









































Ø22mm TW Series









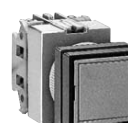







Control Units















ø22 TW Series Control Units (Selection Guides)









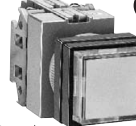











| Function | Pushbutton | | | | |
|----------|--|--|--|---|--|
| Category | Flush | Extended | Extended w/Full Shroud | ø29mm Mushroom | ø40mm Mushroom |
| Shape |     |     |     |     |     |
| Type | ABW1 AOW1 | ABW2 AOW2 | ABFW2 AOFW2 | ABW3 AOW3 | ABW4 AOW4 |
| Page | 8 | 8 | 8 | 8 | 9 |









| Function | Pushbutton | | | | |
|----------|--|--|--|---|--|
| Category | ø40mm Mushroom w/Full Shroud | ø29mm Mushroom | ø40mm Mushroom | ø40mm Mushroom | ø29mm Mushroom |
| | Momentary | Pushlock Turn Reset | Pushlock Turn Reset | Push Turn Lock | Pushlock Key Reset |
| Shape |     |     |     |     |     |
| Type | ABGW4 | AVW3 | AVW4 | AJW4 | AXW3 |
| Page | 9 | 9 | 9 | 9 | 9 |

















| Function | Pushbutton | | | |
|----------|--|--|--|---|
| Category | ø40mm Mushroom | ø40mm Mushroom | Square Flush | Square Extended |
| | Pushlock Key Reset | Push Pull | Momentary/Maintained | |
| Shape |     |     |     |     |
| Type | AXW4 | AYW4 | ABQW1 AOQW1 | ABQW2 AOQW2 |
| Page | 10 | 10 | 10 | 10 |

| Function | Pilot Light | | |
|----------|--|--|--|
| Category | Flush (Non-marking/Marking) | Dome | Square Flush (Marking) |
| Shape |     |     |     |
| Type | APW1 APW1B | APW2 | UPQW1B |
| Page | 11 | 11 | 11 |

TW Series Control Units (Selection Guides) Ø22

| Function | Illuminated Pushbutton (LED/Incandescent) | | | | |
|----------|--|--|--|---|--|
| Category | Extended (Non-marking/Marking) | Extended w/Full Shroud (Non-marking/Marking) | Square Extended (Marking) | Ø29mm Mushroom Pushlock Turn Reset | Ø40mm Mushroom Pushlock Turn Reset |
| Shape |     |     |     |     |     |
| Type | ALW2, ALW2B, AOLW2, AOLW2B | ALFW2, AOLFW2 ALFW2B, AOLFW2B | ALQW2B AOLQW2B | AVLW3 AVLW3B | AVLW4 AVLW4B |
| Page | 13, 14 | 15, 16 | 17 | 18 | 19 |

| Function | Illuminated Pushbutton (Incandescent) | |
|----------|--|--|
| Category | Ø29mm Mushroom (Non-marking/Marking) | Ø40mm Push-Pull |
| Shape |     |     |
| Type | ALW3, ALW3B, AOLW3, AOLW3B | AYLW4 AYLW4B |
| Page | 18 | 19 |

| Function | Selector Switch | | | Illuminated Selector Switch (LED/Incandescent) |
|----------|--|--|--|---|
| Category | Knob | Lever | Key | Knob |
| Shape |     |     |     |     |
| Type | ASW | ASW*L | ASW*K | ASLW |
| Page | 22 | 23 | 24 | 25, 26 |

Ø22 TW Series Control Units

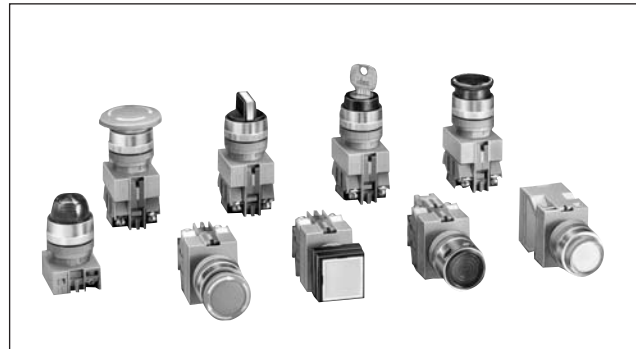
General-purpose control units for various applications
Heavy-duty type for high-level protection against harsh environment

Low Voltage Directive
 EMC Directive



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

| Safety Standards | File No. or Organization |
|-----------------------------|-------------------------------|
| UL | UL Listing File No. E68961 |
| CSA | File No. LR21451 |
| EN EN60947-1 EN60947-5-1 | TÜV Rheinland |



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

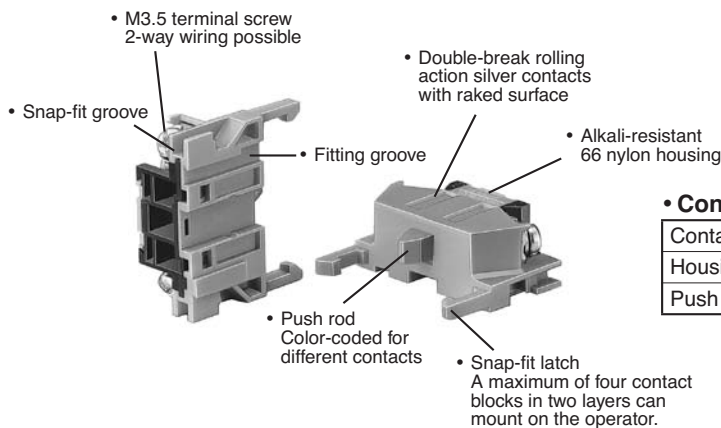
| Operational Voltage | | | 24V | 48V | 50V | 110V | 220V | 440V |
|---------------------|----------------|--|-----|-----|-----|------|------|------|
| Operational Current | AC 50/60 Hz | AC-12 Control of resistive loads and solid state loads | 10A | — | 10A | 10A | 6A | 2A |
| | | AC-15 Control of electromagnetic 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 Block Types

| 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 Type)

| Type 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) | | | |

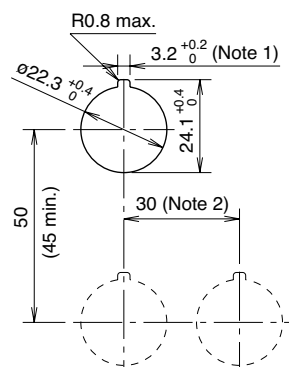
LED Lamp Ratings (LSTD Type)

| Type 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% | | 24V AC/DC ±10% |
| Current Draw | AC | A, R, W, Y: 17 mA, G, PW, S: 8 mA | 11 mA |
| | DC | A, R, W, Y: 14 mA, G, PW, S: 5.5 mA | 10 mA |
| Color Code ② | A (amber), G (green), PW (pure white), R (red), S (blue), W (white), Y (yellow) | | |
| Lamp Base Color | Same as illumination color | | |
| Voltage Marking | Die stamped on the base | | |
| Life (reference value) | Approx. 50,000 hours (The luminance reduces to 50% the initial intensity when used on complete DC.) | | |
| Internal Circuit | A, R, W, Y | | |
| | | | |
| | G, PW, S | | |
| | | | |

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 type illuminated units: 2,000V AC, 1 minute) |
| Vibration Resistance | 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%) |

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 type selector switch: 39 mm minimum
- 4-position, 5-position lever type selector switch: 50 mm minimum

Degree of Protection

| Type 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.

ø22 TW Series Control Units (Ordering Information)

Ordering Information

- Specify an operator or lens color code in the Type No.
- Full voltage type illuminated units are not supplied with a lamp. Order LED or incandescent lamps separately. Transformer and DC-DC converter type illuminated units contain an LED or incandescent lamp.
- When a terminal cover is required, order an applicable terminal cover referring to page 30.

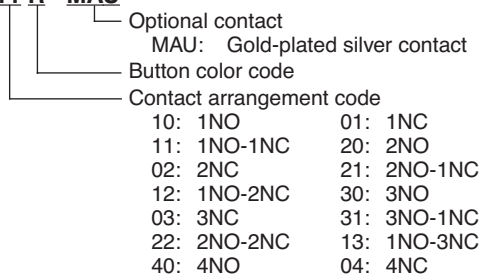
| Rated Voltage | LED Lamp | Incandescent |
|---------------|----------|--------------|
| 100/110V AC | LSTD-6② | LS-6 |
| 200/220V AC | LSTD-6② | LS-6 |
| 110V DC | LSTD-6② | LS-6 |

- All standard units are UL, CSA, EN, and TÜV approved.

The Type 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

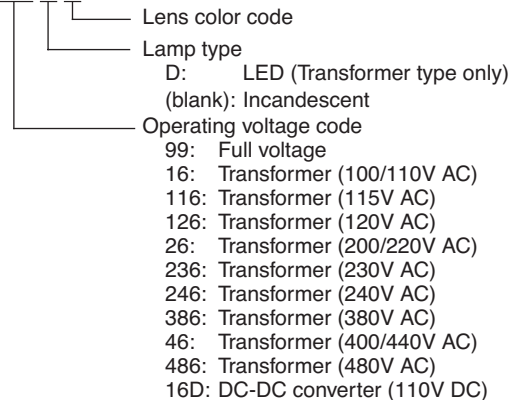


Note:

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

Pilot Lights

APW2 116 D R

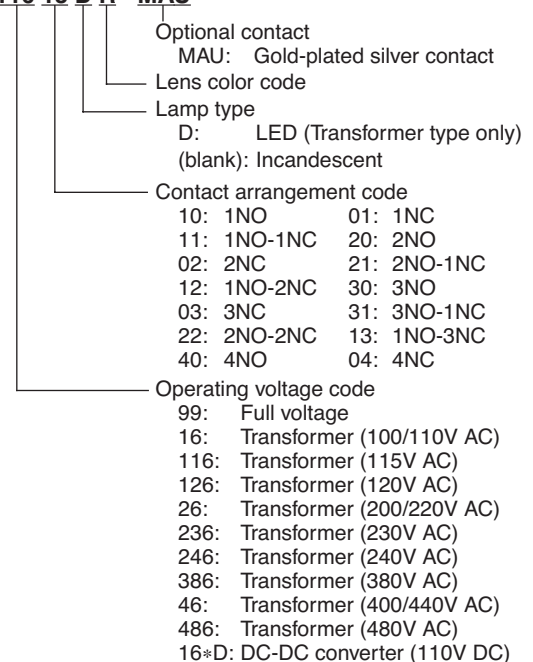


Note:

- Full voltage type is not supplied with a lamp.
- Transformer and DC-DC converter types contain an LED lamp (LSTD-6②) or incandescent lamp (LS-6).

