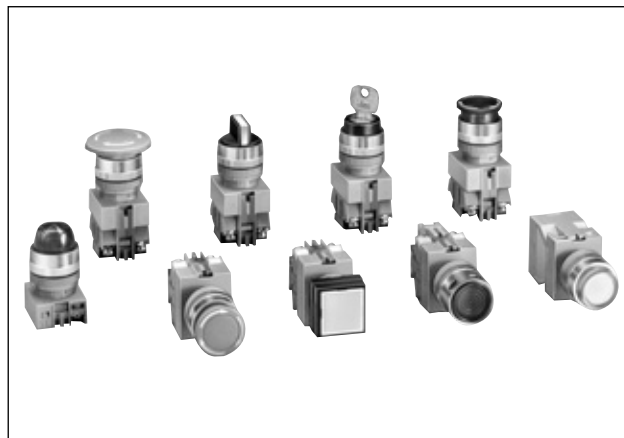


ø22 TW Series Control Units

General-purpose control units for various applications Heavy-duty type for high-level protection against harsh environment

- Highly reliable HW contact blocks are used.
- Degree of protection: IP65 (IEC 60529)
- UL and CSA approved, EN compliant

Applicable Standards	Mark	File No. or Organization
UL508		UL Listing File No. E68961
CSA C22.2 No.14		CSA File No. LR21451
EN60947-5-1		TÜV Rheinland
		EU Low Voltage Directive
GB14048.5		CCC No. 2003010305027380 (pilot light: No. 2007010304226713)



Specifications and Ratings

Contact Ratings

Contact Block	Rated Insulation Voltage	600V
	Rated Continuous Current	10A
	Contact Ratings by Utilization Category IEC 60947-5-1	AC-15 (A600)
		DC-13 (P600)

Characteristics

Contact Ratings by Utilization Category

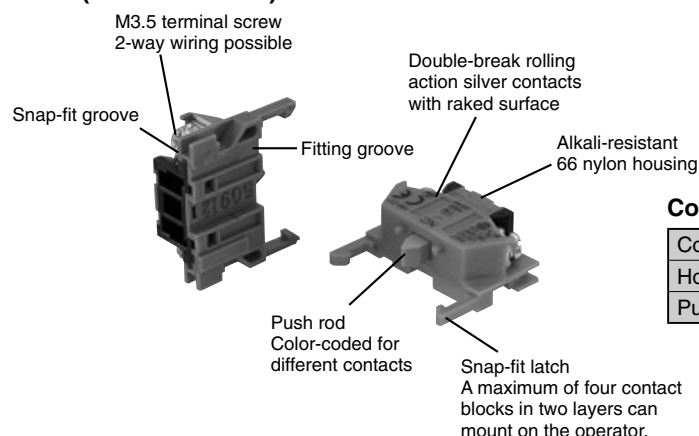
Operational Voltage			24V	48V	50V	110V	220V	440V
Operational Current	AC 50/60 Hz	AC-12 Control of resistive loads and solid state loads	10A	—	10A	10A	6A	2A
		AC-15 Control of electromagnetic loads (> 72 VA)	10A	—	7A	5A	3A	1A
	DC	DC-12 Control of resistive loads and solid state loads	8A	4A	—	2.2A	1.1A	—
		DC-13 Control of electromagnets	4A	2A	—	1.1A	0.6A	—

Minimum applicable load: 3V AC/DC, 5 mA (applicable range may vary with operating conditions and load types)

For the control units listed below, the rated current (load switching current) is reduced to a half of the rated operational current of the contact block. The rated insulation voltage (600V) and the rated thermal current (10A) remain unchanged.

- Selector switches and illuminated selector switches with contact code 2S, 3S, 4S, 2R, or 4R.

HW-C (Contact Block)



Contact Blocks

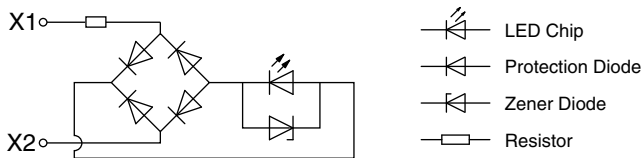
Contact	NO	NC	NO (early make)	NC (late break)
Housing	Blue	Purple red	Blue	Purple red
Push Rod	Green	Red	Black	White

Incandescent Lamp Ratings (LS)

Part No.	LS-6	LS-8	LS-2	LS-3
Lamp Base	BA9S/13			
Rated Voltage	6V AC/DC	12V AC/DC	18V AC/DC	24V AC/DC
Wattage	1W (6.3V)	1W (18V)	1W (24V)	1W (30V)
Voltage Marking	Die stamped on the base			
Life (reference value)	Approx. 1,000 hours minimum (mean value when used on the rated voltage)			

TW Series Control Units ø22

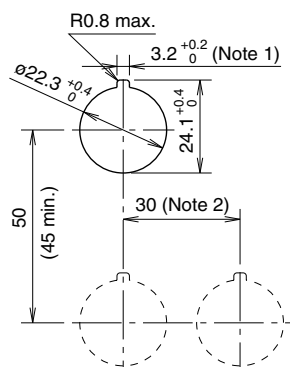
LED Lamp Ratings (LSTD)

Part No.	LSTD-6②		LSTD-1②	LSTD-2②
Lamp Base	BA9S/13			
Rated Voltage	6V AC/DC		12V AC/DC	24V AC/DC
Voltage Range	6V AC/DC ±10%		12V AC/DC ±10%	24V AC/DC ±10%
Current Draw	AC	8 mA	11 mA	11 mA
	DC	A, R, W: 7 mA, G, PW, S: 5.5 mA	10 mA	10 mA
Color Code ②	A (amber), G (green), PW (pure white), R (red), S (blue), W (white) Use a pure white LED lamp for yellow illumination			
Lamp Base Color	Same as illumination color			
Voltage Marking	Die stamped on the base			
Life (reference value)	Approx. 50,000 hours (until the brightness reduces to 50% of the initial value when lit at complete direct current of the rated voltage under 25°C environment.)			
Internal Circuit				

Specifications

Operating Temperature	-25 to +50°C (no freezing)	
Storage Temperature	-40 to +80°C	
Operating Humidity	45 to 85% RH (no condensation)	
Contact Resistance	50 mΩ maximum (initial value)	
Insulation Resistance	100 MΩ minimum (500V DC megger)	
Dielectric Strength	Between live and dead metal parts: 2,500V AC, 1 minute (Full voltage illuminated units: 2,000V AC, 1 minute)	
Vibration Resistance	Damage Limits: 30 Hz, amplitude 1.5 mm Operating extremes: 5 to 55 Hz, amplitude 0.5 mm	
Shock Resistance	Damage limits: 1,000 m/s ² Operating extremes: 100 m/s ²	
Mechanical Life (minimum operations)	Pushbuttons, Illuminated pushbuttons Momentary: 5,000,000 Others: 500,000 Selector switches: 500,000 Illuminated selector switches: 500,000	
Electrical Life (minimum operations)	Pushbuttons: 500,000 (switching frequency 1,800 operations/h, duty ratio 40%) Illuminated pushbuttons: 500,000 (switching frequency 1,800 operations/h, duty ratio 40%) Selector switches: 500,000 (switching frequency 1,200 operations/h, duty ratio 40%)	
Weight (approx.)	68g (ABW122) 33g (APW122D) 89g (ALW22222D) 68g (ASW222) 107g (ASW2K22) 90g (ASLW22222D) 95g (APW126D)	

Mounting Hole Layout



Note 1: The 3.2 mm recess is for preventing rotation and is not necessary when the nameplate or anti-rotation ring is not used.

Note 2: The minimum mounting centers are applicable to switches with one layer of contact blocks (two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers in consideration of convenience for wiring.

- ø40mm mushroom: 40 mm minimum
- 2-position, 3-position lever selector switch: 39 mm minimum
- 4-position, 5-position lever selector switch: 50 mm minimum

Degree of Protection

Part No.	Unit	NEMA ICS 6-110	IEC 60529
A****	Pushbuttons, pilot lights, illuminated pushbuttons, and selector switches	Type 1, 2, 3, 3R, (3S), 4, 5, 12, 13	IP65
	Illuminated selector switches, key pushbuttons, key reset pushbuttons, and key selector switches	Type 1, 2, 3R, 5, 12, 13	IP54

Note: (3S) of NEMA ICS 6-110 applies to the pilot lights with round lens.

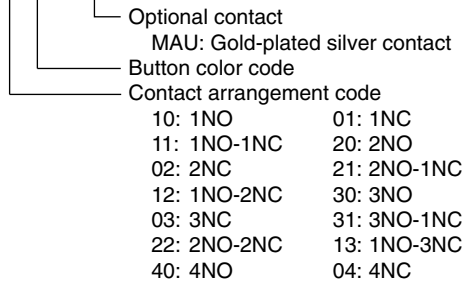
Ordering Information

- Specify an operator or lens color code in the Part No.
- All standard units are UL, CSA, EN, and TÜV approved.
- When a terminal cover is required, order an applicable terminal cover referring to page 320.

Part No. development charts shown below can be used to specify control units other than those listed on the following pages. Gold-plated silver contacts are also available.

Pushbuttons

ABW1 11 R - MAU

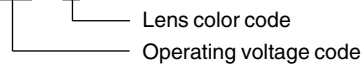


Note:

- Push-pull type AYW4 can have a maximum of two contact blocks.

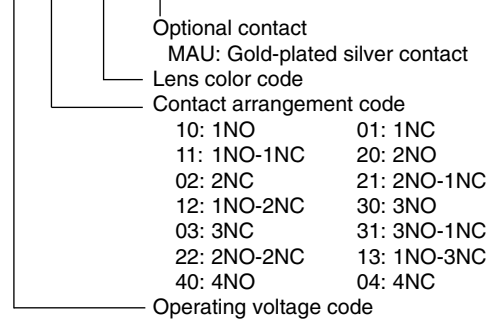
Pilot Lights

APW2 116 D R



Illuminated Pushbuttons

ALFW2 116 13 D R - MAU



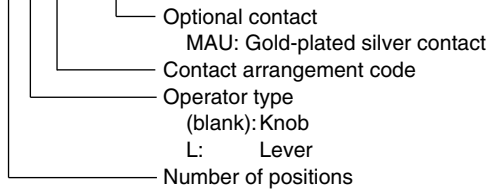
Note:

- Push-pull type AYLW4 can have a maximum of two contact blocks.

TW Series Ordering Information ø22

Selector Switch

ASW 2 L 11 - MAU

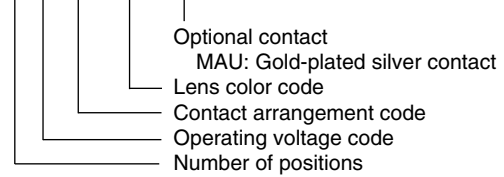


Note:

- See pages 317 to 319 for contact arrangement codes.

Illuminated Selector Switch

ASLW 2 16 22 D R - MAU

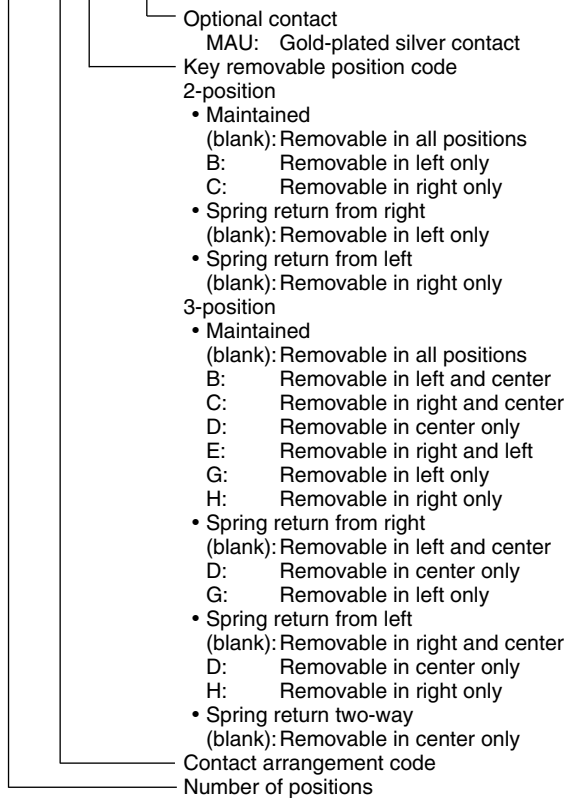


Note:

- See pages 317 to 319 for contact arrangement codes.

Key Selector Switch

ASW 2 K 20 B - MAU



Note:

- See pages 317 to 319 for contact arrangement codes.
- The key cannot be removed in the return position.

