




ø22 HW Series Control Units

Complete with IP20 finger-safe contact blocks Ensure safety and save wiring time

- The locking lever removable contact block features spring-up screw terminals.
- Self-cleaning rolling action contacts have a raked contact surface.
- Degree of protection: IP65
- A wide range of operating voltages for worldwide application
- UL, CSA approved, and EN compliant

| Safety Standards | File No. or Organization |
|---|--|
| UL  | UL Listing File No. E68961 |
| CSA  | File No. LR92374 |
| EN EN60947-1 EN60947-5-1 |  TÜV Rheinland R9551089 |



Specifications and Ratings

Contact Ratings

| Pushbuttons Illuminated Pushbuttons Selector Switches Illuminated Selector Switches Pushbutton Selectors | Contact Block | Type HW-G (HW series) |
|--|--|------------------------------|
| | 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

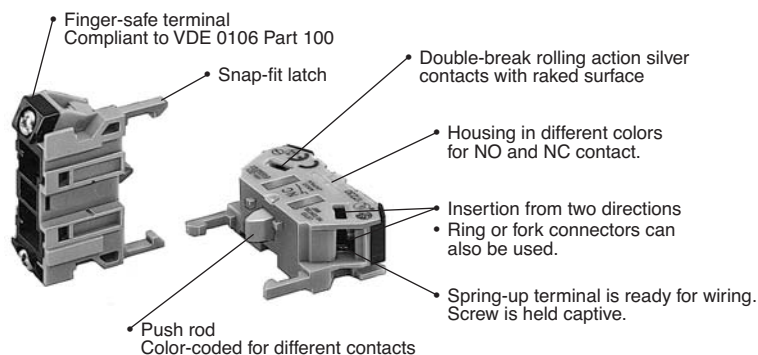
| Operational Voltage | | | 24V | 48V | 50V | 110V | 220V | 440V |
|---------------------|----------------|--|-----|-----|-----|------|------|------|
| Operational Current | AC 50/60 Hz | AC-12 Control of resistive loads and solid state loads | 10A | — | 10A | 10A | 6A | 2A |
| | | AC-15 Control of electromagnetic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

Note: The operational current represents the classification by making and breaking currents (IEC 60947-5-1).
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.

- 3-position selector switches which contain J or S following 3 in the Type No. and which have cam code J or S. Example: HW1S-3JT21N1
- All 4-position and 5-position selector switches
- All mono-lever switches
- All pushbutton selectors

HW-G Contact Block



• Contact Block Types

| Type No. | HW-G10 | HW-G01 | HW-G10R | HW-G01R |
|----------|--------|------------|-----------------|-----------------|
| Contact | NO | NC | NO (early make) | NC (late break) |
| Housing | Blue | Purple red | Blue | Purple red |
| Push Rod | Green | Red | Black | White |

Transformer Unit



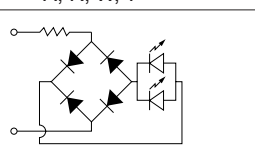
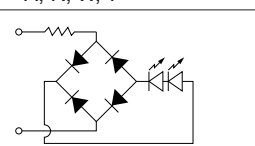
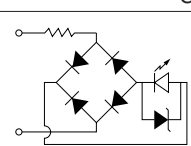



LED Illuminated Unit Specifications

| Unit | Color Code ② | Input Type | Operating Voltage | LED Lamp | | |
|--|--|-----------------|--|-----------|---------------|----------------|
| | | | | Lamp Base | Type No. | Voltage |
| Pilot Light Illuminated Pushbutton Illuminated Selector Switch | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | Full Voltage | 6V AC/DC | BA9S/13 | LSTD-6② | 6V AC/DC ±10% |
| | | | 12V AC/DC | | LSTD-1② | 12V AC/DC ±10% |
| | | | 24V AC/DC | | LSTD-2② | 24V AC/DC ±10% |
| | | Transformer | 100/110V AC/DC 115/120V AC/DC 200/220V AC/DC 230/240V AC/DC 380V AC/DC 400/440V AC/DC 480V AC/DC (50/60 Hz) | LSTD-6② | 6V AC/DC ±10% | |
| | | DC-DC Converter | 110V DC | | LSTD-6② | 6V AC/DC ±10% |

Incandescent Illuminated Unit Specifications

| Unit | Color Code ② | Input Type | Operating Voltage | Incandescent Lamp | | |
|--|---|--------------|--|-------------------|-----------|-----------|
| | | | | Lamp Base | Type No. | Rating |
| Pilot Light Illuminated Pushbutton Illuminated Selector Switch | A: amber G: green R: red S: blue W: white | Full Voltage | 6V AC/DC | BA9S/13 | LS-6 | 1W (6.3V) |
| | | | 12V AC/DC | | LS-8 | 1W (18V) |
| | | | 24V AC/DC | | LS-3 | 1W (30V) |
| | | Transformer | 100/110V AC/DC 115/120V AC/DC 200/220V AC/DC 230/240V AC/DC 380V AC/DC 400/440V AC/DC 480V AC/DC (50/60 Hz) | LS-6 | 1W (6.3V) | |

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% | 12V 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 | 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 | | A, R, W, Y |
| |  | |  |
| | G, PW, S | | |
| |  | |  LED Chip  Protection Diode  Zener Diode |

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) | | | |

ø22 HW Series Control Units

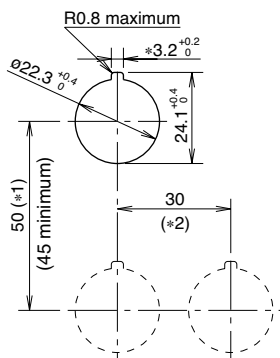
Specifications

| | |
|---|--|
| Operating Temperature | -25 to +60°C (no freezing) Illuminated units: -25 to +50°C |
| 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 Maintained: 500,000 Selector switches: 500,000 Key selector switches: 500,000 Illuminated selector switches: 500,000 Pushbutton selectors: 250,000 Mono-lever switches: 250,000 |
| Electrical Life (minimum operations) | Pushbuttons, Illuminated pushbuttons: 500,000 *1 Selector switches: 500,000 *2 Key selector switches: 500,000 *2 Illuminated selector switches: 500,000 *2 Pushbutton selectors: 250,000 *2 Mono-lever switches: 250,000 *3 *1 Switching frequency 1,800 operations/h, duty ratio 40% *2 Switching frequency 1,200 operations/h, duty ratio 40% *3 Switching frequency 900 operations/h, duty ratio 40% |

Degree of Protection

| Unit | NEMA ICS 6-110 | IEC 60529 |
|-----------|--|-----------|
| All units | Type 1, 2, 3, 3R, (3S), 4, 5, 12,13 | IP65 |

Mounting Hole Layout



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

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.

• Minimum Mounting Centers

| Unit | *1 | *2 |
|-----------------------|-------|-------|
| ø40mm mushroom button | 50 mm | 40 mm |
| Pilot light | 30 mm | 30 mm |
| Pushbutton selector | 50 mm | 50 mm |
| Mono-lever switch | 72 mm | 72 mm |

Note: When using the safety lever lock, determine the vertical spacing (*1) in consideration of convenience for installing and removing the safety lever lock.

Recommended vertical spacing: 100 mm

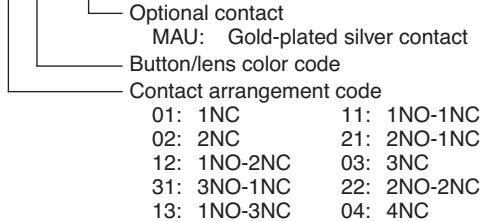
Ordering Information

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.

Emergency Stop Switches

For emergency stop purposes, these switches must contain at least one NC contact block.

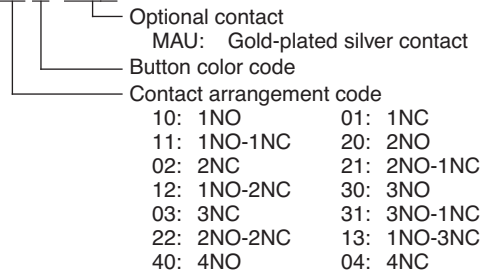
HW1B-V4 11 R -MAU



Note:
Push-pull type HW1B-Y2 can have a maximum of two contact blocks.

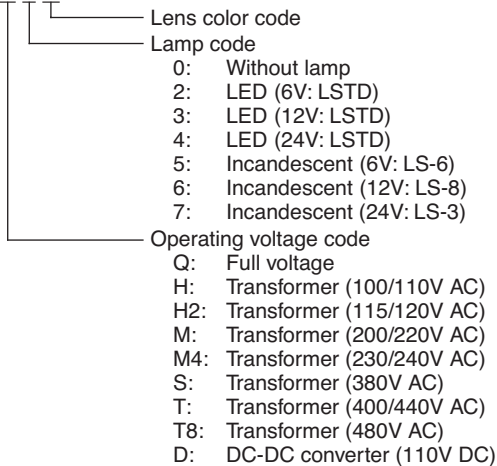
Pushbuttons

HW1B-M1 11 R -MAU



Pilot Lights

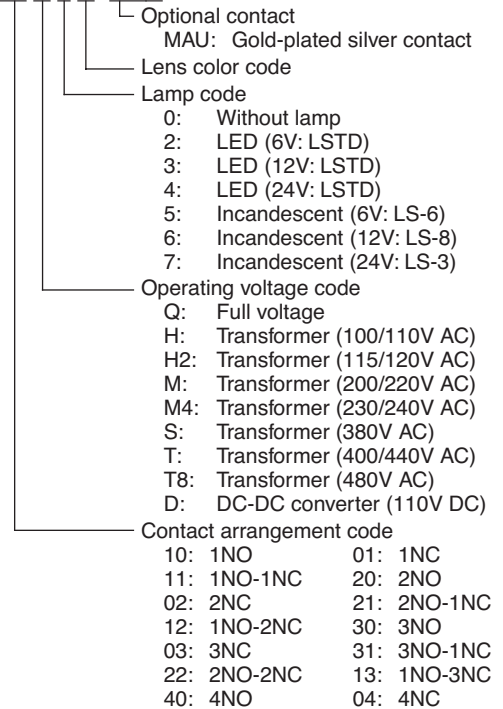
HW1P-1 H 2 R



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

Illuminated Pushbuttons

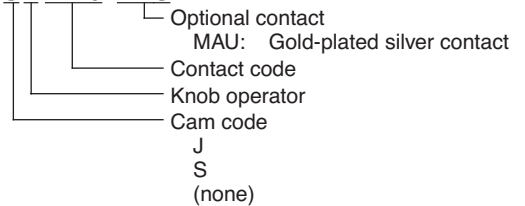
HW1L-M1 11 H 2 R -MAU



Note:
Full voltage type is not supplied with a lamp.
Transformer and DC-DC converter types contain an LED lamp (LSTD-6[Ⓜ]) or incandescent lamp (LS-6).
Transformer and DC-DC converter types can have two or four contact blocks only.

Selector Switches

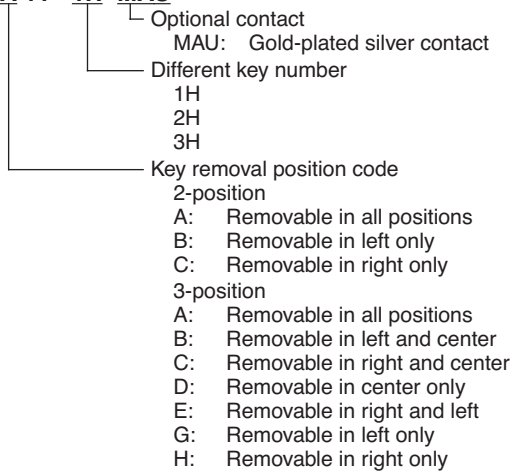
HW1S-3 ST 22N9 -MAU



ø22 HW Series Control Units (Ordering Information)

Key Selector Switches

HW1K-2 A 11 - 1H -MAU

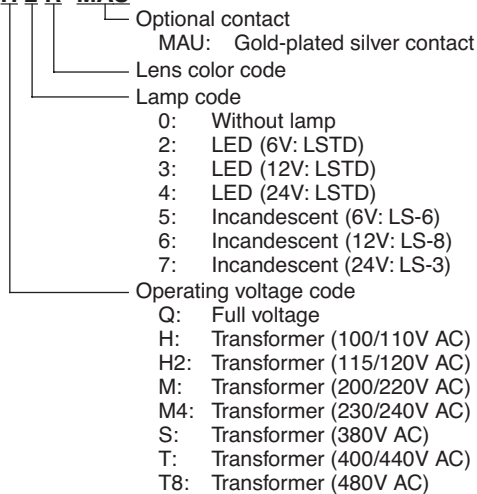


Note:

Key is not removable from spring-return positions.

Illuminated Selector Switches

HW1F-2 11 H 2 R -MAU



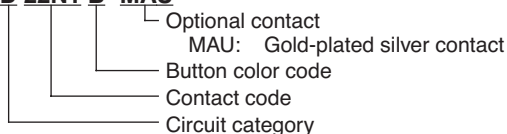
Note:

Full voltage type is not supplied with a lamp.

Transformer type contains an LED lamp (LSTD-6②) or incandescent lamp (LS-6).

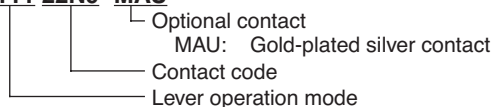
Pushbutton Selectors

HW1R-2 D 22N1 B -MAU



Mono-Lever Switches

HW1M - 1111 22N9 -MAU



Emergency Stop Switches (Unibody Type) Specifications

Contact Ratings

| | | | | | |
|--------------------------------|----------------|------------------------|------|------|-------|
| Rated Insulation Voltage (Ui) | | 250V | | | |
| Rated Thermal Current (Ith) | | 10A | | | |
| Rated Operational Voltage (Ue) | | 24V | 110V | 220V | |
| Rated Operational Current | AC 50/60 Hz | Resistive Load (AC-12) | 6A | 3A | 3A |
| | | Inductive Load (AC-15) | 6A | 3A | 3A |
| | DC | Resistive Load (DC-12) | 6A | 2A | 1A |
| | | Inductive Load (DC-13) | 1.5A | 0.3A | 0.15A |

Note: The operational current represents the classification by making and breaking currents (IEC 60947-5-1).
 Minimum applicable load (reference value): 3V AC/DC, 5 mA (Applicable range may vary with operating conditions and load types.)

LED Lamp Ratings

| Unit Rated Operating Voltage | LED Lamp | | |
|------------------------------|----------|----------------|---------------|
| | Type No. | Rated Voltage | Rated Current |
| 6V AC/DC | LSTD-6R | 6V AC/DC ±10% | 14 mA |
| 12V AC/DC | LSTD-1R | 12V AC/DC ±10% | 10 mA |
| 24V AC/DC | LSTD-2R | 24V AC/DC ±10% | 10 mA |

Incandescent Lamp Ratings

| Unit Rated Operating Voltage | Incandescent Lamp | |
|------------------------------|-------------------|-----------|
| | Type No. | Wattage |
| 6V AC/DC | LS-6 | 1W (6.3V) |
| 12V AC/DC | LS-8 | 1W (18V) |
| 24V AC/DC | LS-3 | 1W (30V) |


Specifications

| | |
|-----------------------|--|
| Operating Temperature | -25 to +60°C (no freezing) Illuminated units: -25 to +50°C |
| 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 |
| | Contacts: 2,500V AC, 1 minute Illuminated parts: 1,000V AC, 1 minute |
| Vibration Resistance | Damage limits: 60 m/s ² |
| | 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 |
| Operating Frequency | 900 operations/h |
| Life | Mechanical: 250,000 operations minimum |
| | Electrical: 100,000 operations minimum (at 900 operations/h, duty ratio 40%) |
| Degree of Protection | IP65 |
| Terminal Style | M3.5 screw |

Applicable Standards and Approvals

| Safety Standards | File No. or Organization |
|------------------|----------------------------|
| UL508 | UL Listing File No. E55996 |
| CSA C22.2 No. 14 | c-UL (File No. E55996) |
| EN60947-5-5 | DEMKO approved |

Pushlock Turn Reset Switches (Unibody Type)


| Shape | Contact | Type No. | Button Color |
|---|---------|-------------|--------------|
| ø40mm Mushroom Pushlock Turn Reset HW1E-BV4  | 1NO-1NC | HW1E-BV411R | Red only |
| | 2NC | HW1E-BV402R | |

- When pressed, the button is held depressed. The button is released by turning clockwise.
- Terminal cover HW-VL7 is supplied with the switch.



ø22 HW Series Emergency Stop Switches

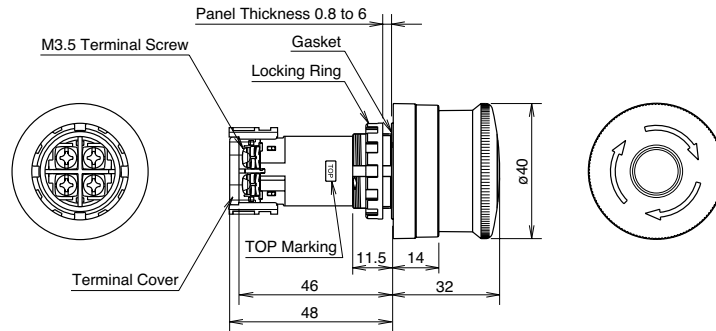
Illuminated Pushlock Turn Reset Switches (Unibody Type)

| Shape | Lamp | Contact | Type No. | Lens Color |
|---|--------------|---------|---------------|------------|
| ø40mm Mushroom Pushlock Turn Reset HW1E-LV4  | Without Lamp | 1NO-1NC | HW1E-LV411Q0R | Red only |
| | | 2NC | HW1E-LV402Q0R | |

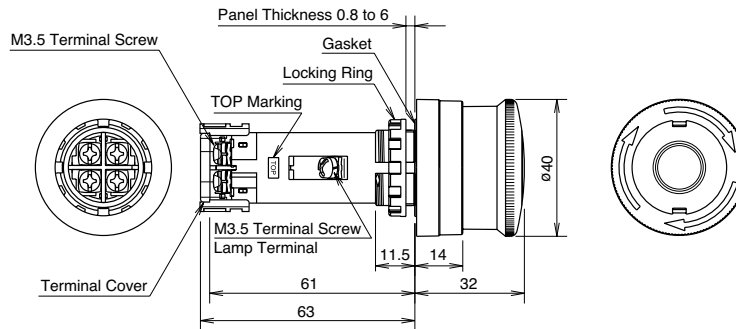
- When pressed, the button is held depressed. The button is released by turning clockwise.
- The illuminated pushlock turn reset switch does not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
- Terminal cover HW-VL7 is supplied with the switch.