Illuminated Pushbuttons

ALFW2 116 13 D R - MAU

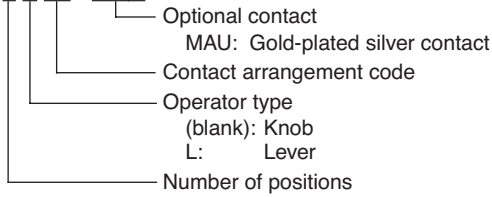


Note:

- Push-pull type AYLW4 can have a maximum of two contact blocks.
- Transformer type and DC-DC converter type cannot have an odd number of contact blocks, such as 1NO, 1NC, 3NO, 2NO-1NC, 1NO-2NC, and 3NC.

Selector Switch

ASW 2 L 11 - MAU

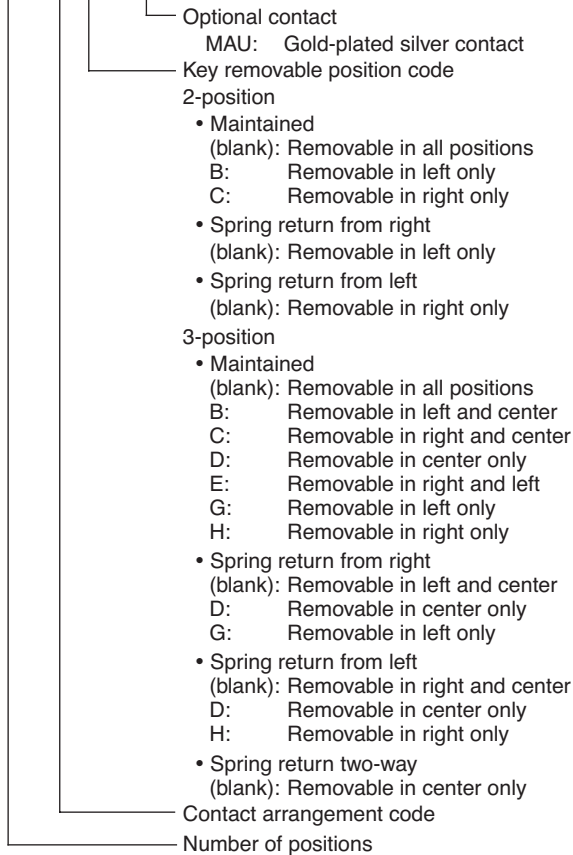


Note:

- See pages 26 to 28 for contact arrangement codes.

Key Selector Switch

ASW 2 K 20 B - MAU

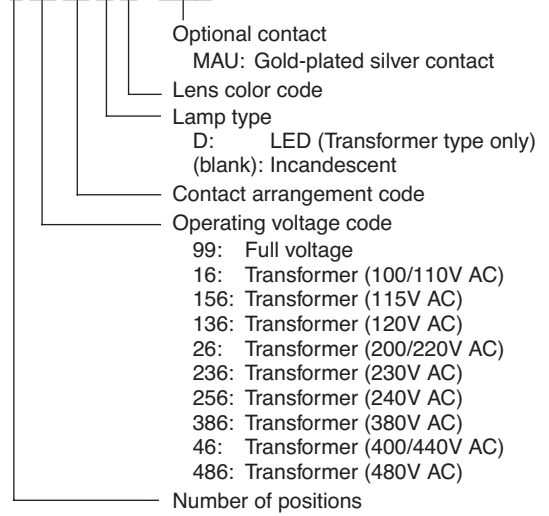


Note:

- See pages 27 to 29 for contact arrangement codes.
- The key cannot be removed in the return position.

Illuminated Selector Switch

ASLW 2 16 22 D R - MAU



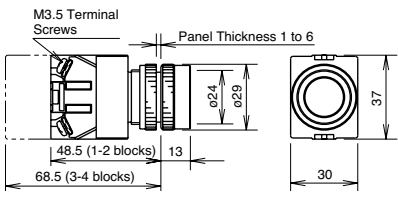


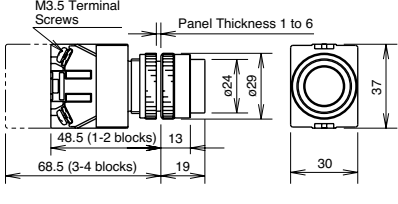


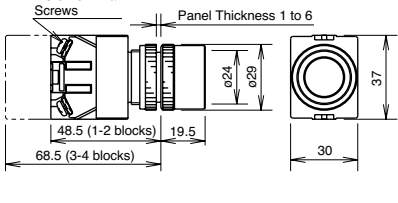


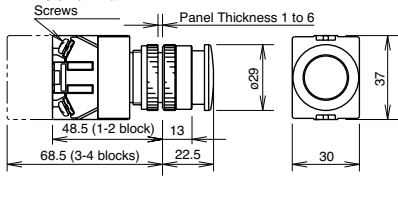


Note:

- Full voltage type is not supplied with a lamp.
- Transformer type contains an LED lamp (LSTD-6[®]) or incandescent lamp (LS-6).
- See pages 27 to 29 for contact arrangement codes.



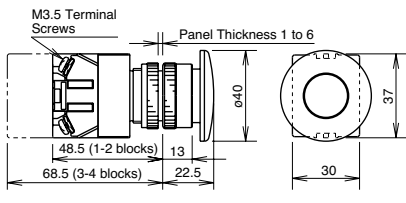


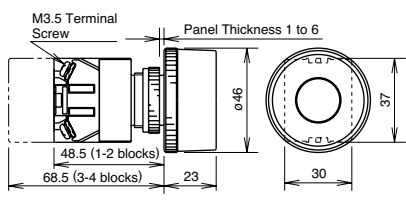


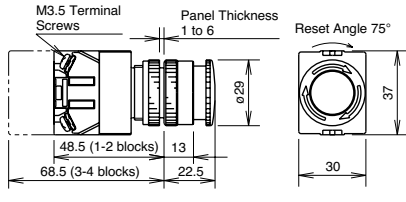


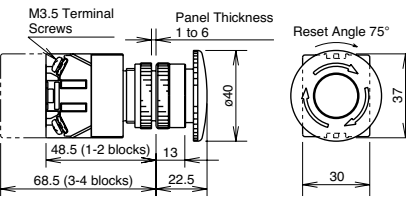


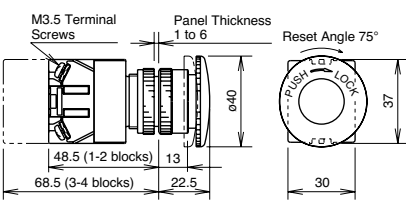


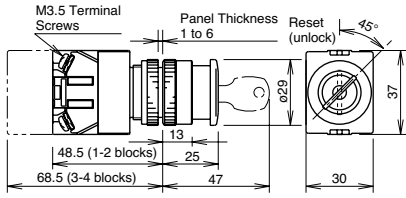
ø22 TW Series Pushbuttons

Flush / Extended / Extended w/Full Shroud / Mushroom Types

| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) | | | |
|---|----------------|---|-----------|---|---|-----|---------|---|
| Flush ABW1 AOW1   | Momentary | 1NO | ABW110① | Specify a button color code in place of ① in the Type No. B: black G: green R: red S: blue W: white Y: yellow |  | | | |
| | | 1NC | ABW101① | | | | | |
| | | 1NO-1NC | ABW111① | | | | | |
| | | 2NO | ABW120① | | | | | |
| | | 2NC | ABW102① | | | | | |
| | | 2NO-2NC | ABW122① | | | | | |
| | Maintained | 1NO | AOW110① | | | | | |
| | | 1NC | AOW101① | | | | | |
| | | 1NO-1NC | AOW111① | | | | | |
| | | 2NO | AOW120① | | | | | |
| | | 2NC | AOW102① | | | | | |
| | | 2NO-2NC | AOW122① | | | | | |
| | | Extended ABW2 AOW2   | Momentary | | | 1NO | ABW210① |  |
| | | | | | | 1NC | ABW201① | |
| 1NO-1NC | ABW211① | | | | | | | |
| 2NO | ABW220① | | | | | | | |
| 2NC | ABW202① | | | | | | | |
| 2NO-2NC | ABW222① | | | | | | | |
| Maintained | 1NO | | AOW210① | | | | | |
| | 1NC | | AOW201① | | | | | |
| | 1NO-1NC | | AOW211① | | | | | |
| | 2NO | | AOW220① | | | | | |
| | 2NC | | AOW202① | | | | | |
| | 2NO-2NC | | AOW222① | | | | | |
| Extended with Full Shroud ABFW2 AOFW2   | Momentary | 1NO | ABFW210① |  | | | | |
| | | 1NC | ABFW201① | | | | | |
| | | 1NO-1NC | ABFW211① | | | | | |
| | | 2NO | ABFW220① | | | | | |
| | | 2NC | ABFW202① | | | | | |
| | | 2NO-2NC | ABFW222① | | | | | |
| | Maintained | 1NO | AOFW210① | | | | | |
| | | 1NC | AOFW201① | | | | | |
| | | 1NO-1NC | AOFW211① | | | | | |
| | | 2NO | AOFW220① | | | | | |
| | | 2NC | AOFW202① | | | | | |
| | | 2NO-2NC | AOFW222① | | | | | |
| ø29mm Mushroom ABW3 AOW3   | Momentary | 1NO | ABW310① |  | | | | |
| | | 1NC | ABW301① | | | | | |
| | | 1NO-1NC | ABW311① | | | | | |
| | | 2NO | ABW320① | | | | | |
| | | 2NC | ABW302① | | | | | |
| | | 2NO-2NC | ABW322① | | | | | |
| | Maintained | 1NO | AOW310① | | | | | |
| | | 1NC | AOW301① | | | | | |
| | | 1NO-1NC | AOW311① | | | | | |
| | | 2NO | AOW320① | | | | | |
| | | 2NC | AOW302① | | | | | |
| | | 2NO-2NC | AOW322① | | | | | |

- Specify a button color code in place of ① in the Type No.
- 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 6.