Flush
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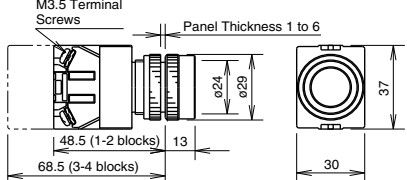
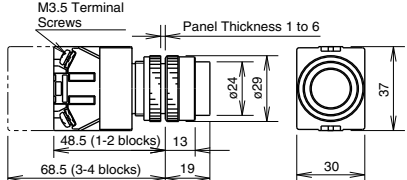
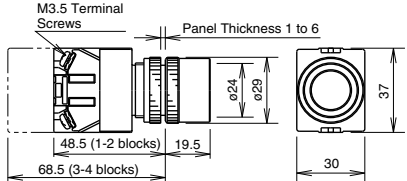
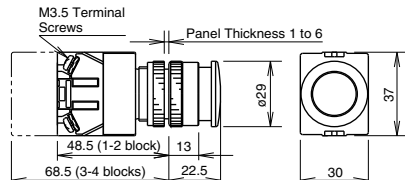
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ø22 TW Series Pushbuttons

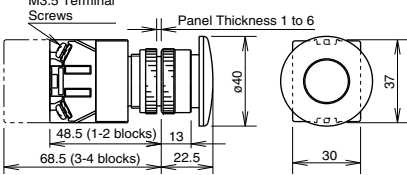
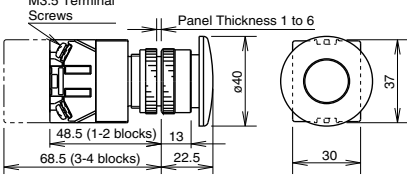
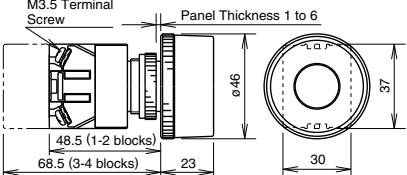
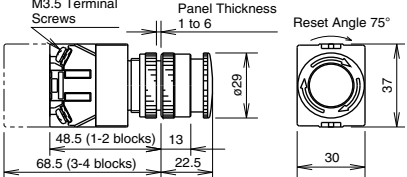
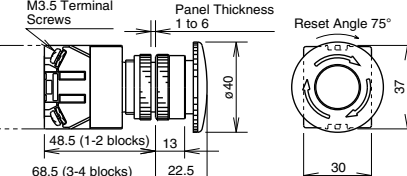
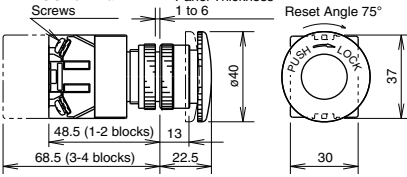
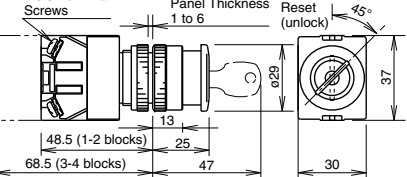
Flush / Extended / Extended w/Full Shroud / Mushroom

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm)
Flush ABW1 AOW1  	Momentary	1NO	ABW110 ①	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	ABW101 ①		
		1NO-1NC	ABW111 ①		
		2NO	ABW120 ①		
		2NC	ABW102 ①		
		2NO-2NC	ABW122 ①		
	Maintained	1NO	AOW110 ①		
		1NC	AOW101 ①		
		1NO-1NC	AOW111 ①		
		2NO	AOW120 ①		
		2NC	AOW102 ①		
		2NO-2NC	AOW122 ①		
Extended ABW2 AOW2  	Momentary	1NO	ABW210 ①		
		1NC	ABW201 ①		
		1NO-1NC	ABW211 ①		
		2NO	ABW220 ①		
		2NC	ABW202 ①		
		2NO-2NC	ABW222 ①		
	Maintained	1NO	AOW210 ①		
		1NC	AOW201 ①		
		1NO-1NC	AOW211 ①		
		2NO	AOW220 ①		
		2NC	AOW202 ①		
		2NO-2NC	AOW222 ①		
Extended with Full Shroud ABFW2 AOFW2  	Momentary	1NO	ABFW210 ①		
		1NC	ABFW201 ①		
		1NO-1NC	ABFW211 ①		
		2NO	ABFW220 ①		
		2NC	ABFW202 ①		
		2NO-2NC	ABFW222 ①		
	Maintained	1NO	AOFW210 ①		
		1NC	AOFW201 ①		
		1NO-1NC	AOFW211 ①		
		2NO	AOFW220 ①		
		2NC	AOFW202 ①		
		2NO-2NC	AOFW222 ①		
ø29mm Mushroom ABW3 AOW3  	Momentary	1NO	ABW310 ①		
		1NC	ABW301 ①		
		1NO-1NC	ABW311 ①		
		2NO	ABW320 ①		
		2NC	ABW302 ①		
		2NO-2NC	ABW322 ①		
	Maintained	1NO	AOW310 ①		
		1NC	AOW301 ①		
		1NO-1NC	AOW311 ①		
		2NO	AOW320 ①		
		2NC	AOW302 ①		
		2NO-2NC	AOW322 ①		

- Round bezel and shroud (metal): Mat aluminum color
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 296.

TW Series Pushbuttons ø22

Mushroom / Pushlock Turn Reset / Push Turn Lock / Pushlock Key Reset

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm)
ø40mm Mushroom ABW4 AOW4  	Momentary	1NO	ABW410 ①	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	ABW401 ①		
		1NO-1NC	ABW411 ①		
		2NO	ABW420 ①		
		2NC	ABW402 ①		
		2NO-2NC	ABW422 ①		
	Maintained	1NO	AOW410 ①		
		1NC	AOW401 ①		
		1NO-1NC	AOW411 ①		
		2NO	AOW420 ①		
		2NC	AOW402 ①		
		2NO-2NC	AOW422 ①		
ø40mm Mushroom w/Full Shroud ABGW4  	Momentary	1NO	ABGW410 ①		
		1NC	ABGW401 ①		
		1NO-1NC	ABGW411 ①		
		2NO	ABGW420 ①		
		2NC	ABGW402 ①		
		2NO-2NC	ABGW422 ①		
ø29mm Pushlock Turn Reset AVW3 (Note)  		1NO	AVW310 ①	R: red Y: yellow	
		1NC	AVW301 ①		
		1NO-1NC	AVW311 ①		
		2NO	AVW320 ①		
		2NC	AVW302 ①		
		2NO-2NC	AVW322 ①		
ø40mm Pushlock Turn Reset AVW4 (Note)  		1NO	AVW410 ①		
		1NC	AVW401 ①		
		1NO-1NC	AVW411 ①		
		2NO	AVW420 ①		
		2NC	AVW402 ①		
		2NO-2NC	AVW422 ①		
ø40mm Push Turn Lock AJW4  		1NO	AJW410 ①	B: black G: green R: red Y: yellow	
		1NC	AJW401 ①		
		1NO-1NC	AJW411 ①		
		2NO	AJW420 ①		
		2NC	AJW402 ①		
		2NO-2NC	AJW422 ①		
ø29mm Pushlock Key Reset AXW3 (Note)  		1NO	AXW310R	Red only	
		1NC	AXW301R		
		1NO-1NC	AXW311R		
		2NO	AXW320R		
		2NC	AXW302R		
		2NO-2NC	AXW322R		

- Round bezel (metal): Mat aluminum color
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 296.

Note: AVW3, AVW4, and AXW3 pushbuttons cannot be used as emergency stop switches. When emergency stop switches are required, use XW or HW series pushbuttons (ISO 13850 and IEC 60947-5-5 compliant).

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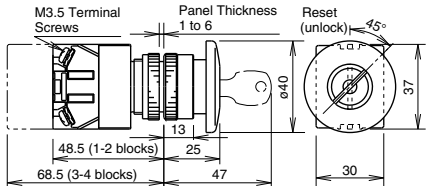
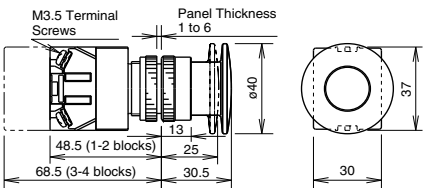
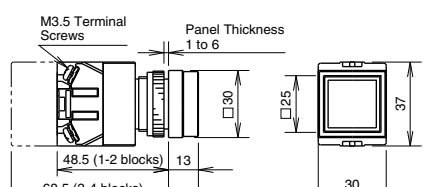
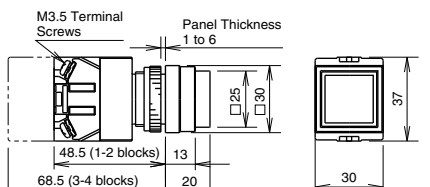
Sensors

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ø22 TW Series Pushbuttons

Pushlock Key Reset / Push-Pull / Square Flush / Square Extended

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm)
ø40mm Mushroom Push Lock Key Reset AXW4 (Note)  		1NO	AXW410R	Red only	
		1NC	AXW401R		
		1NO-1NC	AXW411R		
		2NO	AXW420R		
		2NC	AXW402R		
		2NO-2NC	AXW422R		
ø40mm Mushroom Push-Pull AYW4  		1NO	AYW410①		
		1NC	AYW401①		
		1NO-1NC	AYW411①		
		2NO	AYW420①		
		2NC	AYW402①		
Square Flush ABQW1 AOQW1  	Momentary	1NO	ABQW110①	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	ABQW101①		
		1NO-1NC	ABQW111①		
		2NO	ABQW120①		
		2NC	ABQW102①		
	Maintained	2NO-2NC	ABQW122①		
		1NO	AOQW110①		
		1NC	AOQW101①		
		1NO-1NC	AOQW111①		
		2NO	AOQW120①		
Square Extended ABQW2 AOQW2  	Momentary	2NC	AOQW102①		
		2NO-2NC	AOQW122①		
		1NO	AOQW210①		
		1NC	AOQW201①		
		1NO-1NC	AOQW211①		
	Maintained	2NO	AOQW220①		
		2NC	AOQW202①		
		2NO-2NC	AOQW222①		
		1NO	AOQW210①		
		1NC	AOQW201①		

- Round bezel (metal): Mat aluminum color
- Square bezel (plastic): Black
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 296.

Note: AXW4 pushbuttons cannot be used as emergency stop switches. When emergency stop switches are required, use XW or HW series pushbuttons (ISO 13850 and IEC 60947-5-5 compliant).

Contact Statuses of Push-Pull Switch

Contact	ø40mm Mushroom Push-Pull Switch	
	Push	Pull
1NO		
1NC		
1NO-1NC	 	 
2NO	 	 
2NC	 	 

Note: Push-pull switch can have a maximum of two contact blocks.

TW Series Pilot Lights ø22

Round Flush / Dome / Square Flush Pilot Lights

Package Quantity: 1

Shape	Lamp	Part No.	② Lens/Illumination Color Code
Round Flush APW1  	Without Lamp	APW199②	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	APW1③D②	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	APW1③②	A: amber, G: green, R: red, S: blue, W: white
Round Flush (Marking) APW1B  	Without Lamp	APW1B99②	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	APW1B③D②	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	APW1B③②	A: amber, G: green, R: red, S: blue, W: white
Dome APW2  	Without Lamp	APW299②	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	APW2③D②	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	APW2③②	A: amber, G: green, R: red, S: blue, W: white
Square Flush (Marking) APQW1B  	Without Lamp	APQW1B99②	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	APQW1B③D②	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	APQW1B③②	A: amber, G: green, R: red, S: blue, W: white

Designation Code

Specify an designation code in place of ③ in the Part No.

③ Operating Voltage Code		Input Type
LED	Incandescent	
66: 6V AC/DC	66: 6V AC/DC	Full Voltage
11: 12V AC/DC	88: 12V AC/DC	
22: 24V AC/DC	33: 24V AC/DC	
16: 100/110V AC		Transformer
116: 115V AC		
126: 120V AC		
26: 200/220V AC		
236: 230V AC		
246: 240V AC		
386: 380V AC		
46: 400/440V AC		
486: 480V AC		DC-DC Converter *
16□□D: 110V DC	—	

- Use a pure white LED lamp for yellow illumination.
- The white (W) lens of APW1B and APQW1B consists of a clear lens and a white marking plate.
- Round bezel (metal): Mat aluminum color Square bezel (plastic): Black
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

Flush

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LED Illumination Units

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Operator Interfaces

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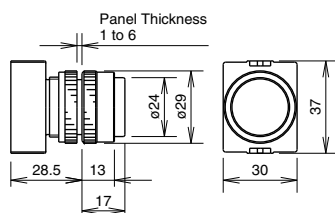
Explosion Protection

References

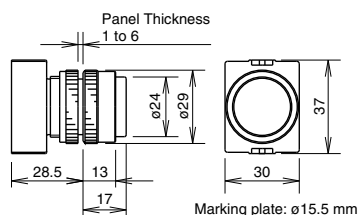
ø22 TW Series Pilot Lights

Dimensions

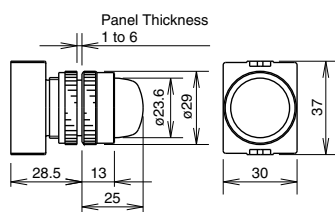
Round Flush APW1 Full Voltage



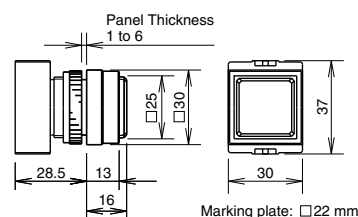
Round Flush Marking APW1B Full Voltage



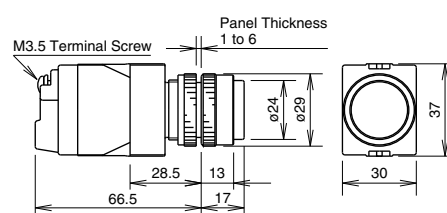
Dome APW2
Full Voltage



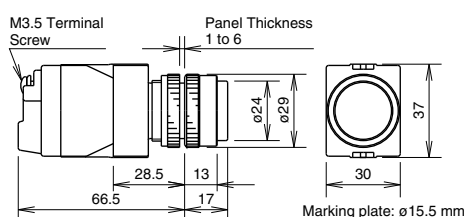
Square Flush Marking APQW1B
Full Voltage



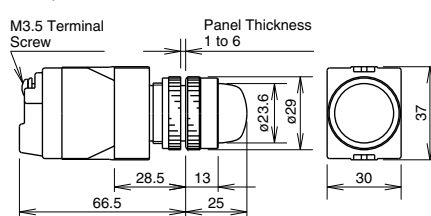
Round Flush APW1 Transformer, DC-DC Converter



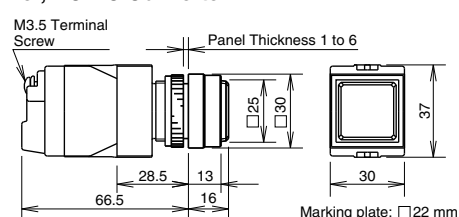
Round Flush Marking APW1B Transformer, DC-DC Converter



Dome APW2 Transformer, DC-DC Converter



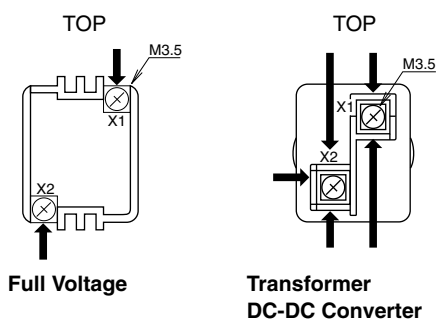
Square Flush Marking APQW1B Transformer, DC-DC Converter



All dimensions in mm.