Dimensions

• HW1E-BV4

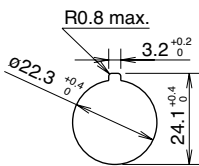


• HW1E-LV4



All dimensions in mm.

Mounting Hole

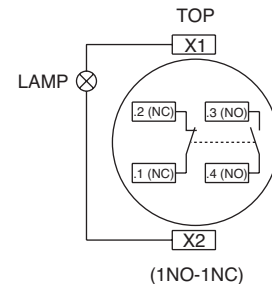
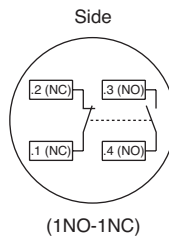


Determine the minimum mounting hole centers in consideration of convenience for wiring.

Terminal Arrangement (Bottom View)

• HW1E-BV4

• HW1E-LV4



Replacement Parts

| Name | Type No. | Ordering Type No. | Package Quantity | Remarks |
|----------------|----------|-------------------|------------------|--|
| Terminal Cover | HW-VL7 | HW-VL7PN10 | 10 | Used on HW1E emergency stop switches for preventing electrical shocks. The HW-VL7 terminal cover is supplied with the HW1E. |

Emergency Stop Switches (Separate Type) Specifications

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 | — |







Applicable Standards and Approvals

| Safety Standards | File No. or Organization |
|-----------------------------|-------------------------------|
| UL | UL Listing File No. E68961 |
| CSA C22.2 No. 14 | File No. LR92374 |
| EN EN60947-1 EN60947-5-1 | TÜV Rheinland R9551089 |

Specifications

| | |
|-----------------------|---|
| Operating Temperature | –25 to +60°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 Between terminals of different poles Between terminals of the same pole 2,500V 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 |
| Operating Frequency | 900 operations/h |
| Life | Mechanical: 500,000 operations minimum (push-pull: 250,000 operations) Electrical: 500,000 operations minimum (push-pull: 250,000 operations) (at 900 operations/h, duty ratio 40%) |
| Degree of Protection | IP65 |
| Terminal Style | M3.5 screw |


Pushlock Turn Reset Switches (Separate Type)

| Shape | Contact | Type No. | Button Color |
|---|---------|------------|--|
| ø29mm Mushroom Pushlock Turn Reset HW1B-V3   | 1NC | HW1B-V301① | Specify a button color code in place of ① in the Type No. R: red Y: yellow |
| | 1NO-1NC | HW1B-V311① | |
| | 2NC | HW1B-V302① | |
| | 2NO-2NC | HW1B-V322① | |
| ø40mm Mushroom Pushlock Turn Reset HW1B-V4   | 1NC | HW1B-V401① | |
| | 1NO-1NC | HW1B-V411① | |
| | 2NC | HW1B-V402① | |
| | 2NO-2NC | HW1B-V422① | |
| ø60mm Mushroom Pushlock Turn Reset HW1B-V5   | 1NC | HW1B-V501① | |
| | 1NO-1NC | HW1B-V511① | |
| | 2NC | HW1B-V502① | |
| | 2NO-2NC | HW1B-V522① | |

- Yellow buttons cannot be used as emergency stop switches in compliance with EN standards.
- When pressed, the button is held depressed. The button is released by turning clockwise.
- Pushlock turn reset switches with one or three contact blocks contain a dummy block.
- Safety lever lock HW9Z-LS is supplied with the switch.
- Other contact arrangements and gold-plated silver contacts are also available. See page 7.

ø22 HW Series Emergency Stop Switches


Pushlock Key Reset Switches (Separate Type)

| Shape | Contact | Type No. | Button Color |
|---|---------|------------|--------------|
| ø40mm Mushroom Pushlock Key Reset HW1B-X4  | 1NC | HW1B-X401R | Red only |
| | 1NO-1NC | HW1B-X411R | |
| | 2NC | HW1B-X402R | |
| | 2NO-2NC | HW1B-X422R | |



- When pressed, the button is held depressed. The button is released by turning the key clockwise.
- Pushlock key reset switches with one or three contact blocks contain a dummy block.
- Two identical keys and safety lever lock HW9Z-LS are supplied with the switch.
- Other contact arrangements and gold-plated silver contacts are also available. See page 7.

Push-Pull Switches (Separate Type)

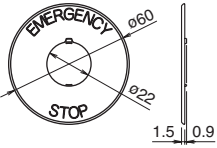
| Shape | Contact | Type No. | Button Color |
|--|---------|------------|--|
| ø40mm Mushroom Push-Pull (2-position) HW1B-Y2  | 1NC | HW1B-Y201① | Specify a button color code in place of ① in the Type No. R: red Y: yellow |
| | 1NO-1NC | HW1B-Y211① | |
| | 2NC | HW1B-Y202① | |



- The button is maintained at either pulled or depressed position.
- Push-pull switches are available with one or two contact blocks.
- Push-pull switches with one contact block contain a dummy block.
- Safety lever lock HW9Z-LS is supplied with the switch.

Accessory

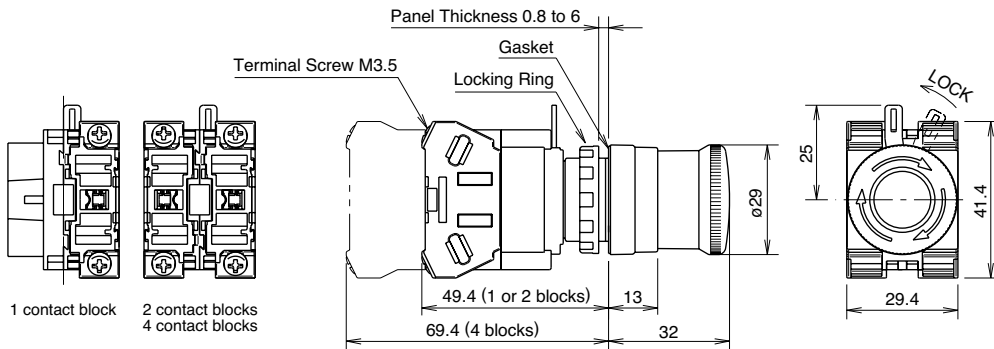
Nameplate

| Shape | Name | Type No. | Legend | Package Quantity | Remarks |
|---|--|----------|-------------------|------------------|---|
|  | Nameplate for Emergency Stop Switch | HWAV-0 | (blank) | 1 | Background: Yellow Legend: Black Applicable panel thickness: 0.8 to 4.5 mm Material: Polyamide Not applicable for ø60mm mushroom buttons. Legend "EMERGENCY STOP" is indicated outside a ø44mm circle. |
| | | HWAV-27 | EMERGENCY STOP | | |

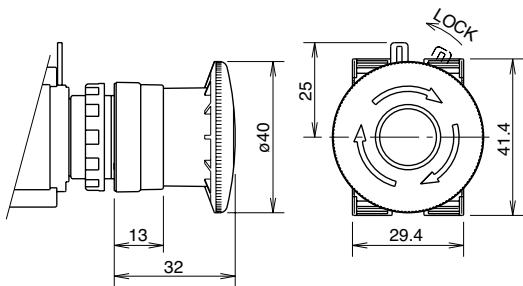
HW Series Emergency Stop Switches ø22

Dimensions

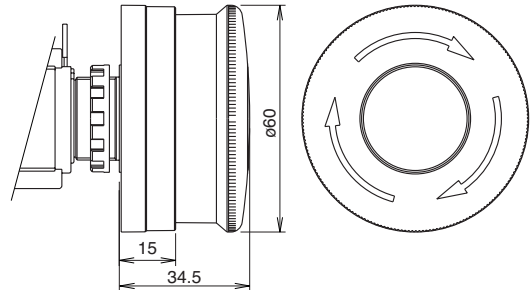
• ø29mm Pushlock Turn Reset HW1B-V3



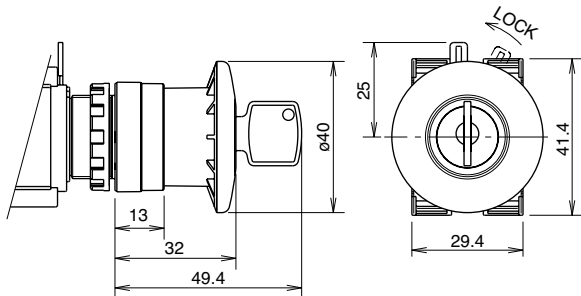
• ø40mm Pushlock Turn Reset HW1B-V4



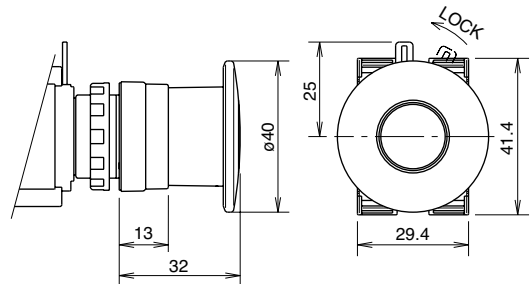
• ø60mm Pushlock Turn Reset HW1B-V5



• ø40mm Pushlock Key Reset HW1B-X4

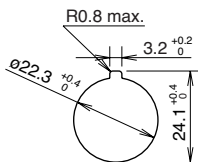


• ø40mm Push-Pull HW1B-Y2



All dimensions in mm.

Mounting Hole



The minimum mounting centers shown below are applicable to emergency stop 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.

• Minimum Mounting Centers for Emergency Stop Switches

| Unit | Vertical Spacing | Horizontal Spacing |
|--|------------------|--------------------|
| HW1B-V3 HW1B-V4 HW1B-X4 HW1B-Y2 | 50 mm | 50 mm |
| HW1B-V5 | 60 mm | 60 mm |

Note: When using the safety lever lock, determine the vertical spacing in consideration of convenience for installing and removing the safety lever lock.

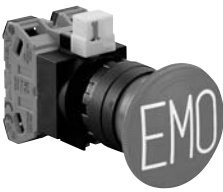
Recommended vertical spacing: 100 mm

For emergency stop control boxes, see page 48.

ø22 HW Series Emergency Stop Switches

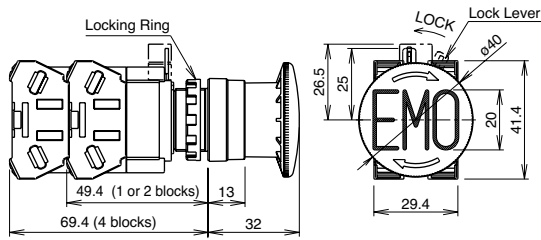
EMO Pushbuttons

EMO is an abbreviation of Emergency Off. Used for emergency stop according to SEMI standards.

| Shape | Contact | Type No. | Button Color |
|--|---------|----------------|-----------------------------|
| ø40mm EMO Pushbuttons HW1B-V4**R-EMO  | 1NC | HW1B-V401R-EMO | Red only (Legend: White) |
| | 1NO-1NC | HW1B-V411R-EMO | |
| | 2NC | HW1B-V402R-EMO | |
| | 2NO-2NC | HW1B-V422R-EMO | |



Dimensions



All dimensions in mm.

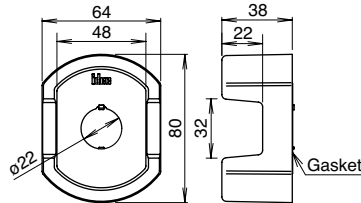
SEMI Standard Compliant Switch Guards (For ø22mm mounting hole)

• SEMI S2-0200 12.5.1 Compliant

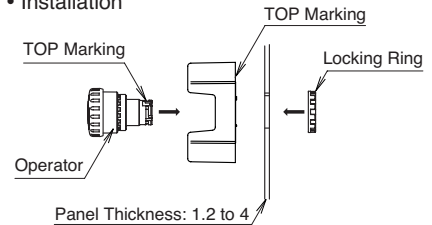


- Type No.: HW9Z-KG1
- Degree of Protection: IP65
- Color: Yellow

• Dimensions



• Installation



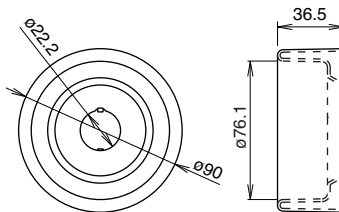
Not applicable for ø60mm mushroom buttons.

• SEMATECH Application Guide for SEMI S2-93, 12.4 Compliant

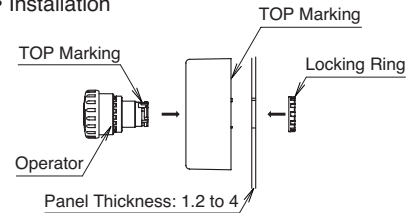


- Type No.: HW9Z-KG2
- Degree of Protection: IP65
- Color: Yellow

• Dimensions



• Installation

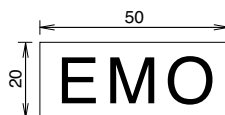


Not applicable for ø60mm mushroom buttons.

• EMO Sticker





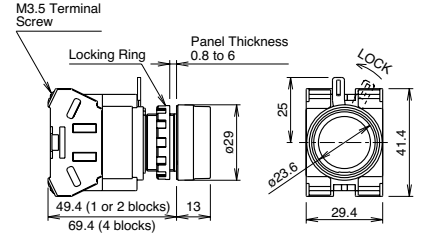


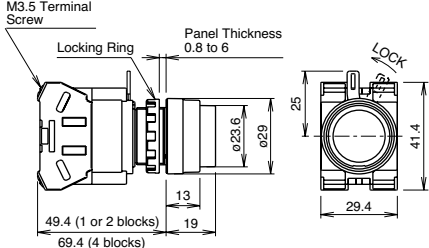


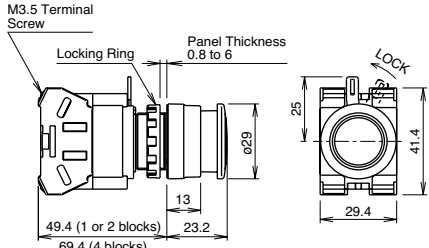


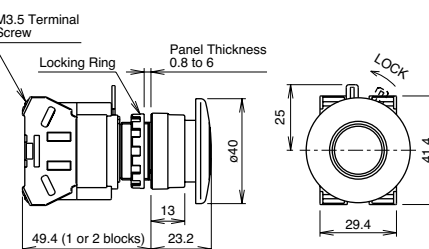


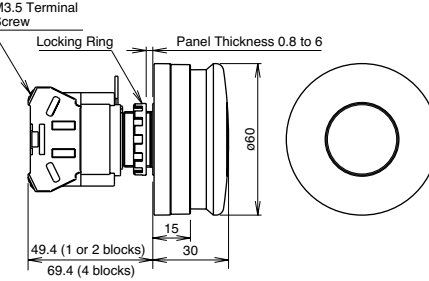
- Type No.: HW9Z-EMO-NPP
- Package Quantity: 10
- Color: Yellow with red letter



Caution

International industrial standards such as European Union Directive, IEC60204-1, and JIS B9960-1 require that emergency stop switches must be installed in the manner in which the operator can access and operate the switches easily, and prohibit the use of switch guards. The HW9Z-KG1 and HW9Z-KG2 switch guards are used for the emergency stop switches installed on semiconductor manufacturing equipment only. Do not use the switch guards for emergency stop switches installed on machine systems such as machine tool and food processing systems.



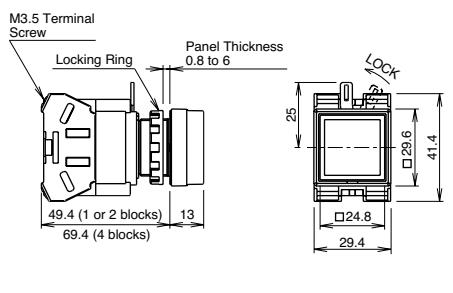


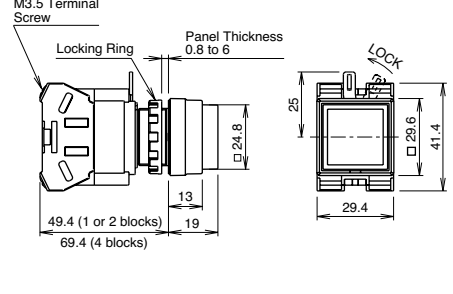
Flush / Extended / Mushroom Types

| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) |
|--|----------------|---------|------------|---|---|
| Flush HW1B-M1 HW1B-A1   | Momentary | 1NO | HW1B-M110① | 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 | HW1B-M101① | | |
| | | 1NO-1NC | HW1B-M111① | | |
| | | 2NO | HW1B-M120① | | |
| | | 2NC | HW1B-M102① | | |
| | Maintained | 2NO-2NC | HW1B-M122① | | |
| | | 1NO | HW1B-A110① | | |
| | | 1NC | HW1B-A101① | | |
| | | 1NO-1NC | HW1B-A111① | | |
| | | 2NO | HW1B-A120① | | |
| 2NC | HW1B-A102① | | | | |
| 2NO-2NC | HW1B-A122① | | | | |
| Extended HW1B-M2 HW1B-A2   | Momentary | 1NO | HW1B-M210① | 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 | HW1B-M201① | | |
| | | 1NO-1NC | HW1B-M211① | | |
| | | 2NO | HW1B-M220① | | |
| | | 2NC | HW1B-M202① | | |
| | Maintained | 2NO-2NC | HW1B-M222① | | |
| | | 1NO | HW1B-A210① | | |
| | | 1NC | HW1B-A201① | | |
| | | 1NO-1NC | HW1B-A211① | | |
| | | 2NO | HW1B-A220① | | |
| 2NC | HW1B-A202① | | | | |
| 2NO-2NC | HW1B-A222① | | | | |
| ø29mm Mushroom HW1B-M3 HW1B-A3   | Momentary | 1NO | HW1B-M310① | 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 | HW1B-M301① | | |
| | | 1NO-1NC | HW1B-M311① | | |
| | | 2NO | HW1B-M320① | | |
| | | 2NC | HW1B-M302① | | |
| | Maintained | 2NO-2NC | HW1B-M322① | | |
| | | 1NO | HW1B-A310① | | |
| | | 1NC | HW1B-A301① | | |
| | | 1NO-1NC | HW1B-A311① | | |
| | | 2NO | HW1B-A320① | | |
| 2NC | HW1B-A302① | | | | |
| 2NO-2NC | HW1B-A322① | | | | |
| ø40mm Mushroom HW1B-M4 HW1B-A4   | Momentary | 1NO | HW1B-M410① | Specify a button color code in place of ① in the Type No. B: black G: green R: red |  |
| | | 1NC | HW1B-M401① | | |
| | | 1NO-1NC | HW1B-M411① | | |
| | | 2NO | HW1B-M420① | | |
| | | 2NC | HW1B-M402① | | |
| | Maintained | 2NO-2NC | HW1B-M422① | | |
| | | 1NO | HW1B-A410① | | |
| | | 1NC | HW1B-A401① | | |
| | | 1NO-1NC | HW1B-A411① | | |
| | | 2NO | HW1B-A420① | | |
| 2NC | HW1B-A402① | | | | |
| 2NO-2NC | HW1B-A422① | | | | |
| ø60mm Mushroom HW1B-M5   | Momentary | 1NO | HW1B-M510① | Specify a button color code in place of ① in the Type No. B: black G: green R: red |  |
| | | 1NC | HW1B-M501① | | |
| | | 1NO-1NC | HW1B-M511① | | |
| | | 2NO | HW1B-M520① | | |
| | | 2NC | HW1B-M502① | | |
| | | 2NO-2NC | HW1B-M522① | | |

- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 7.