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



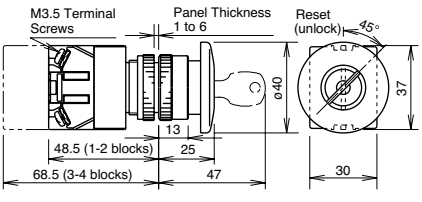


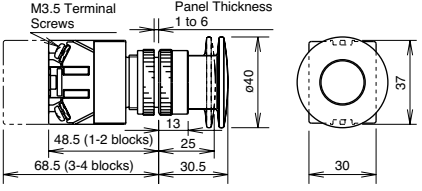
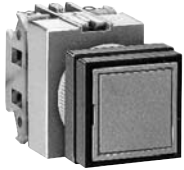

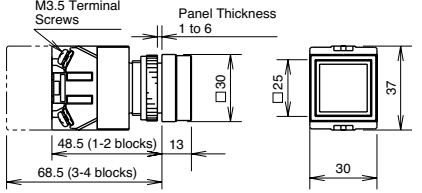


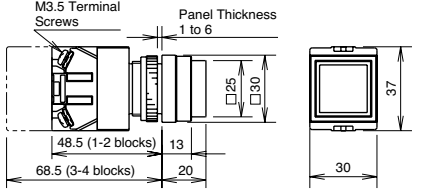
| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) |
|--|----------------|---------|----------|---|---|
| ø40mm Mushroom ABW4 AOW4   | Momentary | 1NO | ABW410① | Specify a button color code in place of ① in the Type No. B: black G: green R: red S: blue W: white Y: yellow |  |
| | | 1NC | ABW401① | | |
| | | 1NO-1NC | ABW411① | | |
| | | 2NO | ABW420① | | |
| | | 2NC | ABW402① | | |
| | Maintained | 2NO-2NC | ABW422① | | |
| | | 1NO | AOW410① | | |
| | | 1NC | AOW401① | | |
| | | 1NO-1NC | AOW411① | | |
| | | 2NO | AOW420① | | |
| 2NC | AOW402① | | | | |
| 2NO-2NC | AOW422① | | | | |
| ø40mm Mushroom w/Full Shroud ABGW4   | Momentary | 1NO | ABGW410① | Specify a button color code in place of ① in the Type No. B: black G: green R: red S: blue W: white Y: yellow |  |
| | | 1NC | ABGW401① | | |
| | | 1NO-1NC | ABGW411① | | |
| | | 2NO | ABGW420① | | |
| | | 2NC | ABGW402① | | |
| | | 2NO-2NC | ABGW422① | | |
| ø29mm Pushlock Turn Reset AVW3 (Note)   | | 1NO | AVW310① | R: red Y: yellow |  |
| | | 1NC | AVW301① | | |
| | | 1NO-1NC | AVW311① | | |
| | | 2NO | AVW320① | | |
| | | 2NC | AVW302① | | |
| | | 2NO-2NC | AVW322① | | |
| ø40mm Pushlock Turn Reset AVW4 (Note)   | | 1NO | AVW410① | R: red Y: yellow |  |
| | | 1NC | AVW401① | | |
| | | 1NO-1NC | AVW411① | | |
| | | 2NO | AVW420① | | |
| | | 2NC | AVW402① | | |
| | | 2NO-2NC | AVW422① | | |
| ø40mm Push Turn Lock AJW4   | | 1NO | AJW410① | B: black G: green R: red Y: yellow |  |
| | | 1NC | AJW401① | | |
| | | 1NO-1NC | AJW411① | | |
| | | 2NO | AJW420① | | |
| | | 2NC | AJW402① | | |
| | | 2NO-2NC | AJW422① | | |
| ø29mm Pushlock Key Reset AXW3 (Note)   | | 1NO | AXW310R | Red only |  |
| | | 1NC | AXW301R | | |
| | | 1NO-1NC | AXW311R | | |
| | | 2NO | AXW320R | | |
| | | 2NC | AXW302R | | |
| | | 2NO-2NC | AXW322R | | |

- Specify a button color code in place of ① in the Type No.
- 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 6.

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).

ø22 TW Series Pushbuttons

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

| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) | |
|--|----------------|----------|----------|--|---|----------|
| ø40mm Mushroom Push Lock Key Reset AXW4   | | 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 | 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 | | | |
| | 2NC | AOQW102① | | | | |
| | 2NO-2NC | AOQW122① | | | | |
| Square Extended ABQW2 AOQW2   | Momentary | 1NO | ABQW210① | |  | |
| | | | 1NC | | | ABQW201① |
| | | | 1NO-1NC | | | ABQW211① |
| | | | 2NO | | | ABQW220① |
| | | | 2NC | | | ABQW202① |
| | Maintained | 2NO-2NC | ABQW222① | | | |
| | | 1NO | AOQW210① | | | |
| | | 1NC | AOQW201① | | | |
| | | 1NO-1NC | AOQW211① | | | |
| | | 2NO | AOQW220① | | | |
| | 2NC | AOQW202① | | | | |
| | 2NO-2NC | AOQW222① | | | | |























- Specify a button color code in place of ① in the Type No.
- 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 6.

• 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.

Round Flush / Dome / Square Flush Types

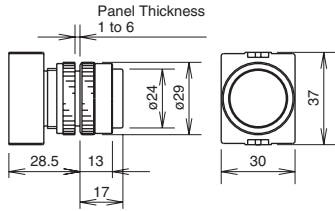
| Shape | Lamp | Input Type | Type No. | ② Lens/LED Color Code | ③ Operating Voltage Code |
|--|--------------|------------------|-------------|--|---|
| Round Flush APW1   | Without Lamp | Full Voltage | APW199② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify an operating voltage code in place of ③ in the Type No. 16: 100/110V AC 116: 115 AC 126: 120V AC 26: 200/220V AC 236: 230V AC 246: 240V AC 386: 380V AC 46: 400/440V AC 486: 480V AC |
| | LED | Transformer | APW1③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APW11DD② | R: red S: blue W: white Y: yellow | |
| Round Flush (Marking) APW1B   | Without Lamp | Full Voltage | APW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APW1B16DD② | R: red S: blue W: white Y: yellow | |
| Dome APW2   | Without Lamp | Full Voltage | APW299② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APW2③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APW216DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |
| Square Flush (Marking) APQW1B   | Without Lamp | Full Voltage | APQW1B99② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | APQW1B③D② | R: red S: blue W: white Y: yellow | |
| | | DC-DC Converter* | APQW1B16DD② | R: red S: blue W: white Y: yellow | |

- Specify a lens/LED color code in place of ② in the Type No.
- The white (W) lens of APW1B and APQW1B types is a combination of clear lens and white marking plate.
- Specify an operating voltage code in place of ③ in the Type No.
- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- 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).

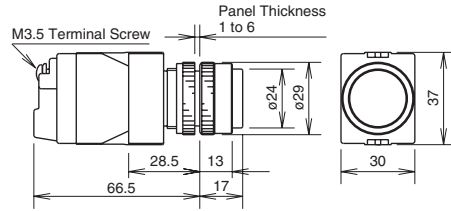
ø22 TW Series Pilot Lights

Dimensions

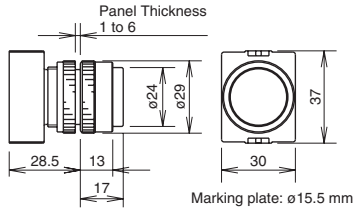
• Round Flush APW1 Full Voltage



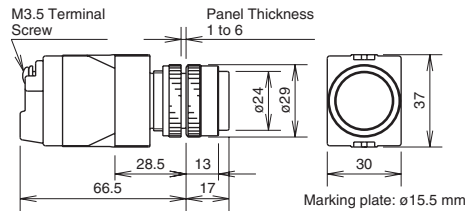
• Round Flush APW1 Transformer, DC-DC Converter



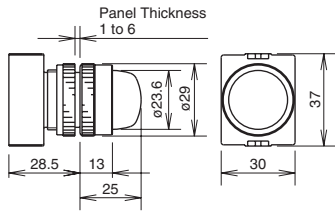
• Round Flush Marking Type APW1B Full Voltage



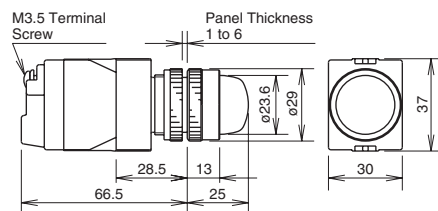
• Round Flush Marking Type APW1B Transformer, DC-DC Converter



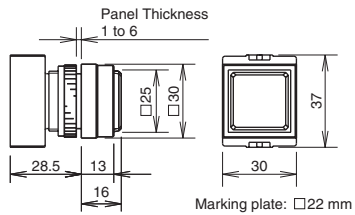
• Dome APW2 Full Voltage



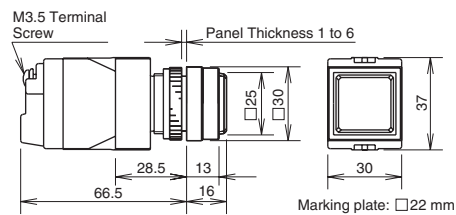
• Dome APW2 Transformer, DC-DC Converter



• Square Flush Marking Type APQW1B Full Voltage

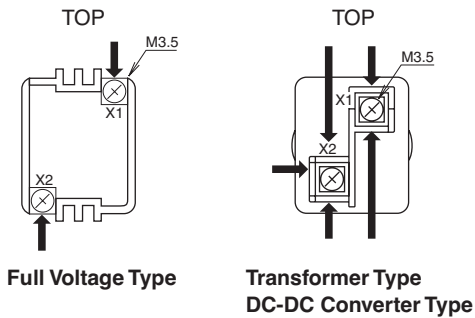


• Square Flush Marking Type APQW1B Transformer, DC-DC Converter



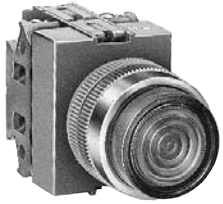

Terminal Wiring (Bottom View)

• Arrows indicate access directions for wiring.



All dimensions in mm.

