Think Automation and beyond...

ø22mm
HW Series Control Units

IDEC CORPORATION

(14/05/22)

ø22 HW Series Selection Guide

Function	Emergency Stop Switch (Unibody)		Emergency Stop Switch (with Removable Contact Block)		
Category	Pushlock Turn Reset				
	ø40mm Mushroom	ø40mm Mushroom (Illuminated)	ø29mm Mushroom	ø40mm Mushroom	ø60mm Mushroom
Shape					
Model	**HW1E-BV4**	**HW1E-LV4**	**HW1B-V3**	**HW1B-V4**	**HW1B-V5**
Page	4	4	6	6	6

Function	Emergency Stop Switch		
Category	Pushlock Key Reset	Push Pull	Pushlock Turn Reset
	ø40mm Mushroom	ø40mm Mushroom	ø40mm EMO
Shape			
Model	**HW1B-X4**	**HW1B-Y2**	**HW1B-V**R-EMO**
Page	7	7	12

Function	Pushbutton				
Category	Flush	Extended	ø29mm Mushroom	ø40mm Mushroom	ø60mm Mushroom
	Momentary/Maintained				Momentary
Shape					
Model	**HW1B-M1** **HW1B-A1**	**HW1B-M2** **HW1B-A2**	**HW1B-M3** **HW1B-A3**	**HW1B-M4** **HW1B-A4**	**HW1B-M5**
Page	24	24	24	24	24

Function	Pushbutton				
Category	Square Flush	Square Extended	Round Flush w/Square Bezel	Round Extended w/Square Bezel	ø29mm Mushroom w/Square Bezel
	Momentary/Maintained				
Shape					
Model	**HW2B-M1** **HW2B-A1**	**HW2B-M2** **HW2B-A2**	**HW3B-M1** **HW3B-A1**	**HW3B-M2** **HW3B-A2**	**HW3B-M3** **HW3B-A3**
Page	25	25	26	26	26

Function	Pilot Light (LED/Incandescent)			
Category	Flush (Marking)	Extended (Dome)	Square Flush (Marking)	Jumbo Dome
Shape				
Model	**HW1P-1**	**HW1P-2**	**HW2P-1**	**HW1P-5**
Page	27	27	27	27

Function	Illuminated Pushbutton (LED/Incandescent)				
Category	Flush	Extended	Extended w/Full Shroud	Square Flush	Flush w/Square Bezel
	Momentary/Maintained				
Shape					
Model	**HW1L-M1 HW1L-A1**	**HW1L-M2 HW1L-A2**	**HW1L-MF2 HW1L-AF2**	**HW2L-M1 HW2L-A1**	**HW3L-M1 HW3L-A1**
Page	29	30	31	32	33

Function	Illuminated Pushbutton (LED/Incandescent)			Dual Pushbutton (w/o Pilot Light)	
Category	ø29mm Mushroom	ø29mm Mushroom w/ Square Bezel	ø40mm Mushroom	Flush (top) Flush (bottom)	Flush (top) Extended (bottom)
	Momentary/Maintained				
Shape					
Model	**HW1L-M3 HW1L-A3**	**HW3L-M3 HW3L-A3**	**HW1L-M4 HW1L-A4**	**HW7D-B11 HW7D-B21**	**HW7D-B12 HW7D-B22**
Page	34	35	36	38	38

Function	Dual Pushbutton (LED/Incandescent)		Selector Switch		
Category	Flush (top) Flush (bottom)	Flush (top) Extended (bottom)	Selector	Pin Tumber Key	Disc Tumbler Key
	Momentary/Maintained				
Shape					
Model	**HW7D-L11 HW7D-L21**	**HW7D-L12 HW7D-L22**	**HW1S**	**HW1K-□P**	**HW1K**
Page	39	39	43	44	46

Function	Illuminated Selector (LED/Incandescent)		Pushbutton Selector	Mono-Lever Switch	
Category	Knob Operator	Lever Operator		Standard	Interlocking
Shape					
Model	**HW1F**	**HW1F-□L**	**HW1R**	**HW1M**	**HW1M-L**
Page	48	48	56	57	57

