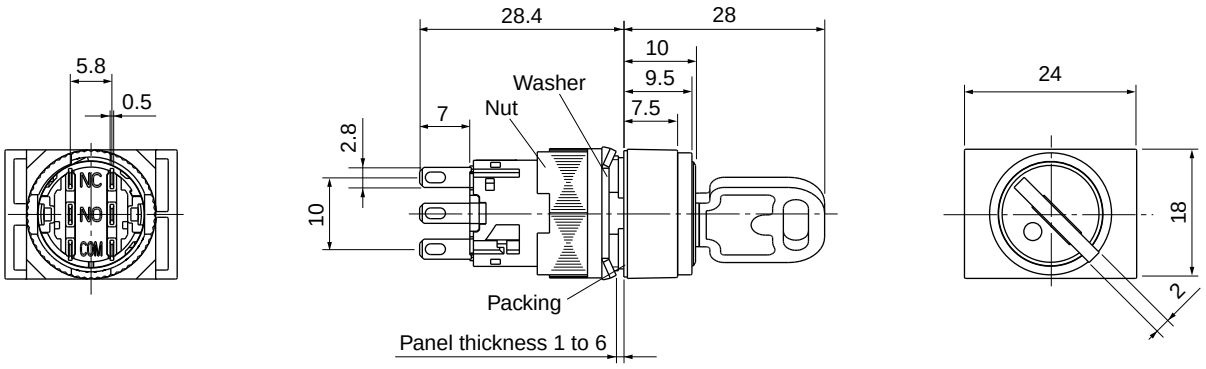
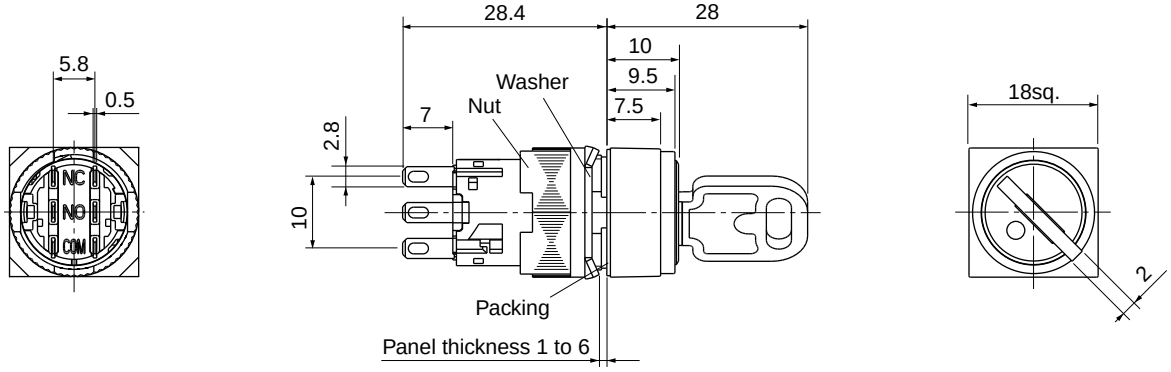
• **Dimensions, mm**

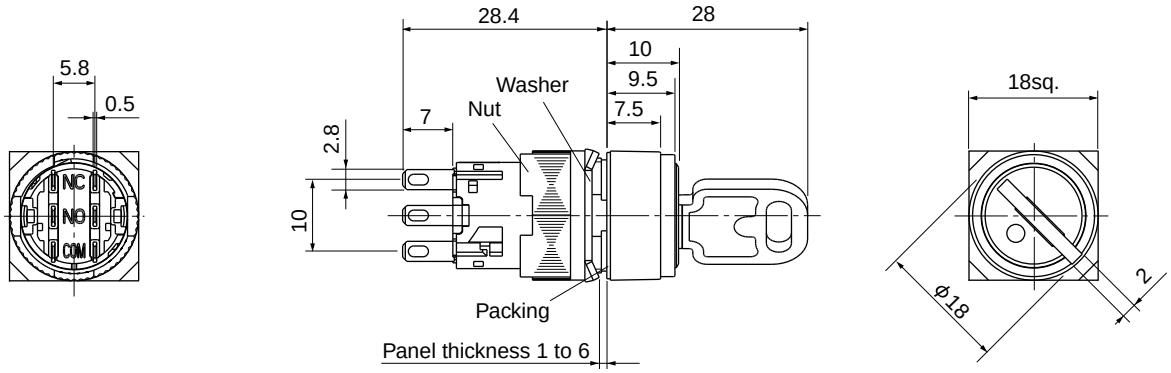
Key with rectangular bezel
AR16JT



Key with square bezel
AR16JS



Key with round bezel
AR16JR



■ Illuminated pushbutton switches (LED lamp)

• Type number system

AF16 F0N – C2 E3 G

- AF16 F0N: Prodect category: Thin type / Operator shape and action
- C2: Contact arrangement and terminal
- E3: Lamp operational voltage and light source
- G: Color of button

• Type

Operator	Appearance (Thin type)	LED lamp operational voltage	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AF16F0N, F5N**	6V AC/DC	SPDT	**AF16F0N-C1A3□**	**AF16F5N-C1A3□**
			2PDT	**AF16F0N-C2A3□**	**AF16F5N-C2A3□**
		12V AC/DC	SPDT	**AF16F0N-C1B3□**	**AF16F5N-C1B3□**
			2PDT	**AF16F0N-C2B3□**	**AF16F5N-C2B3□**
		24V AC/DC	SPDT	**AF16F0N-C1E3□**	**AF16F5N-C1E3□**
			2PDT	**AF16F0N-C2E3□**	**AF16F5N-C2E3□**
Flush square	**AF16F0M, F5M**	6V AC/DC	SPDT	**AF16F0M-C1A3□**	**AF16F5M-C1A3□**
			2PDT	**AF16F0M-C2A3□**	**AF16F5M-C2A3□**
		12V AC/DC	SPDT	**AF16F0M-C1B3□**	**AF16F5M-C1B3□**
			2PDT	**AF16F0M-C2B3□**	**AF16F5M-C2B3□**
		24V AC/DC	SPDT	**AF16F0M-C1E3□**	**AF16F5M-C1E3□**
			2PDT	**AF16F0M-C2E3□**	**AF16F5M-C2E3□**
Flush round	**AF16F0L, F5L**	6V AC/DC	SPDT	**AF16F0L-C1A3□**	**AF16F5L-C1A3□**
			2PDT	**AF16F0L-C2A3□**	**AF16F5L-C2A3□**
		12V AC/DC	SPDT	**AF16F0L-C1B3□**	**AF16F5L-C1B3□**
			2PDT	**AF16F0L-C2B3□**	**AF16F5L-C2B3□**
		24V AC/DC	SPDT	**AF16F0L-C1E3□**	**AF16F5L-C1E3□**
			2PDT	**AF16F0L-C2E3□**	**AF16F5L-C2E3□**

Note: • The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/156.

•Button color

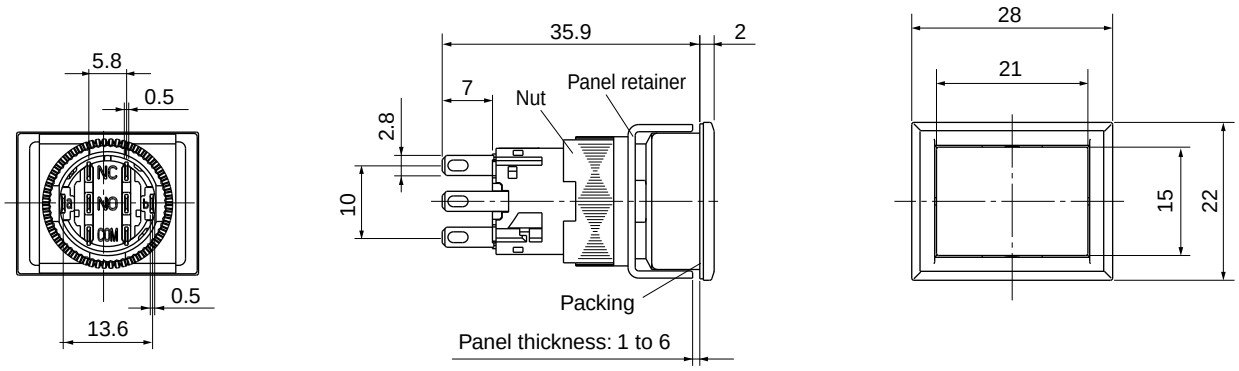
Replace the □ mark by the color code.

Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

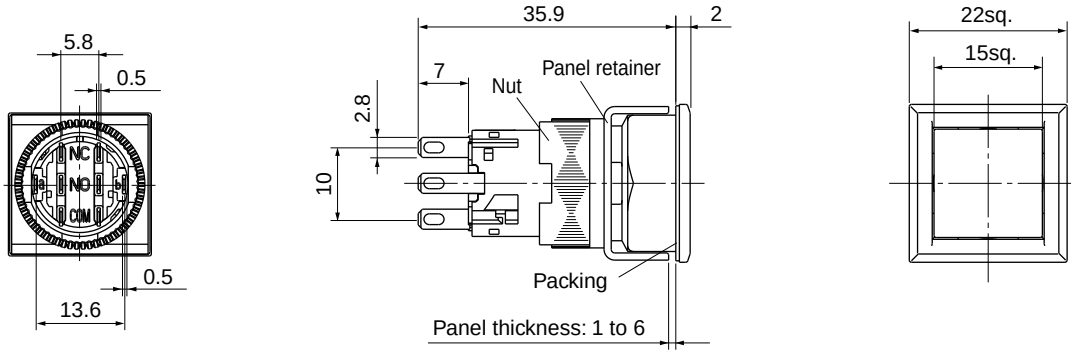
Note: *1 A combination of the translucent button and the white legend plate comes to white lens.

• **Dimensions, mm**

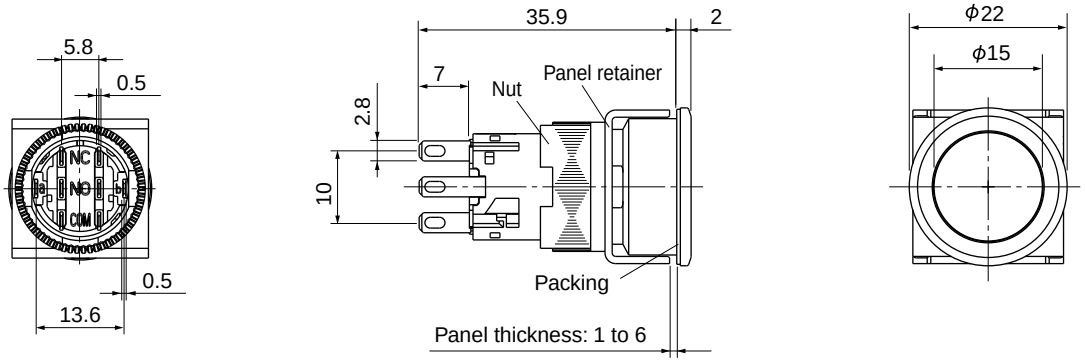
Flush rectangular
AF16F0N, F5N



Flush square
AF16F0M, F5M



Flush round
AF16F0L, F5L



■ Pushbutton switches

• Type number system

AF16 F0T – C2 G

- Prodect category: Thin type
- Operator shape and action
- Contact arrangement and terminal
- Color of button

• Type

Operator	Appearance (Thin type)	Contact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AF16F0T, F5T**	SPDT	**AF16F0T-C1□**	**AF16F5T-C1□**
		2PDT	**AF16F0T-C2□**	**AF16F5T-C2□**
Flush square	**AF16F0S, F5S**	SPDT	**AF16F0S-C1□**	**AF16F5S-C1□**
		2PDT	**AF16F0S-C2□**	**AF16F5S-C2□**
Flush round	**AF16F0R, F5R**	SPDT	**AF16F0R-C1□**	**AF16F5R-C1□**
		2PDT	**AF16F0R-C2□**	**AF16F5R-C2□**

Note: • The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/158.

• Button color

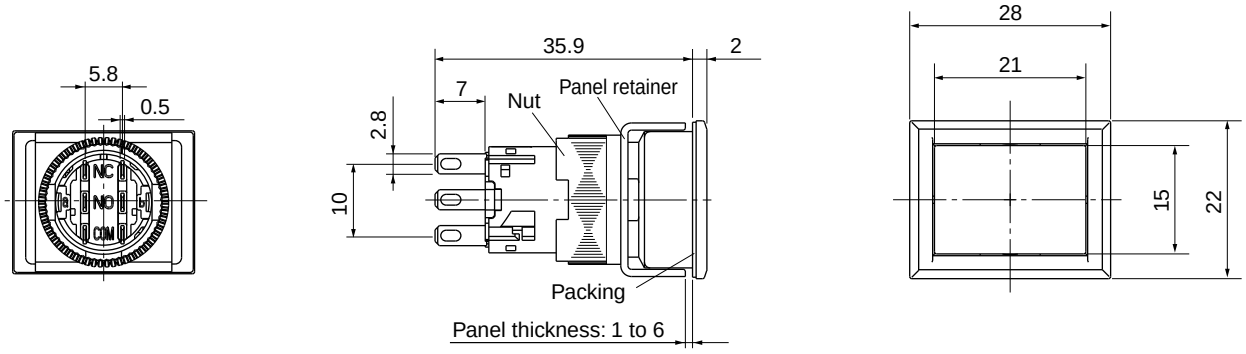
Replace the □ mark by the color code.

