# HW Series Emergency Stop Switches

## Emergency Stop Switches (with Removable Contact Block) Specifications

- Direct opening action mechanism.
  IEC60947-5-5, 5.2, IEC60947-5-1, Annex K
- Safety lock mechanism(IEC60947-5-5, 6.2)
- Degree of protection: IP65 (IEC60529)

LISTED

### Contact Ratings

| | | |
|---|---|---|
| Contact Block | Rated Insulation Voltage | 600V |
| | Rated Thermal Current | 10A |
| | Contact Ratings by Utilization Category ,IEC60947-5-1 | AC-15 (A600)<br>DC-13 |

### Operating Voltage and Current by Utilization Category

| Operating Voltage | | | 24V | 48V | 50V | 110V | 220V | 440V |
|---|---|---|---|---|---|---|---|---|
| Operating 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 | 10A | 5A | – | 2.2A | 1.1A | – |
| | | DC-13 Control of electromagnets | 5A | 2A | – | 1.1A | 0.6A | – |

### Specifications

| | |
|---|---|
| Operating Temperature | –25 to +60°C (no freezing) |
| Storage Temperature | –40 to +80°C (no freezing) |
| Operating Humidity | 45 to 85% RH (no condensation) |
| Minimum Force Required for Direct Opening Action | 50N |
| Minimum Operator Stroke Required for Direct Opening Action | 5.5 mm |
| Maximum Operator Stroke | 10 mm |
| Contact Resistance | 50 mΩ maximum (initial value) |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) |
| Dielectric Strength | Between live and dead metal parts<br>Between terminals of different poles<br>Between terminals of the same pole<br>2,500V AC, 1 minute |
| Shock Resistance | Operating extremes: 100 m/s$^2$<br>Damage limits: 1,000 m/s$^2$ |
| Vibration Resistance | Operating extremes: 5 to 55Hz, amplitude 0.5 mm<br>Damage limits: 30 Hz, amplitude 1.5 mm |
| Operating Frequency | 900 operations/h |
| Life | Mechanical: 500,000 operations minimum (push-pull: 250,000 operations)<br>Electrical: 500,000 operations minimum (push-pull: 250,000 operations) (at 900 operations/h, duty ratio 40%) |
| Protection | IP65 (IEC 60529) |
| Short-circtuit protection | 250V/10A fuse<br>(Type aM IEC60269-1/IEC60269-2) |
| Terminal Style | M3.5 screw |
| Weight (approx.) | 76g (HW1B-V322)<br>99g (HW1B-X422R)<br>54g (HW1B-Y202)<br>79g (HW1B-V422R-EMO) |

### Pushlock Turn Reset Switches

| Shape | Contact | Part No. | Button Color |
|---|---|---|---|
| ø29mm Mushroom Pushlock Turn Reset HW1B-V3  | 1NC | HW1B-V301① | Specify a button color code in place of ① in the Part No.<br><br>R: red<br>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.
- For pushlock turn reset, 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 2.

## Pushlock Key Reset Switches

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

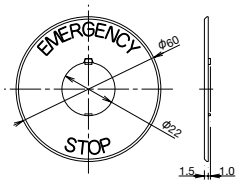
- For pushlock key reset switches, when pressed, the button is held depressed. The button is released by turning the key clockwise.
- Pushlock key reset switches with one or three contact blocks contain a dummy block.
- Two identical keys are supplied. (HW9Z-SK-231)
- Lever stopper is supplied. (HW9Z-LS)
- Other contact arrangements and gold-plated silver contacts are also available. See Part No. Development.

## Push-Pull Switches

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

- Yellow buttons cannot be used as emergency stop switches in compliance with EN standards.
- For push-pull switches, the button is maintained at either pulled or depressed position.
- Push-pull switches with one contact block contain a dummy block.
- Push-pull switches are available with one or two contact blocks.
- Lever stopper is supplied. (HW9Z-LS)

## Nameplate (for ø22 Emergency Stop Switches)

| Shape | Name | Part No. | Ordering No. | Remarks |
|---|---|---|---|---|
|  | Blank | **HWAV-0-Y** | HWAV-0-Y | HWAV-27-Y<br>Background: Yellow<br>Legend: Black<br>Applicable panel thickness:<br>0.8 to 4.5mm<br>Material: Polyamide Plastic<br>  <br>Note) Not applicable for ø60 mm mushroom buttons.<br>Legend "EMERGENCY STOP" is indicated outside a ø44mm circle.<br><br>(Panel cut-out: page 3) |
| | EMERGENCY STOP | **HWAV-27-Y** | HWAV-27-Y | |

- EMERGENCY OFF and white nameplates (blank) also available. For SEMI Emergency Off (EMO) Switches and Stop Switches, see website.