Emergency Stop Switches (Unibody) Specifications

Standards

Applicable Standards	Mark	File No. or Organization
UL508 CSA C22.2 No. 14	c UL us LISTED	UL/c-UL Listing File No. E55996
EN60947-5-5		DEMKO approved
	CE	EU Low Voltage Directive
GB14048.5	CCC	CCC No.2004010305132908

Specifications

Operating Temperature	–25 to +60°C (no freezing) Illuminated units: –25 to +55°C
Storage Temperature	–40 to +80°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)
Operating Force	50N
Minimum Force 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: Contacts: 2,500V AC, 1 minute Illuminated parts: 1,000V AC, 1 minute
Vibration Resistance	Damage limits: 30 Hz, amplitude 1.5 mm Operating extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage limits: 1,000 m/s^2 Operating extremes: 100 m/s^2
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
Weight	49g (HW1E-BV402R) 56g (HW1E-LV402Q4R)

Contact Ratings

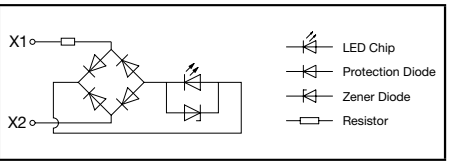
Rated Insulation Voltage (Ui)			250V		
Rated Thermal Current (Ith)			10A		
Rated Operational Voltage (Ue)			24V	110V	220V
Rated Operational Current	AC 50/60 Hz	Resistive Load (AC-12)	6A	3A	3A
		Inductive Load (AC-15)	6A	3A	3A
	DC	Resistive Load (DC-12)	6A	2A	1A
		Inductive Load (DC-13)	1.5A	0.3A	0.15A

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

LED Lamp Ratings

Rated Operating Voltage of Unit	LED Lamp		
	Part No.	Rated Voltage	Rated Current
6V AC/DC	**LSTD-6R**	6V AC/DC ±10%	7 mA
12V AC/DC	**LSTD-1R**	12V AC/DC ±10%	10 mA
24V AC/DC	**LSTD-2R**	24V AC/DC ±10%	10 mA

LED Internal Circuit

Internal Circuit	

Incandescent Lamp Ratings

Rated Operating Voltage of Unit	LED Lamp	
	Part No.	Wattage
6V AC/DC	**LS-6**	1W (6.3V)
12V AC/DC	**LS-8**	1W (18V)
24V AC/DC	**LS-3**	1W (30V)

Pushlock Turn Reset Switches (Unibody)

Shape	Contact	Part No.	Button Color
ø40mm Mushroom Pushlock Turn Reset HW1E-BV4 	1NO-1NC	**HW1E-BV4F11R**	Red only
	2NC	**HW1E-BV4F02R**	

- When pressed, the button is held depressed. The button is released by turning clockwise.
- Finger-safe (IP20) terminal.

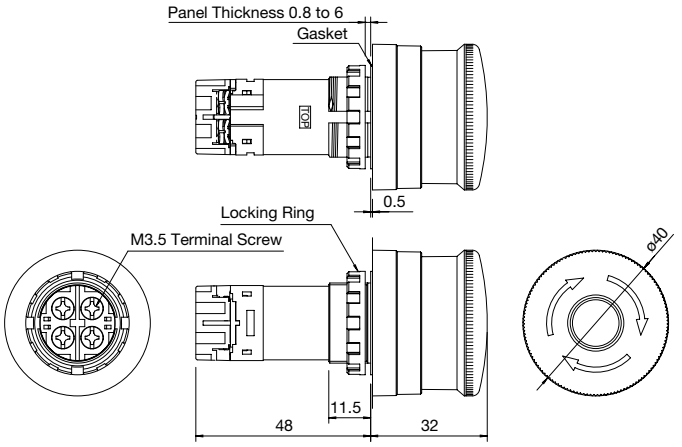
Illuminated Pushlock Turn Reset Switches (Unibody)