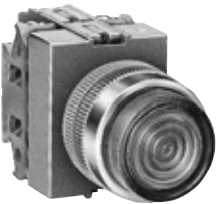
Terminal Wiring (Bottom View)

- Arrows indicate access directions for wiring.



TW Series Illuminated Pushbuttons ø22

Round Extended Illuminated Pushbuttons

Shape	Operation	Lamp	Contact	Part No.
Round Extended ALW2 AOLW2  	Momentary	Without Lamp	1NO-1NC	ALW29911②
			2NO	ALW29920②
			2NO-2NC	ALW29922②
		LED	1NO-1NC	ALW2③11D②
			2NO	ALW2③20D②
			2NO-2NC	ALW2③22D②
			1NO-1NC	ALW21611DD② (Note)
			2NO	ALW21620DD② (Note)
			2NO-2NC	ALW21622DD② (Note)
		Incandescent	1NO-1NC	ALW2③11②
			2NO	ALW2③20②
			2NO-2NC	ALW2③22②
	Maintained	Without Lamp	1NO-1NC	AOLW29911②
			2NO	AOLW29920②
			2NO-2NC	AOLW29922②
		LED	1NO-1NC	AOLW2③11D②
			2NO	AOLW2③20D②
			2NO-2NC	AOLW2③22D②
			1NO-1NC	AOLW21611DD② (Note)
			2NO	AOLW21620DD② (Note)
			2NO-2NC	AOLW21622DD② (Note)
		Incandescent	1NO-1NC	AOLW2③11②
			2NO	AOLW2③20②
			2NO-2NC	AOLW2③22②

Note: DC-DC converter types.

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC	Transformer	
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		
			16□□D: 110V DC	—	DC-DC Converter *

• Use a pure white LED lamp for yellow illumination.

*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

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References

ø22 TW Series Illuminated Pushbuttons

Round Extended Illuminated Pushbuttons (Marking)

Shape	Operation	Lamp	Contact	Part No.
Round Extended (Marking) ALW2B AOLW2B 	Momentary	Without Lamp	1NO-1NC	ALW2B9911②
			2NO	ALW2B9920②
			2NO-2NC	ALW2B9922②
		LED	1NO-1NC	ALW2B③11D②
			2NO	ALW2B③20D②
			2NO-2NC	ALW2B③22D②
			1NO-1NC	ALW2B1611DD② (Note)
			2NO	ALW2B1620DD② (Note)
			2NO-2NC	ALW2B1622DD② (Note)
		Incandescent	1NO-1NC	ALW2B③11②
			2NO	ALW2B③20②
			2NO-2NC	ALW2B③22②
	Maintained	Without Lamp	1NO-1NC	AOLW2B9911②
			2NO	AOLW2B9920②
			2NO-2NC	AOLW2B9922②
		LED	1NO-1NC	AOLW2B③11D②
			2NO	AOLW2B③20D②
			2NO-2NC	AOLW2B③22D②
			1NO-1NC	AOLW2B1611DD② (Note)
			2NO	AOLW2B1620DD② (Note)
			2NO-2NC	AOLW2B1622DD② (Note)
		Incandescent	1NO-1NC	AOLW2B③11②
			2NO	AOLW2B③20②
			2NO-2NC	AOLW2B③22②

Note: DC-DC converter types.

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		
			16□□D: 110V DC	—	DC-DC Converter *

* Use a pure white LED lamp for yellow illumination.

*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

TW Series Illuminated Pushbuttons ø22

Round Extended with Full Shroud Illuminated Pushbuttons

Shape	Operation	Lamp	Contact	Part No.
Round Extended With Full Shroud ALFW2 AOLFW2  	Momentary	Without Lamp	1NO-1NC	ALFW29911②
			2NO	ALFW29920②
			2NO-2NC	ALFW29922②
		LED	1NO-1NC	ALFW2③11D②
			2NO	ALFW2③20D②
			2NO-2NC	ALFW2③22D②
			1NO-1NC	ALFW21611DD② (Note)
			2NO	ALFW21620DD② (Note)
			2NO-2NC	ALFW21622DD② (Note)
		Incandescent	1NO-1NC	ALFW2③11②
			2NO	ALFW2③20②
			2NO-2NC	ALFW2③22②
	Maintained	Without Lamp	1NO-1NC	AOLFW29911②
			2NO	AOLFW29920②
			2NO-2NC	AOLFW29922②
		LED	1NO-1NC	AOLFW2③11D②
			2NO	AOLFW2③20D②
			2NO-2NC	AOLFW2③22D②
			1NO-1NC	AOLFW21611DD② (Note)
			2NO	AOLFW21620DD② (Note)
			2NO-2NC	AOLFW21622DD② (Note)
		Incandescent	1NO-1NC	AOLFW2③11②
			2NO	AOLFW2③20②
			2NO-2NC	AOLFW2③22②

Note: DC-DC converter types.

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		
			16□□D: 110V DC	—	DC-DC Converter *

• Use a pure white LED lamp for yellow illumination.

*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

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ø22 TW Series Illuminated Pushbuttons

Round Extended with Full Shroud Illuminated Pushbuttons (Marking)

Shape	Operation	Lamp	Contact	Part No.
Round Extended (Marking) With Full Shroud ALFW2B AOLFW2B 	Momentary	Without Lamp	1NO-1NC	ALFW2B9911②
			2NO	ALFW2B9920②
			2NO-2NC	ALFW2B9922②
		LED	1NO-1NC	ALFW2B③11D②
			2NO	ALFW2B③20D②
			2NO-2NC	ALFW2B③22D②
			1NO-1NC	ALFW2B1611DD② (Note)
			2NO	ALFW2B1620DD② (Note)
			2NO-2NC	ALFW2B1622DD② (Note)
		Incandescent	1NO-1NC	ALFW2B③11②
			2NO	ALFW2B③20②
			2NO-2NC	ALFW2B③22②
	Maintained	Without Lamp	1NO-1NC	AOLFW2B9911②
			2NO	AOLFW2B9920②
			2NO-2NC	AOLFW2B9922②
		LED	1NO-1NC	AOLFW2B③11D②
			2NO	AOLFW2B③20D②
			2NO-2NC	AOLFW2B③22D②
			1NO-1NC	AOLFW2B1611DD② (Note)
			2NO	AOLFW2B1620DD② (Note)
			2NO-2NC	AOLFW2B1622DD② (Note)
		Incandescent	1NO-1NC	AOLFW2B③11②
			2NO	AOLFW2B③20②
			2NO-2NC	AOLFW2B③22②

Note: DC-DC converter types.

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		
			16□□D: 110V DC	—	DC-DC Converter *

• Use a pure white LED lamp for yellow illumination.

*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

TW Series Illuminated Pushbuttons ø22

Square Extended Illuminated Pushbuttons (Marking)

Shape	Operation	Lamp	Contact	Part No.
Square Extended (Marking) ALQW2B AOLQW2B 	Momentary	Without Lamp	1NO-1NC	ALQW2B9911②
			2NO	ALQW2B9920②
			2NO-2NC	ALQW2B9922②
		LED	1NO-1NC	ALQW2B③11D②
			2NO	ALQW2B③20D②
			2NO-2NC	ALQW2B③22D②
			1NO-1NC	ALQW2B1611DD② (Note)
			2NO	ALQW2B1620DD② (Note)
			2NO-2NC	ALQW2B1622DD② (Note)
		Incandescent	1NO-1NC	ALQW2B③11②
			2NO	ALQW2B③20②
			2NO-2NC	ALQW2B③22②
	Maintained	Without Lamp	1NO-1NC	AOLQW2B9911②
			2NO	AOLQW2B9920②
			2NO-2NC	AOLQW2B9922②
		LED	1NO-1NC	AOLQW2B③11D②
			2NO	AOLQW2B③20D②
			2NO-2NC	AOLQW2B③22D②
			1NO-1NC	AOLQW2B1611DD② (Note)
			2NO	AOLQW2B1620DD② (Note)
			2NO-2NC	AOLQW2B1622DD② (Note)
		Incandescent	1NO-1NC	AOLQW2B③11②
			2NO	AOLQW2B③20②
			2NO-2NC	AOLQW2B③22②

Note: DC-DC converter types.

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		
			16□□D: 110V DC	—	DC-DC Converter *

• Use a pure white LED lamp for yellow illumination.

*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

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References

ø22 TW Series Illuminated Pushbuttons

Mushroom (ø29) Illuminated Pushbuttons

Shape	Operation	Lamp	Contact	Part No.
ø29 Mushroom ALW3 AOLW3  	Momentary	Without Lamp	1NO-1NC	ALW39911 ②
		Incandescent		ALW3 ③ 11 ②
	Maintained	Without Lamp		AOLW39911 ②
		Incandescent		AOLW3 ③ 11 ②
ø29 Mushroom (Marking) ALW3B AOLW3B  	Momentary	Without Lamp		ALW3B9911 ②
		Incandescent		ALW3B ③ 11 ②
	Maintained	Without Lamp		AOLW3B9911 ②
		Incandescent		AOLW3B ③ 11 ②
ø29 Mushroom Pushlock Turn Reset AVLW3 (Note)  	Without Lamp	LED	1NO-1NC	AVLW39911R
			2NO	AVLW39920R
			2NO-2NC	AVLW39922R
	LED	LED	1NO-1NC	AVLW3 ③ 11DR
			2NO	AVLW3 ③ 20DR
			2NO-2NC	AVLW3 ③ 22DR
	Incandescent	Incandescent	1NO-1NC	AVLW3 ③ 11R
			2NO	AVLW3 ③ 20R
			2NO-2NC	AVLW3 ③ 22R
ø29 Mushroom Pushlock Turn Reset (Marking) AVLW3B (Note)  	Without Lamp	Without Lamp	1NO	AVLW3B9911R
			1NC	AVLW3B9920R
			1NO-1NC	AVLW3B9922R
	LED	LED	1NO-1NC	AVLW3B ③ 11DR
			2NO	AVLW3B ③ 20DR
			2NO-2NC	AVLW3B ③ 22DR
	Incandescent	Incandescent	1NO-1NC	AVLW3B ③ 11R
			2NO	AVLW3B ③ 20R
			2NO-2NC	AVLW3B ③ 22R

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

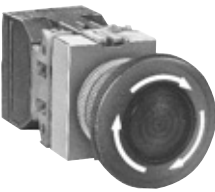
② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		

• Use a pure white LED lamp for yellow illumination.

Note: TW series pushlock turn reset illuminated pushbuttons cannot be used as emergency stop switches under international safety standards ISO13850 and IEC60947-5. For use as emergency stop switches, use XW or HW series.

TW Series Illuminated Pushbuttons ø22

Mushroom (ø40 mm) Illuminated Pushbuttons

Shape	Lamp	Input Type	Contact	Part No.
ø40 Mushroom Pushlock Turn Reset AVLW4  	Without Lamp	Full Voltage	1NO-1NC	AVLW49911R
			2NO	AVLW49920R
			2NO-2NC	AVLW49922R
	LED	Transformer	1NO-1NC	AVLW4③11DR
			2NO	AVLW4③20DR
			2NO-2NC	AVLW4③22DR
	Incandescent	Transformer	1NO-1NC	AVLW4③11R
			2NO	AVLW4③20R
			2NO-2NC	AVLW4③22R
ø40 Mushroom Pushlock Turn Reset (Marking) AVLW4B  	Without Lamp	Full Voltage	1NO	AVLW4B9911R
			1NC	AVLW4B9920R
			1NO-1NC	AVLW4B9922R
	LED	Transformer	1NO-1NC	AVLW4B③11DR
			2NO	AVLW4B③20DR
			2NO-2NC	AVLW4B③22DR
	Incandescent	Transformer	1NO-1NC	AVLW4B③11R
			2NO	AVLW4B③20R
			2NO-2NC	AVLW4B③22R
ø40 Mushroom Push Pull AYLW4 (2-position maintained)  	Without Lamp	Full Voltage	1NO-1NC	AYLW49911②
			2NO	AYLW49920②
			2NO-2NC	AYLW49922②
	Incandescent	Transformer	1NO-1NC	AYLW4③11②
			2NO	AYLW4③20②
			2NO-2NC	AYLW4③22②
ø40 Mushroom Push Pull (Marking) AYLW4B (2-position maintained)  	Without Lamp	Full Voltage	1NO	AYLW4B9911②
			1NC	AYLW4B9920②
			1NO-1NC	AYLW4B9922②
	Incandescent	Transformer	1NO-1NC	AYLW4B③11②
			2NO	AYLW4B③20②
			2NO-2NC	AYLW4B③22②

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			116: 115V AC		
			126: 120V AC		
			26: 200/220V AC		
			236: 230V AC		
			246: 240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		

• Use a pure white LED lamp for yellow illumination.

Note: TW series pushlock turn reset illuminated pushbuttons cannot be used as emergency stop switches under international safety standards ISO13850 and IEC60947-5. For use as emergency stop switches, use XW or HW series.