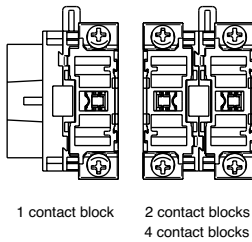
Ø22 HW Series Pushbuttons

Square Flush / Square Extended Types

| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) |
|--|----------------|------------|------------|---|--|
| Square Flush HW2B-M1 HW2B-A1   | Momentary | 1NO | HW2B-M110① | 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 | HW2B-M101① | | |
| | | 1NO-1NC | HW2B-M111① | | |
| | | 2NO | HW2B-M120① | | |
| | | 2NC | HW2B-M102① | | |
| | Maintained | 2NO-2NC | HW2B-M122① | | |
| | | 1NO | HW2B-A110① | | |
| | | 1NC | HW2B-A101① | | |
| | | 1NO-1NC | HW2B-A111① | | |
| | | 2NO | HW2B-A120① | | |
| Square Extended HW2B-M2 HW2B-A2   | Momentary | 2NC | HW2B-A102① |  | |
| | | 2NO-2NC | HW2B-A122① | | |
| | | 1NO | HW2B-M210① | | |
| | | 1NC | HW2B-M201① | | |
| | | 1NO-1NC | HW2B-M211① | | |
| | Maintained | 2NO | HW2B-M220① | | |
| | | 2NC | HW2B-M202① | | |
| | | 2NO-2NC | HW2B-M222① | | |
| | | 1NO | HW2B-A210① | | |
| | | 1NC | HW2B-A201① | | |
| Maintained | 1NO-1NC | HW2B-A211① | | | |
| | 2NO | HW2B-A220① | | | |
| | 2NC | HW2B-A202① | | | |
| | | 2NO-2NC | HW2B-A222① | | |

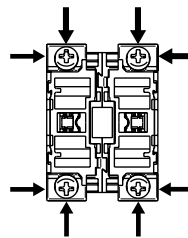
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 7.

Contact Block (Bottom View)



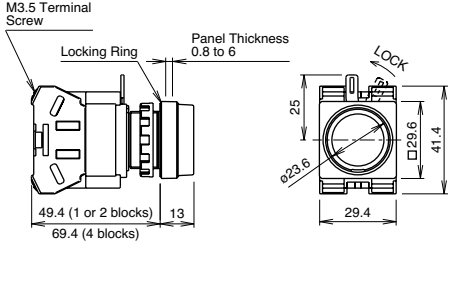


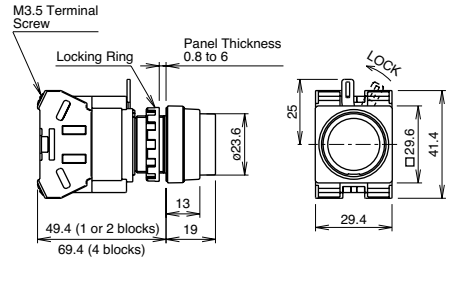


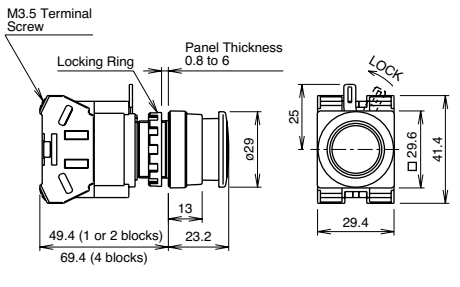


Terminal Wiring

- Arrows indicate access directions for wiring.

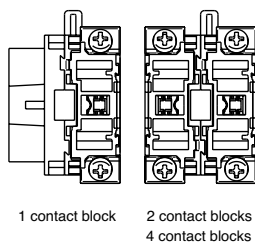


Round Button with Square Bezel Type

| Shape | Operation Type | Contact | Type No. | ① Button Color Code | Dimensions (mm) |
|--|----------------|------------|------------|---|---|
| Round Flush with Square Bezel HW3B-M1 HW3B-A1   | Momentary | 1NO | HW3B-M110① | 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 | HW3B-M101① | | |
| | | 1NO-1NC | HW3B-M111① | | |
| | | 2NO | HW3B-M120① | | |
| | | 2NC | HW3B-M102① | | |
| | Maintained | 2NO-2NC | HW3B-M122① | | |
| | | 1NO | HW3B-A110① | | |
| | | 1NC | HW3B-A101① | | |
| | | 1NO-1NC | HW3B-A111① | | |
| | | 2NO | HW3B-A120① | | |
| Round Extended with Square Bezel HW3B-M2 HW3B-A2   | Momentary | 1NO | HW3B-M210① | 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 | HW3B-M201① | | |
| | | 1NO-1NC | HW3B-M211① | | |
| | | 2NO | HW3B-M220① | | |
| | | 2NC | HW3B-M202① | | |
| | Maintained | 2NO-2NC | HW3B-M222① | | |
| | | 1NO | HW3B-A210① | | |
| | | 1NC | HW3B-A201① | | |
| | | 1NO-1NC | HW3B-A211① | | |
| | | 2NO | HW3B-A220① | | |
| ø29mm Mushroom with Square Bezel HW3B-M3 HW3B-A3   | Momentary | 1NO | HW3B-M310① | 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 | HW3B-M301① | | |
| | | 1NO-1NC | HW3B-M311① | | |
| | | 2NO | HW3B-M320① | | |
| | | 2NC | HW3B-M302① | | |
| | Maintained | 2NO-2NC | HW3B-M322① | | |
| | | 1NO | HW3B-A310① | | |
| | | 1NC | HW3B-A301① | | |
| | | 1NO-1NC | HW3B-A311① | | |
| | | 2NO | HW3B-A320① | | |
| | 2NC | HW3B-A302① | | | |
| | 2NO-2NC | HW3B-A322① | | | |

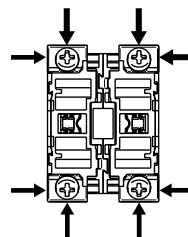
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 7.

Contact Block (Bottom View)









Terminal Wiring

- Arrows indicate access directions for wiring.



ø22 HW Series Pilot Lights

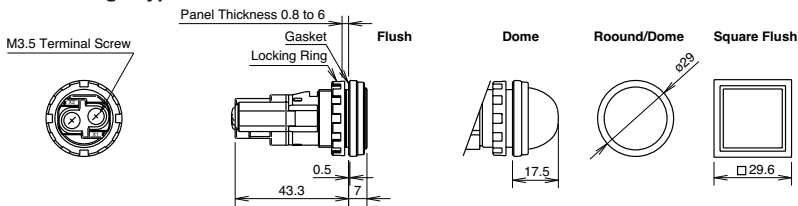
Round Flush / Dome / Square Flush Types

| Shape | Lamp | Input Type | Type No. | ② Lens/LED Color Code | ③ Operating Voltage Code |
|---|--------------|------------------|-----------|--|--|
| Round Flush HW1P-1  (Photo: Full Voltage Type)  | Without Lamp | Full Voltage | HW1P-1Q0② | 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. H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |
| | LED | Transformer | HW1P-1③2② | | |
| | | DC-DC Converter* | HW1P-1D2② | | |
| | Incandescent | Transformer | HW1P-1③5② | A: amber G: green R: red S: blue W: white | |
| Dome HW1P-2  (Photo: Full Voltage Type)  | Without Lamp | Full Voltage | HW1P-2Q0② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | HW1P-2③2② | | |
| | | DC-DC Converter* | HW1P-2D2② | | |
| | Incandescent | Transformer | HW1P-2③5② | A: amber G: green R: red S: blue W: white | |
| Square Flush HW2P-1  (Photo: Transformer Type)  | Without Lamp | Full Voltage | HW2P-1Q0② | A: amber G: green PW: pure white R: red S: blue W: white Y: yellow | |
| | LED | Transformer | HW2P-1③2② | | A: amber G: green R: red S: blue W: white |
| | | DC-DC Converter* | HW2P-1D2② | | |
| | Incandescent | Transformer | HW2P-1③5② | A: amber G: green R: red S: blue W: white | |

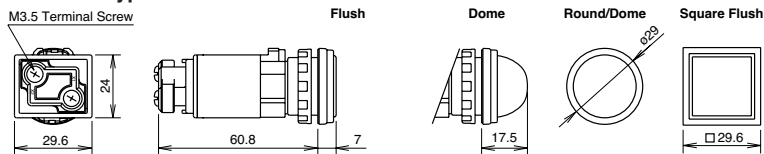
- Specify a lens/LED color code in place of ② in the Type No.
- Specify an operating voltage code in place of ③ in the Type No.
- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
- LED illuminated transformer and DC-DC converter types contain 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).

Dimensions

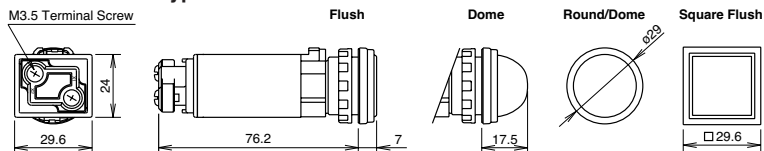
• Full Voltage Type



• Transformer Type

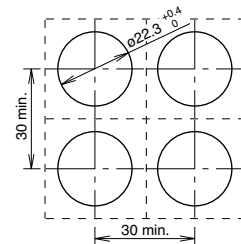


• DC-DC Converter Type



Mounting Hole Layout



- Close mounting on 30mm centers
- Degree of protection: IP65



- When mounting transformer or DC-DC converter type units on 30mm centers vertically and horizontally, keep the ambient temperature below 40°C.

All dimensions in mm.

Round Flush Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. | |
|---|----------------|--------------|--------------|------------------|--------------|--------------|
|   | Momentary | Without Lamp | Full Voltage | 1NO | HW1L-M110Q0② | |
| | | | | 1NC | HW1L-M101Q0② | |
| | | | | 1NO-1NC | HW1L-M111Q0② | |
| | | | | 2NO | HW1L-M120Q0② | |
| | | | | 2NC | HW1L-M102Q0② | |
| | | | | 2NO-2NC | HW1L-M122Q0② | |
| | | LED | Transformer | 1NO-1NC | HW1L-M111③2② | |
| | | | | 2NO | HW1L-M120③2② | |
| | | | | 2NC | HW1L-M102③2② | |
| | | | | 2NO-2NC | HW1L-M122③2② | |
| | | | | DC-DC Converter* | 1NO-1NC | HW1L-M111D2② |
| | | | | | 2NO | HW1L-M120D2② |
| | | 2NC | HW1L-M102D2② | | | |
| | | Incandescent | Transformer | 2NO-2NC | HW1L-M122D2② | |
| | | | | 1NO-1NC | HW1L-M111③5② | |
| | | | | 2NO | HW1L-M120③5② | |
| | | | | 2NC | HW1L-M102③5② | |
| | | | | 2NO-2NC | HW1L-M122③5② | |
| | Maintained | | | Without Lamp | Full Voltage | 1NO |
| | | 1NC | HW1L-A101Q0② | | | |
| | | 1NO-1NC | HW1L-A111Q0② | | | |
| | | 2NO | HW1L-A120Q0② | | | |
| | | 2NC | HW1L-A102Q0② | | | |
| | | 2NO-2NC | HW1L-A122Q0② | | | |
| | | LED | Transformer | 1NO-1NC | HW1L-A111③2② | |
| | | | | 2NO | HW1L-A120③2② | |
| | | | | 2NC | HW1L-A102③2② | |
| | | | | 2NO-2NC | HW1L-A122③2② | |
| | | | | DC-DC Converter* | 1NO-1NC | HW1L-A111D2② |
| | | | | | 2NO | HW1L-A120D2② |
| 2NC | HW1L-A102D2② | | | | | |
| Incandescent | Transformer | 2NO-2NC | HW1L-A122D2② | | | |
| | | 1NO-1NC | HW1L-A111③5② | | | |
| | | 2NO | HW1L-A120③5② | | | |
| | | 2NC | HW1L-A102③5② | | | |
| | | 2NO-2NC | HW1L-A122③5② | | | |
| | | | | | | |



• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
 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 HW Series Illuminated Pushbuttons

Round Extended Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|---|----------------|--------------|------------------|--------------|--------------|
| Round Extended HW1L-M2 HW1L-A2   | Momentary | Without Lamp | Full Voltage | 1NO | HW1L-M210Q0② |
| | | | | 1NC | HW1L-M201Q0② |
| | | | | 1NO-1NC | HW1L-M211Q0② |
| | | | | 2NO | HW1L-M220Q0② |
| | | | | 2NC | HW1L-M202Q0② |
| | | 2NO-2NC | HW1L-M222Q0② | | |
| | | LED | Transformer | 1NO-1NC | HW1L-M211③2② |
| | | | | 2NO | HW1L-M220③2② |
| | | | | 2NC | HW1L-M202③2② |
| | | | DC-DC Converter* | 2NO-2NC | HW1L-M222③2② |
| | | | | 1NO-1NC | HW1L-M211D2② |
| | | | | 2NO | HW1L-M220D2② |
| | | 2NC | HW1L-M202D2② | | |
| | | Incandescent | Transformer | 2NO-2NC | HW1L-M222Q0② |
| | | | | 1NO-1NC | HW1L-M211③5② |
| | 2NO | | | HW1L-M220③5② | |
| | 2NC | | | HW1L-M202③5② | |
| | Maintained | Without Lamp | Full Voltage | 2NO-2NC | HW1L-M222Q0② |
| | | | | 1NO-1NC | HW1L-A211Q0② |
| | | | | 2NO | HW1L-A220Q0② |
| | | | | 2NC | HW1L-A202Q0② |
| | | | | 2NO-2NC | HW1L-A222Q0② |
| | | LED | Transformer | 1NO-1NC | HW1L-A211③2② |
| | | | | 2NO | HW1L-A220③2② |
| | | | | 2NC | HW1L-A202③2② |
| | | | DC-DC Converter* | 2NO-2NC | HW1L-A222③2② |
| | | | | 1NO-1NC | HW1L-A211D2② |
| | | | | 2NO | HW1L-A220D2② |
| | | 2NC | HW1L-A202D2② | | |
| | | Incandescent | Transformer | 2NO-2NC | HW1L-A222D2② |
| 1NO-1NC | | | | HW1L-A211③5② | |
| 2NO | | | | HW1L-A220③5② | |
| 2NC | HW1L-A202③5② | | | | |
| 2NO-2NC | HW1L-A222③5② | | | | |

• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |


Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.