Color	Green	Black	Red	White	Yellow	Orange	Blue
Code	G	B *1	R	W *2	Y	A	S

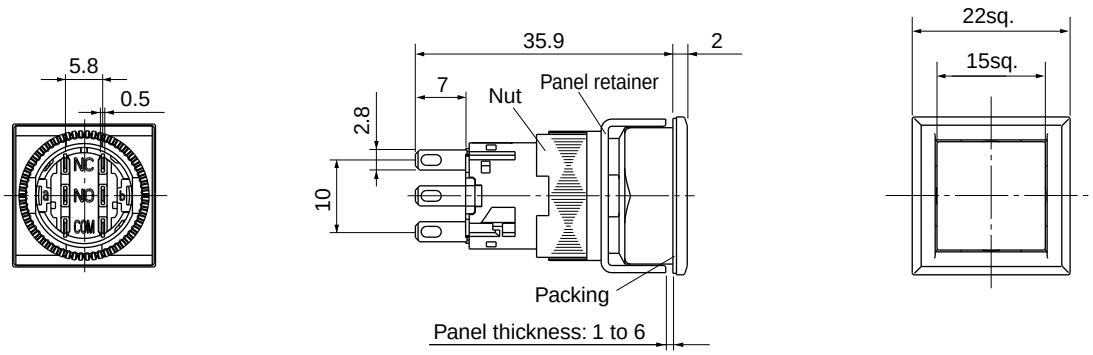
Notes: *1 A combination of the translucent button and the black legend plate comes to black.
*2 A combination of the translucent button and the white legend plate comes to white.

• Dimensions, mm

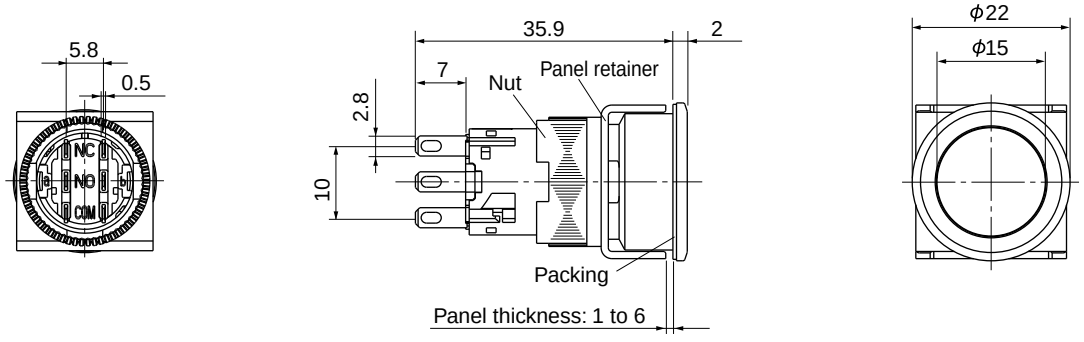
Flush rectangular
AF16F0T, F5T



Flush square
AF16F0S, F5S



Flush round
AF16F0R, F5R



■ Pilot lights (LED lamp)

• Type number system

DF16 F0N – E3 W

- DF16: Product category: Thin type
- F0N: Lens shape
- E3: Lamp operational voltage and light source
- W: Color of lens

• Type

Lens	Appearance (Thin type)	LED lamp operational voltage	Type
Flush rectangular	**DF16F0N**	6V AC/DC	**DF16F0N-A3**□
		12V AC/DC	**DF16F0N-B3**□
		24V AC/DC	**DF16F0N-E3**□
Flush square	**DF16F0M**	6V AC/DC	**DF16F0M-A3**□
		12V AC/DC	**DF16F0M-B3**□
		24V AC/DC	**DF16F0M-E3**□
Flush round	**DF16F0L**	6V AC/DC	**DF16F0L-A3**□
		12V AC/DC	**DF16F0L-B3**□
		24V AC/DC	**DF16F0L-E3**□

Note: • The panel cutting dimensions differ depending on the lens shape of thin type model. See page 04/167.
• For the dimensions, see page 04/160.

• Lens color

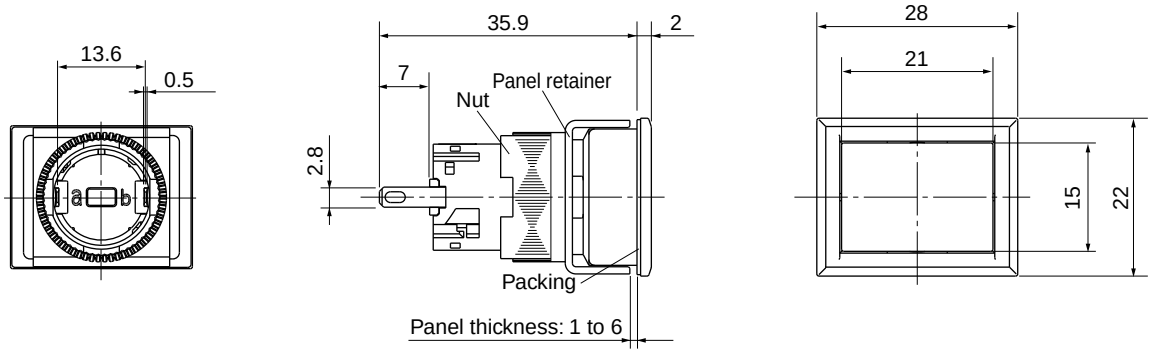
Replace the □ mark by the color code

Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

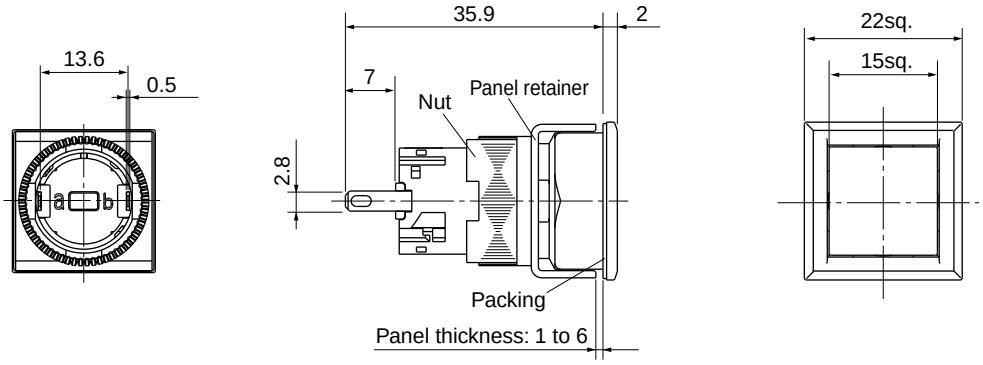
Note: *1 A combination of the transparent lens and the white legend plate comes to white.

• **Dimensions, mm**

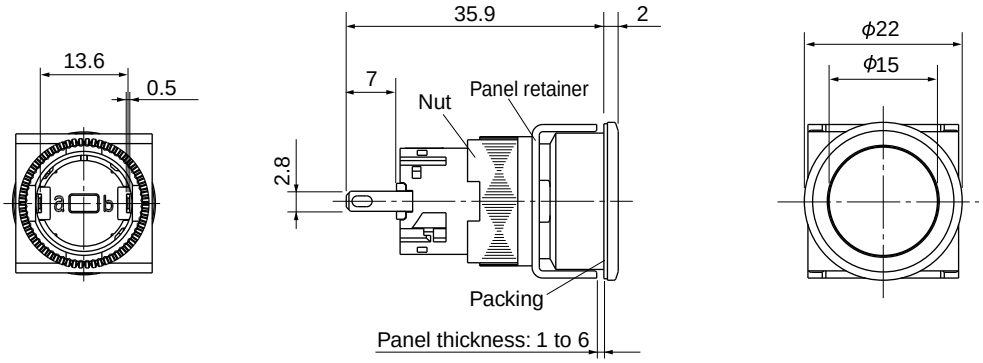
Flush rectangular
DF16F0N



Flush square
DF16F0M



Flush round
DF16F0L



■ Selector switches (Knob type)

• Type number system

AF16 PT – 2 C2 B

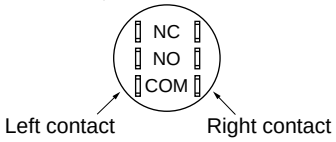
- Product category: Thin type
- Operator shape
- No. of positions and operator action
- Contact arrangement and terminal
- Color of knob: Black

• Type

2-position

Operator (Thin type)	Conntact arrangement	Type		Contact operation			
		1 2 Maintained/90°	1 2 Spring return/90°	Contact unit *1		Operator position *2	
						1	2
Knob with rectangular bezel/**AF16PT**	SPDT	**AF16PT-2C1B**	**AF16PT-0C1B**	Left	COM NC NO	●	
		AF16PS-2C1B	**AF16PS-0C1B**				
		AF16PR-2C1B	**AF16PR-0C1B**				●
Knob with square bezel/**AF16PS**	2PDT	**AF16PT-2C2B**	**AF16PT-0C2B**	Left	COM NC NO	●	
		AF16PS-2C2B	**AF16PS-0C2B**				●
Knob with round bezel/**AF16PR**		**AF16PR-2C2B**	**AF16PR-0C2B**	Right	COM NC NO	●	
							●

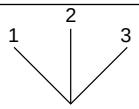
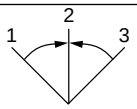
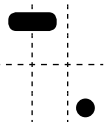
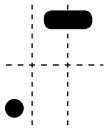
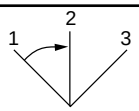
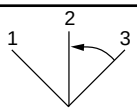
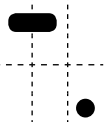
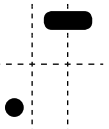
Notes: *1 Terminal arrangement of contact (view from terminal side).



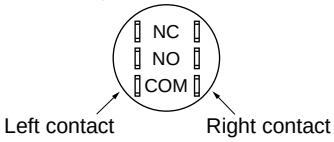
*2 ●: Contact closed.

- The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
- For the dimensions, see page 04/163.

3-position

Operator (Thin type)	Contact arrangement	Type		Contact operation		
		 Maintained/each 45°	 Spring return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with flush square/**AF16PT**	2PDT	**AF16PT-3C2B**	**AF16PT-1C2B**	Left	COM – NC / NO	
		AF16PS-3C2B	**AF16PS-1C2B**			
Knob with square bezel/**AF16PS**		**AF16PR-3C2B**	**AF16PR-1C2B**	Right	COM – NC / NO	
		 Spring/manual return/each 45°	 Spring/manual return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with round bezel/**AF16PR**		**AF16PT-6C2B**	**AF16PT-7C2B**	Left	COM – NC / NO	
		AF16PS-6C2B	**AF16PS-7C2B**			
		AF16PR-6C2B	**AF16PR-7C2B**	Right	COM – NC / NO	

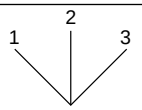
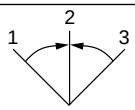
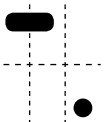
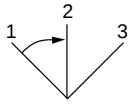
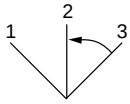
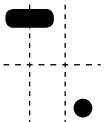
Notes: *1 Terminal arrangement of contact (view from terminal side).



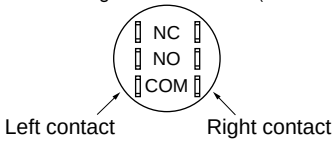
*2 ●, ▬: Contact closed.

- The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
- For the dimensions, see page 04/163.

3-position

Operator (Thin type)	Contact arrangement	Type		Contact operation			
		 Maintained/each 45°	 Spring return/each 45°	Contact unit *1			Operator position *2 1 2 3
Key with Flush square/ **AF16JT**	2PDT	**AF16JT-3■C2A**	**AF16JT-1EC2A**	Left	COM	NC	
		AF16JS-3■C2A	**AF16JS-1EC2A**			NO	
Key with square bezel/ **AF16JS**		**AF16JR-3■C2A**	**AF16JR-1EC2A**	Right	COM	NC	
						NO	
		 Spring/manual return/each 45°	 Spring/manual return/each 45°	Contact unit *1			Operator position *2 1 2 3
Key with round bezel/ **AF16JR**		**AF16JT-6■C2A**	**AF16JT-7■C2A**	Left	COM	NC	
		AF16JS-6■C2A	**AF16JS-7■C2A**			NO	
		AF16JR-6■C2A	**AF16JR-7■C2A**	Right	COM	NC	
						NO	

Notes: *1 Terminal arrangement of contact (view from terminal side).



*2 ●, ▬: Contact closed.

• The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/166.

• Key removable position

Replace the ■ mark by the removable positiom code.