Round Extended Illuminated Pushbuttons

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. | | |
|---|----------------|------------------|--------------|--------------|--------------|---------|------------|
|  Round Extended ALW2 AOLW2  | Momentary | Without Lamp | Full Voltage | 1NO-1NC | ALW29911② | | |
| | | | | 2NO | ALW29920② | | |
| | | | | 2NO-2NC | ALW29922② | | |
| | | | | LED | Transformer | 1NO-1NC | ALW2③11D② |
| | | | | | | 2NO | ALW2③20D② |
| | | | | | | 2NO-2NC | ALW2③22D② |
| | | DC-DC Converter* | Transformer | 1NO-1NC | ALW21611DD② | | |
| | | | | 2NO | ALW21620DD② | | |
| | | | | 2NO-2NC | ALW21622DD② | | |
| | | Incandescent | Transformer | 1NO-1NC | ALW2③11② | | |
| | | | | 2NO | ALW2③20② | | |
| | | | | 2NO-2NC | ALW2③22② | | |
| | Maintained | | | Without Lamp | Full Voltage | 1NO-1NC | AOLW29911② |
| | | | | | | 2NO | AOLW29920② |
| | | | | | | 2NO-2NC | AOLW29922② |
| | | LED | Transformer | | | 1NO-1NC | AOLW2③11D② |
| | | | | | | 2NO | AOLW2③20D② |
| | | | | | | 2NO-2NC | AOLW2③22D② |
| | | DC-DC Converter* | Transformer | 1NO-1NC | AOLW21611DD② | | |
| | | | | 2NO | AOLW21620DD② | | |
| | | | | 2NO-2NC | AOLW21622DD② | | |
| | | Incandescent | Transformer | 1NO-1NC | AOLW2③11② | | |
| | | | | 2NO | AOLW2③20② | | |
| | | | | 2NO-2NC | AOLW2③22② | | |






• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|--|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

ø22 TW Series Illuminated Pushbuttons

Round Extended Illuminated Pushbuttons (Marking Type)



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

• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|--|---|---|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. | Specify a lens color code in place of ② in the Type No. | Specify an operating voltage code in place of ③ in the Type No. |
| 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 | 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

Round Extended with Full Shroud Illuminated Pushbuttons

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






• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|--|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

ø22 TW Series Illuminated Pushbuttons

Round Extended with Full Shroud Illuminated Pushbuttons (Marking Type)

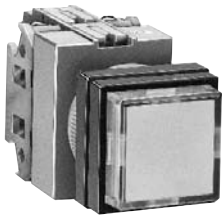



| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|---|----------------|--------------|------------------|---------|----------------|
| Round Extended (Marking) With Full Shroud ALFW2B AOLFW2B      | Momentary | Without Lamp | Full Voltage | 1NO-1NC | ALFW2B9911② |
| | | | | 2NO | ALFW2B9920②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

• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|--|---|---|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. | Specify a lens color code in place of ② in the Type No. | Specify an operating voltage code in place of ③ in the Type No. |
| 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 | 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

Square Extended Illuminated Pushbuttons (Marking Type)

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

• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|--|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).
- * DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

ø22 TW Series Illuminated Pushbuttons

Mushroom (ø29) Illuminated Pushbuttons

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|--|----------------|--------------|---|--------------|--------------|
| ø29 Mushroom ALW3 AOLW3   | Momentary | Without Lamp | Full Voltage | 1NO-1NC | ALW39911② |
| | | Incandescent | Transformer | | ALW3③11② |
| | Maintained | Without Lamp | Full Voltage | | AOLW39911② |
| | | Incandescent | Transformer | | AOLW3③11② |
| ø29 Mushroom (Marking Type) ALW3B AOLW3B   | Momentary | Without Lamp | Full Voltage | | ALW3B9911② |
| | | Incandescent | Transformer | | ALW3B③11② |
| | Maintained | Without Lamp | Full Voltage | | AOLW3B9911② |
| | | Incandescent | Transformer | | AOLW3B③11② |
| ø29 Mushroom Pushlock Turn Reset AVLW3   | | Without Lamp | Full Voltage | 1NO-1NC | AVLW39911R |
| | | | | 2NO | AVLW39920R |
| | | LED | Transformer | 1NO-1NC | AVLW3③11DR |
| | | | | 2NO | AVLW3③20DR |
| | | Incandescent | Transformer | 1NO-1NC | AVLW3③11R |
| | | | | 2NO | AVLW3③20R |
| | | 2NO-2NC | AVLW3③22R | | |
| | | | ø29 Mushroom Pushlock Turn Reset (Marking Type) AVLW3B   | Without Lamp | Full Voltage |
| 1NC | AVLW3B9920R | | | | |
| 1NO-1NC | AVLW3B9922R | | | | |
| | LED | Transformer | | 1NO-1NC | AVLW3B③11DR |
| 2NO | AVLW3B③20DR | | | | |
| 2NO-2NC | AVLW3B③22DR | | | | |
| 1NO-1NC | AVLW3B③11R | | | | |
| | 2NO | AVLW3B③20R | | | |
| 2NO-2NC | AVLW3B③22R | | | | |

• Color Code and Operating Voltage Code

| Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|---|
| ② Lens Color Code | |
| Specify a lens color code in place of ② in the Type No. | Specify an operating voltage code in place of ③ in the Type No. |
| A: amber G: green R: red S: blue W: white | 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

Mushroom (ø40 mm) Illuminated Pushbuttons

| Shape | Lamp | Input Type | Contact | Type 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 Type) 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 |
| | Incandescent | Transformer | 1NO-1NC | AYLW4③11② |
| | | | 2NO | AYLW4③20② |
| ø40 Mushroom Push Pull (Marking Type) AYLW4B (2-position maintained)   | Without Lamp | Full Voltage | 1NO | AYLW4B9911② |
| | | | 1NC | AYLW4B9920② |
| | | | 1NO-1NC | AYLW4B9922② |
| | Incandescent | Transformer | 1NO-1NC | AYLW4B③11② |
| | | 2NO | AYLW4B③20② | |

• **Color Code and Operating Voltage Code**

| Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|
| ② Lens Color Code | |
| Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white (AYLW4 only) | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 116: Transformer (115V AC) 126: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 246: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer type contains an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

• **Contact Statuses of Push-Pull Switch**

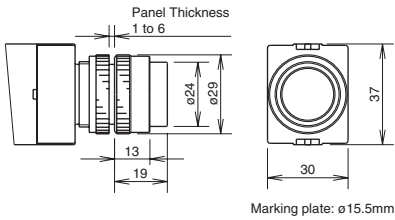
| Contact | ø40mm Mushroom Push-Pull Switch | |
|---------|---------------------------------|---------|
| | Push | Pull |
| 1NO | ○+○ | ○-○ |
| 1NC | ●+● | ●-● |
| 1NO-1NC | ○+○ ●+● | ○-○ ●-● |
| 2NO | ○+○ ○+○ | ○-○ ○-○ |
| 2NC | ●+● ●+● | ●-● ●-● |

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

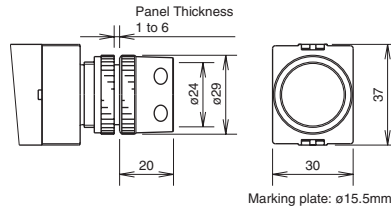
Ø22 TW Series Illuminated Pushbuttons

Dimensions (Operator)

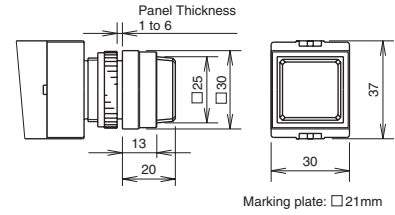
Round Extended (non-marking/markung) ALW2 / ALW2B / AOLW2 / AOLW2B



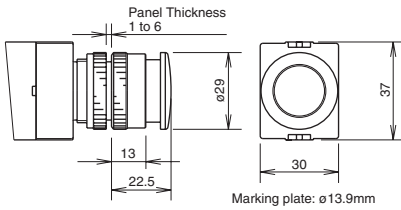
Round Extended with Full Shroud (non-marking/markung) ALFW2 / ALFW2B / AOLFW2 / AOLFW2B



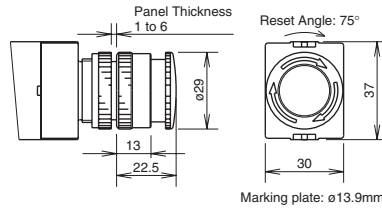
Square Extended (marking) ALQW2B / AOLQW2B



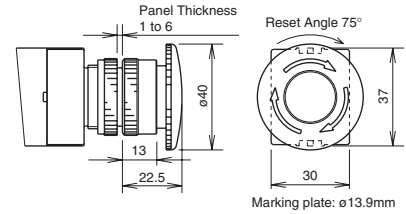
Ø29 Mushroom (non-marking/markung) ALW3 / ALW3B / AOLW3 / AOLW3B



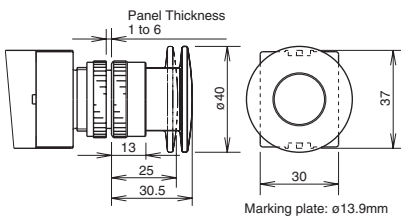
Ø29 Mushroom Pushlock Turn Reset (non-marking/markung) AVLW3 / AVLW3B



Ø40 Mushroom Pushlock Turn Reset (non-marking/markung) AVLW4 / AVLW4B



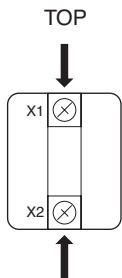
Ø40 Mushroom Push Pull (non-marking/markung) AYLW4 / AYLW4B



All dimensions in mm.

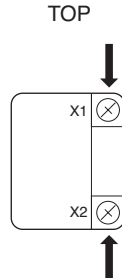
Terminal Arrangement (Lamp Terminal) (Bottom View)

• Arrows indicate access directions for wiring.



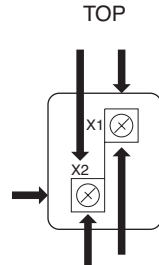
Full Voltage Type

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



Full Voltage Type

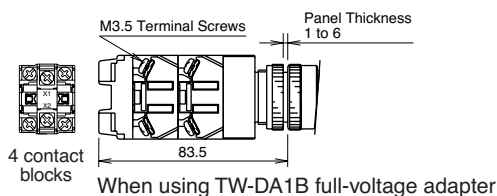
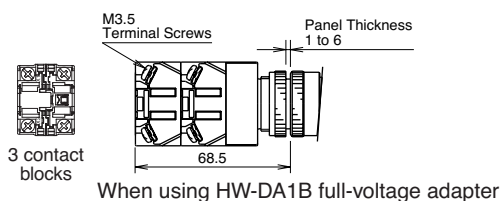
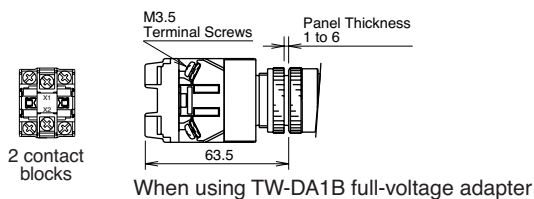
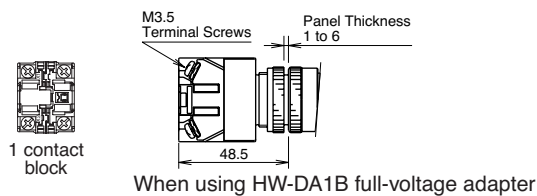
When using HW-DA1B Full Voltage Adapter for 1 or 3 contact blocks



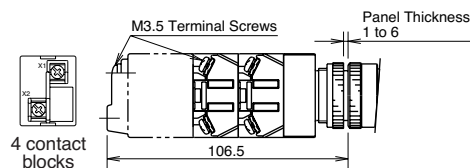
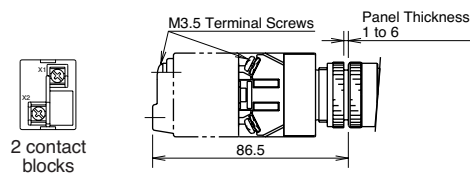
**Transformer Type
DC-DC Converter Type**

Dimensions (Behind the Panel)

• Full Voltage Type



• Transformer Type • DC-DC Converter Type



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


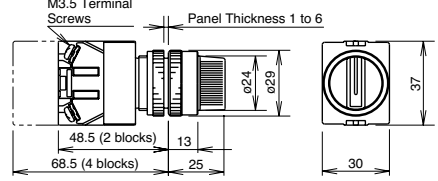







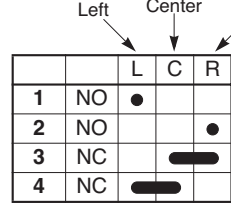


All dimensions in mm.