Shape	Contact	Part No.	Button Color
ø40mm Mushroom Pushlock Turn Reset HW1E-LV4 	1NO-1NC	**HW1E-LV4F11Q0R**	Red only
	2NC	**HW1E-LV4F02Q0R**	

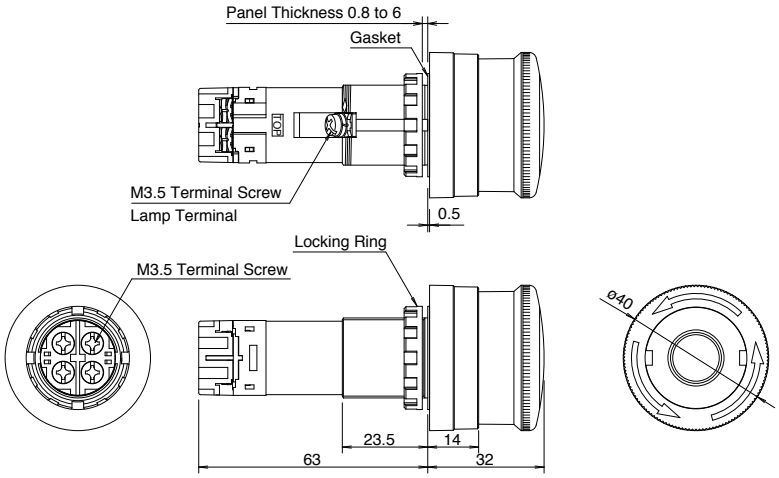
- When pressed, the button is held depressed. The button is released by turning clockwise.
- The illuminated pushlock turn reset switch does not contain a lamp. Order LED or incandescent lamps separately. For lamps, see page 10.
- Finger-safe (IP20) terminal.

Dimensions

HW1E-BV4

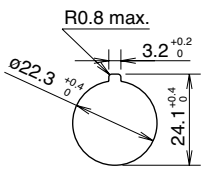


HW1E-LV4



All dimensions in mm.

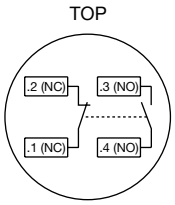
Mounting Hole



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

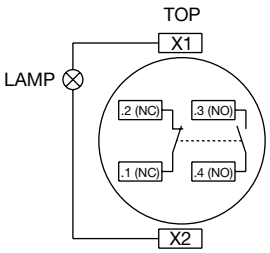
Terminal Arrangement (Bottom View)

HW1E-BV4



(1NO-1NC)

HW1E-LV4



(1NO-1NC)

Emergency Stop Switches (w/Removable Contact Block) Specifications

Standards

Applicable Standards	Mark	File No. or Organization
UL508		UL Listing File No. E68961
CSA C22.2 No. 14		File No. LR92374
EN60947-5-5		TÜV Rheinland
		EU Low Voltage Directive
GB14048.5		CCC No.2005103050145656

Contact Ratings

Contact Block	Rated Insulation Voltage	600V
	Rated Thermal 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	—

Specifications

Operating Temperature	–25 to +60°C (no freezing)
Storage Temperature	–40 to +80°C
Operating Humidity	45 to 85% RH (no condensation)
Operating Force	50N
Minimum Force 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 Between terminals of different poles Between terminals of the same pole 2,500V AC, 1 minute
Vibration Resistance	Damage limits: 30 Hz, amplitude 1.5 mm Operating extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage limits: 1,000 m/s^2 Operating extremes: 100 m/s^2
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 (IEC 60529)
Terminal Style	M3.5 screw
Weight	76g (HW1B-V322) 99g (HW1B-X422R) 54g (HW1B-Y202) 79g (HW1B-V422R-EMO)

Pushlock Turn Reset Switches (with Removable Contact Block)