Contact Statuses of Push-Pull Switch

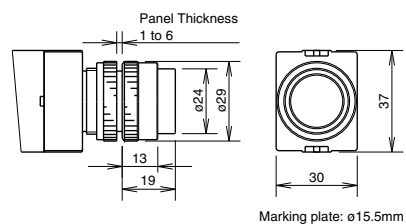
Contact	ø40mm Mushroom Push-Pull Switch	
	Push	Pull
1NO		
1NC		
1NO-1NC		
2NO		
2NC		

Note: Push-pull switch can have a maximum of two contact blocks.

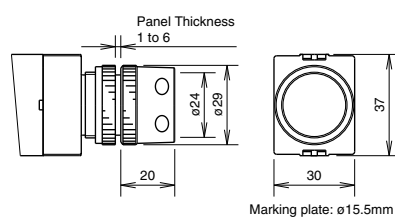
Ø22 TW Series Illuminated Pushbuttons

Dimensions (Operator)

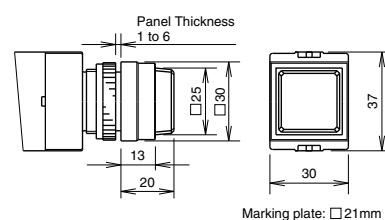
Round Extended (non-marking/markings)
ALW2 / ALW2B / AOLW2 / AOLW2B



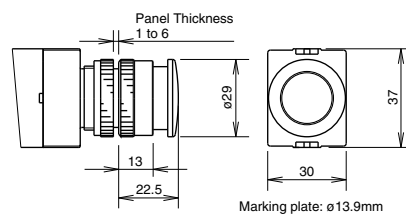
**Round Extended with Full Shroud
(non-marking/markings)
ALFW2 / ALFW2B / AOLFW2 / AOLFW2B**



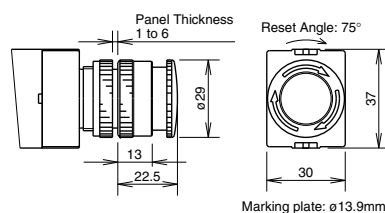
Square Extended (marking)
ALQW2B / AOLQW2B



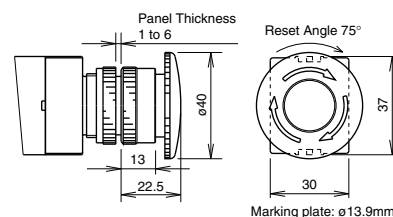
ø29 Mushroom (non-marking/marking)
ALW3 / ALW3B / AOLW3 / AOLW3B



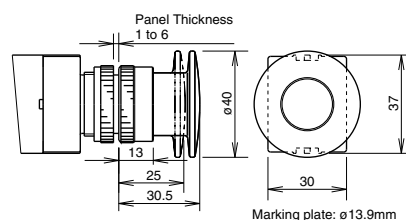
**ø29 Mushroom Pushlock Turn Reset
(non-marking/markings)
AVLW3 / AVLW3B**



**ø40 Mushroom Pushlock Turn Reset
(non-marking/markings)
AVLW4 / AVLW4B**



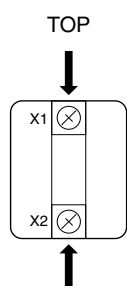
**ø40 Mushroom Push Pull
(non-marking/markings)
AYLW4 / AYLW4B**



All dimensions in mm.

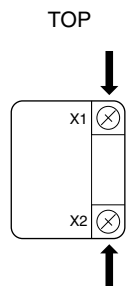
Terminal Arrangement (Lamp Terminal) (Bottom View)

- Arrows indicate access directions for wiring.



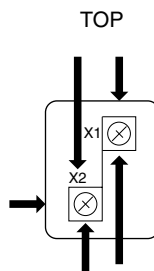
Full Voltage

When using TW-DA1B Full Voltage Adapter for 2 or 4 contact blocks



Full Voltage

When using HW-DA1B Full Voltage Adapter for 1 or 3 contact blocks

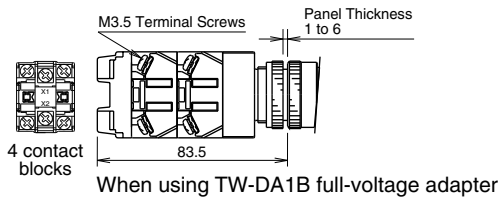
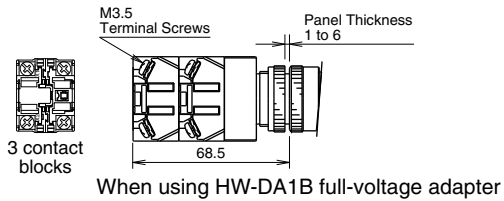
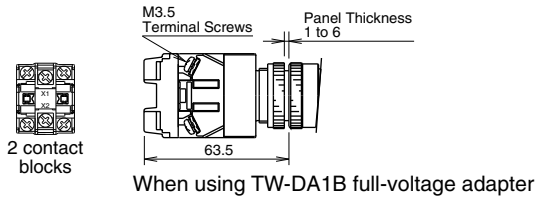
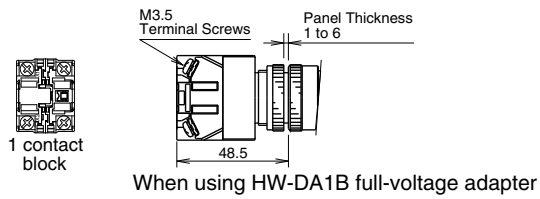


Transformer DC-DC Converter

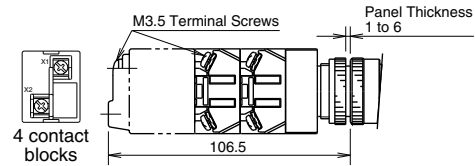
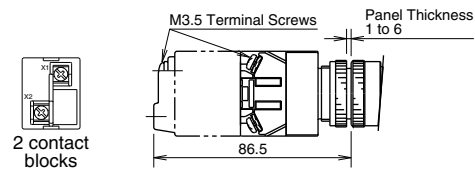
TW Series Illuminated Pushbuttons ø22

Dimensions (Behind the Panel)

Full Voltage



Transformer DC-DC Converter



Note: For push-pull units a maximum of two contact blocks can be used.

All dimensions in mm.

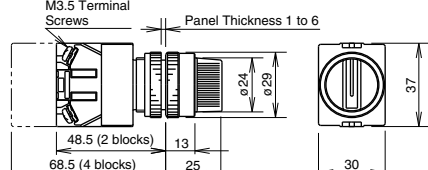
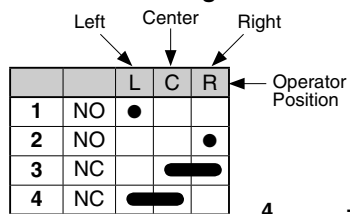
Contact Configuration and Codes

Contact Configuration		Code
1 block	1NO	10
	1NC	01
2 blocks	1NO-1NC	11
	2NO	20
3 blocks	2NC	02
	2NO-1NC	21
	1NO-2NC	12
	3NO	30
4 blocks	3NC	03
	3NO-1NC	31
	2NO-2NC	22
	1NO-3NC	13
	4NO	40
	4NC	04

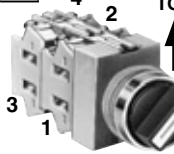
Flush Silhouette
Switches & Pilot Lights
Display Lights
LED Illumination Units
Display Units
Safety Products
Terminal Blocks
Comm. Terminals
AS-Interface
Relays & Timers
Sockets
Circuit Protectors
Power Supplies
PLCs & SmartRelay
Operator Interfaces
Sensors
Control Stations
Explosion Protection
References

ø22 TW Series Selector Switches

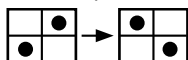
Selector Switches (Knob Operator)

No. of Positions	Shape						ASW		 		
	Contact Arrangement Chart						   				
90° 2-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	—	
		Mounting Position	Contact	L	R						
	10 (1NO)	1	NO		●		ASW210	ASW2110	ASW2210 *		
		2	Dummy								
	11 (1NO-1NC)	1	NO		●		ASW211	ASW2111	ASW2211 *		
		2	NC	●							
20 (2NO)	1	NO		●		ASW220	ASW2120	ASW2220 *			
	2	NO		●							
22 (2NO-2NC)	1	NO		●		ASW222	ASW2122	ASW2222 *			
	2	NC	●								
	3	NO		●							
	4	NC	●								
45° 3-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way	
		Mounting Position	Contact	L	C	R					
	20 (2NO)	1	NO	●			ASW320	ASW3120	ASW3220	ASW3320	
		2	NO			●					
	02 (2NC)	1	NC			●	ASW302	ASW3102	ASW3202	ASW3302	
		2	NC	●							
	22 (2NO-2NC)	1	NO	●			ASW322	ASW3122	ASW3222	ASW3322	
		2	NO			●					
		3	NC			●					
	40 (4NO)	1	NO	●			ASW340	ASW3140	ASW3240	ASW3340	
		2	NO			●					
		3	NO	●							
	04 (4NC)	1	NC			●	ASW304	ASW3104	ASW3204	ASW3304	
		2	NC	●							
		3	NC			●					
	3S ★	1	NO	●			ASW33S-243 ★	—	—	—	
		2	NO			●					
		3	NC			●					
4		Dummy									
30° 5-position / 45° 4-position	Contact Code	Contact Block		Operator Position					Maintained	Maintained	Contact Block Mounting Position and Contact Arrangement Chart 
		Mounting Position	Contact	1	2	3	4	5			
	4S ★	1	NC			●			ASW44S-407 ★	—	
		2	NC		●						
		3	NC			●					
		4	NO				●				
	4S ★	1	NO	●					ASW44S-411 ★	—	
		2	NC		●						
		3	NC			●					
		4	NO				●				
	3S ★	1	NO	●					ASW43S-461 ★	—	
		2	NC		●						
3		NC			●						
4		Dummy									
4S ★	1	NO	●					—	ASW54S-501 ★		
	2	NC		●							
	3	NC			●						
	4	NO				●					

• For more contact arrangement chart, see pages 317 to 319.



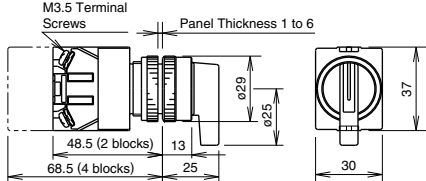
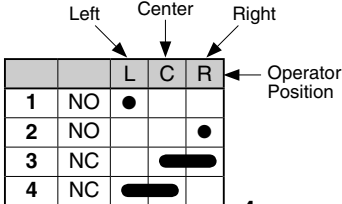
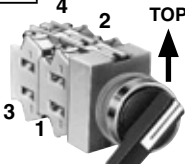
• On the 2-position selector switches marked with * above, the contact operation is reversed as follows.



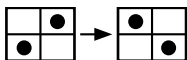
- On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.
- Selector switches with one or three contact blocks contain a dummy block.
- Knob operator: White indicator on black knob

TW Series Selector Switches ø22

Selector Switches (Lever Operator)

No. of Positions	Shape		ASW*L								
	Contact Arrangement Chart										
90° 2-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	—	
		Mounting Position	Contact	L	R						
	10 (1NO)	1	NO		●		ASW2L10	ASW21L10	ASW22L10 *	—	
		2	Dummy								
	11 (1NO-1NC)	1	NO		●		ASW2L11	ASW21L11	ASW22L11 *		
		2	NC	●							
20 (2NO)	1	NO		●		ASW2L20	ASW21L20	ASW22L20 *			
	2	NO		●							
45° 3-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way	
		Mounting Position	Contact	L	C	R					
	20 (2NO)	1	NO	●				ASW3L20	ASW31L20	ASW32L20	ASW33L20
		2	NO			●					
	02 (2NC)	1	NC		●			ASW3L02	ASW31L02	ASW32L02	ASW33L02
		2	NC	●							
30° 5-position / 45° 4-position	Contact Code	Contact Block		Operator Position					Maintained	Maintained	Contact Block Mounting Position and Contact Arrangement Chart 
		Mounting Position	Contact	1	2	3	4	5			
	4S ★	1	NC		●				ASW4L4S-407 ★	—	• For more contact arrangement chart, see pages 317 to 319. 
		2	NC			●					
		3	NC				●				
		4	NO					●			
4S ★	1	NO	●					ASW4L4S-411 ★	—		
	2	NC		●							
	3	NC			●						
	4	NO				●					
3S ★	1	NO	●					ASW4L3S-461 ★	—		
	2	NC		●							
	3	NC			●						
	4	Dummy									
4S ★	1	NO	●					—	ASW5L4S-501 ★		
	2	NC		●							
	3	NC			●						
	4	NO				●					

• On the 2-position selector switches marked with * above, the contact operation is reversed as follows.