• Contact Configuration and Codes

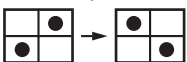
| Contact Configuration | Code | |
|-----------------------|---------|----|
| 1 block | 1NO | 10 |
| | 1NC | 01 |
| 2 blocks | 1NO-1NC | 11 |
| | 2NO | 20 |
| 3 blocks | 2NO-1NC | 21 |
| | 1NO-2NC | 12 |
| | 3NO | 30 |
| | 3NC | 03 |
| 4 blocks | 3NO-1NC | 31 |
| | 2NO-2NC | 22 |
| | 1NO-3NC | 13 |
|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

ø22 TW Series Selector Switches

Selector Switches (Knob Operator Type)


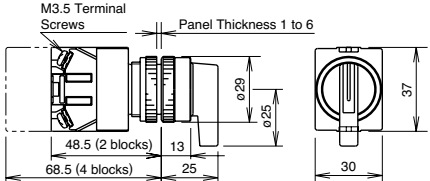







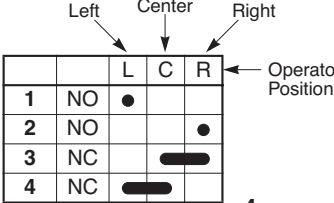


| No. of Positions | Shape | | | ASW | | | | | | | |
|---------------------------------|---------------------------|-------------------|-------|-------------------|-----------|---|---|---|---|---|---|
| | Contact Arrangement Chart | | | CE | UL LISTED | SP |   | | | | |
| 90° 2-position | Contact Code | Contact Block | | Operator Position | | Maintained | Spring Return from Right | Spring Return from Left | — | | |
| | | Mounting Position | Type | 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 | Type | 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 | | ■ | | | | | | |
| | | 4 | NC | | ■ | | | | | | |
| | 40 (4NO) | 1 | NO | ● | | | ASW340 | ASW3140 | ASW3240 | ASW3340 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NO | ● | | | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 04 (4NC) | 1 | NC | | ■ | | ASW304 | ASW3104 | ASW3204 | ASW3304 | |
| | | 2 | NC | | ■ | | | | | | |
| | | 3 | NC | | ■ | | | | | | |
| | | 4 | 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 | Type | 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 | | | | ● | | | | | |

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

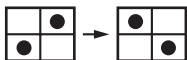


- On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.
- Selector switches with one or three contact blocks contain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

Selector Switches (Lever Operator Type)

| 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 | Type | 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 | | ● | | | | | | |
| | 22 (2NO-2NC) | 1 | NO | | ● | ASW2L22 | ASW21L22 | ASW22L22 * | | | |
| | | 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 | Type | L | C | R |  |  |  |  | |
| | 20 (2NO) | 1 | NO | ● | | | ASW3L20 | ASW31L20 | ASW32L20 | ASW33L20 | |
| | | 2 | NO | | | ● | | | | | |
| | 02 (2NC) | 1 | NC | | ■ | | ASW3L02 | ASW31L02 | ASW32L02 | ASW33L02 | |
| | | 2 | NC | | ■ | | | | | | |
| | 22 (2NO-2NC) | 1 | NO | ● | | | ASW3L22 | ASW31L22 | ASW32L22 | ASW33L22 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NC | | ■ | | | | | | |
| | | 4 | NC | | ■ | | | | | | |
| | 40 (4NO) | 1 | NO | ● | | | ASW3L40 | ASW31L40 | ASW32L40 | ASW33L40 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NO | ● | | | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 04 (4NC) | 1 | NC | | ■ | | ASW3L04 | ASW31L04 | ASW32L04 | ASW33L04 | |
| | | 2 | NC | | ■ | | | | | | |
| 3 | | NC | | ■ | | | | | | | |
| 4 | | NC | | ■ | | | | | | | |
| 3S ★ | 1 | NO | ● | | | ASW3L3S-243 ★ | — | — | — | | |
| | 2 | NO | | | ● | | | | | | |
| | 3 | NC | | ■ | | | | | | | |
| | 4 | Dummy | | | | | | | | | |
| 30° 5-position / 45° 4-position | Contact Code | Contact Block | | Operator Position | | | | | Maintained | Maintained | <p>• Contact Block Mounting Position and Contact Arrangement Chart</p>  |
| | | Mounting Position | Type | 1 | 2 | 3 | 4 | 5 |  |  | |
| | 4S ★ | 1 | NC | | ■ | | | | ASW4L4S-407 ★ | — | |
| | | 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 | | | | ● | | | | | |

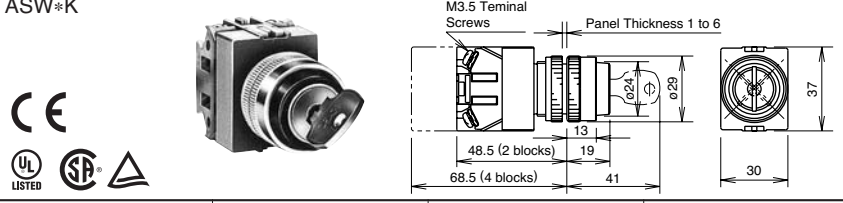







• On the 2-position selector switches marked with * above, the contact operation is reversed as follows.



- 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

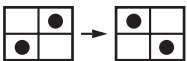
ø22 TW Series Selector Switches

Key Selector Switches

| No. of Positions | Shape | | | ASW*K | | | | | | |
|------------------|---------------------------|-------------------|-------|--|---|---|---|---|---|---|
| | Contact Arrangement Chart | | |  | | | | | | |
| 90° 2-position | Contact Code | Contact Block | | Operator Position | | Maintained | Spring Return from Right | Spring Return from Left | — | |
| | | Mounting Position | Type | 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 | Type | 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 7.

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

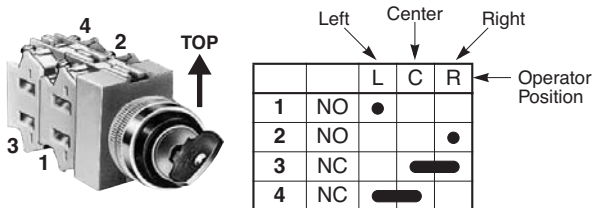


• On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block. The rated insulation voltage and the rated thermal current remain unchanged.

• 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 27 to 29.

Illuminated Selector Switches

90° 2-position

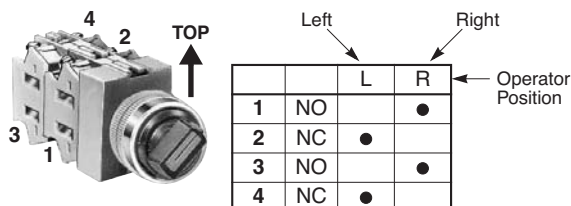
| Shape | | ASLW | | | | | | | |
|----------------------------------|-------------------|------|-------------------|---|--------------|--------------|------------|--------------------------|-------------------------|
| | | | | | | | | | |
| | | | | | | | | | |
| Contact Arrangement Chart | | | | | | | | | |
| Contact Code | Contact Block | | Operator Position | | Lamp | Input Type | Maintained | Spring Return from Right | Spring Return from Left |
| | Mounting Position | Type | L | R | | | | | |
| 11 (1NO-1NC) | 1 | NO | | ● | Without Lamp | Full Voltage | L R | L R | L R |
| | 2 | NC | ● | | LED | Transformer | L R | L R | L R |
| | | | | | Incandescent | Transformer | L R | L R | L R |
| 20 (2NO) | 1 | NO | | ● | Without Lamp | Full Voltage | L R | L R | L R |
| | 2 | NO | | ● | LED | Transformer | L R | L R | L R |
| | | | | | Incandescent | Transformer | L R | L R | L R |
| 22 (2NO-2NC) | 1 | NO | | ● | Without Lamp | Full Voltage | L R | L R | L R |
| | 2 | NC | ● | | LED | Transformer | L R | L R | L R |
| | 3 | NO | | ● | | | | | |
| | 4 | NC | ● | | Incandescent | Transformer | L R | L R | L R |

• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|--|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 156: Transformer (115V AC) 136: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 256: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer type contains an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

• Contact Block Mounting Position and Contact Arrangement Chart



• For more contact arrangement chart, see pages 27 to 29.

ø22 TW Series Selector Switches

Illuminated Selector Switches

45° 3-position

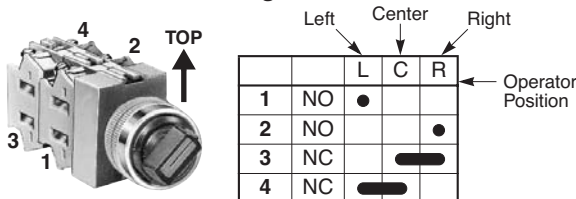
| Contact Code | Contact Block | | Operator Position | | | Lamp Input Type | Maintained | Spring Return from Right | Spring Return from left | Spring Return Two-way |
|-----------------|-------------------|------|-------------------|---|--------------------------|---------------------------|------------|--------------------------|-------------------------|------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

• Color Code and Operating Voltage Code

| LED Illuminated Type | Incandescent Illuminated Type | ③ Operating Voltage Code |
|---|--|--|
| ② Lens/LED Color Code | ② Lens Color Code | |
| Specify a lens/LED color code in place of ② in the Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Specify a lens color code in place of ② in the Type No. A: amber G: green R: red S: blue W: white | Specify an operating voltage code in place of ③ in the Type No. 16: Transformer (100/110V AC) 156: Transformer (115V AC) 136: Transformer (120V AC) 26: Transformer (200/220V AC) 236: Transformer (230V AC) 256: Transformer (240V AC) 386: Transformer (380V AC) 46: Transformer (400/440V AC) 486: Transformer (480V AC) |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 36.
- LED illuminated transformer type contains an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

• Contact Block Mounting Position and Contact Arrangement Chart



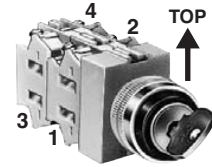
• For more contact arrangement chart, see pages 27 to 29.