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 Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|--|----------------|--------------|------------------|---------------|---------------|
|  | Momentary | Without Lamp | Full Voltage | 1NO | HW1L-MF210Q0② |
| | | | | 1NC | HW1L-MF201Q0② |
| | | | | 1NO-1NC | HW1L-MF211Q0② |
| | | | | 2NO | HW1L-MF220Q0② |
| | | | | 2NC | HW1L-MF202Q0② |
| | | | | 2NO-2NC | HW1L-MF222Q0② |
| | | LED | Transformer | 1NO-1NC | HW1L-MF211③2② |
| | | | | 2NO | HW1L-MF220③2② |
| | | | | 2NC | HW1L-MF202③2② |
| | | | DC-DC Converter* | 2NO-2NC | HW1L-MF222③2② |
| | | | | 1NO-1NC | HW1L-MF211D2② |
| | | | | 2NO | HW1L-MF220D2② |
| | | Incandescent | Transformer | 2NC | HW1L-MF202D2② |
| | | | | 2NO-2NC | HW1L-MF222D2② |
| | | | | 1NO-1NC | HW1L-MF211③5② |
| | | | Transformer | 2NO | HW1L-MF220③5② |
| | | | | 2NC | HW1L-MF202③5② |
| | | | | 2NO-2NC | HW1L-MF222③5② |
| | Maintained | Without Lamp | Full Voltage | 1NO | HW1L-AF210Q0② |
| | | | | 1NC | HW1L-AF201Q0② |
| | | | | 1NO-1NC | HW1L-AF211Q0② |
| | | | | 2NO | HW1L-AF220Q0② |
| | | | | 2NC | HW1L-AF202Q0② |
| | | | | 2NO-2NC | HW1L-AF222Q0② |
| | | LED | Transformer | 1NO-1NC | HW1L-AF211③2② |
| | | | | 2NO | HW1L-AF220③2② |
| | | | | 2NC | HW1L-AF202③2② |
| | | | DC-DC Converter* | 2NO-2NC | HW1L-AF222③2② |
| | | | | 1NO-1NC | HW1L-AF211D2② |
| | | | | 2NO | HW1L-AF220D2② |
| Incandescent | | Transformer | 2NC | HW1L-AF202D2② | |
| | | | 2NO-2NC | HW1L-AF222D2② | |
| | | | 1NO-1NC | HW1L-AF211③5② | |
| | | Transformer | 2NO | HW1L-AF220③5② | |
| | | | 2NC | HW1L-AF202③5② | |
| | | | 2NO-2NC | HW1L-AF222③5② | |



• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
 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 HW Series Illuminated Pushbuttons

Square Flush Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. | |
|---|------------------|--------------|------------------|--------------|--------------|--------------|
| Square Flush HW2L-M1 HW2L-A1   | Momentary | Without Lamp | Full Voltage | 1NO | HW2L-M110Q0② | |
| | | | | 1NC | HW2L-M101Q0② | |
| | | | | 1NO-1NC | HW2L-M111Q0② | |
| | | | | 2NO | HW2L-M120Q0② | |
| | | | | 2NC | HW2L-M102Q0② | |
| | | | | 2NO-2NC | HW2L-M122Q0② | |
| | | | | 1NO-1NC | HW2L-M111③2② | |
| | | | | 2NO | HW2L-M120③2② | |
| | | 2NC | HW2L-M102③2② | | | |
| | | 2NO-2NC | HW2L-M122③2② | | | |
| | | LED | Transformer | 1NO-1NC | HW2L-M111③2② | |
| | | | | 2NO | HW2L-M120③2② | |
| | | | | 2NC | HW2L-M102③2② | |
| | | | | 2NO-2NC | HW2L-M122③2② | |
| | | | DC-DC Converter* | 1NO-1NC | HW2L-M111D2② | |
| | | | | 2NO | HW2L-M120D2② | |
| | 2NC | | | HW2L-M102D2② | | |
| | 2NO-2NC | | | HW2L-M122D2② | | |
| | Incandescent | Transformer | 1NO-1NC | HW2L-M111③5② | | |
| | | | 2NO | HW2L-M120③5② | | |
| | | | 2NC | HW2L-M102③5② | | |
| | | | 2NO-2NC | HW2L-M122③5② | | |
| | | Maintained | Without Lamp | Full Voltage | 1NO | HW2L-A110Q0② |
| | | | | | 1NC | HW2L-A101Q0② |
| | | | | | 1NO-1NC | HW2L-A111Q0② |
| | | | | | 2NO | HW2L-A120Q0② |
| | 2NC | | | | HW2L-A102Q0② | |
| | 2NO-2NC | | | | HW2L-A122Q0② | |
| | 1NO-1NC | | | | HW2L-A111③2② | |
| | 2NO | | | | HW2L-A120③2② | |
| | 2NC | | HW2L-A102③2② | | | |
| | 2NO-2NC | | HW2L-A122③2② | | | |
| LED | Transformer | | 1NO-1NC | HW2L-A111③2② | | |
| | | | 2NO | HW2L-A120③2② | | |
| | | | 2NC | HW2L-A102③2② | | |
| | | | 2NO-2NC | HW2L-A122③2② | | |
| | DC-DC Converter* | | 1NO-1NC | HW2L-A111D2② | | |
| | | | 2NO | HW2L-A120D2② | | |
| | | 2NC | HW2L-A102D2② | | | |
| | | 2NO-2NC | HW2L-A122D2② | | | |
| Incandescent | Transformer | 1NO-1NC | HW2L-A111③5② | | | |
| | | 2NO | HW2L-A120③5② | | | |
| | | 2NC | HW2L-A102③5② | | | |
| | | 2NO-2NC | HW2L-A122③5② | | | |

• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |



Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.

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 Flush with Square Bezel Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. | |
|--|----------------|--------------|------------------|-------------|--------------|--------------|
| Round Flush with Square Bezel HW3L-M1 HW3L-A1   | Momentary | Without Lamp | Full Voltage | 1NO | HW3L-M110Q0② | |
| | | | | 1NC | HW3L-M101Q0② | |
| | | | | 1NO-1NC | HW3L-M111Q0② | |
| | | | | 2NO | HW3L-M120Q0② | |
| | | | | 2NC | HW3L-M102Q0② | |
| | | | | 2NO-2NC | HW3L-M122Q0② | |
| | | LED | Transformer | 1NO-1NC | HW3L-M111③2② | |
| | | | | 2NO | HW3L-M120③2② | |
| | | | | 2NC | HW3L-M102③2② | |
| | | | DC-DC Converter* | 2NO-2NC | HW3L-M122③2② | |
| | | | | 1NO-1NC | HW3L-M111D2② | |
| | | | | 2NO | HW3L-M120D2② | |
| | | | Incandescent | Transformer | 2NC | HW3L-M102D2② |
| | | | | | 2NO-2NC | HW3L-M122D2② |
| | | | | | 1NO-1NC | HW3L-M111③5② |
| | Maintained | Without Lamp | Full Voltage | 2NO | HW3L-M120③5② | |
| | | | | 2NC | HW3L-M102③5② | |
| | | | | 2NO-2NC | HW3L-M122③5② | |
| | | | | 1NO | HW3L-A110Q0② | |
| | | | | 1NC | HW3L-A101Q0② | |
| | | | | 1NO-1NC | HW3L-A111Q0② | |
| | | LED | Transformer | 2NO | HW3L-A120Q0② | |
| | | | | 2NC | HW3L-A102Q0② | |
| | | | | 2NO-2NC | HW3L-A122Q0② | |
| | | | DC-DC Converter* | 1NO-1NC | HW3L-A111③2② | |
| | | | | 2NO | HW3L-A120③2② | |
| | | | | 2NC | HW3L-A102③2② | |
| | | | Incandescent | Transformer | 2NO-2NC | HW3L-A122③2② |
| | | | | | 1NO-1NC | HW3L-A111D2② |
| | | | | | 2NO | HW3L-A120D2② |
| 2NC | Transformer | 2NC | HW3L-A102D2② | | | |
| | | 2NO-2NC | HW3L-A122D2② | | | |
| | | 1NO-1NC | HW3L-A111③5② | | | |
| 2NO | Transformer | 2NO | HW3L-A120③5② | | | |
| | | 2NC | HW3L-A102③5② | | | |
| | | 2NO-2NC | HW3L-A122③5② | | | |



• 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. H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
 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 HW Series Illuminated Pushbuttons

Mushroom (ø29mm) Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|---|----------------|--------------|--------------|------------------|--------------|
| ø29mm Mushroom HW1L-M3 HW1L-A3   | Momentary | Without Lamp | Full Voltage | 1NO | HW1L-M310Q0② |
| | | | | 1NC | HW1L-M301Q0② |
| | | | | 1NO-1NC | HW1L-M311Q0② |
| | | | | 2NO | HW1L-M320Q0② |
| | | | | 2NC | HW1L-M302Q0② |
| | | 2NO-2NC | HW1L-M322Q0② | | |
| | | LED | Transformer | 1NO-1NC | HW1L-M311③2② |
| | | | | 2NO | HW1L-M320③2② |
| | | | | 2NC | HW1L-M302③2② |
| | | | | 2NO-2NC | HW1L-M322③2② |
| | | | | DC-DC Converter* | 1NO-1NC |
| | | 2NO | HW1L-M320D2② | | |
| | | 2NC | HW1L-M302D2② | | |
| | | Incandescent | Transformer | 2NO-2NC | HW1L-M322D2② |
| | | | | 1NO-1NC | HW1L-M311③5② |
| | 2NO | | | HW1L-M320③5② | |
| | 2NC | | | HW1L-M302③5② | |
| | Maintained | Without Lamp | Full Voltage | 2NO | HW1L-M320③5② |
| | | | | 2NC | HW1L-M302③5② |
| | | | | 2NO-2NC | HW1L-M322③5② |
| | | | | 1NO | HW1L-A310Q0② |
| | | | | 1NC | HW1L-A301Q0② |
| | | LED | Transformer | 1NO-1NC | HW1L-A311Q0② |
| | | | | 2NO | HW1L-A320Q0② |
| | | | | 2NC | HW1L-A302Q0② |
| | | | | 2NO-2NC | HW1L-A322Q0② |
| | | | | DC-DC Converter* | 1NO-1NC |
| | | 2NO | HW1L-A320③2② | | |
| | | 2NC | HW1L-A302③2② | | |
| | | Incandescent | Transformer | 2NO-2NC | HW1L-A322③2② |
| 1NO-1NC | | | | HW1L-A311D2② | |
| 2NO | | | | HW1L-A320D2② | |
| 2NC | HW1L-A302D2② | | | | |
| Incandescent | Transformer | 2NO-2NC | HW1L-A322D2② | | |
| | | 1NO-1NC | HW1L-A311③5② | | |
| | | 2NO | HW1L-A320③5② | | |
| | | 2NC | HW1L-A302③5② | | |
| Incandescent | Transformer | 2NO-2NC | HW1L-A322③5② | | |
| | | 2NO-2NC | HW1L-A322③5② | | |

• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |



Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.

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).

Mushroom (ø29mm) with Square Bezel Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|---|----------------|--------------|------------------|---------|--------------|
|   | Momentary | Without Lamp | Full Voltage | 1NO | HW3L-M310Q0② |
| | | | | 1NC | HW3L-M301Q0② |
| | | | | 1NO-1NC | HW3L-M311Q0② |
| | | | | 2NO | HW3L-M320Q0② |
| | | | | 2NC | HW3L-M302Q0② |
| | | | | 2NO-2NC | HW3L-M322Q0② |
| | | LED | Transformer | 1NO-1NC | HW3L-M311③②② |
| | | | | 2NO | HW3L-M320③②② |
| | | | | 2NC | HW3L-M302③②② |
| | | | DC-DC Converter* | 2NO-2NC | HW3L-M322③②② |
| | | | | 1NO-1NC | HW3L-M311D②② |
| | | | | 2NO | HW3L-M320D②② |
| | | Incandescent | Transformer | 2NC | HW3L-M302③⑤② |
| | | | | 2NO-2NC | HW3L-M322③⑤② |
| | | | | 1NO-1NC | HW3L-M311③⑤② |
| | | | Full Voltage | 2NO | HW3L-M320③⑤② |
| | | | | 2NC | HW3L-M302③⑤② |
| | | | | 2NO-2NC | HW3L-M322③⑤② |
| | Maintained | Without Lamp | Full Voltage | 1NO | HW3L-A310Q0② |
| | | | | 1NC | HW3L-A301Q0② |
| | | | | 1NO-1NC | HW3L-A311Q0② |
| | | | | 2NO | HW3L-A320Q0② |
| | | | | 2NC | HW3L-A302Q0② |
| | | | | 2NO-2NC | HW3L-A322Q0② |
| | | LED | Transformer | 1NO-1NC | HW3L-A311③②② |
| | | | | 2NO | HW3L-A320③②② |
| | | | | 2NC | HW3L-A302③②② |
| | | | DC-DC Converter* | 2NO-2NC | HW3L-A322③②② |
| | | | | 1NO-1NC | HW3L-A311D②② |
| | | | | 2NO | HW3L-A320D②② |
| | | Incandescent | Transformer | 2NC | HW3L-A302③⑤② |
| | | | | 2NO-2NC | HW3L-A322③⑤② |
| | | | | 1NO-1NC | HW3L-A311③⑤② |
| | | | Full Voltage | 2NO | HW3L-A320③⑤② |
| | | | | 2NC | HW3L-A302③⑤② |
| | | | | 2NO-2NC | HW3L-A322③⑤② |






• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
 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 HW Series Illuminated Pushbuttons

Mushroom (ø40mm) Illuminated Pushbutton

| Shape | Operation Type | Lamp | Input Type | Contact | Type No. |
|---|----------------|------------------|------------------|--------------|--------------|
| ø40mm Mushroom HW1L-M4 HW1L-A4      | Momentary | Without Lamp | Full Voltage | 1NO | HW1L-M410Q0② |
| | | | | 1NC | HW1L-M401Q0② |
| | | | | 1NO-1NC | HW1L-M411Q0② |
| | | | | 2NO | HW1L-M420Q0② |
| | | | | 2NC | HW1L-M402Q0② |
| | | | | 2NO-2NC | HW1L-M422Q0② |
| | | LED | Transformer | 1NO-1NC | HW1L-M411③2② |
| | | | | 2NO | HW1L-M420③2② |
| | | | | 2NC | HW1L-M402③2② |
| | | | DC-DC Converter* | 2NO-2NC | HW1L-M422③2② |
| | | | | 1NO-1NC | HW1L-M411D2② |
| | | | | 2NO | HW1L-M420D2② |
| | Maintained | Without Lamp | Full Voltage | 2NC | HW1L-M402D2② |
| | | | | 2NO-2NC | HW1L-M422D2② |
| | | | | 1NO-1NC | HW1L-M411③5② |
| | | | | 2NO | HW1L-M420③5② |
| | | | | 2NC | HW1L-M402③5② |
| | | | | 2NO-2NC | HW1L-M422③5② |
| | | LED | Transformer | 1NO | HW1L-A410Q0② |
| | | | | 1NC | HW1L-A401Q0② |
| | | | | 1NO-1NC | HW1L-A411Q0② |
| | | | DC-DC Converter* | 2NO | HW1L-A420Q0② |
| | | | | 2NC | HW1L-A402Q0② |
| | | | | 2NO-2NC | HW1L-A422Q0② |
| | Incandescent | Transformer | 1NO-1NC | HW1L-A411③2② | |
| | | | 2NO | HW1L-A420③2② | |
| | | | 2NC | HW1L-A402③2② | |
| | | DC-DC Converter* | 2NO-2NC | HW1L-A422③2② | |
| | | | 1NO-1NC | HW1L-A411D2② | |
| | | | 2NO | HW1L-A420D2② | |
| Incandescent | Transformer | 2NC | HW1L-A402D2② | | |
| | | 2NO-2NC | HW1L-A422D2② | | |
| | | 1NO-1NC | HW1L-A411③5② | | |
| | Transformer | 2NO | HW1L-A420③5② | | |
| | | 2NC | HW1L-A402③5② | | |
| | | 2NO-2NC | HW1L-A422③5② | | |

• 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 | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

Note: Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.

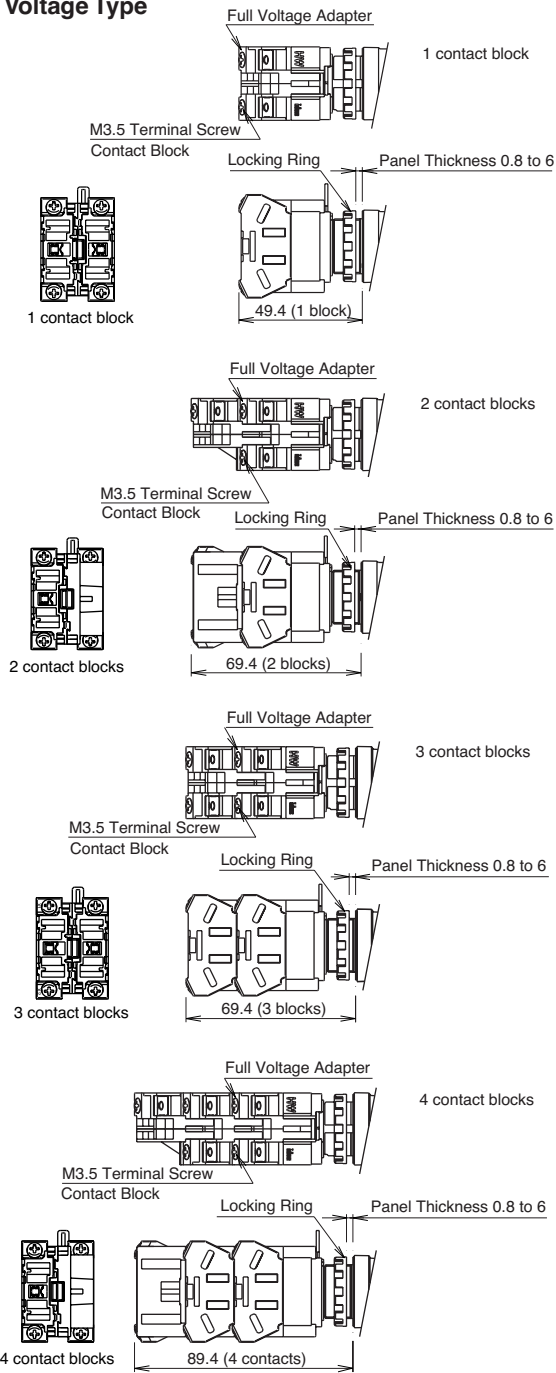
LED illuminated transformer and DC-DC converter types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).

Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

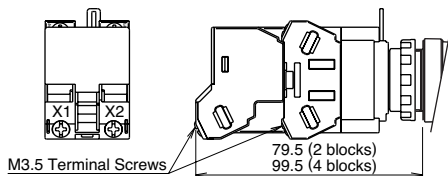
* DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC).