- On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.
- Selector switches with one or three contact blocks contain a dummy block.
- Lever operator: White indicator on black lever

Flush Silhouette

Switches & Pilot Lights

Display Lights

LED Illumination Units

Display Units

Safety Products

Terminal Blocks

Comm. Terminals

AS-Interface

Relays & Timers

Sockets

Circuit Protectors

Power Supplies

PLCs & SmartRelay

Operator Interfaces

Sensors

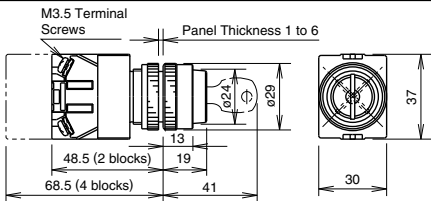
Control Stations

Explosion Protection

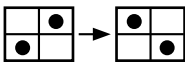
References

ø22 TW Series Selector Switches

Key Selector Switches

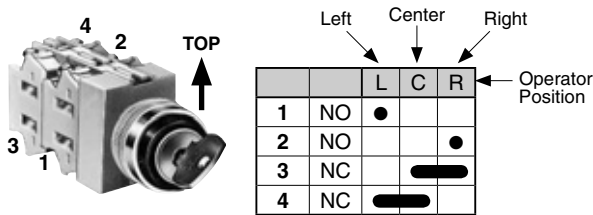
No. of Positions	Shape						ASW*K			
	Contact Arrangement Chart						  M3.5 Terminal Screws Panel Thickness 1 to 6 			
90° 2-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	—
		Mounting Position	Contact	L	R					
	10 (1NO)	1	NO		●		ASW2K10	ASW21K10	ASW22K10 *	
		2	Dummy							
	11 (1NO-1NC)	1	NO		●		ASW2K11	ASW21K11	ASW22K11 *	
		2	NC	●						
	20 (2NO)	1	NO		●		ASW2K20	ASW21K20	ASW22K20 *	
		2	NO		●					
22 (2NO-2NC)	1	NO		●		ASW2K22	ASW21K22	ASW22K22 *		
	2	NC	●							
	3	NO		●						
	4	NC	●							
45° 3-position	Contact Code	Contact Block		Operator Position			Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way
		Mounting Position	Contact	L	C	R				
	20 (2NO)	1	NO	●			ASW3K20	ASW31K20	ASW32K20	ASW33K20
		2	NO			●				
	02 (2NC)	1	NC				ASW3K02	ASW31K02	ASW32K02	ASW33K02
		2	NC							
	22 (2NO-2NC)	1	NO	●			ASW3K22	ASW31K22	ASW32K22	ASW33K22
		2	NO			●				
		3	NC							
		4	NC							
	40 (4NO)	1	NO	●			ASW3K40	ASW31K40	ASW32K40	ASW33K40
		2	NO			●				
		3	NO	●						
		4	NO			●				
	04 (4NC)	1	NC				ASW3K04	ASW31K04	ASW32K04	ASW33K04
		2	NC							
		3	NC							
		4	NC							
	3S ★	1	NO	●			ASW3K3S-243 ★	—	—	—
		2	NO			●				
		3	NC		●					
		4	Dummy							

- On the spring-returned types, the key can be released only from the maintained position. On the maintained types, the key can be released from every position. Key retained positions are also available. See page 297.
- On the 2-position selector switches marked with * above, the contact operation is reversed as follows.



- On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.
- Key selector switches with one or three contact blocks contain a dummy block.
- Cylinder cover: Black, Cylinder: Metal

Contact Block Mounting Position and Contact Arrangement Chart



- For more contact arrangement chart, see pages 317 to 319.

TW Series Illuminated Selector Switches ø22

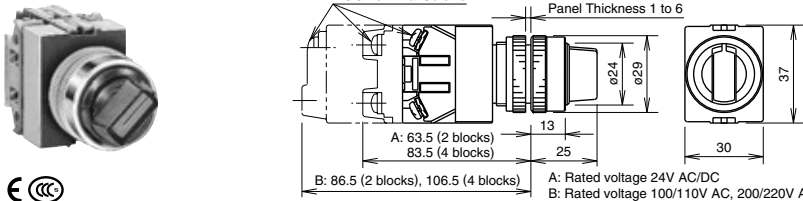
Illuminated Selector Switches

90° 2-position

Shape

Contact Arrangement Chart

ASLW



UL LISTED, SP, CE, CCC

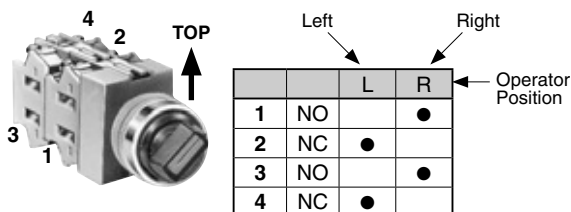
Contact Code	Contact Block		Operator Position		Lamp	Maintained	Spring Return from Right	Spring Return from Left
	Mounting Position	Contact	L	R		L R	L R	L R
11 (1NO-1NC)	1	NO		●	Without Lamp	ASLW29911②	ASLW219911②	ASLW229911②
	2	NC	●		LED	ASLW2③11D②	ASLW21③11D②	ASLW22③11D②
					Incandescent	ASLW2③11②	ASLW21③11②	ASLW22③11②
20 (2NO)	1	NO		●	Without Lamp	ASLW29920②	ASLW219920②	ASLW229920②
	2	NO		●	LED	ASLW2③20D②	ASLW21③20D②	ASLW22③20D②
					Incandescent	ASLW2③20②	ASLW21③20②	ASLW22③20②
22 (2NO-2NC)	1	NO		●	Without Lamp	ASLW29922②	ASLW219922②	ASLW229922②
	2	NC	●					
	3	NO		●	LED	ASLW2③22D②	ASLW21③22D②	ASLW22③22D②
	4	NC	●					
					Incandescent	ASLW2③22②	ASLW21③22②	ASLW22③22②

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			136: 115/120V AC		
			26: 200/220V AC		
			256: 230/240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		

Contact Block Mounting Position and Contact Arrangement Chart



• For more contact arrangement chart, see pages 317 to 319.

ø22 TW Series Illuminated Selector Switches

Illuminated Selector Switches

45° 3-position

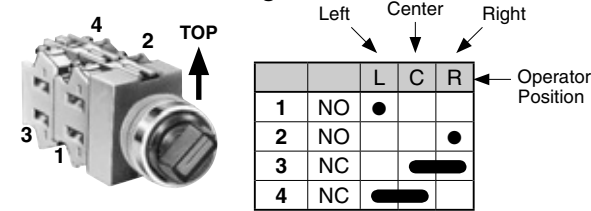
Contact Code	Contact Block		Operator Position			Lamp	Maintained	Spring Return from Right	Spring Return from left	Spring Return Two-way
	Mounting Position	Contact	L	C	R					
20 (2NO)	1	NO	●			Without Lamp	ASLW39920	ASLW319920	ASLW329920	ASLW339920
	2	NO			●	LED	ASLW3③20D②	ASLW31③20D②	ASLW32③20D②	ASLW33③20D②
						Incandescent	ASLW3③20②	ASLW31③20②	ASLW32③20②	ASLW33③20②
02 (2NC)	1	NC			■	Without Lamp	ASLW39902	ASLW319902	ASLW329902	ASLW339902
	2	NC	■			LED	ASLW3③02D②	ASLW31③02D②	ASLW32③02D②	ASLW33③02D②
						Incandescent	ASLW3③02②	ASLW31③02②	ASLW32③02②	ASLW33③02②
22 (2NO-2NC)	1	NO	●			Without Lamp	ASLW39922	ASLW319922	ASLW329922	ASLW339922
	2	NO			●					
	3	NC			■	LED	ASLW3③22D②	ASLW31③22D②	ASLW32③22D②	ASLW33③22D②
	4	NC	■			Incandescent	ASLW3③22②	ASLW31③22②	ASLW32③22②	ASLW33③22②
40 (4NO)	1	NO	●			Without Lamp	ASLW39940	ASLW319940	ASLW329940	ASLW339940
	2	NO			●					
	3	NO	●			LED	ASLW3③40D②	ASLW31③40D②	ASLW32③40D②	ASLW33③40D②
	4	NO			●	Incandescent	ASLW3③40②	ASLW31③40②	ASLW32③40②	ASLW33③40②
04 (4NC)	1	NC			■	Without Lamp	ASLW39904	ASLW319904	ASLW329904	ASLW339904
	2	NC	■							
	3	NC			■	LED	ASLW3③04D②	ASLW31③04D②	ASLW32③04D②	ASLW33③04D②
	4	NC	■			Incandescent	ASLW3③04②	ASLW31③04②	ASLW32③04②	ASLW33③04②

Designation Code

Specify a designation code in place of ② or ③ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type
Without Lamp	LED	Incandescent	LED	Incandescent	
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	66: 6V AC/DC	66: 6V AC/DC	Full Voltage
			11: 12V AC/DC	88: 12V AC/DC	
			22: 24V AC/DC	33: 24V AC/DC	
			16: 100/110V AC		Transformer
			136: 115/120V AC		
			26: 200/220V AC		
			256: 230/240V AC		
			386: 380V AC		
			46: 400/440V AC		
			486: 480V AC		

Contact Block Mounting Position and Contact Arrangement Chart



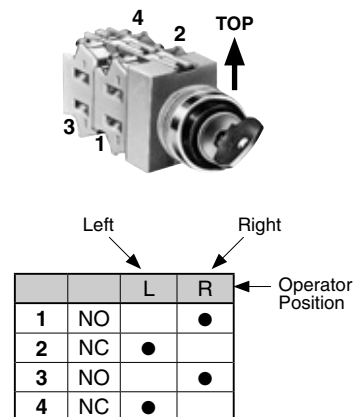
• For more contact arrangement chart, see pages 317 to 319.

TW series Selector Switch Contact Arrangement Charts ø22

90° 2-position (Maintained / Spring Return)

Positions				Maintained	Spring Return from Right	Spring Return from Left		
Operator				Knob, Lever, Key, Illuminated				
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions				
10 (1NO)	—	1	NO					
		2	Dummy					
01 (1NC)	—	1	NC					
		2	Dummy					
11 (1NO-1NC)	—	1	NO					
		2	NC					
		103	1	NC				
			2	NO				
20 (2NO)	—	1	NO					
		2	NO					
02 (2NC)	—	1	NC					
		2	NC					
22 (2NO-2NC)	—	1	NO					
		2	NC					
		3	NO					
		4	NC					
	109	1	NO					
		2	NC					
		3	NC					
		4	NO					
	110	1	NC					
		2	NO					
		3	NC					
		4	NO					
	111	1	NO					
		2	NO					
		3	NC					
		4	NC					
	117	1	NC					
		2	NO					
		3	NO					
		4	NC					
31 (3NO-1NC)	107	1	NC					
		2	NO					
		3	NO					
		4	NO					
40 (4NO)	—	1	NO					
		2	NO					
		3	NO					
		4	NO					
2R ★	118 ★	1	NO					
		2	NO					
	168 ★	1	NO					
		2	NC					
	119 ★	1	NC					
		2	NO					
	169 ★	1	NC					
		2	NO					
4R ★	120 ★	1	NO					
		2	NC					
		3	NO					
		4	NC					
	170 ★	1	NO					
		2	NC					
		3	NO					
		4	NC					
	121 ★	1	NC					
		2	NO					
		3	NC					
		4	NO					
	171 ★	1	NC					
		2	NO					
		3	NC					
		4	NO					

Contact Block Mounting Position and Contact Arrangement Chart



- On the contact arrangement marked with ★ in the table, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.

Part No. Development

- When circuit number is not required:

ASW 2 11

— Contact Code (1NO-1NC)
— 2-position

- When circuit number is required:

ASW 2 11 - 103

— Circuit No.
— Contact Code (1NO-1NC)
— 2-position

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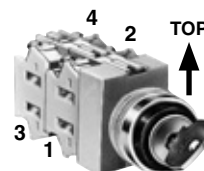
References

ø22 TW Series Selector Switch Contact Arrangement Charts

45° 3-position (Maintained / Spring Return)

Positions				Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way
				L C R	L C R	L C R	L C R
Operator				Knob, Lever, Key, Illuminated			
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions			
				L	C	R	
11	202	1	NO	●			
		2	NC	■			
	203	1	NC		■		
		2	NO			●	
	302	1	NO	●			●
		2	NC	■			
20	—	1	NC		●		
		2	NO			●	
	301	1	NO	●			●
		2	NO			●	
02	—	1	NC		■		
		2	NC	■			
	304	1	NC		●		
		2	NC	■			
22 (2NO-2NC)	—	1	NO	●			●
		2	NO			■	
		3	NC		■		
		4	NC	■			
	210	1	NC		■		
		2	NO			●	
		3	NC		■		
		4	NO			●	
	308	1	NO	●			●
		2	NC	■			
		3	NO	●			●
		4	NC	■			
	309	1	NO	●			●
		2	NC	■			
		3	NC		●		
		4	NO			●	
	310	1	NC		●		
		2	NO			●	
		3	NC		●		
		4	NO			●	
31 (3NO-1NC)	206	1	NO	●			
		2	NC	■			
		3	NO	●		■	
		4	NO			●	
	207	1	NC		■		
		2	NO			●	
		3	NO	●			
		4	NO			●	
13	212	1	NO	●			
		2	NC	■			
		3	NC		■		
		4	NC	■			
	313	1	NC		●		
		2	NO			●	
		3	NC		●		
		4	NC	■			
40	—	1	NO	●			●
		2	NO			●	
		3	NO	●			
		4	NO			●	
	305	1	NO	●			●
		2	NO			●	
		3	NO	●			●
		4	NO			●	
04	—	1	NC		■		
		2	NC	■			
		3	NC		■		
		4	NC	■			
	314	1	NC		●		
		2	NC	■			
		3	NC		●		
		4	NC	■			

Contact Block Mounting Position and Contact Arrangement Chart



		Left	Center	Right	
		L	C	R	Operator Position
1	NO	●			
2	NO			●	
3	NC		■		
4	NC	■			

Part No. Development

- When circuit number is not required:

ASW 3 22

— Contact Code (2NO-2NC)
 — 3-position

- When circuit number is required:

ASW 3 22 - 210

— Circuit No.
 — Contact Code (2NO-2NC)
 — 3-position

TW Series Selector Switch Contact Arrangement Charts ø22

45° 3-position (Maintained)

Positions				Maintained		
						
Operator				Knob, Lever, Key, Illuminated		
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions		
						
				L	C	R
2S ★	1361 ★	1	NO	●		
		2	NC		●	
3S ★	243 ★	1	NO	●		
		2	NO			●
		3	NC		●	
		4	Dummy			
4S ★	233 ★	1	NO	●		
		2	NC		●	
		3	NC	●		●
		4	NO			●
	234 ★	1	NO	●		
		2	NC		●	
		3	NC			●
		4	NC		●	
	235 ★	1	NC		●	
		2	NO			●
		3	NC		●	
		4	NO			●
	237 ★	1	NO	●		
		2	NO			●
		3	NC		●	
		4	NO			●
	240 ★	1	NC		●	
		2	NC		●	
		3	NC		●	
		4	NO			●