TW Series Selector Switch Contact Arrangement Charts ø22

90° 2-position (Maintained / Spring Return)

| Positions | | | | Maintained | Spring Return from Right | Spring Return from Left | |
|-----------------|-------------|-------------------|-------|-------------------------------|--------------------------|-------------------------|---|
| | | | | L R | | L R | |
| Operator Types | | | | Knob, Lever, Key, Illuminated | | | |
| Contact Code | Circuit No. | Mounting Position | Type | Operator Positions | | | |
| | | | | L | R | L | R |
| 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 | NC | ————— | | | |
| | 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



| | | Left | Right | Operator Position |
|---|----|------|-------|-------------------|
| | | L | R | |
| 1 | NO | | ● | |
| 2 | NC | ● | | |
| 3 | NO | | ● | |
| 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.

Type 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

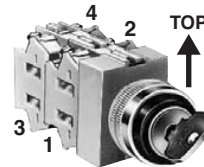
ø22 TW Series Selector Switch Contact Arrangement Charts

45° 3-position (Maintained / Spring Return)

| Positions | Maintained | Spring Return from Right | Spring Return from Left | Spring Return Two-way |
|----------------|-------------------------------|--------------------------|-------------------------|-----------------------|
| | | | | |
| Operator Types | Knob, Lever, Key, Illuminated | | | |

| Contact Code | Circuit No. | Mounting Position | Type | Operator Positions | | |
|-----------------|-------------|-------------------|------|--------------------|---|---|
| | | | | | | |
| 11 | 202 | 1 | NO | • | | |
| | | 2 | NC | — | | |
| | 203 | 1 | NC | | — | |
| | | 2 | NO | | | • |
| | 302 | 1 | NO | • | | • |
| | | 2 | NC | — | | |
| | 303 | 1 | NC | | • | |
| | | 2 | NO | | | • |
| 20 | — | 1 | NO | • | | |
| | | 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 | — | | |
| | 207 | 1 | NC | | — | |
| | | 2 | 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 | | | • |
| | 305 | 1 | NO | • | | • |
| | | 2 | 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 | — | | | |

Type 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 Types | | | | Knob, Lever, Key, Illuminated | | |
| Contact Code | Circuit No. | Mounting Position | Type | 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 | NO | ● | | ● |
| | | 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)

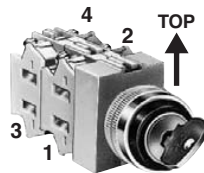
| Positions | | | | Maintained | | |
|----------------|-------------|-------------------|------|--------------------------|---|---|
| | | | | | | |
| Operator Types | | | | Knob, Lever, Illuminated | | |
| Contact Code | Circuit No. | Mounting Position | Type | Operator Positions | | |
| | | | | | |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

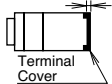







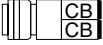







| | | Left | Center | Right | |
|---|----|------|--------|-------|---------------------|
| | | L | C | R | ← Operator Position |
| 1 | NO | ● | | | |
| 2 | NC | | ■ | | |
| 3 | NO | ● | | ● | |
| 4 | NO | | | ● | |

• 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.

ø22 TW Series Accessories and Replacement Parts

Accessories

| | | 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 | |
| • Pilot light APW APQW | Full Voltage | | | | | | | X | +6mm |
| | Transformer DC-DC Converter | | | X | | | | | +3mm |
| | | | | X | | | | | +3mm |
| • Pushbutton ABW ACW AVW ABQW ABFW AJW AOQW AOFW AXW ABGW AYW | 1 contact block  | X | | | | | | | +3.5mm |
| | 2 contact blocks  | X 2 pieces | | | | | | | |
| | 3 contact blocks  | X 2 pieces | | | | | | | |
| | 4 contact blocks  | X 2 pieces | | | | | | | |
| • Selector switch ASW | 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 |

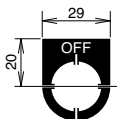
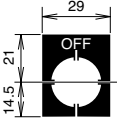
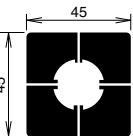
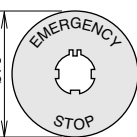
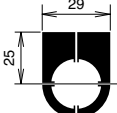
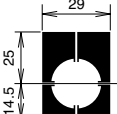

• Ordering Terminal Covers

Terminal covers are ordered separately.

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

Nameplates

NWA, NWAQ, NWAQ, NWAQ, NWAQ, and NWAQ

| Dimensions (mm) | Legend | Material | Type No. | Ordering Type No. | Package Quantity | Description |
|---|----------------|---------------------------|----------|-------------------|------------------|------------------------------------|
|  | 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 | |
|  | 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 | |
|  | Blank | Aluminium 0.8 mm thick | NWAQ-0 | NWAQ-0 | 1 | Black |
| | | | | | NWAQ-0PN10 | |
|  | Blank | Aluminium 0.8 mm thick | NWAQ-0 | NWAQ-0 | 1 | Yellow |
| | | | | NWAQ-0PN10 | 10 | |
| | EMERGENCY STOP | | NWAQ-27 | NWAQ-27 | 1 | Black letters on yellow background |
| | | | | NWAQ-27PN10 | 10 | |
|  | Blank | Aluminium 0.8 mm thick | NWAQ-0 | NWAQ-0 | 1 | Black |
| | | | | | NWAQ-0PN10 | |
|  | Blank | Aluminium 0.8 mm thick | NWAQ-0 | NWAQ-0 | 1 | Black |
| | | | | | NWAQ-0PN10 | |
|  | Blank | Plastic | HWAV-0 | HWAV-0 | 1 | Yellow |
| | EMERGENCY STOP | | HWAV-27 | HWAV-27 | 1 | Black letters on yellow background |


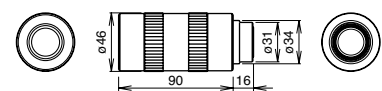

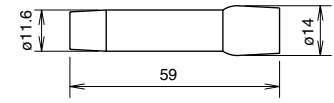

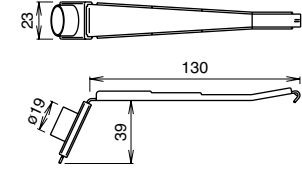

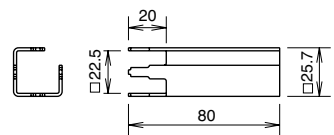

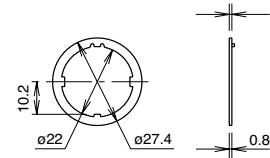

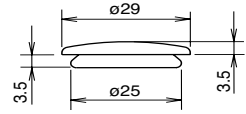

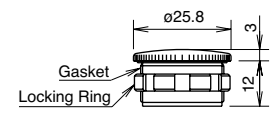

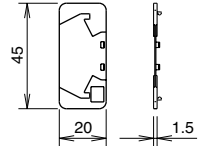
• Specify a legend code in place of * in the Ordering Type No.


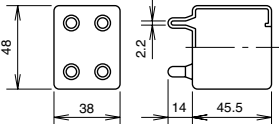

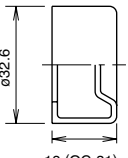


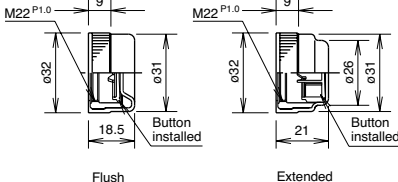
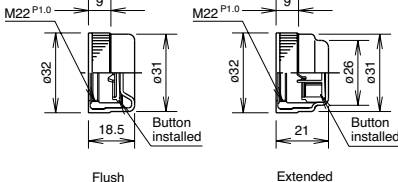

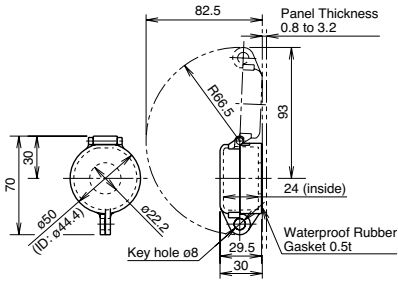

Legends

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

ø22 TW Series Accessories and Replacement Parts

Accessories

| Shape | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions |
|---|---------------------------------------|----------|-------------------|------------------|---|
|  | Rubber | OR-14 | OR-14 | 1 | <ul style="list-style-type: none"> Used to tighten the locking ring when installing the TW control unit onto a panel.  <p>For ø22/ø25mm units For ø22mm units (close mounting)</p> |
|  | Rubber | OR-55 | OR-55 | 1 | <ul style="list-style-type: none"> Used to install and remove LED/incandescent lamps.  |
|  | Metal/Rubber | TW-KC1 | TW-KC1 | 1 | <ul style="list-style-type: none"> Used to remove contact blocks, transformers, lenses and adapters. Can also be used to determine panel thickness adjustment.  |
|  | Metal | TW-KQ2 | TW-KQ2 | 1 | <ul style="list-style-type: none"> Used to tighten the locking nuts inside of the square bezel. This tool can be inserted into the OR-14 locking ring wrench.  |
|  | Metal | OGL-31 | OGL-31PN10 | 10 | <ul style="list-style-type: none"> Used to prevent the operator from rotating. Generally used when using no nameplates on selector switches.  |
|  | Rubber (black) | OB-31 | OB-31PN05 | 5 | <ul style="list-style-type: none"> Used to plug unused ø22.2mm mounting holes.  |
|  | Diecast Metal (locking ring: plastic) | LW9Z-BM | LW9Z-BM | 1 | <ul style="list-style-type: none"> 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 | HW-VL1 | HW-VL1PN10 | 10 | <ul style="list-style-type: none"> Used to prevent contact between adjacent lead wires when units are mounted closely. Barriers should be always used in close mounting.  |

| Accessories | | | | | | |
|---|-------------------------------------|-----------|-------------------|------------------|--|---|
| Shape | Material | Type No. | Ordering Type No. | Package Quantity | Description | |
|  | Rubber (nitril) | OCW-99 | OCW-99 | 1 | <ul style="list-style-type: none"> Oiltight rubber boot used for pushbuttons and selector switches. Temperature range: -5 to +60°C Black  | <ul style="list-style-type: none"> For 1 layer of contact blocks (2 contact blocks) |
| | | OCW-299 | OCW-299 | 1 | | |
|  | Rubber (EPDM) | OC-31 | OC-31 | 1 | <ul style="list-style-type: none"> 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 flush pushbuttons (ABW1/AOW1) |
| | | OC-32 | OC-32 | 1 | |  |
|  | Rubber (nitril) | OCW-10① | OCW-10① | 1 | <ul style="list-style-type: none"> 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 flush pushbuttons (ABW1/AOW1) |
| | | OCW-11① | OCW-11① | 1 | |  |
|  | Polyarylate (gasket: nitril rubber) | HW9Z-KL1 | HW9Z-KL1 | 1 | <ul style="list-style-type: none"> Used to protect momentary and maintained pushbuttons, illuminated pushbuttons, knobs selector switches, and key selector switches.  | |
|  | Plastic | ALW4L-② | ALW4L-② | 1 | <ul style="list-style-type: none"> Applicable unit: ALW3, AOLW3 | Non-marking Type |
| | | ALW4LD-② | ALW4LD-② | 1 | | <ul style="list-style-type: none"> Applicable unit: ALW3B, AOLW3B Marking plate is included |
| | | ALW4BL-② | ALW4BL-② | 1 | <ul style="list-style-type: none"> Applicable unit: ALW3, AOLW3 | <ul style="list-style-type: none"> ②: G (green), R (red), S (blue) |
| | | ALW4BLD-② | ALW4BLD-② | 1 | <ul style="list-style-type: none"> Applicable unit: ALW3B, AOLW3B Marking plate is included | <ul style="list-style-type: none"> ②: A (amber), W (white) ②: G (green), R (red), S (blue), W (white) ②: A (amber) |