Dimensions

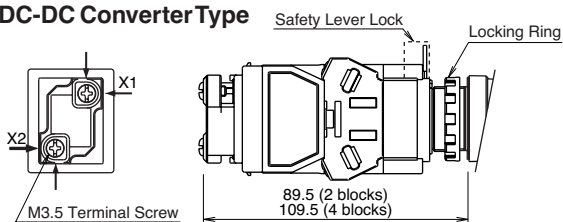
• Full Voltage Type



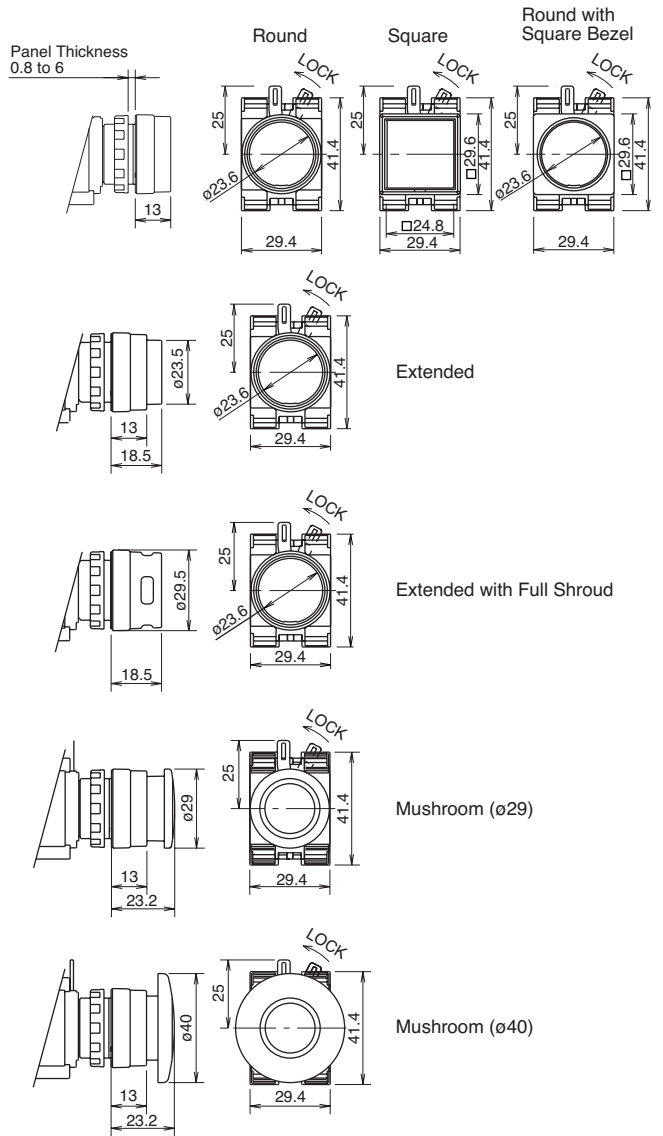
• Transformer Type



• DC-DC Converter Type

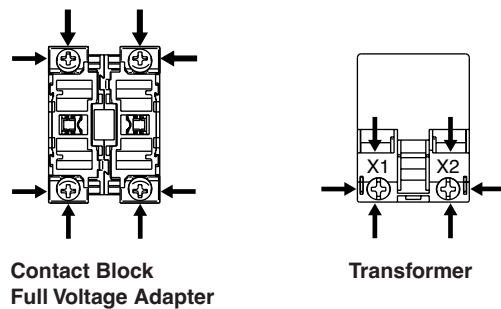


• Operator











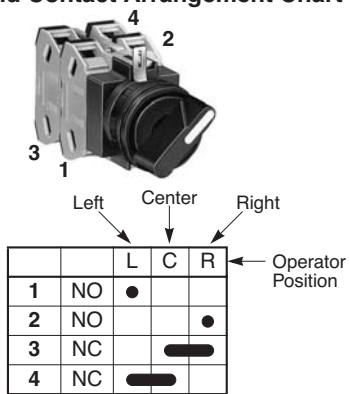


Terminal Wiring

• Arrows indicate access directions for wiring.











ø22 HW Series Selector Switches

Selector Switches

| No. of Positions | Shape | | | HW1S | |  |  | Dimensions on page 32. | | | |
|---------------------------------|---------------------------|-------------------|-------|-------------------|---|--|---|---|---|---|---|
| | Contact Arrangement Chart | | | | | | | | | | |
| 90° 2-position / 60° 2-position | Contact Code | Contact Block | | Operator Position | | Maintained (90°) | Spring Return from Right (60°) | — | — | | |
| | | Mounting Position | Type | L | R |  |  | | | | |
| | 10 (1NO) | 1 | NO | | ● | | HW1S-2T10 | HW1S-21T10 | — | — | |
| | | 2 | Dummy | | | | | | | | |
| | 11 (1NO-1NC) | 1 | NO | | ● | | HW1S-2T11 | HW1S-21T11 | — | — | |
| | | 2 | NC | ● | | | | | | | |
| | 20 (2NO) | 1 | NO | | ● | | HW1S-2T20 | HW1S-21T20 | — | — | |
| | | 2 | NO | | ● | | | | | | |
| | 22 (2NO-2NC) | 1 | NO | | ● | | HW1S-2T22 | HW1S-21T22 | — | — | |
| | | 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 | ● | | | HW1S-3T20 | HW1S-31T20 | HW1S-32T20 | HW1S-33T20 | |
| | | 2 | NO | | | ● | | | | | |
| | 02 (2NC) | 1 | NC | | | ● | HW1S-3T02 | HW1S-31T02 | HW1S-32T02 | HW1S-33T02 | |
| | | 2 | NC | | | ● | | | | | |
| | 22N1 (2NO-2NC) | 1 | NO | ● | | | HW1S-3T22N1 | HW1S-31T22N1 | HW1S-32T22N1 | HW1S-33T22N1 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NC | | | ● | | | | | |
| | | 4 | NC | | | ● | | | | | |
| | 22N9 ★ (2NO-2NC) | 1 | NC | | | ● | HW1S-3ST22N9 | — | — | — | |
| | | 2 | NC | ● | | | | | | | |
| | | 3 | NO | | | ● | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 40 (4NO) | 1 | NO | ● | | | HW1S-3T40 | HW1S-31T40 | HW1S-32T40 | HW1S-33T40 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NO | ● | | | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 40N2 ★ (4NO) | 1 | NO | ● | | | HW1S-3ST40N2 | — | — | — | |
| | | 2 | NO | | | ● | | | | | |
| 3 | | NO | ● | | | | | | | | |
| 4 | | NO | | | ● | | | | | | |
| 04 (4NC) | 1 | NC | | | ● | HW1S-3T04 | HW1S-31T04 | HW1S-32T04 | HW1S-33T04 | | |
| | 2 | NC | | | ● | | | | | | |
| | 3 | NC | | | ● | | | | | | |
| | 4 | NC | | | ● | | | | | | |
| 21N1 ★ (2NO-1NC) | 1 | NO | ● | | | HW1S-3JT21N1 | — | — | — | | |
| | 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 |  |  | |
| | 13N6 ★ (1NO-3NC) | 1 | NC | | | | | | | HW1S-4T13N6 | — |
| | | 2 | NC | | ● | | | | | | |
| | | 3 | NC | | | ● | | | | | |
| | | 4 | NO | | | | | ● | | | |
| | 22N3 ★ (2NO-2NC) | 1 | NO | ● | | | | | HW1S-4T22N3 | — | |
| | | 2 | NC | | ● | | | | | | |
| | | 3 | NC | | | ● | | | | | |
| | | 4 | NO | | | | | ● | | | |
| | 12 ★ (1NO-2NC) | 1 | NO | ● | | | | | HW1S-4T12 | — | |
| | | 2 | NC | | ● | | | | | | |
| 3 | | NC | | | ● | | | | | | |
| 4 | | Dummy | | | | | | | | | |
| 22N3 ★ (2NO-2NC) | 1 | NO | ● | | | | | — | HW1S-5T22N3 | | |
| | 2 | NC | | ● | | | | | | | |
| | 3 | NC | | | ● | | | | | | |
| | 4 | NO | | | | | ● | | | | |

- 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 body
- Other contact arrangements are also available. See pages 33 through 36.

Key Selector Switches

| No. of Positions | Shape | | | HW1K | |  | |  | | Dimensions on page 32. | |
|---------------------------------|---------------------------|-------------------|-------|-------------------|---|--|---|---|---|---|--|
| | Contact Arrangement Chart | | | | | | | | | | |
| 90° 2-position / 60° 2-position | Contact Code | Contact Block | | Operator Position | | Maintained (90°) | Spring Return from Right (60°) | | | | |
| | | Mounting Position | Type | L | R |  |  | | | | |
| | 10 (1NO) | 1 | NO | | ● | HW1K-2A10 | HW1K-21B10 | | | | |
| | | 2 | Dummy | | | | | | | | |
| | 11 (1NO-1NC) | 1 | NO | | ● | HW1K-2A11 | HW1K-21B11 | | | | |
| | | 2 | NC | ● | | | | | | | |
| | 20 (2NO) | 1 | NO | | ● | HW1K-2A20 | HW1K-21B20 | | | | |
| | | 2 | NO | | ● | | | | | | |
| | 22 (2NO-2NC) | 1 | NO | | ● | HW1K-2A22 | HW1K-21B22 | | | | |
| | | 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 | ● | | | HW1K-3A20 | HW1K-31B20 | HW1K-32C20 | HW1K-33D20 | |
| | | 2 | NO | | | ● | | | | | |
| | 02 (2NC) | 1 | NC | | | ● | HW1K-3A02 | HW1K-31B02 | HW1K-32C02 | HW1K-33D02 | |
| | | 2 | NC | ● | | | | | | | |
| | 22N1 (2NO-2NC) | 1 | NO | ● | | | HW1K-3A22N1 | HW1K-31B22N1 | HW1K-32C22N1 | HW1K-33D22N1 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NC | | | ● | | | | | |
| | | 4 | NC | ● | | | | | | | |
| | 22N9 ★ (2NO-2NC) | 1 | NC | | | ● | HW1K-3SA22N9 | — | — | — | |
| | | 2 | NC | ● | | | | | | | |
| | | 3 | NO | | | ● | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 40 (4NO) | 1 | NO | ● | | | HW1K-3A40 | HW1K-31B40 | HW1K-32C40 | HW1K-33D40 | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NO | ● | | | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 40N2 ★ (4NO) | 1 | NO | ● | | | HW1K-3SA40N2 | — | — | — | |
| | | 2 | NO | | | ● | | | | | |
| | | 3 | NO | ● | | | | | | | |
| | | 4 | NO | | | ● | | | | | |
| | 04 (4NC) | 1 | NC | | | ● | HW1K-3A04 | HW1K-31B04 | HW1K-32C04 | HW1K-33D04 | |
| | | 2 | NC | ● | | | | | | | |
| | | 3 | NC | | | ● | | | | | |
| | | 4 | NC | ● | | | | | | | |
| | 21N1 ★ (2NO-1NC) | 1 | NO | ● | | | HW1K-3JA21N1 | — | — | — | |
| | | 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 8.
- Each key selector switch is supplied with two identical keys. Three different keys are also available. See page 8.
- 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
- Other contact arrangements are also available. See pages 33 through 36.

• Contact Block Mounting Position and Contact Arrangement Chart







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

ø22 HW Series Illuminated Selector Switches

Illuminated Selector Switches

90° 2-position / 60° 2-position

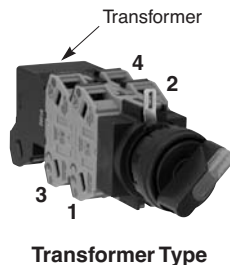
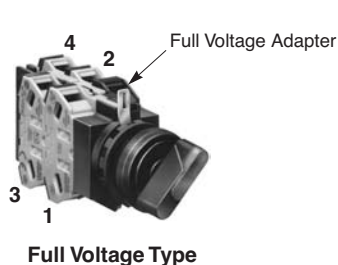
| Shape | | HW1F | | | | | |  | |
|---------------------------|-------------------|---|-------------------|------------------------|--------------|--------------|---|---|--|
| Contact Arrangement Chart | |  | | Dimensions on page 32. | | | | | |
| Contact Code | Contact Block | | Operator Position | | Lamp | Input Type | Maintained (90°) | Spring Return from Right (60°) | |
| | Mounting Position | Type | L | R | | |  |  | |
| 11 (1NO-1NC) | 1 | NO | | ● | Without Lamp | Full Voltage | HW1F-211Q0② | HW1F-2111Q0② | |
| | 2 | NC | ● | | LED | Transformer | HW1F-211③2② | HW1F-2111③2② | |
| | | | | | Incandescent | Transformer | HW1F-211③5② | HW1F-2111③5② | |
| 20 (2NO) | 1 | NO | | ● | Without Lamp | Full Voltage | HW1F-220Q0② | HW1F-2120Q0② | |
| | 2 | NO | | ● | LED | Transformer | HW1F-220③2② | HW1F-2120③2② | |
| | | | | | Incandescent | Transformer | HW1F-220③5② | HW1F-2120③5② | |
| 22 (2NO-2NC) | 1 | NO | | ● | Without Lamp | Full Voltage | HW1F-222Q0② | HW1F-2122Q0② | |
| | 2 | NC | ● | | | | | | |
| | 3 | NO | | ● | LED | Transformer | HW1F-222③2② | HW1F-2122③2② | |
| | 4 | NC | ● | | | | | | |
| | | | | Incandescent | Transformer | HW1F-222③5② | HW1F-2122③5② | | |

• 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 R: red S: blue W: white Y: yellow | A: amber G: green R: red S: blue W: white | H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
- 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).

• Contact Block Mounting Position and Contact Arrangement Chart



| | | Left | Right | Operator Position |
|---|----|------|-------|-------------------|
| | | L | R | |
| 1 | NO | | ● | |
| 2 | NC | ● | | |
| 3 | NO | | ● | |
| 4 | NC | ● | | |

For more contact arrangement chart, see page 33.

HW Series Illuminated Selector Switches ø22

45° 3-position

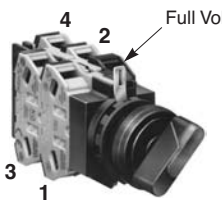
| Contact Code | Contact Block | | Operator Position | | | Lamp Input Type | Maintained | Spring Return from Right | Spring Return from Left | Spring Return Two-way |
|-------------------|-------------------|------|-------------------|---|---|---------------------------|---------------|--------------------------|-------------------------|-----------------------|
| | Mounting Position | Type | L | C | R | | | | | |
| 20 (2NO) | 1 | NO | ● | | | Without Lamp Full Voltage | HW1F-320Q0② | HW1F-3120Q0② | HW1F-3220Q0② | HW1F-3320Q0② |
| | 2 | NO | | | ● | LED Transformer | HW1F-320③2② | HW1F-3120③2② | HW1F-3220③2② | HW1F-3320③2② |
| | | | | | | Incandescent Transformer | HW1F-320③5② | HW1F-3120③5② | HW1F-3220③5② | HW1F-3320③5② |
| 02 (2NC) | 1 | NC | | ■ | | Without Lamp Full Voltage | HW1F-302Q0② | HW1F-3102Q0② | HW1F-3202Q0② | HW1F-3302Q0② |
| | 2 | NC | | ■ | | LED Transformer | HW1F-302③2② | HW1F-3102③2② | HW1F-3202③2② | HW1F-3302③2② |
| | | | | | | Incandescent Transformer | HW1F-302③5② | HW1F-3102③5② | HW1F-3202③5② | HW1F-3302③5② |
| 22N1 (2NO-2NC) | 1 | NO | ● | | | Without Lamp Full Voltage | HW1F-322N1Q0② | HW1F-3122N1Q0② | HW1F-3222N1Q0② | HW1F-3322N1Q0② |
| | 2 | NO | | | ● | LED Transformer | HW1F-322N1③2② | HW1F-3122N1③2② | HW1F-3222N1③2② | HW1F-3322N1③2② |
| | 3 | NC | | ■ | | LED Transformer | HW1F-322N1③2② | HW1F-3122N1③2② | HW1F-3222N1③2② | HW1F-3322N1③2② |
| | 4 | NC | | ■ | | Incandescent Transformer | HW1F-322N1③5② | HW1F-3122N1③5② | HW1F-3222N1③5② | HW1F-3322N1③5② |
| 40 (4NO) | 1 | NO | ● | | | Without Lamp Full Voltage | HW1F-340Q0② | HW1F-3140Q0② | HW1F-3240Q0② | HW1F-3340Q0② |
| | 2 | NO | | | ● | LED Transformer | HW1F-340③2② | HW1F-3140③2② | HW1F-3240③2② | HW1F-3340③2② |
| | 3 | NO | ● | | | LED Transformer | HW1F-340③2② | HW1F-3140③2② | HW1F-3240③2② | HW1F-3340③2② |
| | 4 | NO | | | ● | Incandescent Transformer | HW1F-340③5② | HW1F-3140③5② | HW1F-3240③5② | HW1F-3340③5② |
| 04 (4NC) | 1 | NC | | ■ | | Without Lamp Full Voltage | HW1F-304Q0② | HW1F-3104Q0② | HW1F-3204Q0② | HW1F-3304Q0② |
| | 2 | NC | | ■ | | LED Transformer | HW1F-304③2② | HW1F-3104③2② | HW1F-3204③2② | HW1F-3304③2② |
| | 3 | NC | | ■ | | LED Transformer | HW1F-304③2② | HW1F-3104③2② | HW1F-3204③2② | HW1F-3304③2② |
| | 4 | NC | | ■ | | Incandescent Transformer | HW1F-304③5② | HW1F-3104③5② | HW1F-3204③5② | HW1F-3304③5② |

• 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 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. H: 100/110V AC H2: 115/120V AC M: 200/220V AC M4: 230/240V AC S: 380V AC T: 400/440V AC T8: 480V AC |

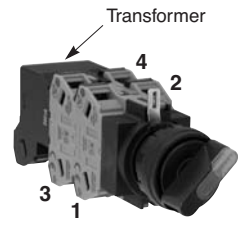
- Full voltage types do not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 43.
- LED illuminated transformer types contain an LED lamp (LSTD-6②, rated voltage 6V AC/DC).
- Incandescent illuminated transformer types contain an incandescent lamp (LS-6, rated voltage 6V AC/DC).

• Contact Block Mounting Position and Contact Arrangement Chart



Full Voltage Adapter

Full Voltage Type



Transformer

Transformer Type

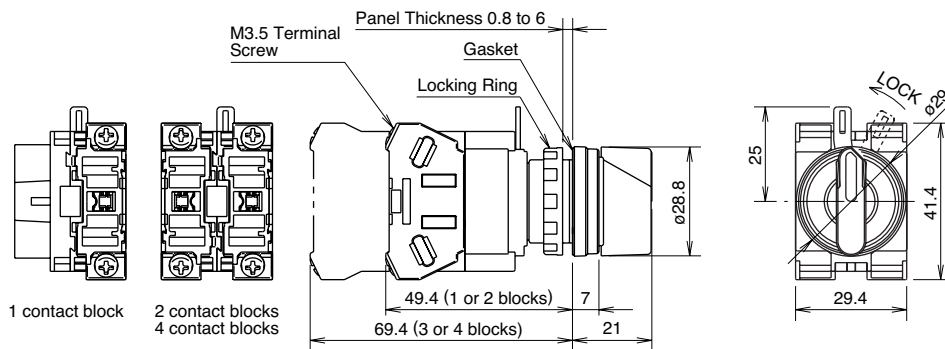
| | | | | | |
|---|----|------|--------|-------|---------------------|
| | | Left | Center | Right | |
| | | L | C | R | ← Operator Position |
| 1 | NO | ● | | | |
| 2 | NO | | | ● | |
| 3 | NC | | ■ | | |
| 4 | NC | | ■ | | |

For more contact arrangement chart, see page 33.