Shape	Contact	Part No.	Button Color
ø29mm Mushroom Pushlock Turn Reset HW1B-V3 	1NC	**HW1B-V3⑥01①**	Specify a button color code in place of ① in the Part No. R: red Y: yellow
	1NO-1NC	**HW1B-V3⑥11①**	
	2NC	**HW1B-V3⑥02①**	
	2NO-2NC	**HW1B-V3⑥22①**	
ø40mm Mushroom Pushlock Turn Reset HW1B-V4 	1NC	**HW1B-V4⑥01①**	
	1NO-1NC	**HW1B-V4⑥11①**	
	2NC	**HW1B-V4⑥02①**	
	2NO-2NC	**HW1B-V4⑥22①**	
ø60mm Mushroom Pushlock Turn Reset HW1B-V5 	1NC	**HW1B-V5⑥01①**	
	1NO-1NC	**HW1B-V5⑥11①**	
	2NC	**HW1B-V5⑥02①**	
	2NO-2NC	**HW1B-V5⑥22①**	

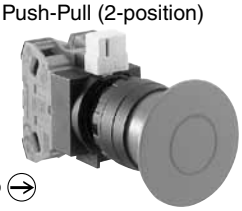
- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- Yellow buttons cannot be used as emergency stop switches in compliance with EN standards.
- When pressed, the button is held depressed. The button is released by turning clockwise.
- Pushlock 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.

Pushlock Key Reset Switches (with Removable Contact Block)

Shape	Contact	Part No.	Button Color
ø40mm Mushroom Pushlock Key Reset HW1B-X4 	1NC	**HW1B-X4⑥01R**	Red only
	1NO-1NC	**HW1B-X4⑥11R**	
	2NC	**HW1B-X4⑥02R**	
	2NO-2NC	**HW1B-X4⑥22R**	

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- 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.
- Safety lever lock HW9Z-LS is supplied with the switch.
- Other contact arrangements and gold-plated silver contacts are also available. See Part No. Development.

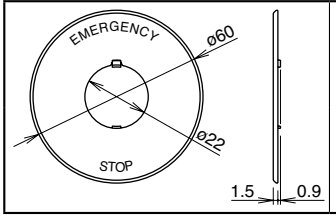
Push-Pull Switches (with Removable Contact Block)

Shape	Contact	Part No.	Button Color
ø40mm Mushroom Push-Pull (2-position) HW1B-Y2 	1NC	**HW1B-Y2⑥01①**	Specify a button color code in place of ① in the Part No. R: red Y: yellow
	1NO-1NC	**HW1B-Y2⑥11①**	
	2NC	**HW1B-Y2⑥02①**	

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- 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 (for ø22 Emergency Stop Switches)

Shape	Name	Part No.	Legend	Package Quantity	Remarks
	Nameplate for Emergency Stop Switch (See page 8 for panel cut-out.)	**HWAV-0-Y**	(blank)	1	Background: Yellow Legend: Black Applicable panel thickness: 0.8 to 4.5 mm Material: Polyamide Not applicable for ø60 mm mushroom buttons. Legend "EMERGENCY STOP" is indicated outside a ø44mm circle.
		HWAV-27-Y	EMERGENCY STOP		

- EMERGENCY OFF and white nameplates (blank) also available. See page 16 and 17 for details.

Part No. Development

Emergency Stop Switches (w/Removable Contact Block)