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

ø22 TW Series Accessories and Replacement Parts





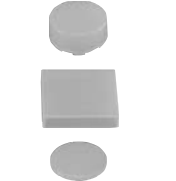

Accessories

| Shape | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions | | |
|----------------------------|-----------|--|-------------------|------------------|---|--|----------------------------|
| Plastic Bezel | Plastic | ① Flush | AW-RP1B | AW-RP1BPN05 | 5 | | |
| | | ② Extended | AW-FP1B | AW-FP1B | 1 | | |
| | | ③ Extended (for illuminated pushbuttons) | AW-FP2B | AW-FP2B | 1 | | |
| | | ④ Square round (for round pushbuttons) | AW-H1B | AW-H1B | 1 | | |
| | | ⑤ Square | AW-Q1B | AW-Q1B | 1 | | |
| Aluminium Bezel | Aluminium | ① Flush | AW-R1 | AW-R1PN05 | 5 | | |
| | | ② Extended | AW-R1B | AW-R1B | 1 | | Black |
| | | ③ Extended (for illuminated pushbuttons) | AW-F1 | AW-F1 | 1 | | Aluminium color (standard) |
| | | ④ Mushroom | AW-G4 | AW-G4 | 1 | | |
| | | Selector Operator | Plastic | ① Knob | ASWHHY-② | | ASWHHY-②PN02 |
| ② Lever | ASWHHL-② | | | ASWHHL-②PN02 | 2 | | |
| ③ Round | ASWHHM-B | | | ASWHHM-BPN02 | 2 | Black only | |
| ④ Color 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) | |
| ⑤ Illuminated 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 | <ul style="list-style-type: none"> Used to protect flush pushbuttons from inadvertent operation. | | |

Maintenance Parts

| Shape | Specification | Type No. | Ordering Type No. | Package Quantity | Color | | |
|-------|-------------------------|----------|-------------------|------------------|--|------------|-------|
| | | | | | 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 |
| | | TW-DB | TW-DBPN10 | 10 | <ul style="list-style-type: none"> Used for non-illuminated units with 1NO or 1NC contact blocks. Black | | |
| | | TW-DA1B | TW-DA1BPN02 | 2 | <ul style="list-style-type: none"> 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 | | |
| | | HW-DA1B | HW-DA1BPN02 | 2 | <ul style="list-style-type: none"> Adapter with M3.5 screws used for illuminated pushbuttons or illuminated selector switch. Used with 1 or 3 contact blocks. Black | | |


Maintenance Parts

| Shape | Material | Type No. | Ordering Type No. | Package Quantity | Color Code |
|---|------------------|---------------|-------------------|------------------|--|
|  | 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 type | APW11L-② | APW11L-②PN05 | 5 | C (clear), G (green), R (red), S (blue) |
| | | APW11LD-② | APW11LD-②PN05 | 5 | A (amber), Y (yellow) |
| | AS | APW2L-② | APW2L-②PN05 | 5 | G (green), R (red), S (blue) |
| | | APW2LD-② | APW2LD-②PN05 | 5 | A (amber), W (white), Y (yellow) |
| | AS, Marking type | APQW11L-② | APQW11L-②PN05 | 5 | C (clear), G (green), R (red), S (blue) |
| | | APQW11LD-② | APQW11LD-②PN05 | 5 | A (amber), Y (yellow) |
|  | 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 type | ALW21L-② | ALW21L-②PN05 | 5 | C (clear), G (green), R (red), S (blue) |
| | | ALW21LD-② | ALW21LD-②PN05 | 5 | A (amber), Y (yellow) |
| | AS | ALQW21L-② | ALQW21L-②PN05 | 5 | C (clear), G (green), R (red), S (blue) |
| | | ALQW21LD-② | ALQW21LD-②PN05 | 5 | A (amber), Y (yellow) |
| | 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 type | ALW31L-② | ALW31L-②PN02 | 2 | C (clear), G (green), R (red), S (blue) |
| | | ALW31LD-② | ALW31LD-②PN02 | 2 | A (amber), Y (yellow) |
| AS, Marking type | AVLW31L-R | AVLW31L-RPN02 | 2 | | |
| AS | AVLW4L-R | AVLW4L-RPN02 | 2 | | |
|  | Polyacetal | ABW1B-① | ABW1B-①PN05 | 5 | B (black) G (green) R (red) S (blue) W (white) Y (yellow) |
| | | ABW2B-① | ABW2B-①PN05 | 5 | |
| | | ABQW1B-① | ABQW1B-①PN05 | 5 | |
| | | ABQW2B-① | ABQW2B-①PN05 | 5 | |
| | | ABW3B-① | ABW3B-①PN02 | 2 | |
| | | ABW4B-① | ABW4B-①PN02 | 2 | |
| | | AVW3B-① | AVW3B-①PN02 | 2 | R (red), Y (yellow) |
| | | AVW4B-① | AVW4B-①PN02 | 2 | R (red), Y (yellow) |
| | | AYW4B-① | AYW4B-①PN02 | 2 | B (black), G (green), R (red), S (blue), W (white), Y (yellow) |
|  | | APW2B | APW2BPN05 | 5 | |
| | | APQW1B | APQW1BPN05 | 5 | |
|  | Acrylic | ALW2B | ALW2BPN05 | 5 | • White |
| | | ALQW2B | ALQW2BPN05 | 5 | |
| | | ALW3B | ALW3BPN05 | 5 | |
|  | Acrylic | APW00LN | APW00LNPN05 | 5 | |
| | | APW00L | APW00LPN05 | 5 | |




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

ø22 TW Series Accessories and Replacement Parts





Maintenance Parts

| Shape | Material | Type No. | Ordering Type No. | Package Quantity |
|---|----------|----------|-------------------|------------------|
|  <p>Spare Key For Key Selector Switch For Pushlock Key Reset</p> | Metal | TW-SK-0 | TW-SK-0PN02 | 2 |


LED Lamps (LSTD Type)

| Operating Voltage | Current Draw | | Type No. | Ordering Type No. | Illumination Color Code | Package Quantity | Base |
|---|---------------------------------------|---|----------|-------------------|---|------------------|---------|
| | AC | DC | | | | | |
|  <p>6V AC/DC ±5%</p> | 17 mA (A, R, W, Y) 8 mA (G, PW, S) | 14 mA (A, R, W, Y) 5.5 mA (G, PW, S) | LSTD-6② | LSTD-6② | Specify a color code in place of ② in the Ordering Type No. A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | 1 | BA9S/13 |
| | | | | LSTD-6②PN10 | | 10 | |
|  <p>12V AC/DC ±10%</p> | 11 mA | 10 mA | LSTD-1② | LSTD-1② | 1 | | |
| | | | | LSTD-1②PN10 | 10 | | |
|  <p>24V AC/DC ±10%</p> | 11 mA | 10 mA | LSTD-2② | LSTD-2② | 1 | | |
| | | | | LSTD-2②PN10 | 10 | | |

Incandescent Lamps (LS Type)

| Rated Operating Voltage | Lamp Ratings | Type No. | Package Quantity |
|--|--------------|----------|------------------|
|  <p>6V AC/DC</p> | 1W (6.3V) | LS-6 | 1 |
|  <p>12V AC/DC</p> | 1W (18V) | LS-8 | |
|  <p>18V AC/DC</p> | 1W (24V) | LS-2 | |
|  <p>24V AC/DC</p> | 1W (30V) | LS-3 | |

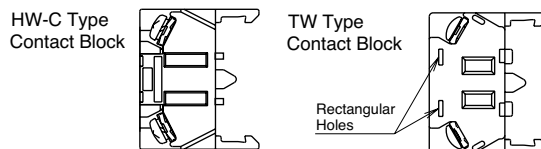
Transformer

| Shape | Primary Voltage | Secondary Voltage | Type No. |
|---|-----------------|-------------------|----------|
|  <p>Transformer Unit</p> | 100/110V AC | 5.5V | TW-T16B |
| | 120V AC | | TW-T126B |
| | 200/220V AC | | TW-T26B |
| | 240V AC | | TW-T246B |

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 type 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

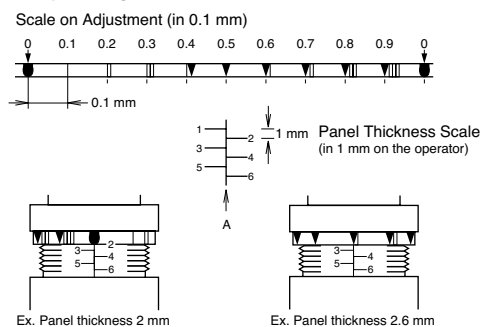
Panel Mounting

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 | Panel | Panel Lens | | | | | | |
| Remarks | | | Attach the unit with the panel thickness scale facing up. | <table border="1"> <thead> <tr> <th>Type</th> <th>Method</th> </tr> </thead> <tbody> <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> </tbody> </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 waterproof 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.

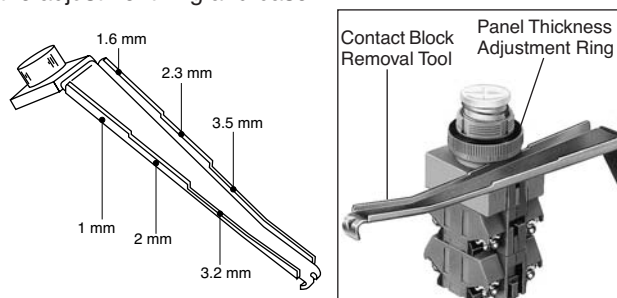


Note: When a nameplate or an anti-rotation ring is used, add 0.8mm to the panel thickness.

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

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.