Removable position	Applied operatior position 3	6	7	1	Code
Left ⊘	○	–	○	–	**A**
Left•Right ⊗	○	–	–	–	**B**
Left•Center•Right ⊛	○	–	–	–	**C**
Right ⊘	○	○	–	–	**D**
Center ⓘ	○	○	○	○	**E**
Center•Right ⓟ	○	○	–	–	**F**
Left•Center ⓚ	○	–	○	–	**G**

○ : Available –: Not available

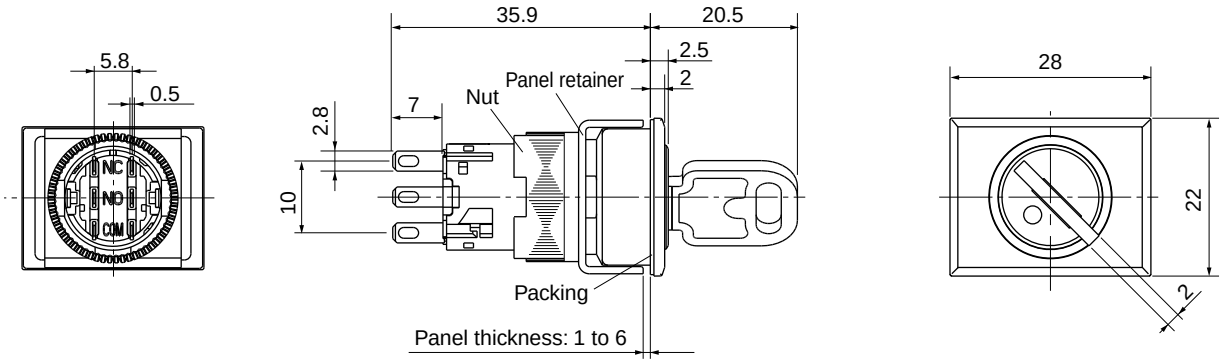
• Type of key

Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

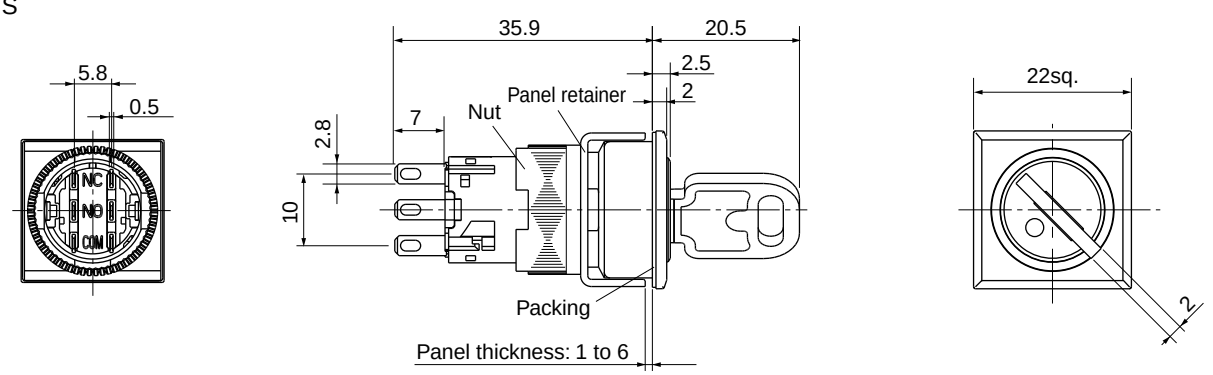
*1 "A" is standard.

• **Dimensions, mm**

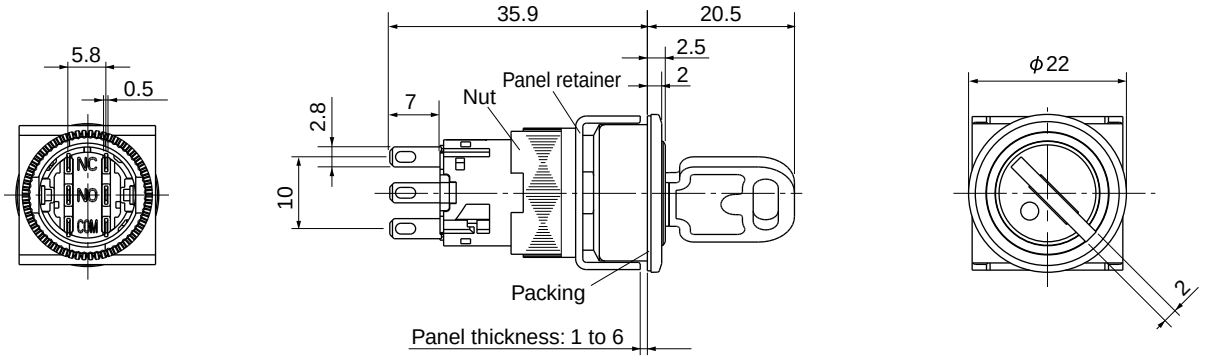
Key with recrangular bezel
AF16JT



Key with square bezel
AF16JS



Key with round bezel
AF16JR



Safety Precautions

Read the Operating Instructions carefully before mounting, wiring, operating, servicing, or inspecting the command switch. Make sure that the Operating Instructions is delivered to the final user of the command switch.

- The safety precautions are classified into two levels, Warning and Caution, with meanings described as follows:

⚠Warning : If operation is incorrect, a dangerous situation may occur, resulting in death or serious injuries.

⚠Caution : If operation is incorrect, a dangerous situation may occur, resulting in minor to medium injuries or physical damage to equipment.

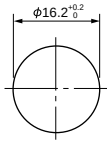
An item described under CAUTION may result in a serious accident, depending on the situation.

⚠Warning
• Do not touch or approach any live part while power is supplied. An electric shock or burning may result. • Be sure to turn off the power before mounting, dismounting, wiring, or inspecting the product. An electric shock, burning from short-circuiting or equipment malfunction may result.

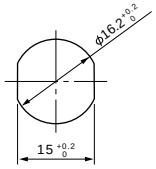
⚠Caution
• Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current. The wrong wiring may result in fire, accidents or malfunctions. • Treat the product as industrial waste when it is to be discarded.

■ Panel cutout, mm

- **Standard type** (common)

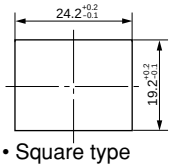


When requiring rotation prevention or positional stabilization

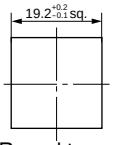


Note: When changing the operating angle position of the selector switch, the panel cutout also requires an angle change.

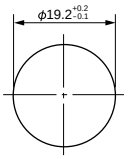
- **Thin type** (The panel cutout dimension varies depending on the operator or lens shape.)
- Rectangular type



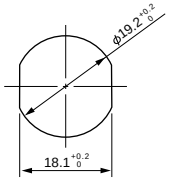
- Square type



- Round type



When requiring rotation prevention or positional stabilization

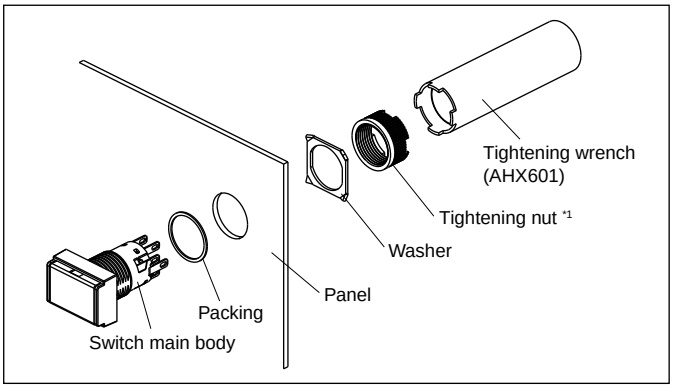


Note: When changing the operating angle position of the selector switch, the panel cutout also requires an angle change.

■ Installation on panel

- As shown in the figure below, insert the switch main unit into the mounting hole from the front of the panel, attach the washer and tightening nut from the back of the panel, and securely tighten the nut with the wrench (AHX601).

Note: The proper tightening torque is 0.6 to 1.0 N•m.

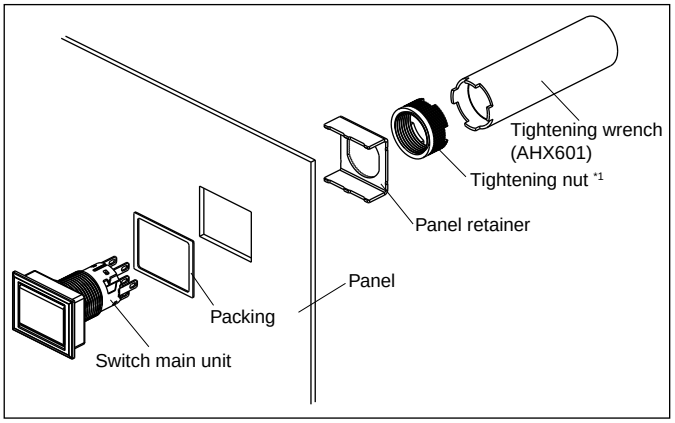


Note: *1 Do not use pliers or other improper tools to tighten the nut, or tighten it excessively, Otherwise, the nut may be damaged or the switch may malfunction.

• Thin type

As shown in the figure below, insert the switch main unit into the mounting hole from the front of the panel, attach the panel retainer from the back of the panel, and securely tighten the nut with the wrench (AHX601).

Note: The proper tightening torque is 0.6 to 1.0 N•m.



Note: *1 Do not use pliers or other improper tools to tighten the nut, or tighten it excessively, Otherwise, the nut may be damaged or the switch may malfunction.

■ Applicable panel thickness

Tables 1 and 2 show applicable panel thickness.

Table 1 Standard type (AR16/DR16 series)

Mounting condition		Applicable panel thickness, mm
Without accessories		1 to 6
With accessories	Protective cover	1 to 4
	Dust-tight cover	1 to 4
	Various sockets	1 to 3.2
	Terminal cover	1 to 3.2
	Protective cover + various sockets	1 to 1.6
	Protective cover + Terminal cover	1 to 1.6
	Dust-tight cover + various sockets	Cannot be used.
	Dust-tight cover + Terminal cover	Cannot be used.

Table 2 Thin type (AF16/DF16 series)

Mounting condition		Applicable panel thickness, mm
Without accessories		1 to 6
With accessories	Protective cover	1 to 4
	Various sockets	1 to 3.2
	Terminal cover	1 to 3.2
	Protective cover + various sockets	1 to 3.2
	Protective cover + Terminal cover	1 to 3.2

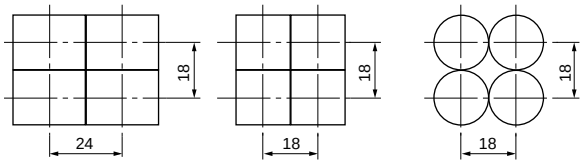
■ High-density mounting

Minimum mounting space (pitch) without accessories, mm

• **Standard type** (AR16/DR16 series)

Illuminated pushbuttons, pushbuttons, selectors, and pilot lights

①Rectangular ②Square ③Round, dome

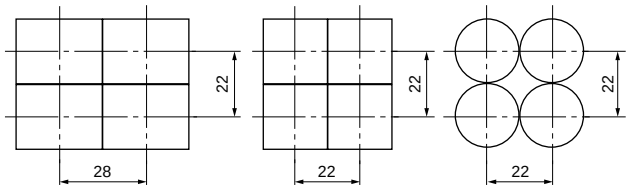


Note: Determine the mounting pitch by taking the operatbility and wiring work into consideration.

• **Thin type** (AF16/DF16 series)

Illuminated pushbuttons, pushbuttons, selectors, and pilot lights

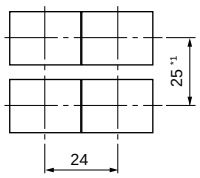
①Rectangular ②Square ③Round, dome



Note: Determine the mounting pitch by taking the operatbility and wiring work into consideration.

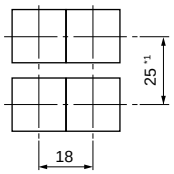
Minimum mounting space (pitch) with accessories, mm

• Protective cover AHX669 and AHX826 (Standard type)



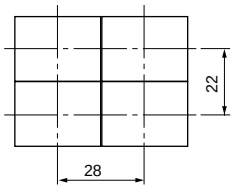
*1 43: with the cover fully opened

• Protective cover AHX671 (Standard type)

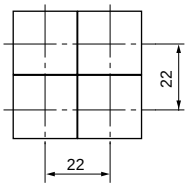


*1 43: with the cover fully opened

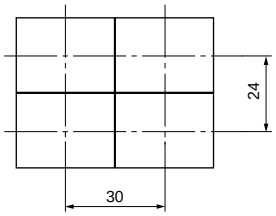
• Protective cover AF6D826 (Thin type)



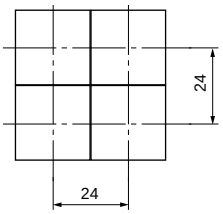
• Protective cover AF6D827 (Thin type)



• Dust-tight cover AHX668 (Standard type)



• Dust-tight cover AHX822 (Standard type)



• Minimum mounting spaces (pitch) with sockets, such as Fast-Connection socket (AR6S690), connector socket (AR6S691) and PC board-use socket (AR6S692) are the same as those without accessories.