45° 3-position (Maintained)

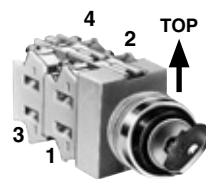
Positions				Maintained		
						
Operator				Knob, Lever, Key, Illuminated		
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions		
						
				L	C	R
4S ★	1336 ★	1	NO	●		
		2	NO			●
		3	NC		●	
		4	NC		●	
	1337 ★	1	NC		●	
		2	NO			●
		3	NC		●	
		4	NC		●	
	1352 ★	1	NO	●		
		2	NC		●	
		3	NC		●	
		4	NO	●		●
	1355 ★	1	NO	●		
		2	NC		●	
		3	NO	●		
		4	NC		●	
	1359 ★	1	NC		●	
		2	NC		●	
		3	NC		●	
		4	NC		●	

45° 4-position (Maintained)

Positions				Maintained			
							
Operator				Knob, Lever			
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions			
							
				1	2	3	4
3S ★	461 ★	1	NO	●			
		2	NC		●		
		3	NC			●	
		4	Dummy				
4S ★	405 ★	1	NC		●	●	●
		2	NC		●		
		3	NC			●	
		4	NC		●	●	●
	407 ★	1	NC		●	●	●
		2	NC		●		
		3	NC			●	
		4	NO				●
	409 ★	1	NO	●			
		2	NC		●		
		3	NC			●	
		4	NC		●	●	●
	411 ★	1	NO	●			
		2	NC		●		
		3	NC			●	
		4	NO				●

30° 5-position (Maintained)

Positions				Maintained				
								
Operator				Knob, Lever				
Contact Code	Circuit No.	Mounting Position	Contact	Operator Positions				
								
				1	2	3	4	5
4S ★	501 ★	1	NO	●				
		2	NC		●			
		3	NC				●	
		4	NO					●



		Left	Center	Right	Operator Position
		L	C	R	
1	NO	●			
2	NO		●		
3	NC	●		●	
4	NC			●	

- On the contact arrangement marked with ★ in the table, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.

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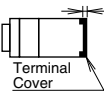
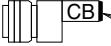
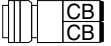
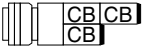
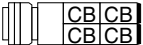
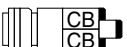
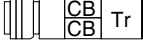
Control Stations

Explosion Protection

References

ø22 TW Series Accessories and Replacement Parts

Terminal Covers

Terminal Cover		HW-VL2	HW-VL3	HW-VL4	HW-VL5	HW-VL6	APS-PVL	Use of terminal covers increases the depth by the dimensions below.
Control Unit		 39.8H × 14.1W	 37.8H × 26W	 39.8H × 8.7W	 39.1H × 15.5W	 40H × 14.8W	 36H × 29.4W	 Terminal Cover
• Pilot light APW APQW	Full Voltage						X	+6mm
	Transformer DC-DC Converter		X					+3mm
• Pushbutton ABW AOW AVW ABQW ABFW AJW AOQW AOFW AXW ABGW AYW • Selector switch ASW	1 contact block 	X						+3.5mm
	2 contact blocks 	X 2 pieces						
	3 contact blocks 	X 2 pieces						
	4 contact blocks 	X 2 pieces						
• Illuminated pushbutton ALW AOLW ALFW AOLFW ALQW AOLQW AVLW AYLW	Full Voltage, 1 or 3 contact blocks 	X 2 pieces						+3.5mm
	Full Voltage, 2 or 4 contact blocks 			X For contact blocks 2 pieces	X For full voltage adapter			+3mm
• Illuminated selector switch ASLW	Transformer DC-DC Converter 		X					+3mm

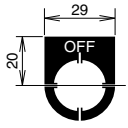
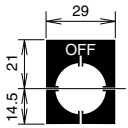
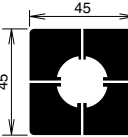
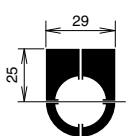
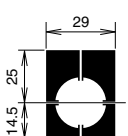
Ordering Terminal Covers

Terminal covers are ordered separately.

When ordering terminal covers, specify the Part No. and required quantity.

TW Series Accessories and Replacement Parts ø22

Nameplates

Dimensions (mm)	Legend	Material	Part No.	Ordering No.	Package Quantity	Description
NWA 	Blank	Aluminium 0.8 mm thick	NWA-0	NWA-0	1	Black
				NWA-0PN10	10	
	With Legend		NWA-*	NWA-*	1	White letters on black background
				NWA-*PN10	10	
NWAQ 	Blank	Aluminium 0.8 mm thick	NWAQ-0	NWAQ-0	1	Black
				NWAQ-0PN10	10	
	With Legend		NWAQ-*	NWAQ-*	1	White letters on black background
				NWAQ-*PN10	10	
NWAS 	Blank	Aluminium 0.8 mm thick	NWAS-0	NWAS-0	1	Black
				NWAS-0PN10	10	
NWAL 	Blank	Aluminium 0.8 mm thick	NWAL-0	NWAL-0	1	Black
				NWAL-0PN10	10	
NWAQL 	Blank	Aluminium 0.8 mm thick	NWAQL-0	NWAQL-0	1	Black
				NWAQL-0PN10	10	

• Specify a legend code in place of * in the Ordering No.

Legends

Code	Legend
0	(blank)
1	ON
2	OFF
3	START
4	STOP
31	OFF-ON
35	HAND-AUTO
53	HAND-OFF-AUTO

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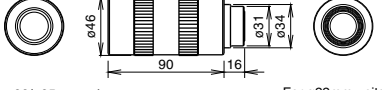
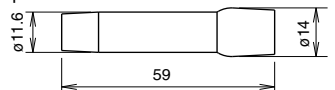
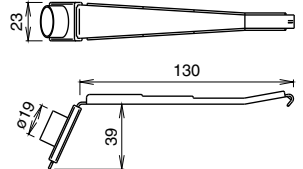
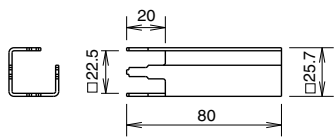
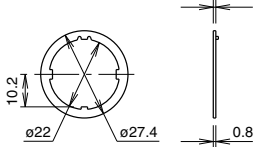
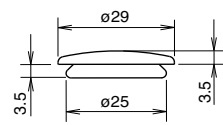
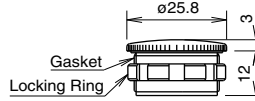
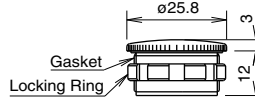
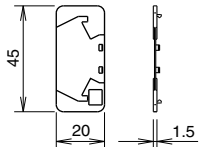
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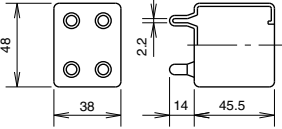
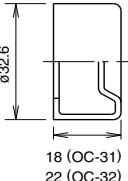
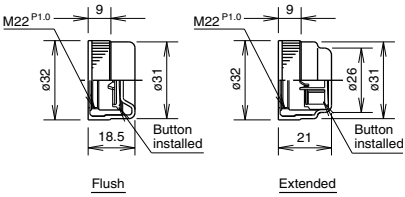
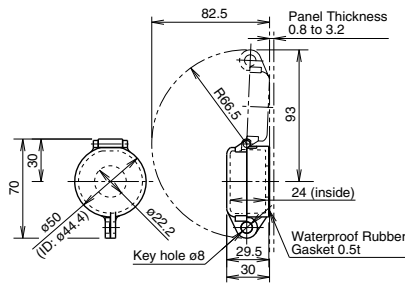
ø22 TW Series Accessories and Replacement Parts

Accessories

Shape	Material	Part No.	Ordering No.	Package Quantity	Dimensions
Locking Ring Wrench 	Rubber (nitril)	OR-14	OR-14	1	Used to tighten the round bezel when installing the TW control unit onto a panel.  For ø22/ø25mm units (close mounting)
Lamp Holder Tool 	Rubber (nitril)	OR-55	OR-55	1	Used to install and remove LED/incandescent lamps. 
Contact Block Removal Tool 	Metal (zinc-plated) Rubber (nitril)	TW-KC1	TW-KC1	1	Used to remove contact blocks, transformers, lenses and adapters. Can also be used to determine panel thickness adjustment. 
Nut Locking Wrench 	Metal (nickel-plated)	TW-KQ2	TW-KQ2	1	Used to tighten the locking nuts inside of the square bezel. This tool can be inserted into the OR-14 locking ring wrench. 
Anti-rotation Ring 	Metal (zinc-plated)	OGL-31	OGL-31PN10	10	Used to prevent the operator from rotating. Generally used when using no nameplates on selector switches. 
Rubber Mounting Hole Plug 	Rubber (black) (nitril)	OB-31	OB-31PN05	5	Used to plug unused ø22.2mm mounting holes. 
Metallic Mounting Hole Plug 	Diecast Metal (locking ring: polyamide)	LW9Z-BM	LW9Z-BM	1	- Used to plug unused ø22.2mm mounting holes. - Tightening torque: 1.2 N·m - Degree of protection: IP66 (without the 3.2mm recess in the mounting hole) 
Plastic Mounting Hole Plug 	Plastic (polyamide)	LW9Z-BP1	LW9Z-BP1	1	- Used to plug the unused ø22.2mm mounting holes. - Tighten the locking ring to a torque of 2.0 N·m. IP65 - Mounting panel thickness: 0.8 to 6 mm 
Barrier 	Polyamide	HW-VL1	HW-VL1PN10	10	Used to prevent contact between adjacent lead wires when units are mounted closely. Barriers should be always used in close mounting. 

TW Series Accessories and Replacement Parts ø22

Accessories

Shape		Material	Part No.	Ordering No.	Package Quantity	Description
	For 1 layer of contact blocks (2 contact blocks)	Rubber (nitril)	OCW-99	OCW-99	1	• Oiltight rubber boot used for pushbuttons and selector switches. • Temperature range: -5 to +60°C • Black 
	For 2 layers of contact blocks (4 contact blocks)		OCW-299	OCW-299	1	
	For flush pushbuttons (ABW1/AOW1)	Rubber (EPDM)	OC-31	OC-31	1	• Used to cover and protect pushbuttons where units are subject to water splash. Not suitable for outdoor use or where the units are subject to oil splash. 
	For extended pushbuttons (ABW2/AOW2)		OC-32	OC-32	1	
	For flush pushbuttons (ABW1/AOW1)	Rubber (nitril)	OCW-10①	OCW-10①	1	• Metallic bezels covered with rubber boot to enhance waterproof and oiltight characteristics. • Button is installed in the cover. Remove the button from the pushbutton before using the button cover. • ①: B (black), G (green), R (red), Y (yellow) 
	For extended pushbuttons (ABW2/AOW2)		OCW-11①	OCW-11①	1	
		Polyarylate (gasket: nitril rubber)	HW9Z-KL1	HW9Z-KL1	1	• Used to protect momentary and maintained pushbuttons, illuminated pushbuttons, knobs selector switches, and key selector switches. 
		Metal (copper)	HS9Z-PC22	HS9Z-PC22	1	• For ASW□K key selector switches. • See page 752 for details.

Note: Specify a button color code or lens color code in place of ① or ② in the Ordering No.

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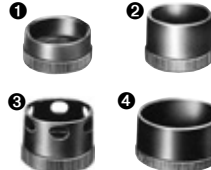
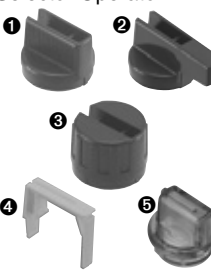
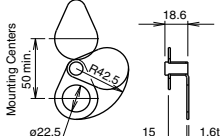
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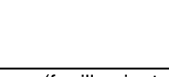
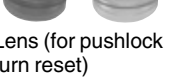
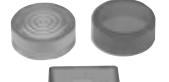
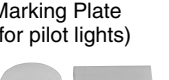
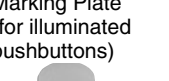
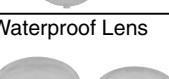
ø22 TW Series Accessories and Replacement Parts

Accessories

Shape		Material	Part No.	Ordering No.	Package Quantity	Remarks	
ø40mm Lens 	Non-marking	Plastic	ALW4L-②	ALW4L-②	1	• Applicable unit: ALW3, AOLW3	②: G (green), R (red), S (blue)
			ALW4LD-②	ALW4LD-②	1		②: A (amber), W (white)
	Marking		ALW4BL-②	ALW4BL-②	1	• Applicable unit: ALW3B, AOLW3B • Marking plate is included	②: G (green), R (red), S (blue), W (white)
			ALW4BLD-②	ALW4BLD-②	1		②: A (amber)
Plastic Bezel 	①Flush	Plastic	AW-RP1B	AW-RP1BPN05	5	Black	
	②Extended		AW-FP1B	AW-FP1B	1		
	③Extended (for illuminated pushbuttons)		AW-FP2B	AW-FP2B	1		
	④Square round (for round pushbuttons)		AW-H1B	AW-H1B	1		
	⑤Square		AW-Q1B	AW-Q1B	1		
	⑥Extended with Full Shroud		AW-QF1B	AW-QF1B	1		
Aluminium Bezel 	①Flush	Aluminium	AW-R1	AW-R1PN05	5	Aluminium color (standard)	
	②Extended		AW-R1B	AW-R1B	1	Black	
			AW-F1	AW-F1	1	Aluminium color (standard)	
			③Extended (for illuminated pushbuttons)	AW-F2	AW-F2		1
			④Mushroom	AW-G4	AW-G4		1
Selector Operator 	①Knob	Plastic	ASWHHY-②	ASWHHY-②PN02	2	Specify a color code in place of ②. B (black), G (green), R (red)	
	②Lever		ASWHHL-②	ASWHHL-②PN02	2		
	③Round		ASWHHM-B	ASWHHM-BPN02	2	Black only	
	④Color Insert		TW-HC1②	TW-HC1②PN05	5	Specify a color code in place of ②. B (black), G (green), R (red), S (blue), W (white), Y (yellow)	
	⑤Illuminated selector		ASLWDDY-②	ASLWDDY-②	1	Specify a color code in place of ②. A (amber), W (white), Y (yellow)	
			ASLWLDY-②	ASLWLDY-②	1	Specify a color code in place of ②. G (green), R (red), S (blue)	
Metal Protector 		Metal	OLW-C	OLW-C	1	• Used to protect flush pushbuttons from inadvertent operation. 	