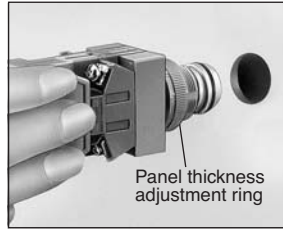


Instructions

Mounting into Panel Cut-out with Bezel

• Insertion into Panel Cut-out

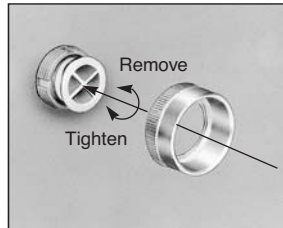
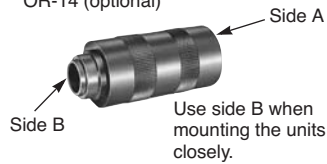
Insert the base into the panel cut-out making sure that the panel thickness scale is facing up.



• Round Bezel

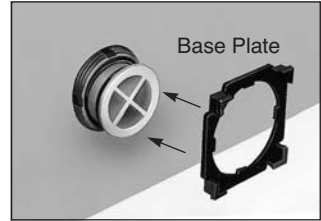
All round bezels are screw-in type. Be sure to use the locking ring wrench to tighten the bezel.

Locking Ring Wrench
OR-14 (optional)



• Square Bezel

1. Insert the base plate from the front.

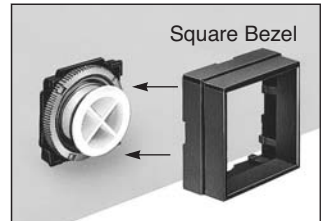


2. Insert the lock nut. For easy installation, use the nut locking wrench.



Nut Locking Wrench
TW-KQ2 (optional)

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



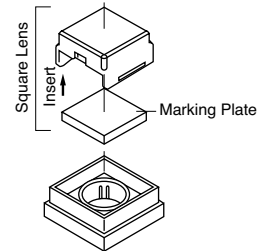
• Recommended tightening torque is 2.0 N·m.

Installing Buttons, Lenses, and Operators

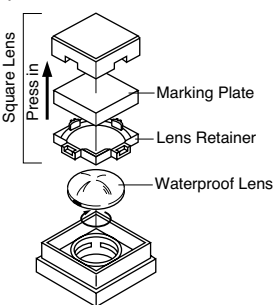
• Lens Structure and Marking Plate

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

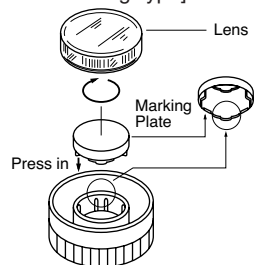
[Square Pilot Lens]



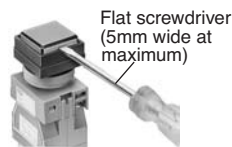
[Square Illuminated Pushbutton]



[Round Marking Type]

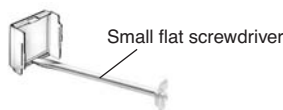


1. **Removing the Square Lens**
Insert the screwdriver into the recess of the lens and lightly push out the lens.

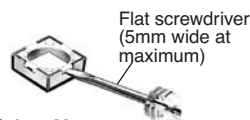


2. **Removing the Marking Plate**

• 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. Always use the 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.

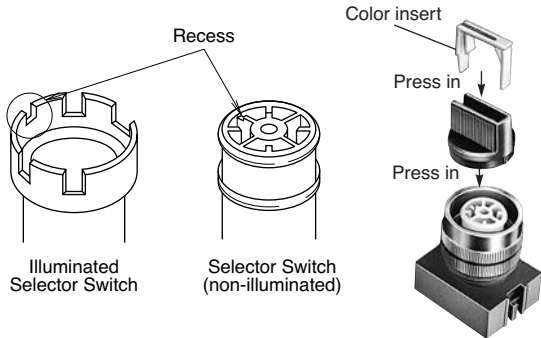
• Installing Round Lens and Waterproof Lens

When installing or removing round lenses of pilot lights and illuminated pushbuttons and waterproof lenses 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.

Instructions

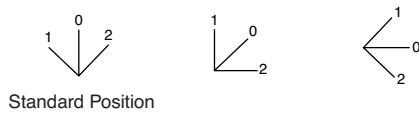
• Installation of Selector Operators

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 type) into the operator. The color insert retains the operator.



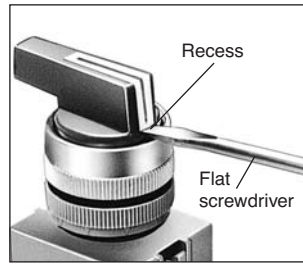
| 2-Position, 90° | 3-Position, 45° | 4-Position, 45° | 5-Position, 30° |
|-----------------|-----------------|-----------------|-----------------|
| | | | |

[Example]



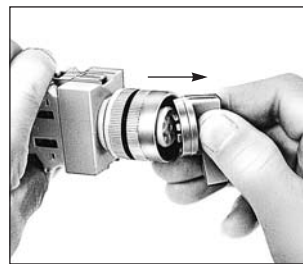
The non-illuminated operators can be installed in positions other than the standard position as shown above.

• Removing the Operator



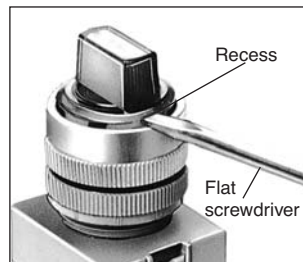
1. Removing the Color Insert

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.

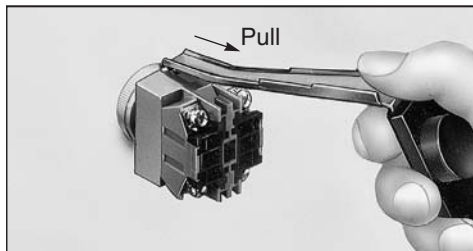


3. Removing the Operator (Illuminated)

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

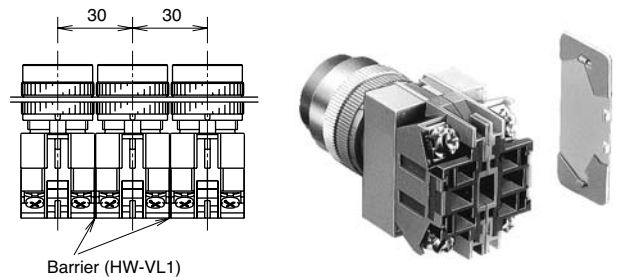
Removing Contact Blocks, Transformers and Full Voltage Adapters

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

022 TW Series Instructions

Installation of LED Illuminated Units

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

| Terminal No. | Polarity |
|--------------|----------|
| X1 | Positive |
| X2 | Negative |

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

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

- Switching power supply
Regulated voltage from switching power supply is best suited. Make sure to use within the rated voltage of the LED lamp.
- 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.
- 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.
- Single-phase half-wave rectification
This is not suitable for the power source of LED lamps. Use constant-voltage DC power.

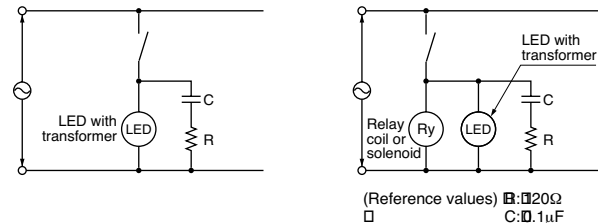
• Noise

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.

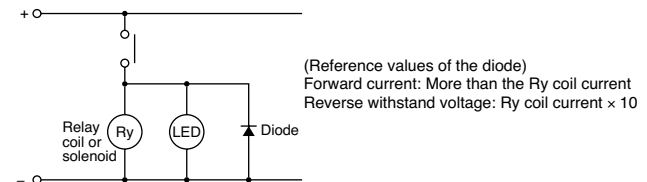
- Notes for Pure White LED Lamps

- 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.

[Protection Example 1] For AC circuit



[Protection Example 2] For DC circuit

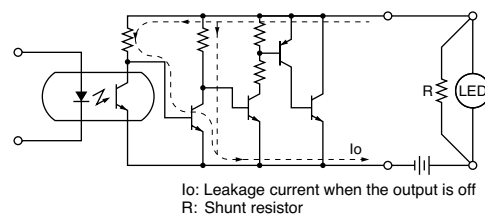


• Countermeasures against Dim Lighting

- Leakage currents through the transistors or a contact protection circuit may cause the LED lamp to illuminate dimly even when the output is off.
- 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.



Specifications and other descriptions in this catalog are subject to change without notice.



IDEAC IZUMI CORPORATION

7-31, Nishi-Miyahara 1-Chome, Yodogawa-ku, Osaka 532-8550, Japan
Tel: +81-6-6398-2571, Fax: +81-6-6392-9731
www.idec.com

IDEAC CORPORATION (USA)
1175 Elko Drive, Sunnyvale, CA 94089-2209, USA
Tel: +1-408-747-0550, Toll Free: (800) 262-IDEAC, Fax: +1-408-744-9055
E-mail: opencontact@idec.com, www.idec.com

IDEAC CANADA LIMITED
Unit 22-151, Brunel Road Mississauga, Ontario, L4Z 1X3, Canada
Tel: +1-905-890-8561, Toll Free: (888) 317-4332, Fax: +1-905-890-8562

IDEAC ELECTRONICS LIMITED
Unit 2, Beechwood, Chineham Business Park, Basingstoke, Hampshire RG24 8WA, UK
Tel: +44-1256-321000, Fax: +44-1256-327755
E-mail: idec@uk.idec.com

IDEAC ELEKTROTECHNIK GmbH
Wendenstrasse 331, D-20537 Hamburg, Germany
Tel: +49-40-25 30 54 10, Fax: +49-40-25 30 54 24
E-mail: service@idec.de, www.idec.de

IDEAC AUSTRALIA PTY. LTD.
2/3 Macro Court, Rowville, Victoria 3178, Australia
Toll Free: 1-800-68-4332, Fax: +61-3-9763-3255
E-mail: sales@au.idec.com

IDEAC IZUMI ASIA PTE. LTD.
No. 31, Tannery Lane #05-01, Dragon Land Building, Singapore 347788
Tel: +65-6746-1155, Fax: +65-6844-5995
E-mail: generalinfo@idecasia.com.sg

IDEAC IZUMI (H.K.) CO., LTD.
Unit 1505-07, DCH Commercial Centre No. 25, Westlands Road, Quarry Bay, Hong Kong
Tel: +852-2803-8989, Fax: +852-2565-0171
E-mail: idec@idechk.com

IDEAC IZUMI (Shanghai) Co., Ltd.
Room E, 15F, Majesty Building, No. 138 Pudong Avenue, Shanghai 200120, P.R.C.
Tel: +86-21-5887-9181, Fax: +86-21-5887-8930
E-mail: idec@cn.idec.com

IDEAC TAIWAN CORPORATION
8F, No. 79, Hsin Tai Wu Road, Sec. 1, Hsi-Chih, Taipei County, Taiwan
Tel: +886-2-2698-3929, Fax: +886-2-2698-3931
E-mail: service@idectwn.com.tw