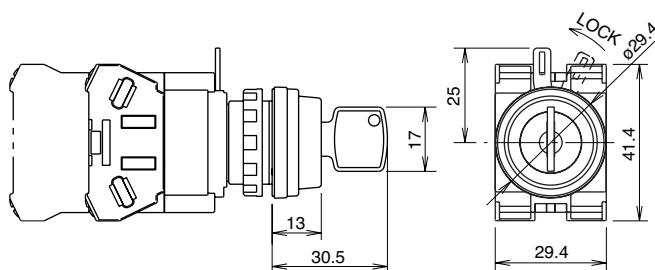
Ø22 HW Series Selector Switches

Dimensions: Selector Switches

• Knob Operator

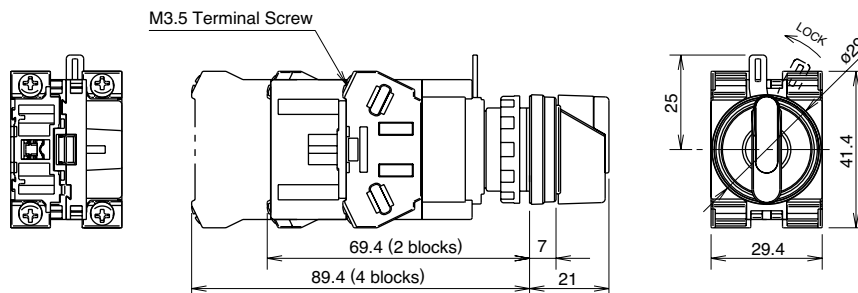


• Key Operator

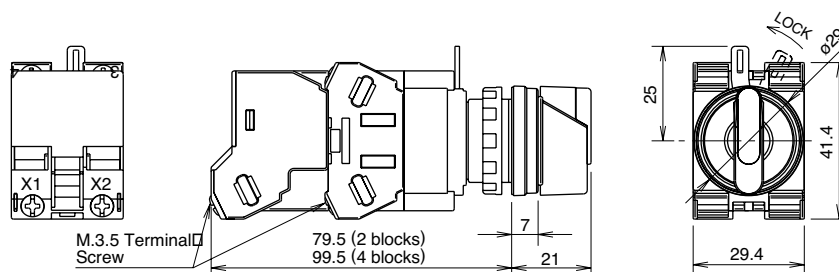


Dimensions: Illuminated Selector Switches

• Full Voltage Type



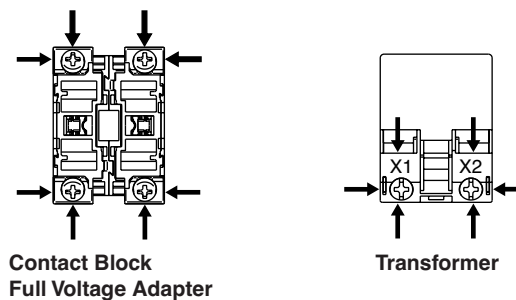
• Transformer Type



All dimensions in mm.

Terminal Wiring

• Arrows indicate access directions for wiring.



HW Series Selector Switch Contact Arrangement Charts ø22

90° 2-position (Maintained) / 60° 2-position (Spring Return)

| Contact Code | Contact Block | | Operator Position | | Operator Availability | | | | | | Cam Code | Remarks |
|---------------------|-------------------|-------|-------------------|---|-----------------------|-----|-------------|------|-----|-------------|----------|----------|
| | | | | | L | | | R | | | | |
| | Mounting Position | Type | L | C | Knob | Key | Illuminated | Knob | Key | Illuminated | | |
| 10 (1NO) | 1 | NO | | ● | x | x | x | x | x | x | — | Standard |
| | 2 | Dummy | | | | | | | | | | |
| 01 (1NC) | 1 | NC | ● | | x | x | x | x | — | x | — | |
| | 2 | Dummy | | | | | | | | | | |
| 11 (1NO-1NC) | 1 | NO | | ● | x | x | x | x | x | x | — | Standard |
| | 2 | NC | ● | | | | | | | | | |
| 11N1 (1NO-1NC) | 1 | NC | ● | | x | x | x | x | — | x | — | |
| | 2 | NO | | ● | | | | | | | | |
| 20 (2NO) | 1 | NO | | ● | x | x | x | x | x | x | — | Standard |
| | 2 | NO | | ● | | | | | | | | |
| 02 (2NC) | 1 | NC | ● | | x | x | x | x | — | x | — | |
| | 2 | NC | ● | | | | | | | | | |
| 22 (2NO-2NC) | 1 | NO | | ● | | | | | | | | Standard |
| | 2 | NO | ● | | x | x | x | x | x | x | — | |
| | 3 | NC | | ● | | | | | | | | |
| | 4 | NC | ● | | | | | | | | | |
| 22N2 (2NO-2NC) | 1 | NC | ● | | | | | | | | | |
| | 2 | NO | | ● | x | x | x | x | — | x | — | |
| | 3 | NC | ● | | | | | | | | | |
| | 4 | NO | | ● | | | | | | | | |
| 22N1 (2NO-2NC) | 1 | NO | | ● | | | | | | | | |
| | 2 | NO | | ● | x | x | x | x | — | x | — | |
| | 3 | NC | ● | | | | | | | | | |
| | 4 | NC | ● | | | | | | | | | |
| 22N4 (2NO-2NC) | 1 | NC | ● | | | | | | | | | |
| | 2 | NO | | ● | x | x | x | x | — | x | — | |
| | 3 | NO | | ● | | | | | | | | |
| | 4 | NC | ● | | | | | | | | | |
| 31N1 (3NO-1NC) | 1 | NC | ● | | | | | | | | | |
| | 2 | NO | | ● | x | x | x | x | — | x | — | |
| | 3 | NO | | ● | | | | | | | | |
| | 4 | NO | | ● | | | | | | | | |
| 40 (4NO) | 1 | NO | | ● | | | | | | | | |
| | 2 | NO | | ● | x | x | x | x | — | x | — | |
| | 3 | NO | | ● | | | | | | | | |
| | 4 | NO | | ● | | | | | | | | |
| 7S ★ (1NO-1NC) | 1 | NO | | ■ | x | x | x | x | — | x | — | |
| | 2 | NC | ■ | | | | | | | | | |
| 8S ★ (2NO-2NC) | 1 | NO | | ■ | | | | | | | | |
| | 2 | NC | ■ | | x | x | x | x | — | x | — | |
| | 3 | NO | | ■ | | | | | | | | |
| | 4 | NC | ■ | | | | | | | | | |
| 22N7 ★ (2NO-2NC) | 1 | NC | ■ | | | | | | | | | |
| | 2 | NO | | ■ | x | x | x | x | — | x | — | |
| | 3 | NC | ■ | | | | | | | | | |
| | 4 | NO | | ■ | | | | | | | | |

• 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.

Remarks: When ordering the contact arrangement indicated with "Standard" in the table above, specify the Type No. shown in the standard Type No. on preceding pages. For other contact arrangements, see page 36 to specify the Type No. and contact code.

ø22 HW Series Selector Switch Contact Arrangement Charts

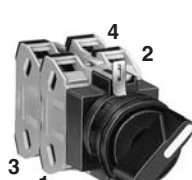
45° 4-position

| Contact Code | Contact Block | | Operator Position | | | | Operator Availability | Cam Code | Remarks |
|---------------------|-------------------|-------|-------------------|------|---|---|-----------------------|----------|----------|
| | | | | | | | | | |
| | Mounting Position | Type | 1 | 2 | 3 | 4 | Knob | | |
| 12 ★ (1NO-2NC) | 1 | NO | ● | | | | x | — | Standard |
| | 2 | NC | | ● | | | | | |
| | 3 | NC | | | ● | | | | |
| | 4 | Dummy | | | | | | | |
| 04N3 ★ (4NC) | 1 | NC | | ■■■■ | | | x | — | |
| | 2 | NC | | ● | | | | | |
| | 3 | NC | | | ● | | | | |
| | 4 | NC | ■■■■ | | | | | | |
| 13N6 ★ (1NO-3NC) | 1 | NC | | ■■■■ | | | x | — | Standard |
| | 2 | NC | | ● | | | | | |
| | 3 | NC | | | ● | | | | |
| | 4 | NO | | | | ● | | | |
| 13N5 ★ (1NO-3NC) | 1 | NO | ● | | | | x | — | |
| | 2 | NC | | ● | | | | | |
| | 3 | NC | | | ● | | | | |
| | 4 | NC | ■■■■ | | | | | | |
| 22N3 ★ (2NO-2NC) | 1 | NO | ● | | | | x | — | Standard |
| | 2 | NC | | ● | | | | | |
| | 3 | NC | | | ● | | | | |
| | 4 | NO | | | | ● | | | |

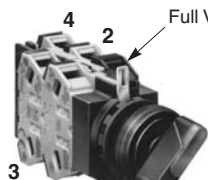
30° 5-position

| Contact Code | Contact Block | | Operator Position | | | | | Operator Availability | Cam Code | Remarks |
|---------------------|-------------------|------|-------------------|---|---|---|---|-----------------------|----------|----------|
| | | | | | | | | | | |
| | Mounting Position | Type | 1 | 2 | 3 | 4 | 5 | Knob | | |
| 22N3 ★ (2NO-2NC) | 1 | NO | ● | | | | | x | — | Standard |
| | 2 | NC | | ● | | | | | | |
| | 3 | NC | | | | ● | | | | |
| | 4 | NO | | | | | ● | | | |

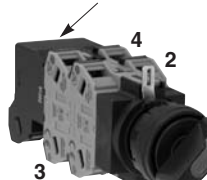
• Contact Block Mounting Position and Contact Arrangement Chart



Non-illuminated Selector



Illuminated Selector
Full Voltage Type



Illuminated Selector
Transformer Type

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

Type No. Development

• When cam code is not required

HW1S - 2 T 11

- Contact code (1NO-1NC)
- "T" for knob operator
- 2-position

• When cam code is required

HW1K - 3 J A 22N2

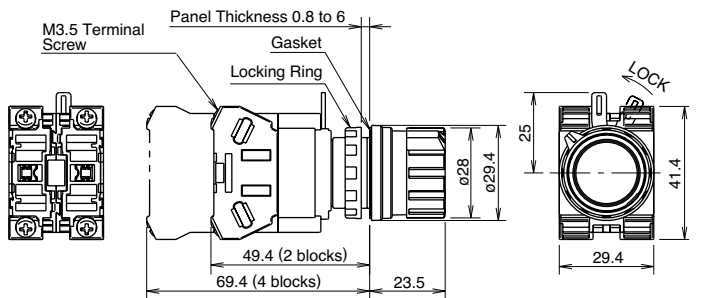
- Contact code (2NO-2NC)
- Key removal option code
- Cam code (J, S, or none)
- 3-position

Pushbutton Selectors

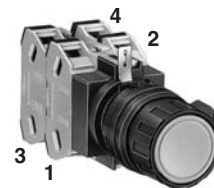
| Shape | Circuit Category | Contact Code | Contact Block | | | | | | Type No. | ① Button Color Code | | |
|----------|---------------------|---------------------|---------------------|---------------------|--------|-----------|--------|-----------|------------|---|--------------|--------------|
| | | | Mounting Position | Type | Normal | Depressed | Normal | Depressed | | | | |
| | A | 11 (1NO-1NC) | 1 | NO | | ● | | ● | HW1R-2A11① | 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 | | |
| | | | 2 | NC | ● | | | | HW1R-2A20① | | | |
| | | 20 (2NO) | 1 | NO | | ● | | ● | | | HW1R-2A20① | |
| | | | 2 | NO | | ● | ■ | | | | HW1R-2A22① | |
| | | 22 (2NO-2NC) | 1 | NO | | ● | | ● | | | HW1R-2A22① | |
| | | | 2 | NC | ● | | | | | | | |
| | | | 3 | NO | | ● | | ● | | | | |
| | | 20 (2NO) | D | 20 (2NO) | 1 | NO | | ● | | | ● | HW1R-2D20① |
| | | | | | 2 | NO | | ● | | | | HW1R-2D22N1① |
| | | | | 22N1 (2NO-2NC) | 2 | NO | | ● | | | ● | HW1R-2D22N1① |
| | | | | | 3 | NC | ● | | ■ | | | |
| | | 22N1 ★ (2NO-2NC) | E | 22N1 ★ (2NO-2NC) | 1 | NO | | ● | | | ● | HW1R-2E22N1① |
| | 2 | | | | NO | | ● | | ● | | | |
| | 3 | | | | NC | | | ■ | | | | |
| | 4 | | | | NC | ■ | | | | | | |
| | 22N1 ★ (2NO-2NC) | F | 22N1 ★ (2NO-2NC) | 1 | NO | | ● | | ● | | HW1R-2F22N1① | |
| | | | | 2 | NO | | ● | | | | | |
| | | | | 3 | NC | | | ● | | | | |
| | | | | 4 | NC | ● | | | | | | |
| | 22N2 ★ (2NO-2NC) | N | 22N2 ★ (2NO-2NC) | 1 | NC | | | ● | | | HW1R-2N22N2① | |
| | | | | 2 | NO | | ● | | ● | | | |
| | | | | 3 | NC | | | ● | | | | |
| | | | | 4 | NO | | ● | | ● | | | |
| | 22N1 ★ (2NO-2NC) | T | 22N1 ★ (2NO-2NC) | 1 | NO | | ● | ● | Blocked | | HW1R-2T22N1① | |
| 2 | | | | NO | | ● | ● | | | | | |
| 3 | | | | NC | ● | | | | | | | |
| 4 | | | | NC | ● | | | | | | | |

- 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.
- When operating the pushbutton selector, do not turn the operator ring or the lock lever while the button is depressed. Otherwise the pushbutton selector may be damaged.
- Other contact arrangements are also available upon request.

Dimensions







• Contact Block Mounting Position and Contact Arrangement Chart



| Contact Block | Left | | Right | | Ring Position | Button |
|---------------|--------|-----------|--------|-----------|---------------|--------|
| | Normal | Depressed | Normal | Depressed | | |
| 1 | NO | | | ● | | |
| 2 | NO | ● | | | | |
| 3 | NC | | ● | | | |
| 4 | NC | ● | | | | |

ø22 HW Series Mono-Lever Switches

Mono-Lever Switches

| Shape | Positions | Type No. |
|--|------------|-----------------|
| HW1M Standard Lever   | 2-position | HW1M-1010-20 |
| | | HW1M-2020-20 |
| | | HW1M-0101-20 |
| | | HW1M-0202-20 |
| | | HW1M-0101-40 |
| | 4-position | HW1M-1111-22N9 |
| HW1M-2222-22N9 | | |
| HW1M-L Interlocking Lever   | 2-position | HW1M-L1010-20 |
| | | HW1M-L2020-20 |
| | | HW1M-L0101-20 |
| | | HW1M-L0202-20 |
| | | HW1M-L0101-40 |
| | 4-position | HW1M-L1111-22N9 |
| | | HW1M-L2222-22N9 |

• On all mono-lever switches, 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.

Contact Arrangement Chart

• 2-position (Right/Left)

| Contact Code | Contact Block | | Lever Operator Position | | |
|--------------|-------------------|------|-------------------------|--------|-------|
| | Mounting Position | Type | Left | Center | Right |
| 20 | 1 | NO | ● | | |
| | 2 | NO | | | ● |
| 40 | 1 | NO | ● | | |
| | 2 | NO | | | ● |
| | 3 | NO | ● | | |
| | 4 | NO | | | ● |

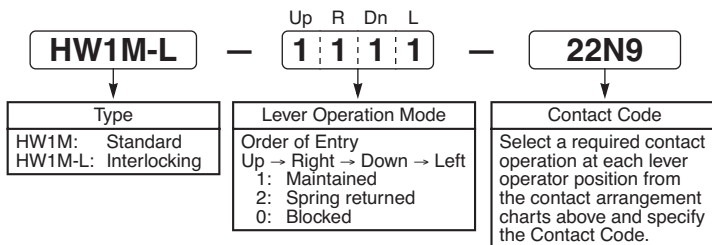
• 2-position (Up/Down)

| Contact Code | Contact Block | | Lever Operator Position | | |
|--------------|-------------------|------|-------------------------|--------|----|
| | Mounting Position | Type | Down | Center | Up |
| 20 | 1 | NO | ● | | |
| | 2 | NO | | | ● |
| 40 | 1 | NO | ● | | |
| | 2 | NO | | | ● |
| | 3 | NO | ● | | |
| | 4 | NO | | | ● |

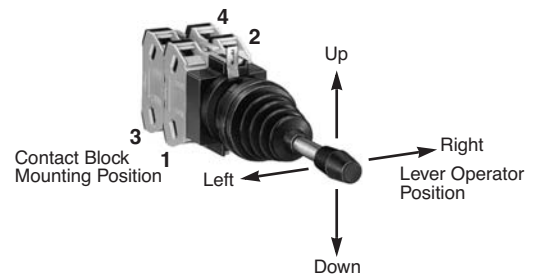
• 4-position

| Contact Code | Contact Block | | Lever Operator Position | | | | |
|--------------|-------------------|------|-------------------------|------|--------|----|-------|
| | Mounting Position | Type | Down | Left | Center | Up | Right |
| 22N9 | 1 | NC | | | | | ● |
| | 2 | NC | ● | | | | |
| | 3 | NO | | ● | | | |
| | 4 | NO | | | | ● | |

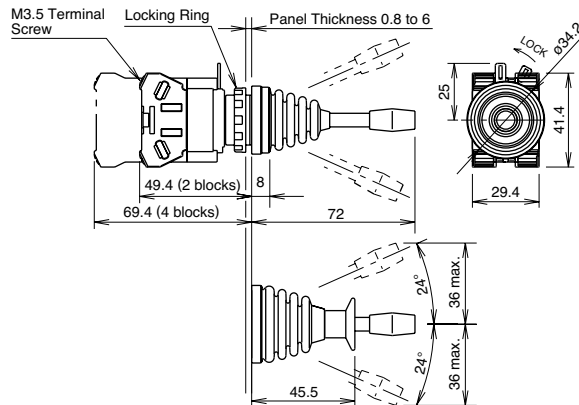
Ordering Information



• Contact Block Mounting Position and Lever Operator Position



Dimensions



All dimensions in mm.