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

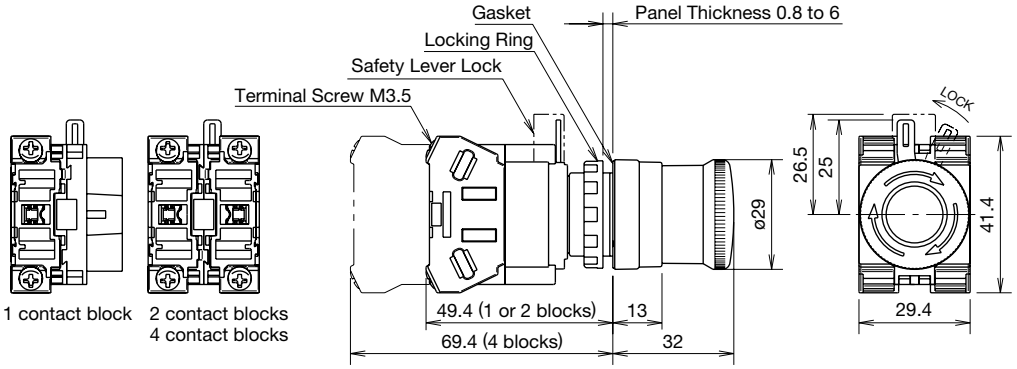
HW1B-V4 F 11 R -MAU

- Optional contact
  - MAU: Gold-plated silver contact
- Button/lens color code
- Contact arrangement code
  - 01: 1NC
  - 02: 2NC
  - 12: 1NO-2NC
  - 31: 3NO-1NC
  - 13: 1NO-3NC
  - 11: 1NO-1NC
  - 21: 2NO-1NC
  - 03: 3NC
  - 22: 2NO-2NC
  - 04: 4NC
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw

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

Dimensions

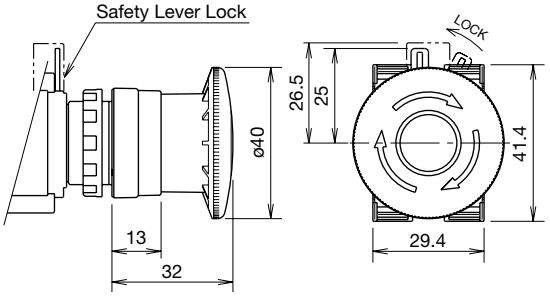
ø29mm Pushlock Turn Reset
HW1B-V3



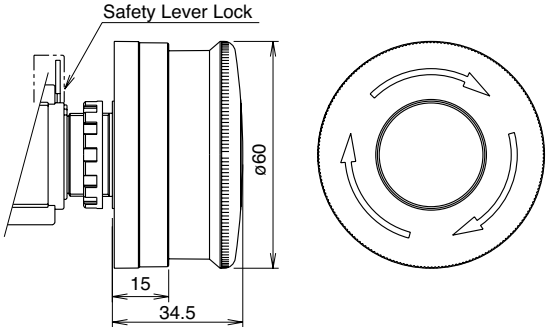
The above figure illustrates spring-up screw terminals.
The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

All dimensions in mm.

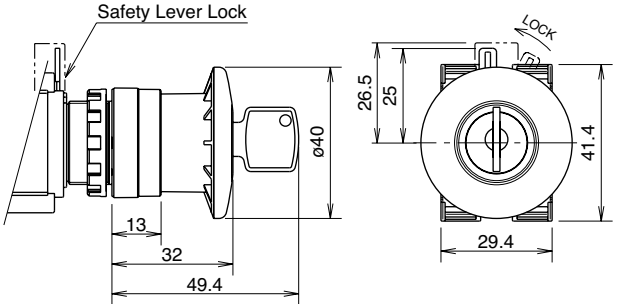
ø40mm Pushlock Turn Reset
HW1B-V4



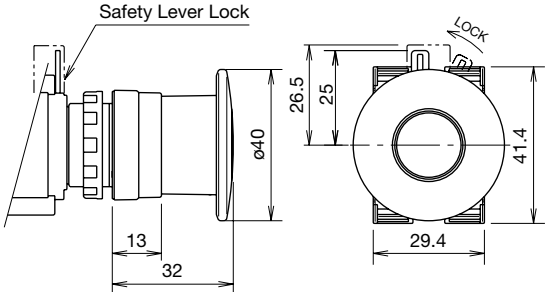
ø60mm Pushlock Turn Reset
HW1B-V5



ø40mm Pushlock Key Reset
HW1B-X4

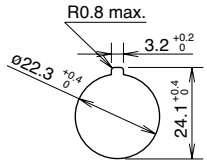


ø40mm Push-Pull
HW1B-Y2



All dimensions in mm.