Note: Determine the mounting pitch by taking the operability and wiring workability into consideration.

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⚠ Warning	: If operation is incorrect, a dangerous situation may occur, resulting in death or serious injuries.
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An item described under CAUTION may result in a serious accident, depending on the situation.

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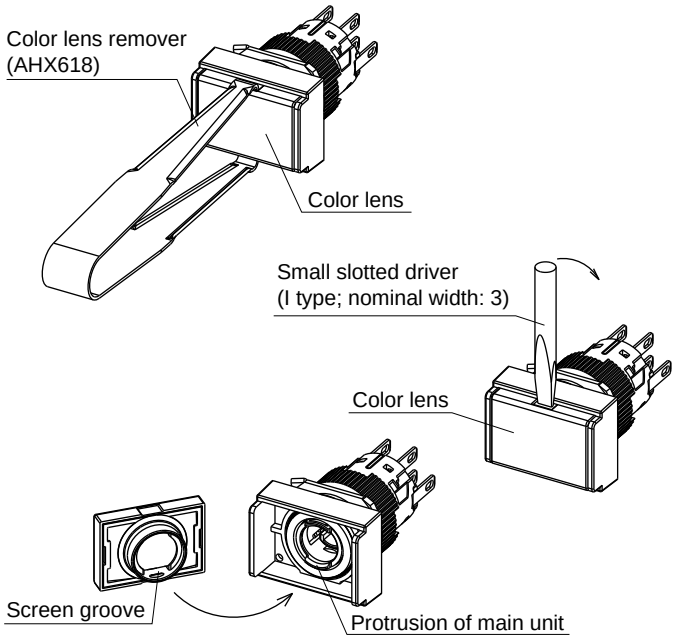
⚠ Caution
• Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current. The wrong wiring may result in fire, accidents, or malfunctions. • Treat the product as industrial waste when it is to be discarded.

■ Method of replacing color lens, legend plate, and screen

Replacing color lens (screen)

• Standard type (AR16/DR16 series)

To remove the color lens, fit the color lens remover (AHX618) to the grooves in the color lens and pull out the lens, or pry the lens lightly with a small slotted screwdriver.

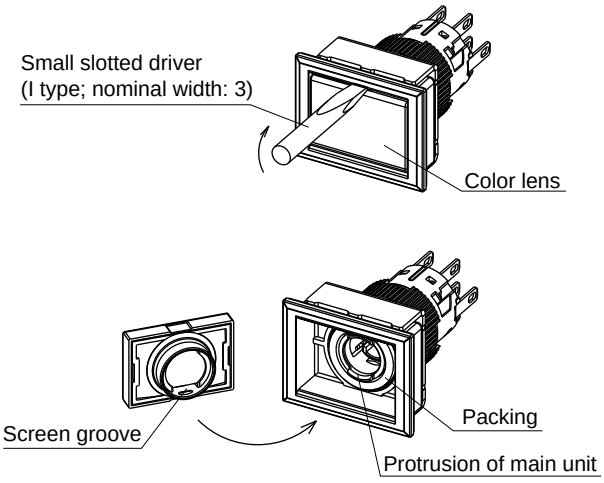


• Thin type (AF16/DF16 Series)

To remove the color lens, pry the lens lightly with a small slotted screwdriver.

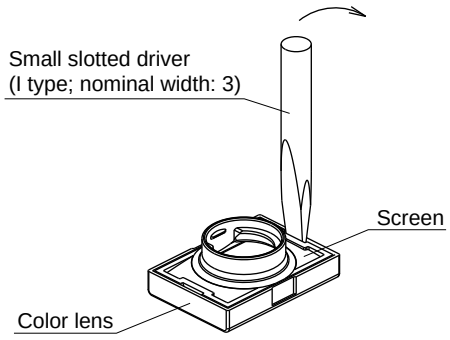
If one side of the color lens is separated from the screen, further insert the screwdriver and remove the color lens together with the screen. Do not pry the packing when doing this.

To fit the color lens, align the protrusion of switch main body with the groove of the screen, and press-fit them.



• Removing screen

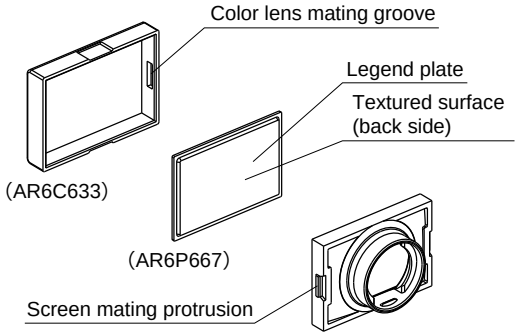
Insert the tip of a small slotted screwdriver into the groove and press down the screwdriver in the direction of the arrow.



Fitting color lens to screen

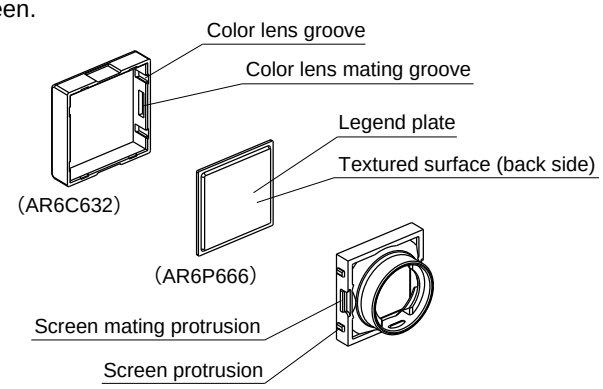
• Rectangular type

Set the textured surface side of the legend plate with the screen side, then press-fit the color lens. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



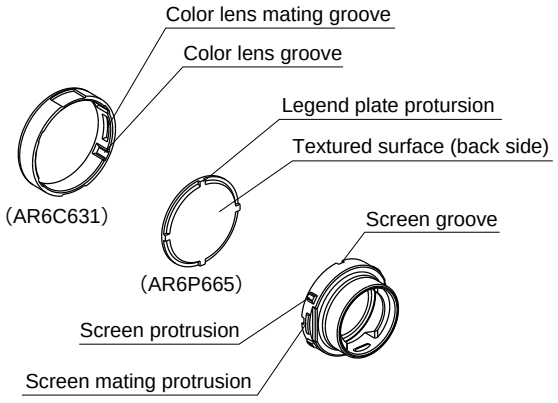
• Square type

Set the textured surface side of the legend plate with the screen side, align the screen protrusion with the color lens groove, and press-fit together. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



• Round type

Align the protrusion of the legend plate with the groove of the screen, also align the screen protrusion and color lens groove, and press-fit together. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



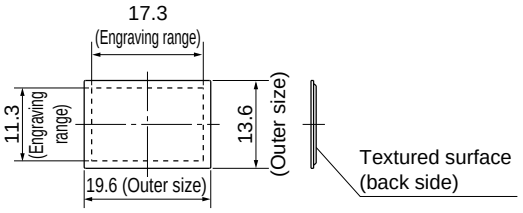
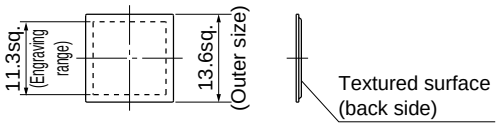
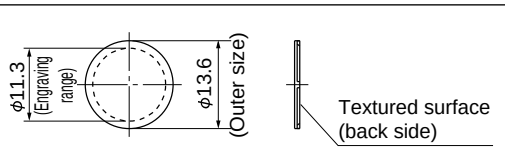
• For alternate action type of illuminated pushbutton switches and pushbutton switches, do not remove the color lenses (screens) in locked (depressed) state. The internal mechanisms may be damaged.

■ Engraving legend plate

Engrave the surface of the legend plate.

- Material: Acrylic resin
- Engraving depth: 0.5 mm max.
- Paint: Use a paint that has alcohol as its main ingredient, such as melamine paint, phthalic acid paint, or acrylic paint.

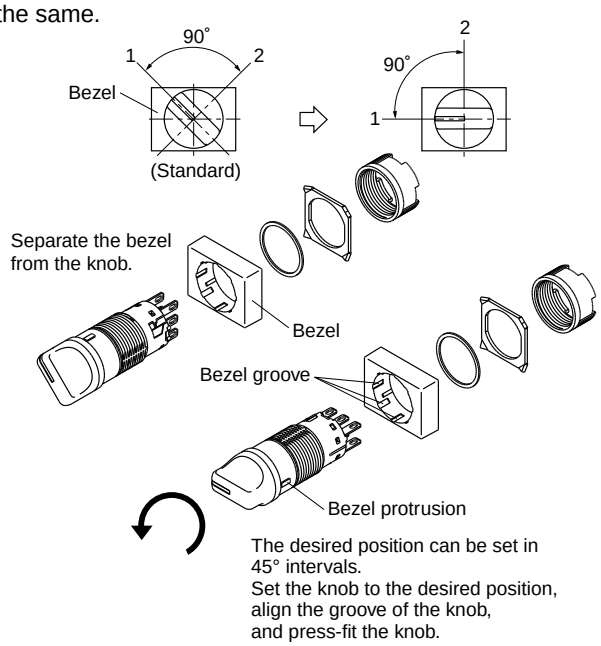
• Legend plate size

Shape	Size, mm
Rectangular	
Square	
Round	

Notes: *1 A legend sheet may be used, provided that the external dimensions do not exceed the corresponding outer size specified in the above table and that the thickness is 0.1 mm or below. (No legend sheets are provided with the product. Please prepare on customer side.)
*2 Do not engrave any part other than the legend plate.

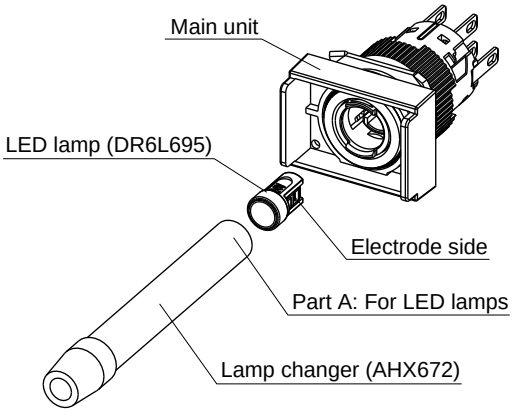
■ Changing the operating angle position of selector switch

The bezel is separated from the knob (key), which makes it easy to change the operating angle position in 45° increments (the AR16 series rectangular or square type only).
The following figures show a knob type example. The key type is the same.



■ Method of replacing lamp

• To remove the LED lamp, insert the lamp changer (AHX672) in the LED lamp and pull out the LED lamp.
To mount the LED lamp, align the lamp terminal side of the main unit with the electrode side of the LED lamp, lightly hold the lamp by hand or with the head of the lamp changer (AHX672), and insert the lamp.
The LED lamp has no polarity, so it can be powered by either AC or DC.

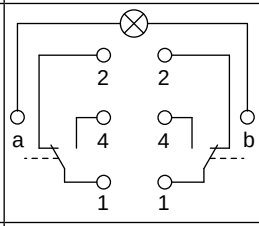
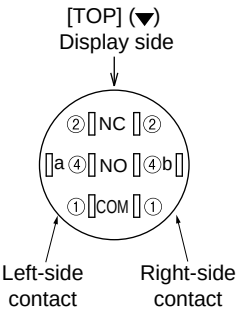
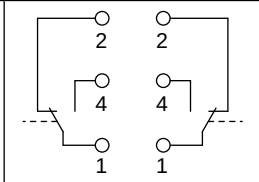
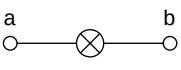
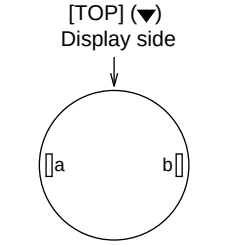


• Handling of LEDs
LED whose luminous color is green or blue is sensitive to static electricity. Be careful when handling the LED. Take thorough measures against static electricity and surges when handling the product. The following anti-electrostatic measure is recommended.
Use a wristband or anti-electrostatic glove when replacing LED lamps.

■ Wiring

• Wiring to tab terminal
Use 110 (2.8mm) series receptacles for tab terminals.
• Pay attention to the following points when soldering.
Type of solder: Use resin-core solder.
Use a soldering iron with a maximum power consumption of 60W (350(C) within five seconds. Make sure that the terminal is free of tension during soldering. Also, do not deform the terminal.
• The melting point of lead-free solder is slightly high, which may make soldering difficult. Use a soldering iron that has a large soldering tip or high heat generation.
• Connectable wires
Two solid wires with a maximum diameter of 0.8 mm (solder)
One stranded wire with a maximum area of 0.75 mm^2 (solder)
Flat-type connection terminal
(2.8□-1.25-5) 0.5 to 1.25mm^2
(2.8□-0.5-5) 0.2 to 0.5mm^2
• Use of contact blocks
When using NO and NC contacts in the same contact block, avoid connection that involves opposite polarity or wiring from different types of power supply.
• For wiring to adjacent terminals, use the terminal cover (AR6Y261) to prevent short-circuit, or an insulation tube to assure isolation. For solder terminals, caution is required if thick wires, in particular, are connected or a large quantity of solder is used.