TW Series Accessories and Replacement Parts ø22

Maintenance Parts

Shape		Material	Part No.	Ordering No.	Package Quantity	Color Code	
Lens (for pilot lights) 	Round flush	AS	APW1L-②	APW1L-②PN05	5	G (green), R (red), S (blue)	
			APW1LD-②	APW1LD-②PN05	5	A (amber), W (white), Y (yellow)	
		AS, Marking	APW11L-②	APW11L-②PN05	5	C (clear), G (green), R (red), S (blue)	
			APW11LD-②	APW11LD-②PN05	5	A (amber), Y (yellow)	
	Round extended	AS	APW2L-②	APW2L-②PN05	5	G (green), R (red), S (blue)	
			APW2LD-②	APW2LD-②PN05	5	A (amber), W (white), Y (yellow)	
Square flush	AS, Marking	APQW11L-②	APQW11L-②PN05	5	C (clear), G (green), R (red), S (blue)		
		APQW11LD-②	APQW11LD-②PN05	5	A (amber), Y (yellow)		
Lens (for illuminated pushbuttons)  Lens (for pushlock turn reset) 	Round extended	AS	ALW2L-②	ALW2L-②PN05	5	G (green), R (red), S (blue)	
			ALW2LD-②	ALW2LD-②PN05	5	A (amber), W (white), Y (yellow)	
		AS, Marking	ALW21L-②	ALW21L-②PN05	5	C (clear), G (green), R (red), S (blue)	
			ALW21LD-②	ALW21LD-②PN05	5	A (amber), Y (yellow)	
	Square extended	AS	ALQW21L-②	ALQW21L-②PN05	5	C (clear), G (green), R (red), S (blue)	
			ALQW21LD-②	ALQW21LD-②PN05	5	A (amber), Y (yellow)	
	ø29mm mushroom	AS	ALW3L-②	ALW3L-②PN02	2	G (green), R (red), S (blue)	
			ALW3LD-②	ALW3LD-②PN02	2	A (amber), W (white), Y (yellow)	
		AS, Marking	ALW31L-②	ALW31L-②PN02	2	C (clear), G (green), R (red), S (blue)	
			ALW31LD-②	ALW31LD-②PN02	2	A (amber), Y (yellow)	
		ø29mm mushroom	AS	AVLW3L-R	AVLW3L-RPN02	2	
			AS, Marking	AVLW31L-R	AVLW31L-RPN02	2	
ø40mm mushroom	AS	AVLW4L-R	AVLW4L-RPN02	2			
Button 	Round flush	Polyacetal	ABW1B-①	ABW1B-①PN05	5	B (black) G (green) R (red) S (blue) W (white) Y (yellow)	
	Round extended		ABW2B-①	ABW2B-①PN05	5		
	Square flush		ABQW1B-①	ABQW1B-①PN05	5		
	Square extended		ABQW2B-①	ABQW2B-①PN05	5		
	ø29mm mushroom		ABW3B-①	ABW3B-①PN02	2		
	ø40mm mushroom		ABW4B-①	ABW4B-①PN02	2		
	ø29mm pushlock turn reset		AVW3B-①	AVW3B-①PN02	2	R (red), Y (yellow)	
	ø40mm pushlock turn reset		AVW4B-①	AVW4B-①PN02	2	R (red), Y (yellow)	
	ø40mm push pull		AYW4B-①	AYW4B-①PN02	2	B (black), G (green), R (red), S (blue), W (white), Y (yellow)	
Marking Plate (for pilot lights) 	Round flush	Acrylic	APW2B	APW2BPN05	5	• White	
	Square flush		APQW1B	APQW1BPN05	5		
Marking Plate (for illuminated pushbuttons) 	Round extended		ALW2B	ALW2BPN05	5		
	Square extended		ALQW2B	ALQW2BPN05	5		
	ø29/40mm mushroom		ALW3B	ALW3BPN05	5		
Waterproof Lens 	For APQW	Acrylic	APW00LN	APW00LNPN05	5		
	For ALQW		APW00L	APW00LPN05	5		

Note: Specify a button color code or lens color code in place of ① or ② in the Ordering No.
Use a clear lens for white or pure white illumination.

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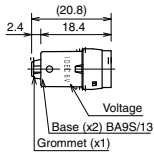
References

ø22 TW Series Accessories and Replacement Parts

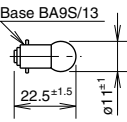
Maintenance Parts

Shape	Specification		Part No.	Ordering No.	Package Quantity	Remarks	
						Housing	Push Rod
	1NO contact		HW-C10	HW-C10	1	Blue	Green
	1NC contact		HW-C01	HW-C01	1	Purple red	Red
	EM contact (early make)		HW-C10R	HW-C10R	1	Blue	Black
	LB contact (late break)		HW-C01R	HW-C01R	1	Purple red	White
Dummy Block			TW-DB	TW-DBPN10	10	- Used for non-illuminated units with 1NO or 1NC contact blocks. - Black	
Full Voltage Adapter (for 2 or 4 contact blocks)			TW-DA1B	TW-DA1BPN02	2	- Adapter with M3.5 screws used for illuminated pushbutton or illuminated selector switch. Snaps on to the back of the contact block. - Used with 2 or 4 contact blocks. - Black	
Full Voltage Adapter (for 1 or 3 contact blocks)			HW-DA1B	HW-DA1BPN02	2	- Adapter with M3.5 screws used for illuminated pushbuttons or illuminated selector switch. - Used with 1 or 3 contact blocks. - Black	
Spare Key			Metal	TW-SK-0	TW-SK-0PN02	2	- For Key Selector Switch - For Pushlock Key Reset

LED Lamps (LSTD)

Dimensions	Operating Voltage	Current Draw		Part No.	Ordering No.	Illumination Color Code	Package Quantity	Base
		AC	DC					
  Base (x2) BA9S/13 Grommet (x1)	6V AC/DC $\pm 5\%$	8 mA	7 mA (A, R, W) 5.5 mA (G, PW, S)	LSTD-6②	LSTD-6②	Specify a color code in place of ② in the Ordering No.	1	BA9S/13
				LSTD-6②	LSTD-6②PN10		10	
	12V AC/DC $\pm 10\%$	11 mA	10 mA	LSTD-1②	LSTD-1②	A: amber G: green PW: pure white R: red S: blue W: white	1	
				LSTD-1②	LSTD-1②PN10		10	
	24V AC/DC $\pm 10\%$	11 mA	10 mA	LSTD-2②	LSTD-2②	Use a pure white (PW) LED lamp with yellow (Y) lens.	1	
				LSTD-2②	LSTD-2②PN10		10	

Incandescent Lamps (LS)

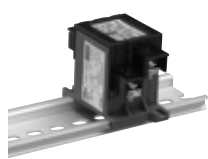
Dimensions	Rated Operating Voltage	Lamp Ratings	Part No.	Package Quantity
  Base BA9S/13	6V AC/DC	1W (6.3V)	LS-6	1
	12V AC/DC	1W (18V)	LS-8	
	18V AC/DC	1W (24V)	LS-2	
	24V AC/DC	1W (30V)	LS-3	

TW Series Accessories and Replacement Parts ø22

Transformer Unit

Shape	Primary Voltage	Secondary Voltage	Part No.
	100/110V AC	5.5V	TW-T16B
	120V AC		TW-T126B
	200/220V AC		TW-T26B
	240V AC		TW-T246B

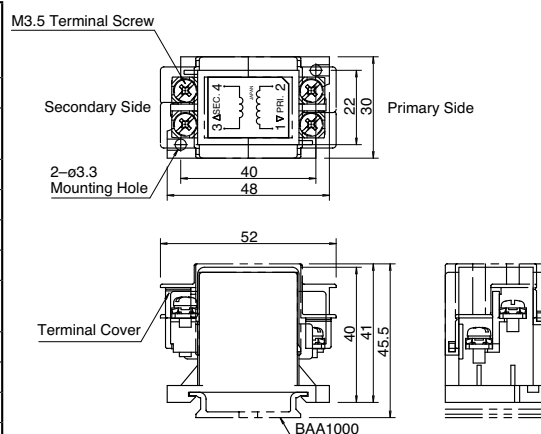
Transformer

Shape	Primary Voltage	Secondary Voltage	Part No.	Applicable Load
	100/110V AC	5.5V AC, 1W	TWR516	LSTD-6 LED lamp (6V AC/DC) or LS-6 incandescent lamp (6V AC/DC, 1W)
	115/120V AC		TWR5126	
	200/220V AC		TWR526	
	230/240V AC		TWR5246	
	380V AC		TWR5386	
	400/440V AC		TWR546	
	480V AC		TWR5486	

Specifications

Operating Voltage	100/110V AC, 115/120V AC, 200/220V AC, 230/240V AC, 380V AC, 400/440V AC, 480V AC (50/60Hz)
Current Draw	2.4 VA
Rated Insulation Voltage	600V
Insulation Resistance	100 MΩ minimum (500V DC megger)
Operating Temperature	-30 to +60°C (no freezing)
Storage Temperature	-40 to +80°C (no freezing)
Operating Humidity	35 to 85% RH (no condensation)
Vibration Resistance	Damage Limits: 30 Hz, amplitude 1.5 mm Operating extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage limits, Operating Extremes: 1,000 m/s ²
Dielectric Strength	2,500V AC, 1 minute
Terminal Screw	M3.5
Applicable Wire	2 mm ² maximum, 2 wires maximum
Weight (approx.)	87g

Dimensions

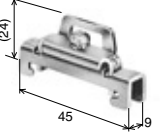


Accessories

DIN Rail

Part No.	Ordering No.	Length	Weight (approx.)	Material	Package Quantity
BAA1000	BAA1000PN10	1000 mm	200g	Aluminum	10
BAP1000	BAP1000PN10	1000 mm	320g	Steel	10

End Clip

Part No.	Ordering No.	Applicable DIN Rail	Weight (approx.)	Material	Package Quantity	Dimensions
BNL6	BNL6PN10	BAA1000 BAP1000	15g	Steel (Zinc-plated)	10	

- Use plastic end clip BC9Z-E/NS35N when using 400/440V AC primary voltage transformers.

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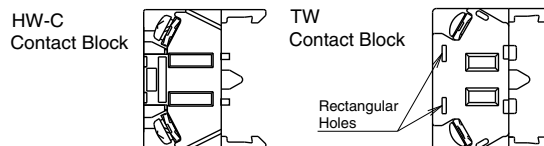
Control
StationsExplosion
Protection

References

Safety Precautions

- Turn off the power to the TW series control units before starting installation, removal, wiring, maintenance, and inspection of the products. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid a burn on your hand, use the lamp holder tool when replacing lamps.
- For wiring, use wires of a proper size to meet the voltage and current requirements. Tighten the M3.5 terminal screws to a tightening torque of 1.0 to 1.3 N·m. Failure to tighten terminal screws may cause overheat and fire.

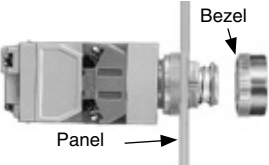
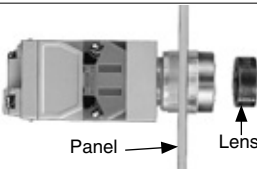
- Use HW-C contact blocks for the TW series. Do not replace with or add conventional TW series contact blocks. Using a different type of contact block may lead to malfunction.



Instructions

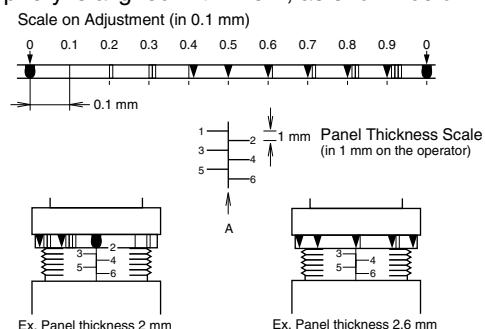
Panel Mounting

Panel thickness adjustment ring is used for the TW series. To attach the TW series to the panel, follow the procedures below.

Mounting order		①Panel Thickness Adjustment	②Attaching the Unit to the Panel with the Bezel	③Attaching the Button, Lens, and Knob						
		 Panel thickness adjustment ring	 Bezel Panel	 Panel Lens						
Remarks			Attach the unit with the panel thickness scale facing up.	Installation method						
				<table><tr><th>Type</th><th>Method</th></tr><tr><td>Flush/Extended pushbuttons, Square lens, Selector operator</td><td>Press in</td></tr><tr><td>29mm/40mm mushroom button/lens, Dome lens</td><td>Screw in</td></tr></table>	Type	Method	Flush/Extended pushbuttons, Square lens, Selector operator	Press in	29mm/40mm mushroom button/lens, Dome lens	Screw in
				Type	Method					
Flush/Extended pushbuttons, Square lens, Selector operator	Press in									
29mm/40mm mushroom button/lens, Dome lens	Screw in									
Tools	Locking ring wrench		For tightening or removing round bezels.							
	Nut locking wrench		For tightening or removing square bezels.							
	Contact block removal tool	Panel thickness adjustment	For installing or removing water-proof lenses after the bezel is attached.	For installing or removing round lenses.						