Panel Cut-Out



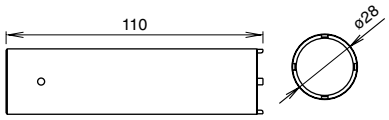
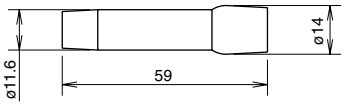
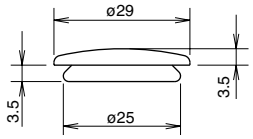
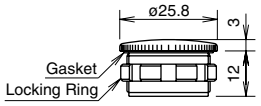
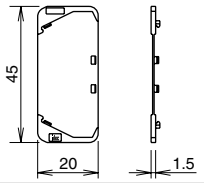
The minimum mounting centers shown below are applicable to emergency stop switches with one layer of contact blocks (two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers in consideration of convenience for wiring.

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

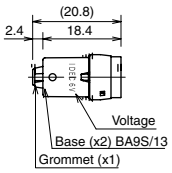
Accessories

Shape	Material	Part No.	Ordering No.	Package Quantity	Description & Dimensions (mm)
Locking Ring Wrench 	Metal (weight: approx. 150g)	**MW9Z-T1**	**MW9Z-T1**	1	• 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. 
Lamp Holder Tool 	Rubber	**OR-55**	**OR-55**	1	• Used to install and remove the LED/incandescent lamps. 
Rubber Mounting Hole Plug 	Rubber (black)	**OB-31**	**OB-31PN05**	5	• Used to plug the unused ø22.2mm mounting holes. 
Metallic Mounting Hole Plug 	Diecast Metal (locking ring: plastic)	**LW9Z-BM**	**LW9Z-BM**	1	• 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 
Barrier 	Plastic	**HW-VG1**	**HW-VG1PN10**	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/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
Ring Adapter 	Adapter: Plastic Washer: Metal	**HW9Z-A30**	**HW9Z-A30PN02**	2	• 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
Ring Adapter 	Adapter: Rubber Washer: Metal	**HW9Z-A30E**	**HW9Z-A30EPN02**	2	• 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

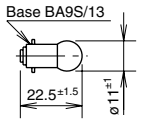
Maintenance Parts

Shape	Material	Part No.	Ordering No.	Package Quantity	Description & Dimensions (mm)
Safety Lever Lock 	Plastic	**HW9Z-LS**	**HW9Z-LSPN10**	10	• Yellow • 1 piece included as standard
Locking Ring 	Polyamide	**HW9Z-LN**	**HW9Z-LNPN05**	5	• Black
Gasket 	Nitryl rubber	**HW9Z-WM**	**HW9Z-WMPN10**	10	
Spare Key 	Metal Brass, nickel-plated	**HW9Z-SK-231**	**HW9Z-SK-231PN02**	2	• For pushlock key reset switches

LED Lamps (LSTD)

Shape	Rated Operating Voltage	Current Draw		Part No.	Ordering No.	Package Quantity	Base	Dimensions (mm)
		AC	DC					
	6V AC/DC	17 mA (A, R, W, Y) 8 mA (G, PW, S)	14 mA (A, R, W, Y) 5.5 mA (G, PW, S)	**LSTD-6R**	**LSTD-6R**	1	BA9S/13	
					LSTD-6RPN10	10		
	12V AC/DC	11 mA	10 mA	**LSTD-1R**	**LSTD-1R**	1		
					LSTD-1RPN10	10		
	24V AC/DC	11 mA	10 mA	**LSTD-2R**	**LSTD-2R**	1		
					LSTD-2RPN10	10		

Incandescent Lamps (LS)

Shape	Rated Operating Voltage	Lamp Ratings	Part No.	Package Quantity	Dimensions (mm)
	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**		

⚠ 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 overheat and fire.