• Terminal arrangement

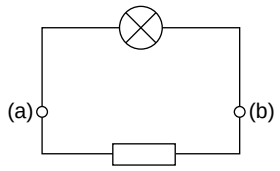
Model	Circuit diagram (example)	Terminal arrangement (view from the terminal (back) side)
Illuminated pushbuttons (2PDT)		
Pushbuttons and selector switches (2PDT)		
Pilot lights		

Note: Only the left-side contact is applicable to the SPDT mechanism.

■ LED Lamps

• LED lamp malfunctioning (incorrect lighting)
The LED lamp incorporates a circuit to prevent malfunctioning. Compared with conventional models, this LED lamp is less likely to malfunction, but it incorporates no absolute countermeasures.
A minute current (approximately 0.25 mA) turns on the LED lamp. A leakage current from the surge absorption circuit or noncontact circuit, or stray capacitance between cables, may also turn on the LED lamp.
In this case, a countermeasure (e.g., attaching a resistor in parallel with the LED lamp) is required.

• Countermeasure against malfunctioning
Malfunctioning can be prevented by connecting a shunt resistor (R) in parallel. The resistance in that case varies with the model and operating conditions.



In the case of 24V DC
R: 10kΩ (0.5W)

In the case of 24V AC
R: 2kΩ (2W)

• The permissible fluctuation range for the operating voltage of the 6V model is ±5% and that for the 12V or 24V model is ±10%. If the operating voltage is always 5% or 10% higher, select a resistor that will make the operating current the same as or lower than the rated current, and connect the resistor in series to the LED lamp.

• Calculation of external resistance
Example: Connecting a 24V red LED to a 48V circuit

$$\text{External resistance } [\Omega] = \frac{\text{Circuit voltage [V] - Rated voltage [V]}}{\text{Rated current [A]}}$$

$$= \frac{48-24}{7.5\times10^{-3}} = 3200\ [\Omega]$$

→ Therefore, use an external resistor of 3.3kΩ 1W.
(Select a resistor with sufficient wattage.)

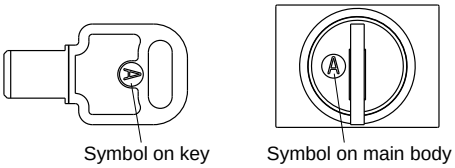
• Surges
High-brightness LED products use elements that are sensitive to static electricity. Keep in mind that an unusual voltage, such as a surge voltage, may cause the product to malfunction.

■ Selector Switches

• Knob type
The knob can be operated by turning it lightly. Be careful to operate the knob with a torque not exceeding 1N•m.

• Key type

• Types of keys
Five types (B, C, D, E, and F) are available in addition to the standard type (type A).
Make sure that the symbol on the key coincides with the symbol on the switch.

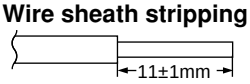


• Fully insert the key into the switch and turn the key. Do not pull on the key while turning it.
• Operate the key with a torque not exceeding 0.1N•m.
• Do not forcibly insert or extract the key.
• Do not attempt to operate the switch with the key insufficiently inserted or insert the wrong key. Otherwise, a malfunction may result.

■ Fast-connection socket

• Connectable wires
• Standed wire : 0.3 to 0.75 mm^2 (AWG22 to AWG18)
• Single wire : 0.5 to 1 mm dia.
• Recommended ferrule : Phoenix Contact, part number AI0, 34-8TQ
Wire size : 0.34 mm^2 (22 AWG)
Crimping tool : CRIMPFOX UD6-6
Note : Use a crimping tool with a hexagonal or round cross section.
Sheath external diameter: 2.8 mm dia. Max.

• Wire sheath stripping length



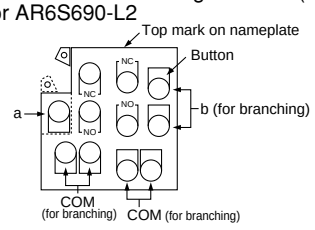
Note : If ferrules are used, securely insert the wire sheath inside a resin shell. Cut the end of the wire the same length as the ferrule or cut it at a position approximately 0.5 mm longer.

Check the length using the strip gauge on the surface of the socket displayed on the model nameplate. If standed wire is used, twist the wire so that there are no loose strands after stripping.

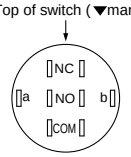
• Connection method
(1) Insert the wire while pressing the button on the insertion slot with a small flat-head screwdriver (tip width of 2 mm max.). Release the button when the wire is all the way seated in the switch.
(2) When disconnecting the wire, pull out the wire while pressing the button on the insertion slot with a small flat-head screwdriver. Cut the bare part of the wire if it was previously used, and then newly remove the sheath to reuse the wire.
(3) Insert a single wire for each insertion slot.
(4) Do not pull on the wires with excessive force (15 N or more) when you perform wiring. Make sure that not extemal force is exerted on the wires after wiring has been completed. The next time that a wire is inserted, the parts that support the wire may change shape and result in conduction failure.

• Terminal arrangement (Rear-side View)

(1) Socket Terminal Arrangement for AR6S690-L2

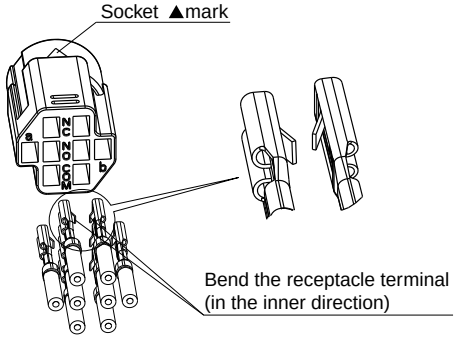


(2) Switch Terminal Arrangement for Illuminated 2PDT Contacts

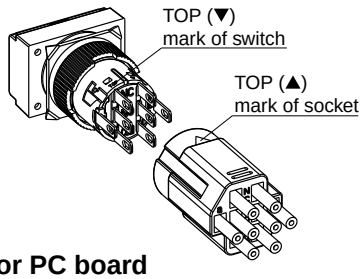


■ Connector sockets

- Connectable wires
  Stranded wire: 0.5 to 0.75 mm^2 (20AWG to 18AWG)
- Arrange for a receptacle terminal separately.
  Nichifu Co., Ltd.: CMC62895F
- Check the insertion position and insert the receptacle terminal into the socket after connecting the wires to the receptacle terminal. (The wires once connected cannot be disconnected.) Lightly pull the wires and check that the receptacle terminal is securely connected to the socket.

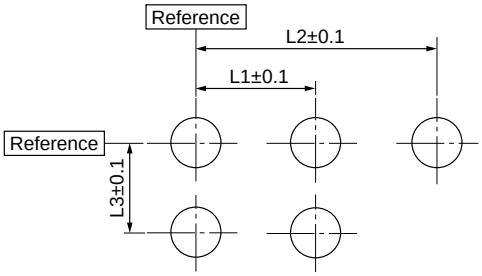


- Align the ▲ mark of the socket and the TOP (▼) mark of the switch, and put the socket and switch together.



■ Socket for PC board

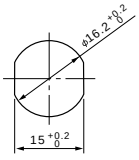
- Minimum mounting space (pitch), mm



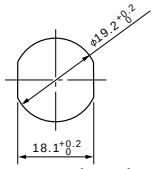
Obtain the mounting pitch based on a reference line to minimize the cumulative error.
Make sure that the centering difference between the switch and the PCB socket does not exceed 0.25 mm.

- Apply the following panel cutout dimensions (in mm) to stabilize the operator position of the switch when combined with the socket.

AR16/DR16 (common)

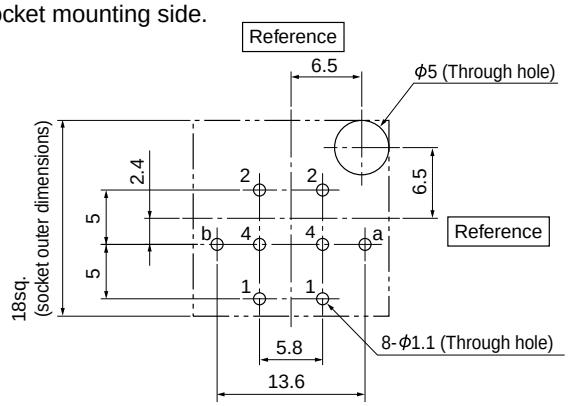


AF16/DF16 (round type)

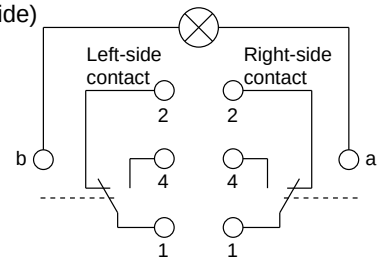


- Mount the switch to the panel. Make sure that the switch is free of any bends.

- PC board processing dimensions (in mm) as viewed from the socket mounting side.

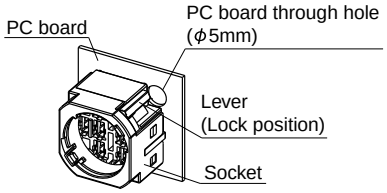


- The reference is the center of the socket (switch).
- Switch terminal arrangement (as viewed from the socket mounting side)

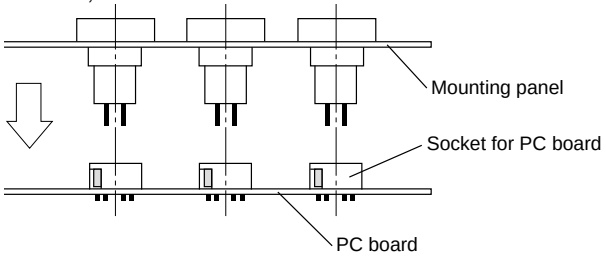


Note: The right-side contact is connected in the case of an SPDT contact.

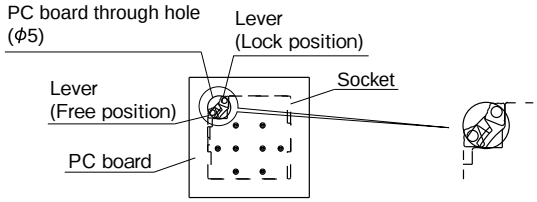
- Insert the socket so that the lever will be located in the 5mm-diameter through hole of the PC board. Set the lever to the lock position as viewed from the socket mounting side.



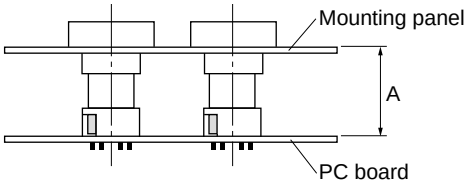
- Combine the switch-mounted panel with the socket on the PC board, and solder the socket terminal.



- Combine the PCB socket and the panel while making sure that the socket terminal does not fall off, and turn over the socket to do the soldering. Do not leave any space between the PC board and socket.
- After combining them, check that the lever as viewed from the soldering side is in the lock position, and solder the terminal.



- Pay attention to the following points when soldering.
  - Type of solder: Use resin-core solder.
  - Finish soldering at 350°C within 5 seconds.
  - Do not wash the socket.
  - Solder the socket so that no flux adheres to it.
- The melting point of lead-free solder is slightly higher than lead solder, which may make soldering difficult. Use a soldering iron with a large tip or that provides a high heat generation.
- Using a spacer between the panel and the PC board
  Make sure that the distance shown in the figure below is maintained between the panel and the PC board. The spacer dimensions vary with the thickness of the mounting panel.



Series	A (mm)
AR16/DR16	30.2±0.2
AF16/DF16	37.7±0.2

- Mounting and removing PC board sockets
  - Removing
    Push down the socket levers all the way viewed from the soldering side in the direction of the free position and remove the PC board sockets. After removal, the socket levers will return to the lock position automatically.
  - Mounting
    Check that the socket lever as viewed from the soldering side is in the lock position, lightly insert the terminal and socket so their position is aligned with the switch on the panel, press the socket-mounting portion of the PC board, and securely insert the entire socket until the socket lever snaps. (Check that the lever as viewed from the soldering side is in the lock position.)
- Use the switch within the following rated voltage range when the PCB socket is used.
  - Rated insulation voltage: 60V
  - Rated operational voltage: 24V
  - Conventional free air thermal current: 3A
- Use a 1.6-mm-thick double-sided through-hole printed circuit board made of copper-plated laminated epoxy resin on a woven glass fabric base.
- In case of standard type (AR16 and DR16 series), beware that the adopted models are not allowed to attach the protective cover to some models and that the adopted models cannot be mounted to some models afterward.

■ Others

- Operation
  Do not hit or flip the button, or the button may be damaged.
  Be sure to operate the button by hand.
  Do not pull the button if the switch is an alternate action type.