## Part No. Development

HW series Emergency Stop Switches (page 1, 2)

HW1B-V4 11 R -MAU

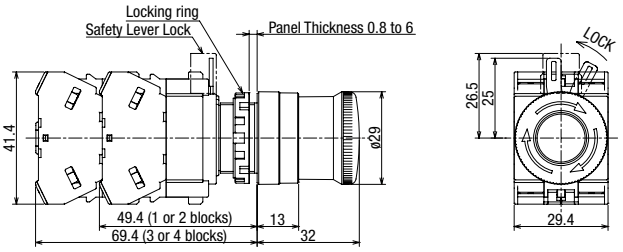
- Contact specification: MAU: Gold-plated silver contact
- Contact arrangement code:
  - 01: 1NC
  - 11: 1NO-1NC
  - 02: 2NC
  - 21: 2NO-1NC
  - 12: 1NO-2NC
  - 03: 3NC
  - 31: 3NO-1NC
  - 22: 2NO-2NC
  - 13: 1NO-3NC
  - 04: 4NC

Note
- Push-pull HW1B-Y2 can have a maximum of two contact blocks.
- For emergency stop purposes, these switches must contain at least one NC contact block.

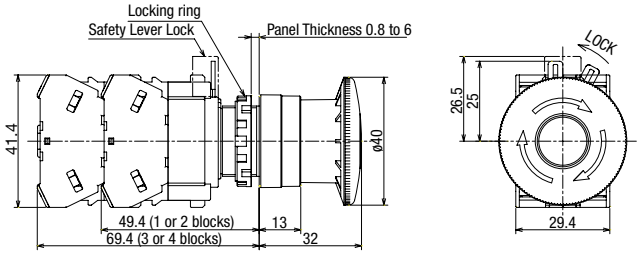
## Dimensions

(All dimensions in mm)

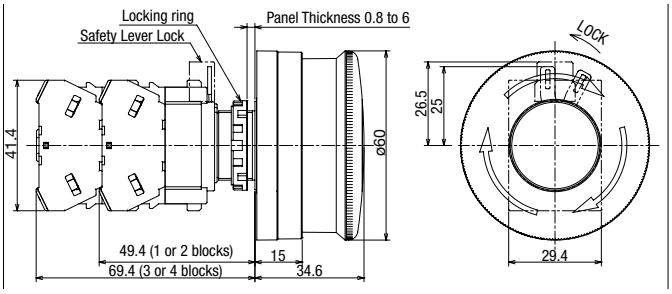
### ø29mm Pushlock Turn Reset
### HW1B-V3



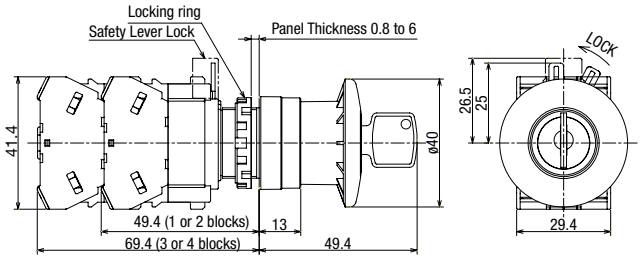

### ø40mm Pushlock Turn Reset
### HW1B-X4



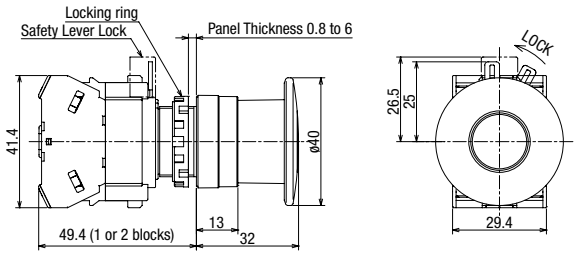

### ø60mm Pushlock Turn Reset
### HW1B-V5



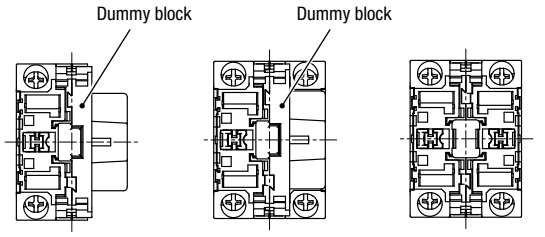

### ø40mm Pushlock Turn Reset
### HW1B-X4




### ø40mm Push-Pull
### HW1B-Y2

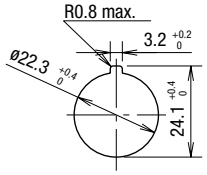



## Bottom View




- For wiring, see ø22 HW series Switches & Pilot Lights catalog
- Integrated terminal cover