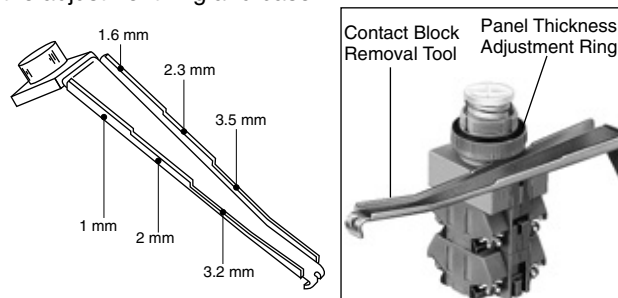
Adjusting Panel Thickness

The panel thickness ring provides adjustment from 1 to 6 mm in 1-mm increments. Set the panel thickness to line A. Rotate the ring until the desired thickness indication around the periphery is aligned with line A, as shown below.



Using the Contact Block Removal Tool to Adjust Panel Thickness

Panel thickness can easily be adjusted to the values shown below by inserting the contact block removal tool between the adjustment ring and base.



Note: When a nameplate or an anti-rotation ring is used, add 0.8mm to the panel thickness.

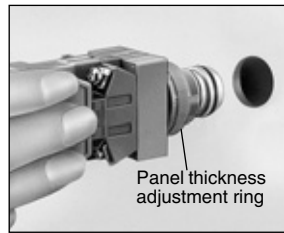
Total thickness
= Panel thickness + 0.8mm (nameplate or anti-rotation ring thickness)

Instructions

Mounting into Panel Cut-out with Bezel

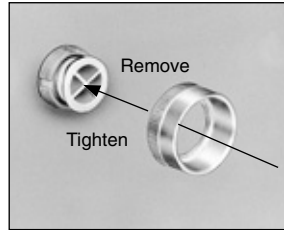
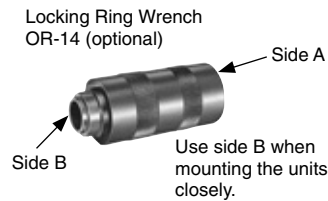
Insertion into Panel Cut-out

Insert the base into the panel cut-out making sure that the panel thickness scale is facing up.



Round Bezel

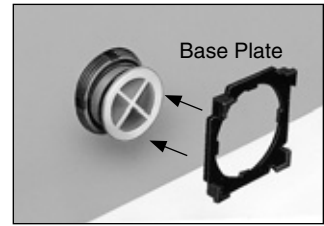
All round bezels are screw-in type. Be sure to use the locking ring wrench to tighten the bezel.



- Recommended tightening torque is 2.0 N·m.

Square Bezel

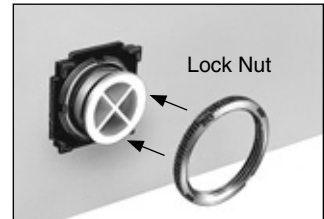
1. Insert the base plate from the front.



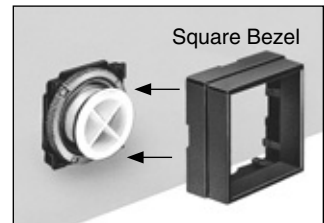
2. Insert the lock nut. For easy installation, use the nut locking wrench.



Nut Locking Wrench
TW-KQ2 (optional)



3. Mount the square bezel. The bezel will snap onto the base plate.

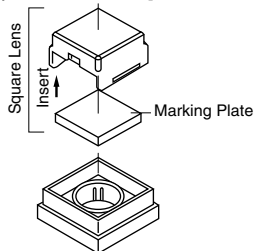


Installing Buttons, Lenses, and Operators

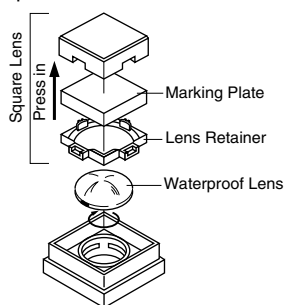
Lens Structure and Marking Plate

All square lens units are marking types. To engrave on the marking plate, remove the marking plate from the lens.

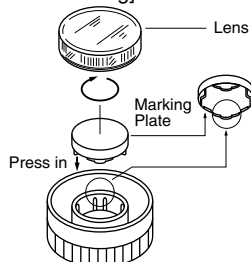
[Square Pilot Lens]



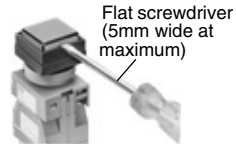
[Square Illuminated Pushbutton]



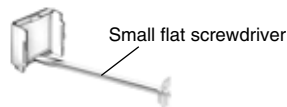
[Round Marking]



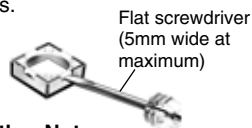
1. **Removing the Square Lens**
Insert the screwdriver into the recess of the lens and lightly push out the lens.



2. **Removing the Marking Plate**
• Pilot Light
Insert the screwdriver into the recess of the lens.



• Illuminated Pushbuttons
Insert the screwdriver into the hook and lightly push out the lens.



3. Other Notes

The square lens of the illuminated pushbutton cannot be used without waterproof lens. Be sure to use the marking plate even when it is not engraved.

Marking Plate Engraving Area

Round	Mushroom	Square (Pilot Light)	Square (Illuminated Pushbutton)

Note: The depth of the engraving must be within 0.5 mm.

Installing Round Lens and Waterproof Lens

When installing or removing round lens of pilot lights and illuminated pushbuttons and waterproof lens of square pilot lights and illuminated pushbuttons, press the rubber part of the contact block removal tool onto the lens or waterproof lens for secure tightening and easy removal.

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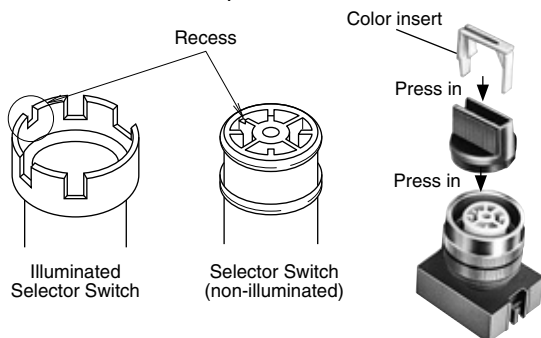
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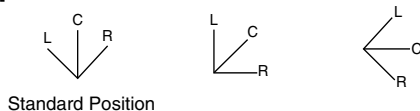
Installation of Selector Operators

1. The shaft of each selector or illuminated selector switch has a recess to identify in which direction to install the operator. Align the operator with the recess and press in the operator.
2. Press color insert (non-illuminated) into the operator. The color insert retains the operator.



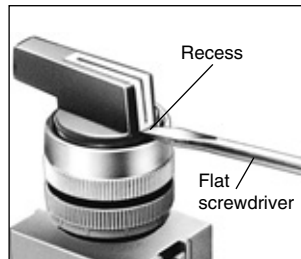
2-Position, 90°	3-Position, 45°	4-Position, 45°	5-Position, 30°

[Example]



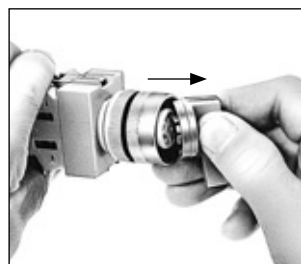
The non-illuminated operators can be installed in positions other than the standard position as shown above.

Removing the Operator



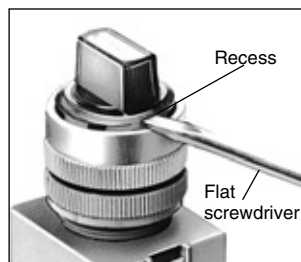
1. Removing the Color Insert

Insert a flat screwdriver into the recess of the color insert. Turn the screwdriver to push out the insert from the operator



2. Removing the Operator (Non-illuminated)

Push the operator sideways as shown in the left photo to remove the operator.

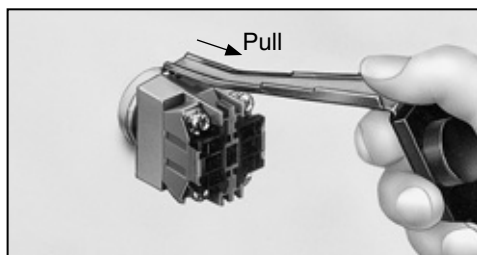


3. Removing the Operator (Illuminated)

Insert a flat screwdriver into the recess of the operator and turn the screwdriver to remove the operator.

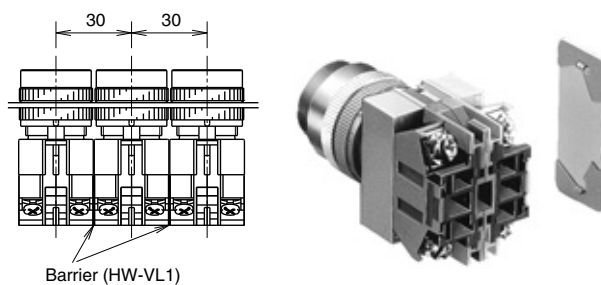
Removing Contact Blocks, Transformers and Full Voltage Adapters

Insert the end of the contact block removal tool into the snap-fit latch of the contact block (or transformer, full-voltage adapter) and pull the tool as shown below.



Collective Mounting

When mounting the units closely in a horizontal row on 30-mm centers, use optional barriers to prevent interconnection between adjoining terminals. The barriers can be attached simply by pressing them onto the sides of contact blocks.



Tightening Torque for Terminal Screws

Tighten the M3.5 terminal screws to a torque of 1.0 to 1.3 N·m.

Installation of LED Illuminated Units

1. Note the polarity for wiring when connecting to DC-DC converter unit.

Terminal No.	Polarity
X1	Positive
X2	Negative

2. Transformer type units are recommended for use in areas subjected to noise.

3. Notes for Pure White LED Lamps

- Do not use the pure white LED outdoors, otherwise it will lead to the degradation of brightness and color. Do not remove or apply shock to the cap on the pure white LED lamp, otherwise it may break or damage the cap.
- For the pure white LED, use a white lens. The illumination color will be dull if a different color is used.

Notes on LED Illuminated Units

LED lamps consist of semiconductors. If the applied voltage exceeds the rated voltage, LED elements may deteriorate due to overheat, resulting in significant decrease in luminance, hue change, or failure of lighting. Also, if an extraneous noise, transient voltage, or transient current is applied to the circuit, similar effects may occur. When using LED lamps, observe the following instructions.

Rated Voltage

The LED lamps are rated at 6V, 12V, or 24V AC/DC, and can be used within $\pm 10\%$ the rated voltage of either AC or DC.

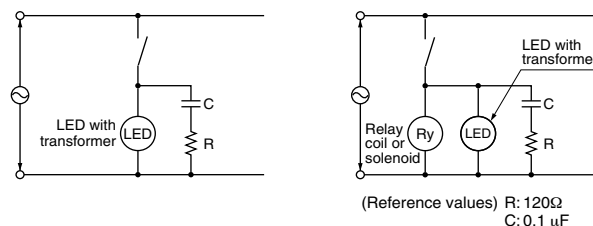
DC Power

1. Switching power supply
Regulated voltage from switching power supply is best suited. Make sure to use within the rated voltage of the LED lamp.
2. Rechargeable battery
Note that the battery voltage may exceed the rated voltage of the LED lamp while the battery is being charged and immediately after the charging is complete. Be sure to use the LED lamp on a voltage of $\pm 10\%$ the rated voltage.
3. Full-wave rectification
Since the LED lamp is AC/DC compatible, a diode bridge for rectification is not necessary. If the LED lamp is used on a full-wave rectification current through a diode bridge, the rectifier diodes will reduce the voltage, resulting in lower luminance.
4. Single-phase half-wave rectification
This is not suitable for the power source of LED lamps. Use constant-voltage DC power.

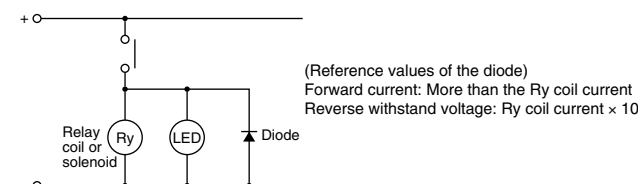
Noise

LED elements deteriorate due to extraneous noise, resulting in significant decrease in luminance, hue change, or failure of lighting. When such effects are anticipated, take a protection measure shown below, such as RC elements or a surge absorber.

[Protection Example 1] For AC circuit



[Protection Example 2] For DC circuit

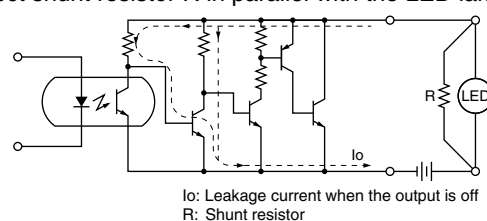


Countermeasures against Dim Lighting

1. Leakage currents through the transistors or a contact protection circuit may cause the LED lamp to illuminate dimly even when the output is off.
2. When the LED lamp is illuminated by a transistor output, take the following measure.

[Circuit Example]

Connect shunt resistor R in parallel with the LED lamp.

Flush
SilhouetteSwitches &
Pilot LightsDisplay
LightsLED
Illumination
UnitsDisplay
UnitsSafety
ProductsTerminal
BlocksComm.
Terminals

AS-Interface

Relays &
Timers

Sockets

Circuit
ProtectorsPower
SuppliesPLCs &
SmartRelayOperator
Interfaces

Sensors

Control
StationsExplosion
Protection

References