- High-density mounting of illuminated type
  When continuously lighting pilot lights or pressing illuminated pushbuttons, keep in mind that the ambient temperature may exceed the rated value due to the heat radiated by the lamp. Be sure to ventilate the lamp /switch if the mounting panel is not made of metal or if the mounting panel is an enclosed type.

- Usage locations
  - Be sure to use and store the product within the rated ambient temperature and humidity ranges.
  - Although the product resists ordinary cutting oils and coolant oils, do not use the unit in places where special oils may be sprayed onto the product.
  - If dusts or filings accumulate in the gap between the button and the frame, the switch may fail to operate normally. Take appropriate measures, such as using a dust-proof protective cover, if the switch is to be used in places that are subject to dusts or filings.
  - The AR16/DR16 series and AF16/DF16 series are for indoor use. Make sure that the product is not exposed to direct sunlight.
  - Do not use the product in the places that are subject to the adverse effects of ozone or corrosive gases.

Protective cover (for Standard type)

KKD07-246

KKD07-247

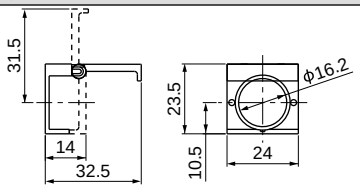
KKD07-248

Type	Used with
AHX669	AR16F0N, F5N, F0T, F5T
AXH826 *	
AHX671	AR16F0M, F5M, F0S, F5S AR16E0L, E5L, E0R, E5R

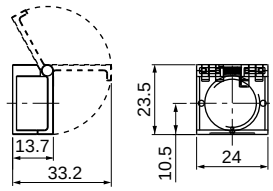
* This cover returns to the home position with spring action to prevent accidental operation (Packing is provided).

Note: The cover cannot be used with the flush rectangular with guard type models.

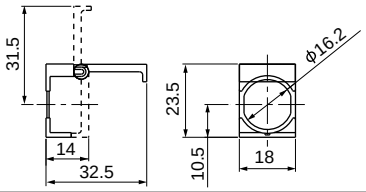
AHX669



AHX826



AHX671



Protective cover (for Thin type)

KKD07-249

KKD07-250

Type	Used with
AF6D826-☐	AF16F0N, F0T
AF6D827-☐	AF16F0M, F0S

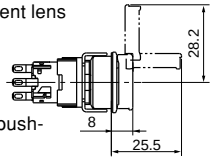
This cover prevents accidental operation.

Note: • The protective cover and the button are made of an integral structure.
• Enter the color code in the square box .

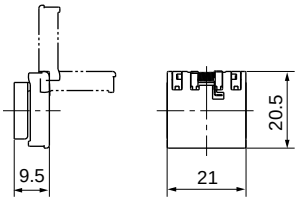
Color	Green	Red	Transparent *	Yellow	Orange	Blue
Code	**G**	**R**	**C**	**Y**	**A**	**S**
Color code of main unit	G	R	W, B	Y	A	S

* When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white. When it is B, a combination of the transparent lens and the black legend plate comes to black.

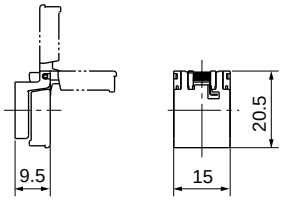
• This cover returns to the home position with spring action.
• Not applicable to alternate models.
• Dimensions when connected with a push-button switch (unit: mm)



AF6D826



AF6D827



Dust-proof cover (for Standard type)

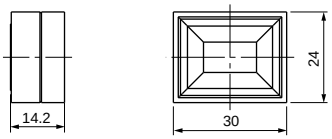
KKD07-251

KKD07-252

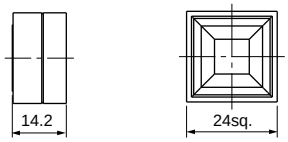
Type	Used with
AHX668	AR16F0N, F5N, F0T, F5T
AHX822	AR16F0M, F5M, F0S, F5S AR16E0L, E5L, E0R, E5R

This cover seals the operator section to prevent powder or dust from invading inside the switch (Packing is provided).

AHX668



AHX822



Terminal cover

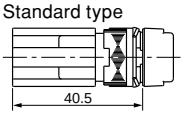
KKD07-253

Type	Used with
AR6Y261	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

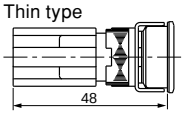
Protective cover for insulation between terminals and live parts.

Note: • Dimensions when connected with a switch (pilot light) (unit: mm)

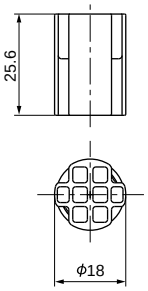
Standard type



Thin type



• Wiring work should be made first, and attach the cover to the switch (pilot light).
• Use cables of sheath outer diameter of ϕ2.8mm or less.

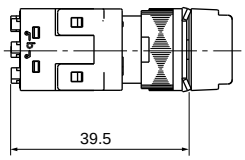


Description	Type	Dimensions, mm
Fast-connection socket		

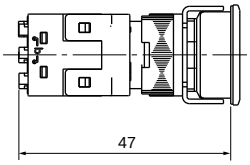
Type	Used with
AR6S690-L1	Illuminated pushbutton switch : SPDT
AR6S690-L2	Illuminated pushbutton switch : 2PDT
AR6S690-LX	Pilot light
AR6S690-R1	Pushbutton switch, selector switch : SPDT
AR6S690-R2	Pushbutton switch, selector switch : 2PDT

By combining with a switch, they can be used as a Fast-connection type switch.
Note: Dimensions when connected with a switch (pilot light)
(unit:mm)

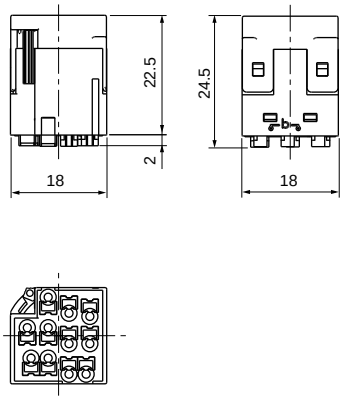
Standard type



Thin type



KKD08-093

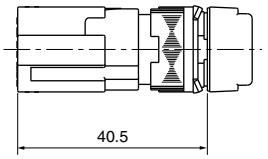


Connector socket

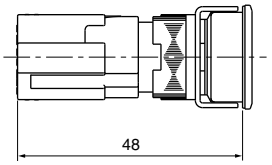
Type	Used with
AR6S691-C	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

By combining with receptacle terminals, this can be used as a connector.
Note: • The receptacle terminal is not supplied.
Please prepare the receptacle terminal Model No. CMC62895-F made by NICHIFU Co.,Ltd. on your side.
• Dimensions when connected with a switch (pilot light)
(unit: mm)

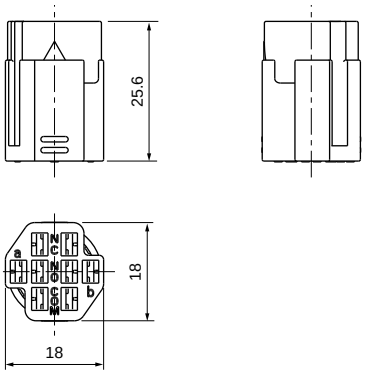
Standard type



Thin type



KKD07-255

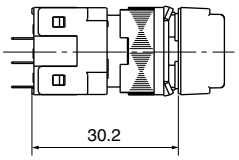


Socket for PC board

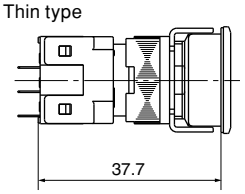
Type	Used with
AR6S692	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

By combining with a switch, they can be used as a switch for PC board, connection type switch.
Note: • Dimensions when connected with a switch (pilot light)
(unit: mm)

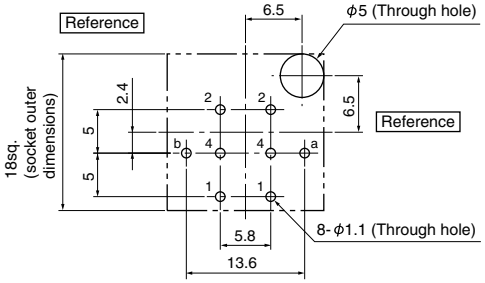
Standard type



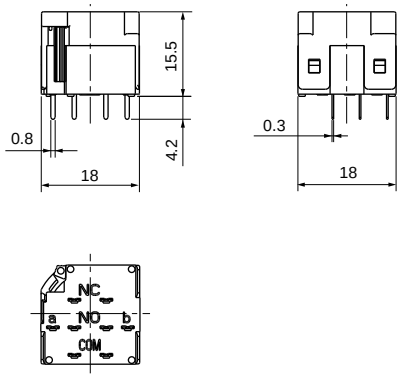
Thin type



• PC board processing drawing (View from component side)
(unit: mm)



KKD08-096

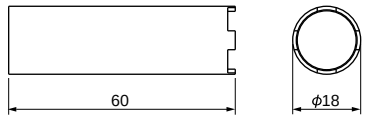


Wrench

KKD07-257

Type	Used with
AHX601	AR16 and DR16 series AF16 and DF16 series

When installing a Command Switch on a panel, this tool enables secure and firm tightening.

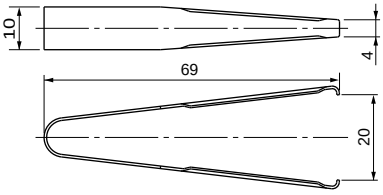


Remover (for Standard type)

KKD07-258

Type	Used with
AHX618	Illuminated pushbutton switch, pushbutton switch, pilot light

This tool is used for removing color lens, buttons or screens.

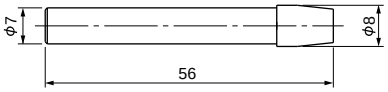


Lamp remover

KKD07-259

Type	Used with
AHX672	Illuminated pushbutton switch, pilot light

This tool is used for installing or removing lamps.
Use the part A to remove LED lamps.



Panel plug (for Standard type)

KKD07-260

KKD07-261

KKD07-262

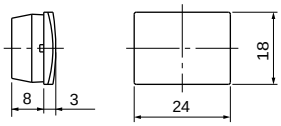
KKD07-267

Type	Used with
AXH645-☐	Rectangular type Degree of protection: IP40
AXH644-☐	Square type Degree of protection: IP40
AXH622-☐	Round type Degree of protection: IP40
AXH850-B *1	Rectangular type Degree of protection: IP65

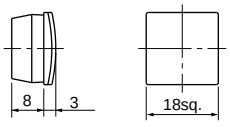
*1 Packing and nut are provided. The color is black only.
Note: • Enter the color code in the square box ☐.

Type	Black	Gray
Code	**B**	**GY**

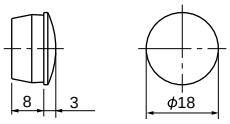
AHX645



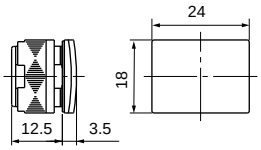
AHX644



AHX622



AHX850-B



Panel plug (for Thin type)

KKD07-264

KKD07-266

KKD07-265

KKD07-263

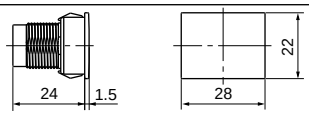
KKD07-268

KKD07-269

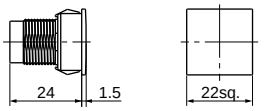
Type	Used with
AF6Y645-B	Rectangular type Degree of protection: IP40
AF6Y644-B	Square type Degree of protection: IP40
AF6Y622-B	Round type Degree of protection: IP40
AF6Y850-B *1	Rectangular type Degree of protection: IP65
AF6Y851-B *1	Square type Degree of protection: IP65
AF6Y852-B *1	Round type Degree of protection: IP65

*1 Packing, panel retainer, and nut are provided.
Note: • The color is black only.

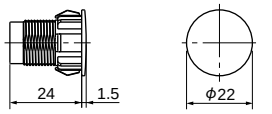
AF6Y645-B



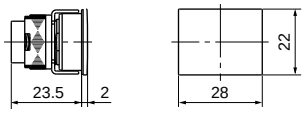
AF6Y644-B



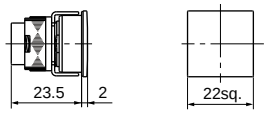
AF6Y622-B



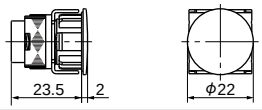
AF6Y850-B



AF6Y851-B



AF6Y852-B



Color lens and button

KKD07-270

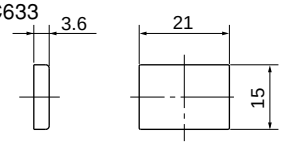
Type	Used with
AR6C633-☐	AR16F0N, F5N, F0T, F5T, G0N, G5N, G0T, G5T DR16F0N AF16F0N, F5N, F0T, F5T, Type DF16F0N
AR6C632-☐	AR16F0M, F5M, F0S, F5S, Type DR16F0M AF16F0M, F5M, F0S, F5S, Type DF16F0M
AR6C631-☐	AR16E0L, E5L, E0R, E5R, Type DR16E0L AF16F0L, F5L, F0R, F5R, Type DF16F0L
DR6C630-☐	DR16D0L

Note: Enter the color code in the square box ☐.