## Panel Cut-Out / Mounting Hole Layout



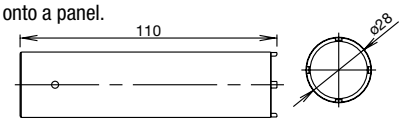
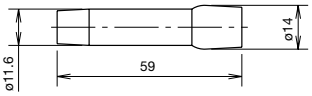
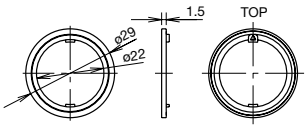
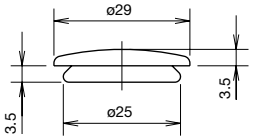
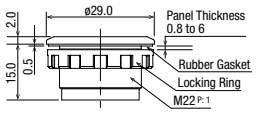
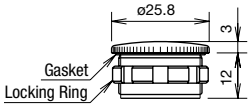
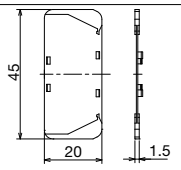

### HW1B (Minimum Mounting Centers for Emergency Stop Switches)

| | Vertical Spacing | Horizontal Spacing |
|---|---|---|
| HW1B-V3<br>HW1B-V4<br>HW1B-X4<br>HW1B-Y2 | 50mm minimum | 50mm minimum |
| HW1B-V5 | 60mm minimum | 60mm minimum |

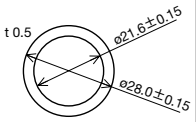
Note: When using the safety lever lock, determine the vertical spacing in consideration of convenience for installing and removing the safety lever lock.
Recommended vertical spacing: 100 mm

- 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. (see ø22 HW series Switches & Pilot Lights catalog)

## Accessories

| Shape | Material | Part No. | Ordering No. | Package Quantity | Remarks |
|---|---|---|---|---|---|
| Locking Ring Wrench  | Metal (brass) (weight: approx. 150g) | MW9Z-T1 | MW9Z-T1 | 1 | Used to tighten the locking ring when installing the HW switch onto a panel.   |
| Lamp Holder Tool  | Rubber (Black) | OR-55 | OR-55 | 1 | Used to install and remove the LED lamps.   |
| Anti-rotation ring  | <Ring> Polyamide <Gasket> Nitrile rubber | HW9Z-RL | HW9Z-RLPN10 | 10 | IP65 protection   |
| Mounting Hole Plug  | Rubber (Black) Nitrile | OB-31 | OB-31PN05 | 5 | • Used to plug the unused ø22.2 mm mounting holes.<br>• Degree of protection: IP40   |
| Mounting Hole Plug  | Polyamide | LW9Z-BP1 | LW9Z-BP1 | 1 | • Used to plug the unused ø22.2mm mounting holes.<br>• Tightening torque: 2.0 N·m<br>• Degree of protection: IP65<br>• Panel thickness: 0.8 to 6.0mm   |
| Mounting Hole Plug  | <Plug> Metal (Diecast) <Locking ring> Polyamide <Gasket> Nitrile rubber | LW9Z-BM | LW9Z-BM | 1 | • Used to plug the unused ø22.2 mm mounting holes.<br>• Tightening torque : 1.2N·m<br>• Degree of protection: IP66 (without ø3.2 anti-rotation ring)<br>• Panel thickness: 0.8 to 6.0mm   |
| Barrier  | Polyamide | HW-VU1 | HW-VU1PN10 | 10 | • Used to prevent contact between adjacent lead wires when units are mounted closely (Barriers should always be used in close mounting. )   |
| Ring Adapter  | Rubber | HW9Z-A25 | HW9Z-A25PN05 | 5 | • Used to install the HW series units into ø25 mm mounting holes. IP65<br>• Cannot be used with anti-rotation, nameplate<br>• Mounting panel thickness: 1.2 to 6.0 mm |
| Ring Adapter  | Body: Plastic Washer: Metal | HW9Z-A30 | HW9Z-A30PN02 | 2 | • Used to install the HW series units (round type) into ø30 mm mounting holes (except for HW1E.)<br>• Degree of protection: IP65<br>• Cannot be used with anti-rotation ring, nameplate fullshroud illuminated pushbuttons, pushbutton selectors, and mono-lever switches.<br>• Mounting panel thickness: 1.6 to 4.0 mm |

## Maintenance Parts

| Shape | Material | Part No. | Ordering No. | Package Quantity | Remarks |
|---|---|---|---|---|---|
| Safety Lever Lock  | Polyacetal (yellow) | **HW9Z-LS** | HW9Z-LSPN10 | 10 | A safety lever lock is supplied with a standard HW series |
| Lockig Ring  | Polyamide (black)<br>ø28.4 H5 M22P1 | **HW9Z-LN** | HW9Z-LNPN05 | 5 | Black |
| Gasket  | Nitryl rubber (black) | **HW9Z-WM** | HW9Z-WMPN10 | 10 | Black   |
| Spare Key  | Metal<br>(nickel-plated brass) | **HW9Z-SK-231** | HW9Z-SK-231PN02 | 2 | For pushlock key reset switches |