Accessories

Nameplates

• HWAM, HWAQ, HWAS, and HWAV

| Description | Legend | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions (mm) |
|-------------|---------------------------------|----------------------------------|----------|-------------------|------------------|-----------------|
| HWAM | Order marking plate separately. | Plastic (black) 1.5 mm thick | HWAM | HWAM | 1 | |
| | | | | HWAMPN10 | 10 | |
| HWAQ | Order marking plate separately. | Plastic (black) 1.5 mm thick | HWAQ | HWAQ | 1 | |
| | | | | HWAQPN10 | 10 | |
| HWAS | Blank | Plastic (black) 1.5 mm thick | HWAS-0 | HWAS-0 | 1 | |
| | | | | HWAS-0PN10 | 10 | |
| HWAV | Blank | Plastic (yellow) 1.5 mm thick | HWAV-0 | HWAV-0 | 1 | |
| | EMERGENCY STOP | | HWAV-27 | HWAV-27 | 1 | |

• Making Plate

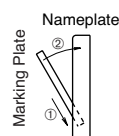
| Description | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions (mm) |
|-------------|----------------------------------|----------|-------------------|------------------|--|
| HWNP | Aluminum (black) 1.0 mm thick | HWNP-* | HWNP-* | 1 | <p>• White legend on black background.</p> |
| | | | HWNP-*PN10 | 10 | |

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

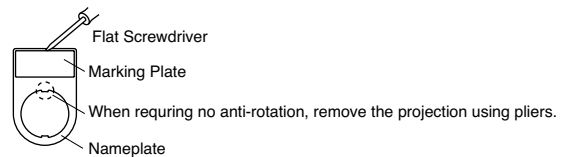
Legends

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

• Installing the marking plate on a nameplate




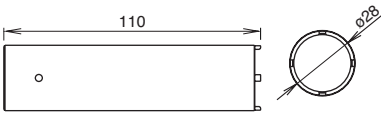

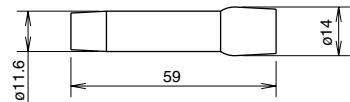

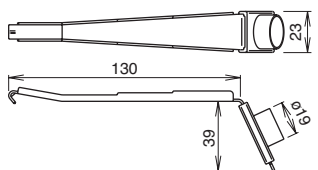

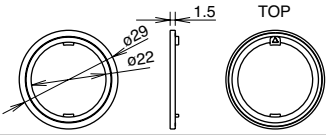

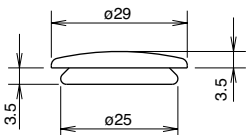

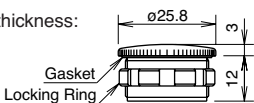

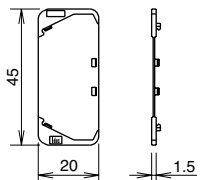

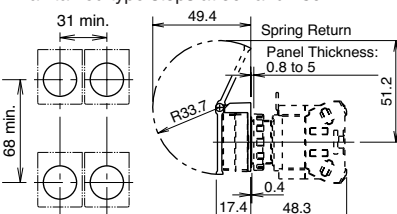
• To remove the marking plate, insert the flat screwdriver between the marking plate and nameplate.




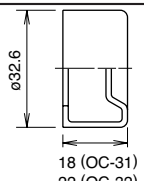

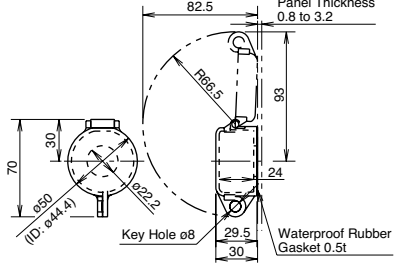



Note: When using an nameplate, the mounting panel thickness is decreased by 1.5 mm.

Ø22 HW Series Accessories and Replacement Parts






Accessories

| Shape | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions (mm) |
|---|---|----------|-------------------|------------------|--|
|  | Metal (weight: approx. 150g) | MW9Z-T1 | MW9Z-T1 | 1 | <ul style="list-style-type: none"> Used to tighten the locking ring when installing the HW switch onto a panel. Tighten the locking ring to a torque of 2.0 N·m.  |
|  | Rubber | OR-55 | OR-55 | 1 | <ul style="list-style-type: none"> Used to install and remove the LED/incandescent lamps.  |
|  | Metal/Rubber | TW-KC1 | TW-KC1 | 1 | <ul style="list-style-type: none"> Used to remove the contact block and transformer, and also to install/remove the pilot light and illuminated pushbutton lens.  |
|  | Plastic | HW9Z-RL | HW9Z-RLPN10 | 10 | <ul style="list-style-type: none"> Used to prevent the operator from turning. Generally used when using no nameplates on selector switches and pushbutton selectors.  |
|  | Rubber (black) | OB-31 | OB-31PN05 | 5 | <ul style="list-style-type: none"> Used to plug the unused Ø22.2mm mounting holes.  |
|  | Diecast Metal (locking ring: plastic) | LW9Z-BM | LW9Z-BM | 1 | <ul style="list-style-type: none"> Used to plug the unused Ø22.2mm mounting holes. Tighten the locking ring to a torque of 1.2 N·m. IP66 Mounting panel thickness: 0.8 to 6 mm  |
|  | Plastic | HW-VG1 | HW-VG1PN10 | 10 | <ul style="list-style-type: none"> Used to prevent contact between adjacent lead wires when units are mounted closely. Barriers should always be used in close mounting.  |
|  | Spring Return | HW9Z-K1 | HW9Z-K1 | 1 | <ul style="list-style-type: none"> Used to prevent inadvertent operation for flush pushbuttons and illuminated pushbuttons. IP65 Maintained type stops at 90° and 180°.  |
| | Maintained | HW9Z-K11 | HW9Z-K11 | 1 | |

Accessories



| Shape | | Material | Type No. | Ordering Type No. | Package Quantity | Dimensions (mm) |
|---|--------------------------|--|-----------|-------------------|------------------|---|
|  | For flush pushbuttons | Rubber (EPDM) | OC-31 | OC-31 | 1 | <ul style="list-style-type: none"> Used to cover and protect pushbuttons where units are subject to watersplash. Not suitable for outdoor use or where the units are subject to oil splash.  |
| | For extended pushbuttons | | OC-32 | OC-32 | 1 | |
|  | | Polyarylate (gasket: nitril rubber) | HW9Z-KL1 | HW9Z-KL1 | 1 | <ul style="list-style-type: none"> Used to protect pushbuttons, illuminated pushbuttons, selector switches, and key selector switches.  |
|  | | | HW9Z-A25 | HW9Z-A25PN05 | 5 | <ul style="list-style-type: none"> Used to install the HW/TW units into ø25 mounting holes. IP65 Cannot be used with anti-rotation ring and nameplate. Mounting panel thickness: 1.2 to 6.0 mm |
|  | | | HW9Z-A30 | HW9Z-A30PN02 | 2 | <ul style="list-style-type: none"> Used to install the HW units into ø30 mounting holes (except for HW1E and HW1B-M5/V5). IP65 Cannot be used with anti-rotation ring, nameplate, full-shroud illuminated pushbuttons, pushbutton selectors, and mono-lever switches. Mounting panel thickness: 1.6 to 4.0 mm |
|  | | | HW9Z-A30E | HW9Z-A30EPN02 | 2 | <ul style="list-style-type: none"> Used to install the HW1E units into ø30 mounting holes. IP65 Cannot be used with anti-rotation ring and nameplate. Mounting panel thickness: 1.6 to 3.8 mm |

Maintenance Parts

| Shape | Specification | Type No. | Ordering Type No. | Package Quantity | Remarks |
|---|-------------------------|----------|-------------------|------------------|---|
|  | 1NO contact | HW-G10 | HW-G10 | 1 | |
| | 1NC contact | HW-G01 | HW-G01 | 1 | |
| | EM (early make) contact | HW-G10R | HW-G10R | 1 | |
| | LB (late break) contact | HW-G01R | HW-G01R | 1 | |
|  | | TW-DB | TW-DBPN10 | 10 | |
|  | | HW-GA1 | HW-GA1PN02 | 2 | |
|  | 100/110V AC | HW-T16 | HW-T16 | 1 | <ul style="list-style-type: none"> For illuminated pushbuttons and illuminated selector switches. |
| | 200/220V AC | HW-T26 | HW-T26 | 1 | |
|  | AS resin | HW1A-P2② | HW1A-P2②PN05 | 5 | <ul style="list-style-type: none"> Specify a color code in place of ②. A (amber), G (green), R (red), S (blue), W (white), and Y (yellow) |

ø22 HW Series Accessories and Replacement Parts




Maintenance Parts

| Shape | | Specification | Type No. | Ordering Type No. | Package Quantity | Color Code |
|--|---|------------------|-------------|-------------------|------------------|--|
| Button  | Round flush with round or square bezel | Polyacetal | HW1A-B1① | HW1A-B1①PN05 | 5 | B (black) G (green) R (red) S (blue) W (white) Y (yellow) |
| | Round extended with round or square bezel | | HW1A-B2① | HW1A-B2①PN05 | 5 | |
| | Square flush | | HW2A-B1① | HW2A-B1①PN05 | 5 | |
| | Square extended | | HW2A-B2① | HW2A-B2①PN05 | 5 | |
| | ø29mm mushroom | | HW1A-B3① | HW1A-B3①PN02 | 2 | |
| | ø40mm mushroom | | HW1A-B4① | HW1A-B4①PN02 | 2 | |
| Lens (for pilot lights and illuminated pushbuttons)  | Round flush | Polyarylate | HW9Z-L11② | HW9Z-L11②PN05 | 5 | A (amber), C (clear), G (green), R (red), S (blue), Y (yellow) Note: Use a clear lens for white illumination. |
| | Square flush | | HW9Z-L21② | HW9Z-L21②PN05 | 5 | |
| | Round extended | | HW9Z-L12② | HW9Z-L12②PN05 | 5 | |
| Lens (for illuminated pushbuttons)  | ø29mm mushroom | AS, Marking type | ALW31L-② | ALW31L-②PN02 | 2 | C (clear), G (green), R (red), S (blue) |
| | | | ALW31LD-② | ALW31LD-②PN02 | 2 | |
| | ø40mm mushroom | | ALW41L-② | ALW41L-② | 1 | C (clear), G (green), R (red), S (blue) |
| | | | ALW41LD-② | ALW41LD-② | 1 | A (amber), Y (yellow) |
| Marking Plate  | Round flush | Acrylic | HW9Z-P11 | HW9Z-P11PN05 | 5 | • White |
| | Round extended | | HW9Z-P12 | HW9Z-P12PN05 | 5 | |
| | Square flush | | HW9Z-P21 | HW9Z-P21PN05 | 5 | |
| | ø29/40mm mushroom | | ALW3B | ALW3BPN05 | 5 | |
| Operator Knob for Illuminated Selector Switch  | | Polyarylate | HW9Z-FDY② | HW9Z-FDY② | 1 | A (amber) G (green) R (red) S (blue) W (white) Y (yellow) |
| Replacement key  | Key selector switch | Metal | HW9Z-SK-231 | HW9Z-SK-231PN02 | 2 | |
| Locking Ring  | | Plastic | HW9Z-LN | HW9Z-LNPN05 | 5 | • Black |
| Cap for Mono-Lever Switch  | Standard | Rubber | HW9Z-CPM | HW9Z-CPM | 1 | |
| Boot for Mono-Lever Switch  | | | HW9Z-BLM | HW9Z-BLM | 1 | |
| Safety Lever Lock  | | Plastic | HW9Z-LS | HW9Z-LSPN10 | 10 | • Yellow |





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

Maintenance Parts


LED Lamps (LSTD Type)

| Operating Voltage | Current Draw | | Type No. | Ordering Type No. | Illumination Color Code | Package Quantity | Base |
|---|---------------------------------------|---|----------|-------------------|---|------------------|---------|
| | AC | DC | | | | | |
| 6V AC/DC ±5%  | 17 mA (A, R, W, Y) 8 mA (G, PW, S) | 14 mA (A, R, W, Y) 5.5 mA (G, PW, S) | LSTD-6* | 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 | |
| 12V AC/DC ±10%  | 11 mA | 10 mA | LSTD-1* | LSTD-1② | | 1 | |
| | | | | LSTD-1②PN10 | | 10 | |
| 24V AC/DC ±10%  | 11 mA | 10 mA | LSTD-2* | LSTD-2② | | 1 | |
| | | | | LSTD-2②PN10 | | 10 | |

Incandescent Lamps (LS Type)

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

Transformer

| Shape | Primary Voltage | Secondary Voltage | Type No. | Applicable Load |
|---|-----------------|-------------------|----------|--|
| Separate Mounting Type  | 100/110V AC | 5.5V | TWR516 | One full voltage type pilot light or illuminated switch containing LSTD-6 LED lamp (6V AC/DC) or LS-6 incandescent lamp (6V AC/DC, 1W) |
| | 200/220V AC | | TWR526 | |
| | 400/440V AC | | TWR546 | |

Safety Precautions

- Turn off the power to the HW 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 overheating and fire.

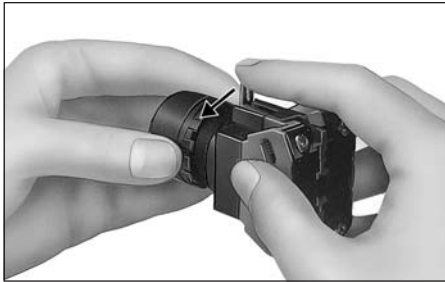
Instructions

Panel Mounting

Remove the contact block from the operator (for transformer type pilot lights, remove the transformer from the illumination unit). Remove the locking ring from the operator. Insert the operator into the panel cut-out from the front, tighten the locking ring from the back, then install the contact block to the operator.

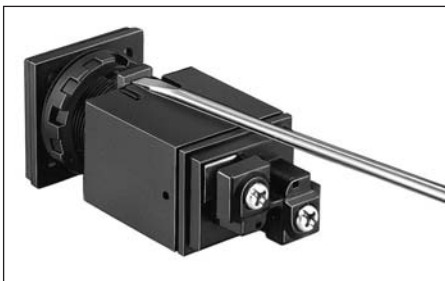
• Removing and Installing the Contact Block

1. To remove the operator from the contact block, turn the locking lever in the direction of the arrow shown below. Then the operator can be pulled out.
2. To reinstall, place the TOP markings on the operator and the contact block mounting adapter in the same direction, and insert the operator into the contact block mounting adapter. Then turn the locking lever in the opposite direction.



• Removing and Installing the Transformer Unit on Pilot Lights

1. Insert a flat screwdriver (5mm wide at the maximum) into the latch hole on the transformer unit as shown in the photo below, and disengage the latch. Then pull out the illumination unit.
2. To reinstall, place the TOP marking on the illumination unit and the latch in the same direction, and push the illumination unit into the transformer unit.



• Notes for Panel Mounting

1. When mounting the operator onto a panel, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring. Tightening torque must not exceed 2.0 N·m. Do not use pliers. Excessive tightening will damage the locking ring.
2. For the contact blocks and transformers housing LED and incandescent lamps, make sure not to press the lamps too hard, otherwise the lamp socket may be impaired.

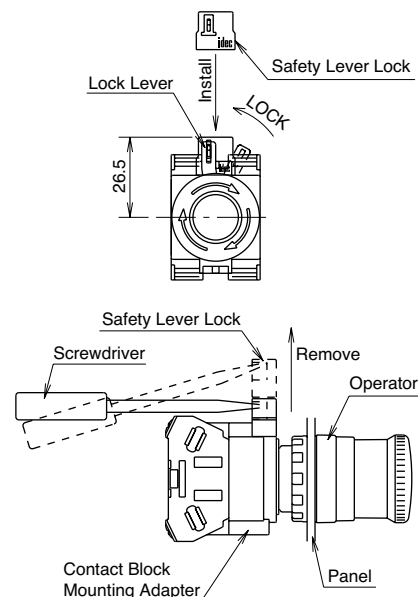
• Notes for Illuminated Pushbuttons

The full shroud cannot be removed from the extended full shroud type.

Safety Lever Lock

IDEC strongly recommends using the safety lever lock (HW9Z-LS, yellow) to prevent heavy vibration or maintenance personnel from unlocking contacts.

1. HW series can be mounted vertically with a minimum spacing of 50 mm (70 mm for mono-lever switches) but spacing should be determined to ensure easy operation.
2. Mount the control unit onto the panel, lock the lever, and strongly push in the safety lever lock to install.
3. When the spacing is narrower than the recommended value, with the lever unlocked, mount the safety lever lock and insert the contact unit to the operator. Then, lock the lever and strongly push in the safety lever lock to install.
4. To remove the safety lever lock, insert a flat screwdriver into the safety lever lock and push upwards.