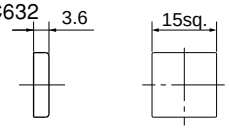
Color	Green	Red	Transparent*	Yellow	Orange	Blue
Code	**G**	**R**	**C**	**Y**	**A**	**S**
Color code of main unit	G	R	W, B	Y	A	S

* When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white (except for dome type).
When it is B, a combination of the transparent lens and the black legend plate comes to black (except for pilot light).
When the dome type (DR16D0L)'s color code of the main unit is W, the lens code is W.

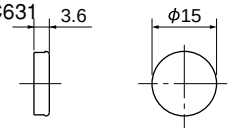
AR6C633



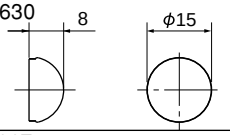
AR6C632



AR6C631



DR6C630



Legend plate

KKD07-272

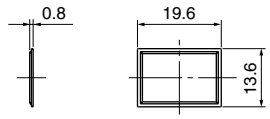
Type	Used with
AR6P667-☐	AR16F0N, F5N, F0T, F5T, G0N, G5N, G0T, G5T DR16F0N AF16F0N, F5N, F0T, F5T, Type DF16F0N
AR6P666-☐	AR16F0M, F5M, F0S, F5S, Type DR16F0M AF16F0M, F5M, F0S, F5S, Type DF16F0M
AR6P665-☐	AR16E0L, E5L, E0R, E5R, Type DR16E0L AF16F0L, F5L, F0R, F5R, Type DF16F0L

Note: Enter the color code in the square box ☐.

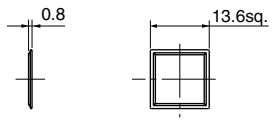
Type	White	Black
Code	**W**	**B**
Color code of main unit	G, R, W, Y, A, S	B

• When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white.
When it is B, a combination of the transparent lens and the black legend plate comes to black (except for pilot light).

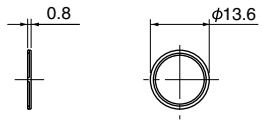
AR6P667



AR6P666



AR6P665



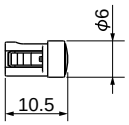
LED lamp

KKD07-273

Type	Lamp operational voltage, current consumption
DR6L695-A☐	6V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange: AC8.5mA, DC8.5mA, Yellow: 17mA AC, 17mA DC
DR6L695-B☐	12V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 8.5mA AC, 8.5mA DC
DR6L695-E☐	24V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 8.5mA AC, 8.5mA DC

Note: Enter the color code in the square box ☐.

Color	Green	Red	Orange	Yellow	Amber	Blue
Code	**G**	**R**	**W**	**Y**	**A**	**S**
Color code of main unit	G	R	W	Y	A	S



Key

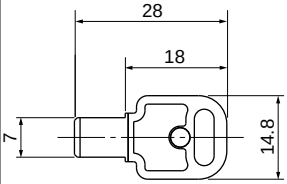
KKD07-274

Type	Used with
AR6C662-☐	AR16JT, JS, JR AF16JT, JS, JR

Note: • Enter the color code in the square box ☐.

Code (Key type)	**A**	**B**	**C**	**D**	**E**	**F**

• Two pieces per set on delivery.
• Both sides of the key is same.



t: 2mm

• Standard type <AR16, DR16 series>

1. Illuminated push button switches (g)

Type	Without transformer	
	SPDT	2PDT
AR16F0N	9.3	9.9
AR16F5N	9.3	9.9
AR16G0N	9.4	10
AR16G5N	9.4	10
AR16F0M	8.7	9.3
AR16F5M	8.7	9.3
AR16E0L	8.1	8.7
AR16E5L	8.1	8.7

2. Pushbutton switches (g)

Type	SPDT	2PDT
AR16F0T	8.5	9.1
AR16F5T	8.5	9.1
AR16G0T	8.7	9.3
AR16G5T	8.7	9.3
AR16F0S	8	8.6
AR16F5S	8	8.6
AR16E0R	7.4	8
AR16E5R	7.4	8

3. Pilot lights (g)

Type	Without transformer
DR16F0N	8.7
DR16F0M	8.1
DR16E0L	7.5
DR16D0L	7.5

4. Selector switches (knob type) (g)

Type	SPDT	2PDT
AR16PT	9.6	10.2
AR16PS	8.6	9.2
AR16PR	8.3	8.9

5. Selector switches (key type) (g)

Type	SPDT	2PDT
AR16JT	23.2	23.8
AR16JS	22.3	22.9
AR16JR	21.9	22.5

Note: The value when two keys are attached.

• Thin type <AF16, DF16 series>

1. Illuminated push button switches (g)

Type	Without transformer	
	SPDT	2PDT
AF16F0N	13.5	14.1
AF16F5N	13.5	14.1
AF16F0M	12.8	13.4
AF16F5M	12.8	13.4
AF16F0L	12	12.6
AF16F5L	12	12.6

2. Pushbutton switches (g)

Type	SPDT	2PDT
AF16F0T	12.7	13.3
AF16F5T	12.7	13.3
AF16F0S	12	12.6
AF16F5S	12	12.6
AF16F0R	11.3	11.9
AF16F5R	11.3	11.9

3. Pilot lights (g)

Type	Without transformer
DF16F0N	12.8
DF16F0M	12.1
DF16F0L	11.4

4. Selector switches (knob type) (g)

Type	SPDT	2PDT
AF16PT	14.2	14.8
AF16PS	13.7	14.3
AF16PR	13.1	13.7

5. Selector switches (key type) (g)

Type	SPDT	2PDT
AF16JT	27.8	28.4
AF16JS	27.3	27.9
AF16JR	26.8	27.4

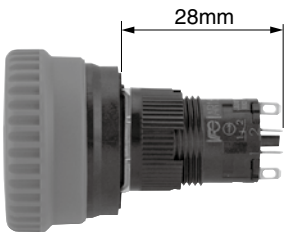
Note: The value when two keys are attached.

Integrated Contacts Structure Emergency stop pushbutton switches AR16V

■ Features

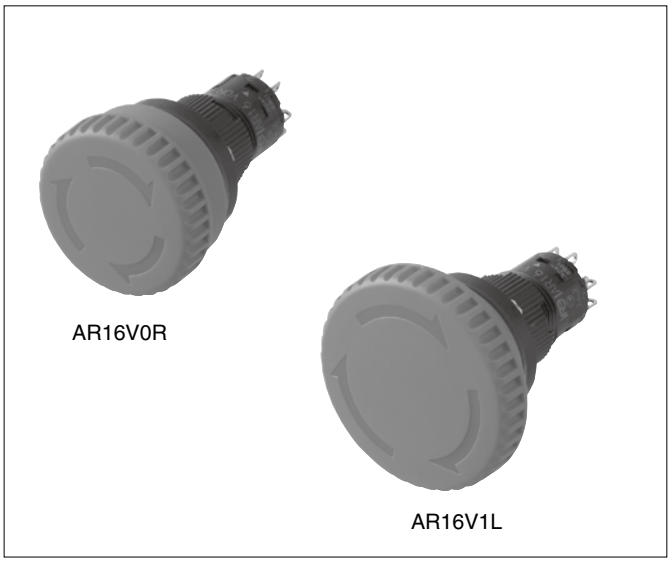
- Up to four sets of contacts in a one-piece structure with a panel depth dimension of 28 mm (non-illuminated type).

Non illuminated type



Illuminated type

- Both pull or turn reset methods are supported.
- Two button diameters are available: 32 mm (AR16V0) and 40 mm (AR16V1).
- Safety trigger-action mechanism that prevents the contacts from operating until the switch is locked, even if people or objects accidentally come into contact with the switch.
- Direct opening mechanism for NC contacts to ensure that the contacts can be opened even in the unlikely event that they become fused. ⊖
- IP65 protection for operating section.



- RoHS compliance (EU Directive 2002/95/EC) is a standard feature.
- Compliance with UL/CSA standards, China Compulsory Certification (CCC) standards, and TÜV (EN standards).
- CE marking.

■ Specifications (indoor use)

Item		AR16V
Rated insulation voltage Ui		250V AC/DC
Durability	Mechanical	100,000 operations
	Electrical	100,000 operations (AC-15, AC-13, AC-12, DC-13, DC-12)
Operating frequency		1200 operations / hour (On-load factor : 40%)
Withstand voltage	Between live section and grounding	2000V AC, 1 minute
	Between opposite polarity live sections	2000V AC, 1 minute
Insulation resistance		100MΩ or more (500V DC megger)
Rated impulse withstand voltage Uimp		2.5kV
Conditional short-circuit current		1000A
Short-circuit protective device		gG 6A (IEC60269 Fuse)
Pollution degree		3
Vibration		Operating extremes : frequency 10 to 500 Hz, double amplitude 0.7mm acceleration 50m/s^2 Damage limits : frequency 10 to 500 Hz, double amplitude 0.7mm acceleration 50m/s^2
Shock		Malfunction durability : 100m/s^2 Mchanical durability : 500m/s^2
Operational ambient temperature		-10 to +55°C (no icing or no condensation)
Storage temperature		-40 to +70°C
Relative humidity (inside control panel)		45 to 85%RH (-5 to 40°C) (no icing or no condensation)
Degree of protection of operating (displaying) section		IP65 (dust-ploof, water jet proof): IEC 60529
Degree of protection of control section		IP2X (Terminal cover : AR6Y262, At the connection)
Terminal style		Solder terminal
Connectable wire		0.75mm^2 maximun (18AWG maximun)

■ Contact ratings

• TÜV (EN60947-5-1), JIS C 8201-5-1 (1999)

Conventional free air thermal current I th	Rated operational current					
	Rated operational voltage Ue	AC			DC	
		AC-12 (Resistive load)	AC-13 (Inductive load)	AC-15 (Inductive load)	DC-12 (Resistive load)	DC-13 (Inductive load)
5A	24V	—	—	—	1.0A	0.7A
	120V	1.5A	1.0A	0.3A	—	—
	125V	—	—	—	0.2A	0.15A
	240V	1.0A	0.7A	0.3A	—	—

• UL/CSA

• AC (COSø=0.35)

Contact rating code	120V		240V	
	Making current	Braeking current	Making current	Braeking current
C300	15A	1.5A	7.5A	0.75A

• DC ($T_{0.95}$=6P)

Contact rating code	Making current・Braeking current	
	125V	250V
R300	0.22A	0.11A

■ Contact reliability

• FUJI has confirmed that the product can be used in 1mA circuit conditions at 5V AC or DC. The operable range, however, may vary deperding on the operational ambient conditions and type of load.

■ Operating characteristic

Operation	Push-lock, turn-reset or pull-reset
Ave. required operating force	25N
Operating travel	Approx. 5.4mm
Operation angle	Approx. 45°
Required return force (pull-reset)	20N
Required return force (tarn-reset)	0.3N・m

■ Mass

(g)

Type	1NC	2NC(1NO+1NC)	4NC(2NO+2NC)
AR16V0R	19.0	19.4	20.0
AR16V1R	21.1	21.5	22.1
AR16V0L	19.7	20.1	20.7
AR16V1L	21.8	22.2	22.8

■ Standards approved

UL508	cUL File No. E44592
CSA C22.2 No.14	
TÜV : EN60947-5-1, EN60947-5-5	R50136611

■ Lamp rating and current consumption

Applied method	Type of lamp	Luminous color	Lamp rated voltage	Current consumption
Without transformer	LED lamp	Red	6V AC/DC	9mA AC, 7.5mA DC
			12V AC/DC	7.5mA AC, 7.5mA DC
			24V AC/DC	7.5mA AC, 7.5mA DC

■ Type

• Emergency stop pushbutton switches

Operator	Contact	Type
Unibody push-lock, pull or turn-reset (32mm dia.)	1NC	AR16V0R-01R
	1NO+1NC	AR16V0R-11R
	2NC	AR16V0R-02R
	1NO+2NC	AR16V0R-12R
	3NC	AR16V0R-03R
	1NO+3NC	AR16V0R-13R
(KKD08-090)	4NC	AR16V0R-04R
Unibody push-lock, pull or turn-reset (40mm dia.)	1NC	AR16V1R-01R
	1NO+1NC	AR16V1R-11R
	2NC	AR16V1R-02R
	1NO+2NC	AR16V1R-12R
	3NC	AR16V1R-03R
	1NO+3NC	AR16V1R-13R
(KKD08-092)	4NC	AR16V1R-04R