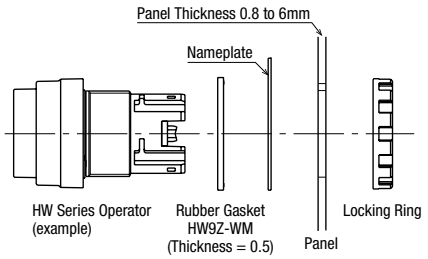
## ⚠ Safety Precautions

- Turn off the power before starting installation, removal, wiring, maintenance, and starting installation, removing, 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 terminal screws to the recommended tightening torque (see page 6). Failure to tighten terminal screws may cause overheat and fire.

## Operating Instructions

### Panel Mounting

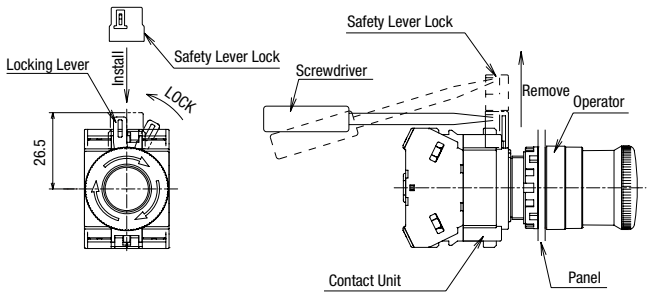
1) Remove the contact block from the operator.
2) Remove the locking ring from the operator.
3) Insert the operator into the panel cut-out from the front.
   When installing the namplate insert between the operator and panel.
4) Tighten the locking ring from the back to install the contact block to the operator.




Mounting panel thickness is reduced by 1.5 mm when using a nameplate.

### Removing the Contact Block

1) Remove the safety lever lock (yellow) from the lock lever by inserting a flat screwdriver into the safety lever lock and push upwards.




2) Remove the operator from the contact block by turning the locking lever in the direction of the arrow shown below. Then the operator can be pulled out.

3) To reinstall, place the TOP marking on the operator and the lock lever in the same direction, and insert the operator into the contact block mounting adapter. Then turn the locking lever in the opposite direction.
4) Install the safety lever lock (yellow) on the lock lever. The safety lever lock cannot be installed when the lock lever is not upright.

### Safety Lever Lock

IDEC strongly recommends using the safety lever lock (HW9Z-LS, yellow) to ensure that lock lever is locked, or to prevent maintenance personnel from unlocking contacts during wiring.

#### How to install

Mount the HW series onto the panel, lock the lever, and push in the safety lever lock.

#### Spacing in Vertical Direction

HW series can be installed with a minimum of 50 mm spacing in vertical direction. Be sure to take the space required for installing/removing the safety lever lock into consideration. When the spacing is narrower than the recommended value, install the HW series units in the order of low to high. When removing, do so in the opposite direction.

### Notes for Panel Mounting

#### Locking ring wrench recommended torque

Tighten the bezel to a tightening torque of 2.0 N·m.

#### Locking ring wrench

Locking ring wrench (MW9Z-T1) can be used to tighten the bezel. Do not use pliers. Excessive tightening will damage the locking ring.

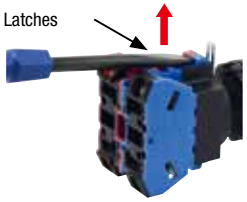
Locking ring wrench (MW9Z-T1)

### Panel Thickness

HW series can be mounted on a panel with thickness of 0.8 to 6.0 mm. Take the thickness of nameplate and/or switch guard into consideration.

#### Contact Blocks

Insert a flat screwdriver (4 to 6 mm) into the snap-fit latches of the contact block or full voltage adapter and lift to remove.




- Make sure to lift both latches. Contact blocks cannot be removed by lifting one latch only.
- Do not apply excessive force to the latches, otherwise damage maybe caused.

### Recommended Tightening Torque Number of Wires

| Unit | Wire | | Number of Wires | Recommended Tightening Torque | Terminal Screw |
|---|---|---|---|---|---|
| HW-U Contact Block | Crimping Terminal | | 2 | 1.0 to 1.3 | M3.5 |
| | Solid Wire | ø0.5 to 1.6 mm (AWG14 to 22) | 2 | 1.0 to 1.3 | |
| | | ø1.7 to 2.0 mm (AWG12) | 1 | 1.2 to 1.3 | |
| | Stranded Wire | 0.3 to 2.0 $mm^2$ (AWG14 to 22) | 2 | 1.0 to 1.3 | |
| | | 2.1 to 3.5 $mm^2$ (AWG12) | 1 | 1.2 to 1.3 | |