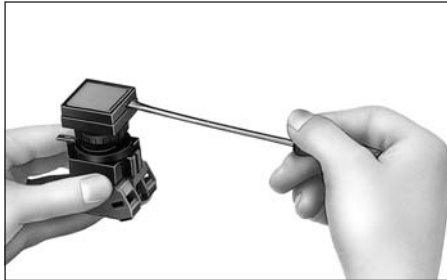
Instructions

Replacement of Lens and Marking Plate

• Removing

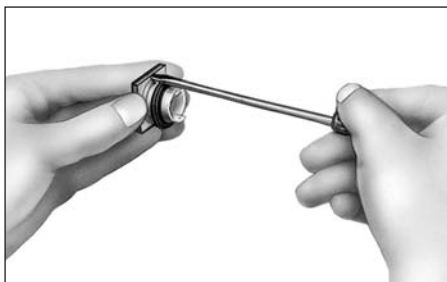
1. Remove the lens unit (color lens, marking plate, and lens holder) by inserting a screwdriver into the recess of the lens through the bezel.

[Removing the Lens Unit]



2. Remove the marking plate by pushing the lens from the rear to disengage the latches between the lens and the lens holder, using the screwdriver as shown below.

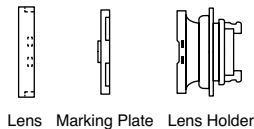
[Removing the Lens]



Note: The translucent filter in the lens holder cannot be removed because this filter is sealed to make the unit waterproof and airtight.

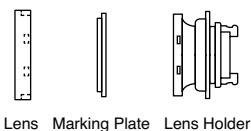
• Installing

[For Round Lens Type]



1. Place the marking plate on the lens holder with the anti-rotation projection engaged and press the lens onto the lens holder to engage the latches.
2. Place the marking plate in the correct orientation.

[For Square Lens Type]



1. Place the marking plate on the lens holder and press the lens onto the lens holder to engage the latches.
2. Place the marking plate in the correct orientation.

Marking

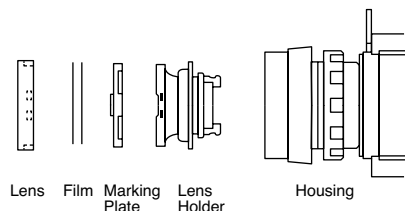
For HW series illuminated pushbuttons and pilot lights, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens for labeling purposes. Films are not supplied with illuminated pushbuttons, and may be provided by the user.

• Marking Plates and Marking Film Size

| Lens Style | Round Lens Type | Square Lens Type |
|-------------------------|---|------------------|
| Built-in Marking Plate | | |
| Applicable Marking Film | | |
| | <ul style="list-style-type: none"> • Engraving must be made on the engraving area within 0.5mm deep. • The marking plate is made of white acrylic resin. | |
| | <ul style="list-style-type: none"> • Mylar for printing labels is not included and must be provided and printed by the user. • Two 0.1mm-thick films or one 0.2mm-thick film can be installed in the lens. • Recommended marking film: Mylar | |

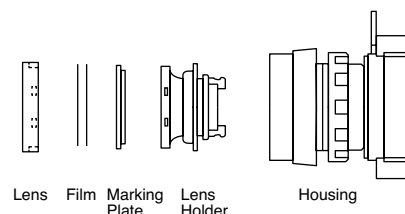
• Insertion Order of Marking Plate and Film

[Round Lens Type]



Note: Films are not included.

[Square Lens Type]



Note: Films are not included.
Place the marking plate in the correct orientation.

Instructions

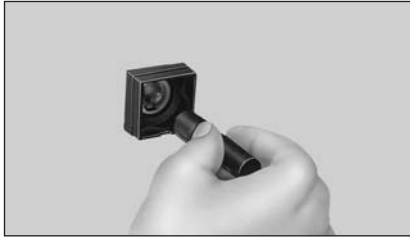
Replacement of Lamps

Lamps can be replaced by using the lamp holder tool (OR-55) from the front of the panel, or by removing the contact block from the operator unit.

• Removing the Lamps from the Front of the Panel

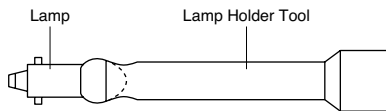
[How to Remove]

1. To remove, slip the lamp holder tool onto the lamp head lightly. Then push slightly, and turn the lamp holder tool counterclockwise.

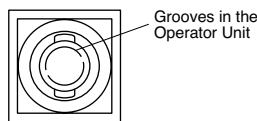


[How to Install]

1. To install, insert the lamp head into the lamp holder tool, and hold the lamp as shown in the figure below.

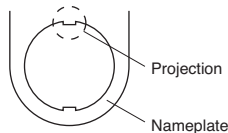


2. Place the pins on the lamp base to the grooves in the lamp socket. Insert the lamp and turn it clockwise.



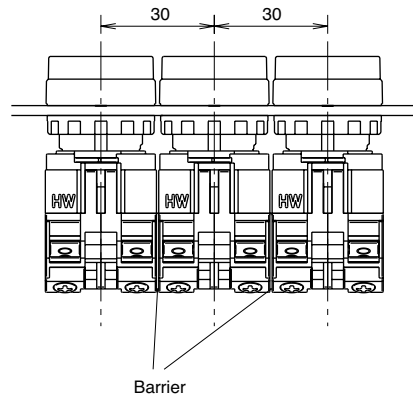
Nameplate

When anti-rotation is not required, remove the projection from the nameplate using pliers.

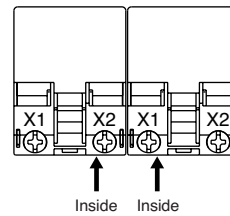


Close Mounting

When mounting the units closely in a horizontal row on 30mm 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.



When mounting transformer type illuminated units closely in a horizontal row on 30mm centers, insert solid wires or stranded wires into inside of the terminal screw on the transformer (see figure below) to prevent short circuit between adjoining terminals.



When using transformer type pilot lights closely mounted in horizontal and vertical rows on 30mm centers, keep the ambient temperature below 40°C.

Instructions

Tightening Torque for Terminal Screws

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

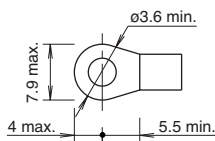
Installation of LED Illuminated Units

- When using full voltage type LED illuminated units, provide protection against electrical noise, if necessary.
- 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.
 - Use a white lens. The illumination color will be dull if a different color lens is used.

Applicable Wiring

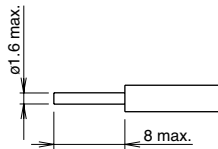
The applicable wire size is 2mm² maximum. (Solid wire ø1.6 mm max.) One or two wires can be connected.

• Applicable Crimping Terminal

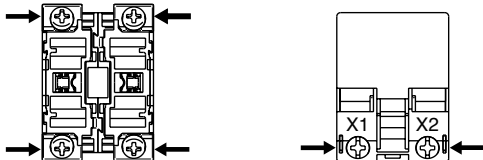


Be sure to use an insulation tube or cover on the crimping part of the crimping terminal to prevent electrical shocks.

• Solid Wire

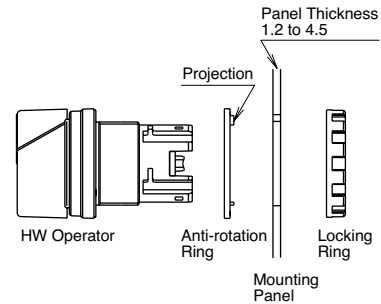


Note: Contact Block and Transformer
When connecting wires in the direction shown below, keep the insulation stripping length 6.6 mm at the maximum.



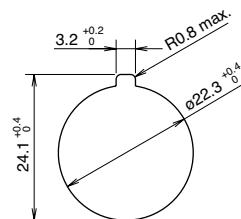
Anti-rotation Ring and Panel Cut-out

Align the TOP marking on the operator and the ▲ mark on the anti-rotation ring with the recess in the mounting panel.



• Panel Cut-out

(Complies with IEC947-5-1)



Unibody Pushlock Turn Reset

• Removing the lens

Remove the lens by inserting a screwdriver into the left or right recess of the lens. Be careful that the lens does not drop off.

• Removing the LED/incandescent lamp

Use a lens removal tool to remove the lamp. See page 46 for more information.

• Notes for Wiring

Ensure that the crimping terminal of each wiring is properly insulated.

Key Selector Switch


• Notes for using a different key


When a different number key is inserted into the key hole, it will not normally operate. However, if the key is forced to turn or is not inserted properly, it may be turned.

ø22 HW Series Control Boxes



Control Boxes

Control Box (Gray Cover)

| Shape | Contact | Type No. | Button Color | Mounted Unit (Operator) |
|---|---------|-------------|---|-------------------------|
| With Pushbutton HW1X-BM  | 1NO | HW1X-BM110① | 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 | HW1B-M1 |
| | 1NO-1NC | HW1X-BM111① | | |

| Shape | No. of Positions | Contact Code | Contact Block | | Operator Position | | | Type No. | Mounted Unit (Operator) |
|---|---------------------------|--------------|-------------------|-------|-------------------|---|---|------------|-------------------------|
| | | | Mounting Position | Type | L | C | R | | |
| With Selector Switch HW1X-S  | 90° 2-position Maintained | 10 (1NO) | 1 | NO | | — | ● | HW1X-S2T10 | HW1S-2T |
| | | | 2 | Dummy | | | | | |
| | | 11 (1NO-1NC) | 1 | NO | | — | ● | HW1X-S2T11 | |
| | | | 2 | NC | ● | — | | | |
| | 45° 3-position Maintained | 20 (2NO) | 1 | NO | ● | | | HW1X-S3T20 | HW1S-3T |
| | | | 2 | NO | | | ● | | |

Emergency Stop Control Box (Yellow Cover)

| Shape | Contact | Type No. | Button Color | Mounted Unit (Operator) |
|--|---------|-------------|--------------|-------------------------|
| With Pushlock Turn Reset Switch HW1X-BV  | 1NC | HW1X-BV401R | Red only | HW1B-V4R |
| | 1NO-1NC | HW1X-BV411R | | |
| | 2NC | HW1X-BV402R | | |
| With Pushlock Key Reset Switch HW1X-BX  | 1NC | HW1X-BX401R | Red only | HW1B-X4R |
| | 1NO-1NC | HW1X-BX411R | | |
| | 2NC | HW1X-BX402R | | |

Accessories

| Name | Type No. | Ordering Type No. | Package Quantity | Remarks |
|-----------------------|----------|-------------------|------------------|--|
| Nameplate | NSA-0 | NSA-0 | 1 | Black surface, made of aluminum 0.8 mm thick |
| | | NSA-0PN10 | 10 | |
| Cover Gasket | HW9Z-W | HW9Z-WPN05 | 5 | Made of rubber |
| Connector Locking Nut | HW9Z-G | HW9Z-GPN05 | 5 | Made of white plastic, G1/2 thread |
| | HW9Z-PG | HW9Z-PGPN05 | 5 | Made of black plastic, PG16 thread |

Ordering Information

- Unless otherwise specified, every control box is supplied with two connector locking nuts (G1/2 thread).
- When using PG16 connectors, specify as described below.

HW1X-BM110① - PG

————— Supplied with two PG16 connector locking nuts

Specifications

| | | |
|--------------------------------------|---|------------|
| Operating Temperature | -25 to +60°C (no freezing) | |
| Storage Temperature | -40 to +80°C (no freezing) | |
| Operating Humidity | 45 to 80% RH (no condensation) | |
| Rated Insulation Voltage | 600V | |
| Contact Resistance | 50 mΩ maximum (initial value) | |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) | |
| Electric Shock Protection Class | Class II (IEC 61140) | |
| Dielectric Strength | Between live and dead parts: 2,500V 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, momentary: | 5,000,000 |
| | Selector switches: | 500,000 |
| | Pushlock turn reset switches: | 500,000 |
| Electrical Life (minimum operations) | Pushbuttons, momentary: | 500,000 *1 |
| | Selector switches: | 500,000 *2 |
| | Pushlock turn reset switches: | 500,000 *3 |
| | (Switching frequency) | |
| | *1 1,800 operations/h, duty ratio 40% | |
| | *2 1,200 operations/h, duty ratio 40% | |
| | *3 900 operations/h, duty ratio 40% | |
| Conduit Port | Ø23mm knockout on top and bottom | |
| Applicable Connector | G1/2 or PG16 (plastic fitting) | |
| Applicable Wire | Solid wire: Ø1.6mm maximum Stranded wire: 2.0 mm ² maximum | |
| Mounting Screw | Two M4 screws Tightening torque 1.4 to 2.0 N·m | |
| Degree of Protection | IP65 (IEC 60529) | |

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) |

Applicable Standards and Approvals

| Safety Standards | File No. or Organization |
|------------------|-----------------------------|
| UL508 | UL Listing File No. E68961 |
| CSA C22.2 No. 14 | c-UL (File No. E68961) |
| EN60947-5-1 | TÜV PS No. B98 08 13332 398 |

Attachments

| Name | Type No. | Quantity |
|-----------------------|-----------|----------|
| Nameplate | *1 NSA-0 | 1 |
| Cover Gasket | *2 HW9Z-W | 1 |
| Connector Locking Nut | HW9Z-G | 2 |

For details, see the instruction sheet attached to the control box.

*1: The nameplate is supplied with the pushbutton and selector switch control boxes, not with the emergency stop control box.

*2: The cover gasket is supplied with the emergency stop control box, not with the pushbutton and selector switch control boxes.

Characteristics

• Contact Ratings by Utilization Category

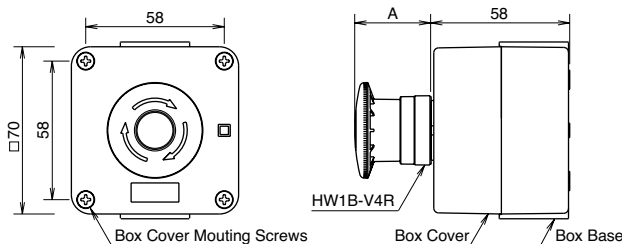
| Operational Voltage | | 24V | 48V | 50V | 110V | 220V | 440V | |
|---------------------|----------|--|-----|-----|------|------|------|----|
| Operational Current | AC | Control of resistive loads and solid state loads | | | | | | |
| | 50/60 Hz | AC-12 | 10A | — | 10A | 10A | 6A | 2A |
| | | AC-15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

Note:

The operational current represents the classification by making and breaking currents (IEC 60947-5-1).

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

Dimensions

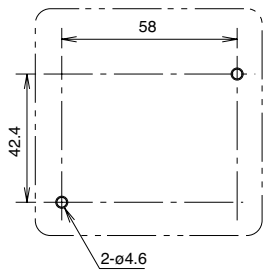


All dimensions in mm.

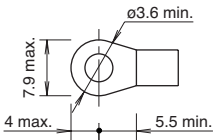
| Control Unit (Operator) | Dimension A (mm) |
|-------------------------|------------------------------|
| Pushbutton | 13.0 |
| Selector Switch | 21.0 |
| Pushlock Turn Reset | 32.0 |
| Pushlock Key Reset | 32.0 (Key inserted: 49.4) |

ø22 HW Series Control Boxes

Mounting Hole Layout

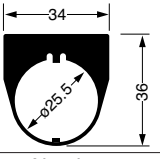


Applicable Terminal



Tightening torque: 1.0 to 1.3 N·m
A maximum of two pieces can be connected to one terminal.

Nameplate

| | |
|--|--|
| Type No. | NSA-0 |
| Color: Black, without legend Thickness: 1.2 mm (Remove the anti-rotation projection) |  |
| Material | Aluminum |

The nameplate is supplied with the pushbutton and selector switch control boxes. When not using the nameplate, use the cover gasket (HW9Z-W).

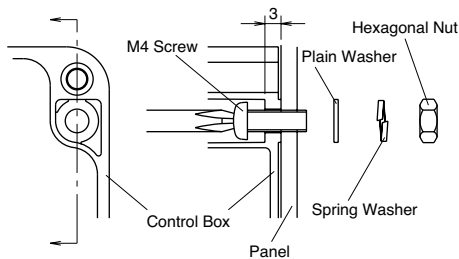
HW series nameplates (HWA*) cannot be used.

Operating Instructions

• Panel Mounting

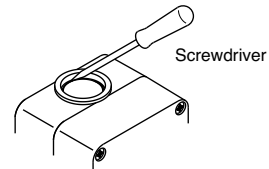
To mount the control box on a panel, use two M4 screws, plain washers and spring washers to preventing loosening. Tighten the screws to a torque of 1.4 to 2.0 N·m.

Determine the screw length in consideration of the panel thickness.



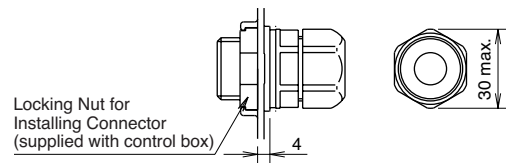
• Applicable Connector and Installation

- To install a connector, break open the conduit port on the top and bottom of the control box. Before opening the conduit port, remove the attached two connector locking nuts from the control box base. Place the tip of a screwdriver on the conduit port and strike the screwdriver end. Make sure that the conduit port is free from burrs and cracks, which may hamper waterproof characteristics.



- Use G1/2 or PG16 connectors which can mount on a panel of 4.0 mm thick minimum. To install the connector to the control box, use the attached connector locking nut and tighten the locking nut sufficiently. If the locking nut is tightened insufficiently, the waterproof characteristics are not ensured.

| Thread Size | Locking Nut Color | Locking Nut Type No. |
|-------------|-------------------|----------------------|
| G1/2 | White | HW9Z-G |
| PG16 | Black | HW9Z-PG |



- Only when using a plastic connector, Insulation Class II (IEC 61140) is satisfied.
- Install the box cover flat on the box base. When the box cover is installed diagonally, the box cover cannot be secured correctly, resulting in an operation error.

• Applicable Cables

| Applicable CVV Cable | Outside Diameter | Core Wires |
|----------------------|------------------|------------|
| 1.25 mm ² | ø14.5 mm maximum | 8 maximum |
| 2.0 mm ² | ø14.5 mm maximum | 8 maximum |

• Applicable Conduits

| Metal Conduit Outside Diameter | ø10 mm | ø12 mm | |
|--------------------------------|----------------------|------------------|--------|
| Conduit Inside Diameter | ø8.3 mm minimum | ø10.6 mm minimum | |
| IV Wire Quantity | 1.25 mm ² | 2 to 3 | 4 to 6 |
| | 2.0 mm ² | 2 to 3 | 3 to 4 |

Wire containment density: 32% to 48%

Select a cable appropriate for the connector.