• Emergency stop illuminated pushbutton switches

Operator	Contact	LED Lamp Type
Unibody push-lock, pull or turn-reset (32mm dia.)	1NC	AR16V0L-01■R
	1NO+1NC	AR16V0L-11■R
	2NC	AR16V0L-02■R
	1NO+2NC	AR16V0L-12■R
	3NC	AR16V0L-03■R
	1NO+3NC	AR16V0L-13■R
(KKD08-087)	4NC	AR16V0L-04■R
Unibody push-lock, pull or turn-reset (40mm dia.)	1NC	AR16V1L-01■R
	1NO+1NC	AR16V1L-11■R
	2NC	AR16V1L-02■R
	1NO+2NC	AR16V1L-12■R
	3NC	AR16V1L-03■R
	1NO+3NC	AR16V1L-13■R
(KKD08-091)	4NC	AR16V1L-04■R

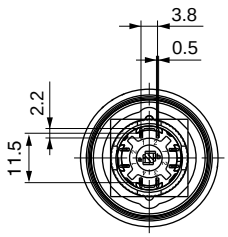
• Voltage Replace the ■mark by the lamp voltage code

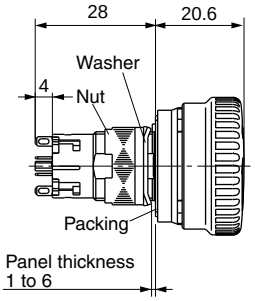
Lamp voltage	Code
6V AC/DC	A3
12V AC/DC	B3
24V AC/DC	E3

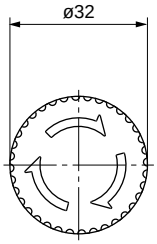
■ Dimensions, mm

• Emergency stop pushbutton switches

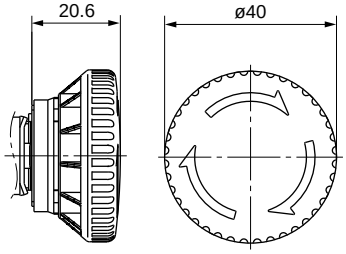
• AR16V0R





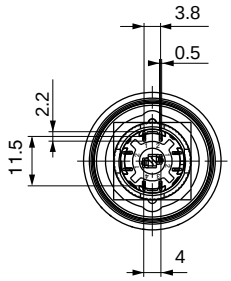


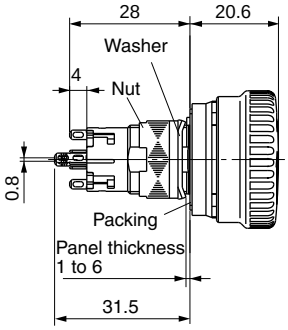
• AR16V1R

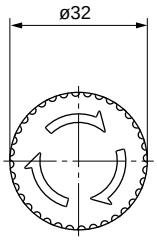


• Emergency stop illuminated pushbutton switches

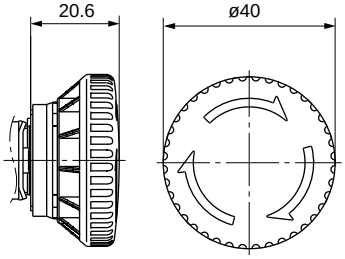
• AR16V0L



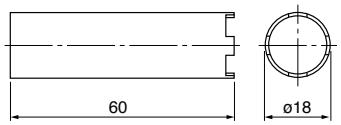
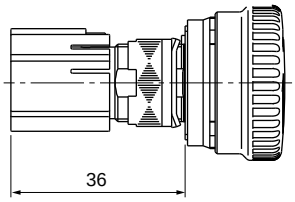
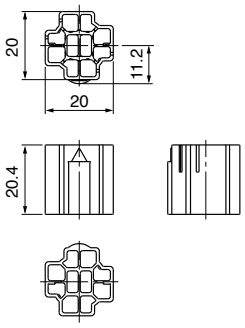
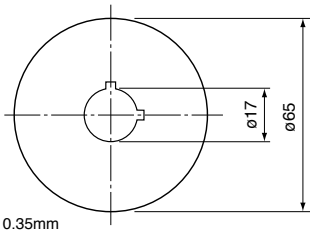




• AR16V1L



■ Accessories

Description	Type	Dimensions, mm
Wrench (KKD07-257)	**AHX601 (AH9A601)** When installing a command switch on a panel, this tool is useful for tightening the switch firmly and efficiently.	
Terminal cover	**AR6Y262** Protective cover for insulation between terminals and live parts. Note : Dimensions when connected with a switch (unit : mm)  • Wiring work should be made first , and attach the cover to the switch.	
Legend plate for AR16V emergency stop	**AR6P719-*1,2** Legend: EMERGENCY STOP; code (*1, 2): 5A; Letter hight: 7mm Black: 00; — • Plate color : Yellow • Letter color : Black	 Thickness : 0.35mm

■ Notes on use

Safety Precautions

Read the Operating Instructions carefully before mounting, wiring, operating, servicing, or inspecting the command switch. Make sure that the Operating Instructions is delivered to the final user of the command switch.

• The safety precautions are classified into two levels, "**WARNING** and **CAUTION**", with meanings described follows.

⚠WARNING: Indicates a potentially hazardous situation, which, if not avoided, could resuit in death or serious injury.

⚠CAUTION: Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury and/or damage to the equipment.

An item described under "**CAUTION**" may resuit in a serious accident, depending on the situation.

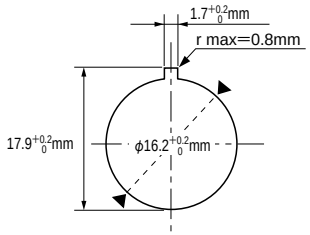
⚠WARNING

- Do not touch or approach any live part while power is supplied. An electric shock or burning may result.
- Be sure to turn off the power before mounting, dismounting, wiring, or inspecting, the product.
  An electric shock, burning from short-circuiting, or equipment malfunction may result.

⚠CAUTION

- Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current.
  The wrong wiring may result in fire, accidents, or malfunctions.
- Treat the product as industrial waste when it is to be discarded.

■ Panel cutout (mm)

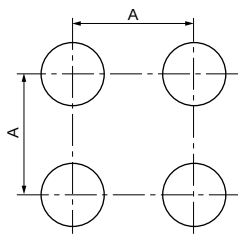


■ Applicable panel thickness

The applicable panel thickness is 1 to 6 mm. When the terminal cover (AR6Y262) is used, however, the applicable panel thickness will be 1 to 3.2 mm.

■ High-density mounting

The following minimum mounting pitch applies to high-density mounting.



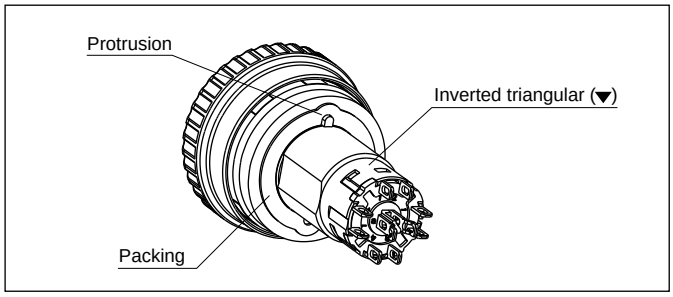
Type	Dimension A
AR16V0□	41mm min.
AR16V1	45mm min.
With AR6P719	65mm min.

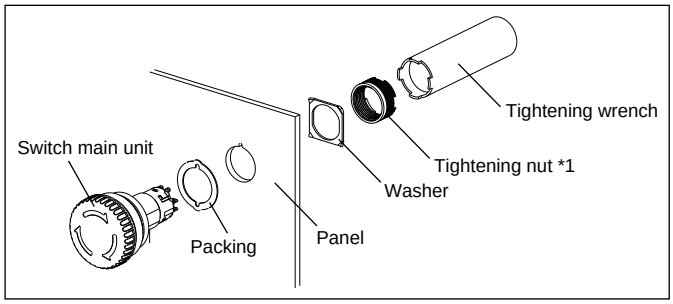
Note : Detemine the mounting pitch by taking the operability and wiring workability into consideration.

• Installation on panel

As shown in the figure below, insert the switch main unit into the panel cutout from the front of the panel with the top of the switch main unit (marked with an inverted triangular) facing upward. Then, use a tightening wrench (AHX601) and secure the unit with a washer and tightening nut from the rear of the panel.

Note : The proper tightening torque is 0.6 to 1.0 N・m.



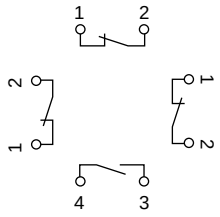
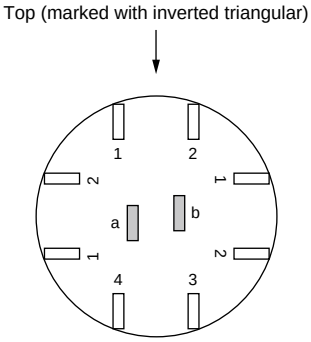
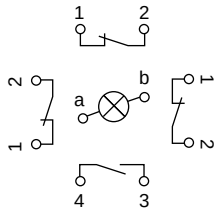


*1 : Do not use pliers or other improper tools tighten the nut, and do not tighten it excessively, or the nut may be damaged or switch may malfunction.

■ Wiring

- ●The wiring to this switch must be soldered. Keep the following items in mind when soldering.
- Type of solder : Use resin-core solder.
- Use a soldering iron with a maximum power consumption of 60W (350°C) within five seconds. Make sure that the terminals is free of tension during soldering. Also, do not deform the terminal.
- ●Lead-free solder has a high melting point, but the specific melting point depends on the type of lead-free solder. This may cause difficulty in soldering. Be careful not to overheat the solder if a soldering iron with a large soldering tip or a large heating capacity is used. Keep in mind that overheating the solder may resuit in product malfunctioning.
- ●Connectable wires
  One Solid wires with a maximum diameter of 1.0mm
  One standed wire with a maximum area of 0.75 mm^2
- ●For wiring to adjacent terminals, use the terminal cover (AR6Y262) to prevent short-circuit, or an insulation tube to assure isolation. Care is necessary when two wires are connected together or a large quantily of solder is applied. In addition, keep in mind that overheating the tube may result in product malfunctioning if a heat-shrinking tube is used.

• Terminal arrangement

Model	Circuit diagram (example)	Terminal arrangement (view from the terminal (back) side)
Emergency stop pushbutton switches		
Emergency stop illuminated pushbutton switches		

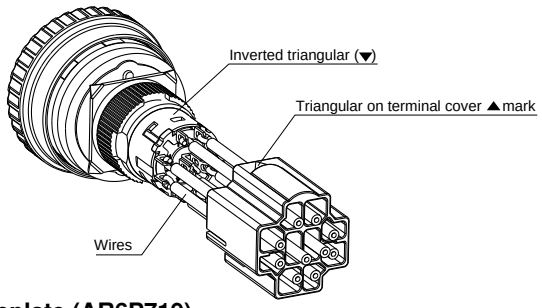
Terminals 1-2 : b (NC) contact terminals
Terminals 3-4 : a (NO) contact terminals
Terminals a-b : Lamp terminals

Note : If NO contacts are uesd in the contact configuration, they will be on the top of the unit (marked with the inverted triangular) and on the opposite side, regardless of the number of contacts.

■ Terminal caver (AR6Y262)

• Combination

The terminal cover must be attached in the correct direction. Make sure that the triangular on the terminal cover is aligned with the inverted triangular on the top of the unit. Also, when wiring the switch, check the alignment of these triangles and insert the wires correctly through the corresponding holes in the terminal cover.



■ Nameplate (AR6P719)

• Precautions

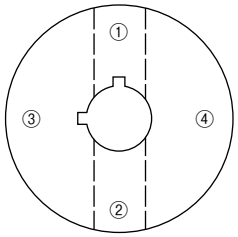
The nameplate must be attached. Attach the nameplate to an appropriate part, such as the panel, after removing the paper from the back of the nameplate.

Before attaching the nameplate, claen the surface to which the nameplate will be attached with alcohol.

The nameplate may come off if the surface is dirty or oily.

• Attachment Procedure (Example)

Remove portions ① and ② from the center of the nameplate, aligh the nameplate with the panel cutout, and lightly press on the front surface of the nameplate to attach it to the panel. Then remove portions ③ and ④ , and press on the entire front surface of the nameplate to complate attaching it to the panel.



■ Others

Operation

- Do not hit or flip the button, or the button may be damaged. Be sure to operate the button by hand.
- To unlock the switch, turn the button approximately 45° clockwise (in the direction of the arrow) or pull out the button. Do not operate or handle the button with excessive force.
- Do not lock the emergency stop pushbutton switch during normal use. Push and lock the switch only in an emergency.

Storage and Usage Locations

- Be sure to use and store the product within the rated ambient temperature and humidity ranges.
- Although the product resists ordinary cutting oils and coolant oils, do not use the unit in places where special oils may be sprayed onto the product.
- If dusts or filings accumulate in the gap between the button and the frame, the switch may fail to operate normally.
- This switch are for indoor use. Make sure that the product is not exposed to direct sunlight.
- Do not use the product in the places thet are subject to the adverse effects of ozone or corrosive gases.