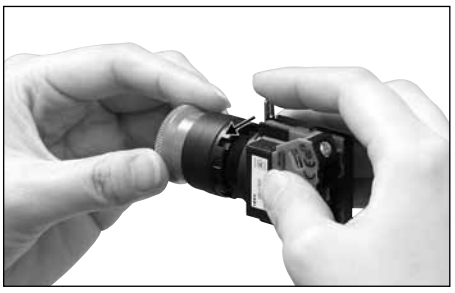
Instructions

Panel Mounting

Remove the contact block from the operator (for transformer 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.



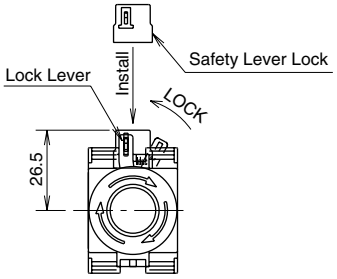
Notes for Panel Mounting

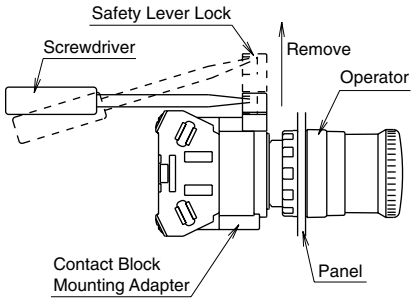
When mounting the operator onto a panel, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring. Tightening torque must not exceed 2.0 N·m. Do not use pliers. Excessive tightening will damage the locking ring.

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.





SEMI Emergency Off (EMO) Switches

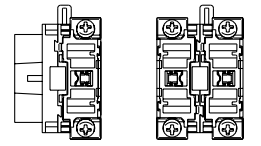
HW SEMI Emergency Off (EMO) Switches

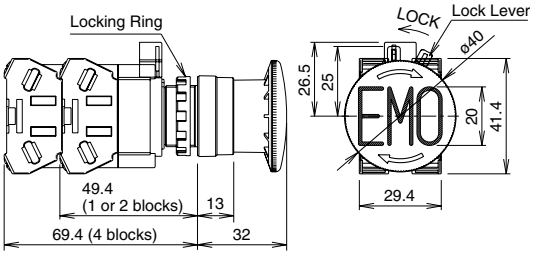
Package Quantity: 1

Shape	Contact	Part No.	Button Color
ø40mm Mushroom 	1NC	**HW1B-V401R-EMO**	Red only
	1NO-1NC	**HW1B-V411R-EMO**	
	2NC	**HW1B-V402R-EMO**	
	2NO-2NC	**HW1B-V422R-EMO**	

Dimensions

ø22mm HW Series EMO Switch



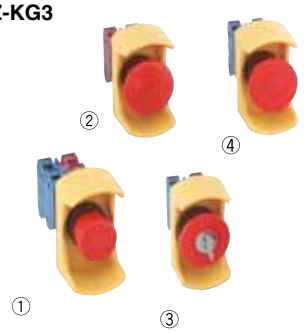


The combination of IDEC's EMO switch guards and emergency stop switches are approved by TÜV Rheinland for compliance with SEMI S2 standards.

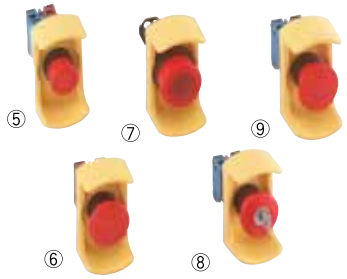
SEMI S2-compliant Combinations

EMO Switch Guard	Applicable Emergency Stop Switches
HW9Z-KG3	**HW1B-V3** (①), **HW1B-V4** (②), **HW1B-X4** (③), **HW1B-Y2** (④)
HW9Z-KG4	**HW1B-V3** (⑤), **HW1B-V4** (⑥), **HW1E** (⑦), **HW1B-X4** (⑧), **HW1B-Y2** (⑨)
HW9Z-KG5	**HW1B-V3** (⑩), **HW1B-V4** (⑪), **HW1E** (⑫), **HW1B-X4** (⑬), **HW1B-Y2** (⑭)

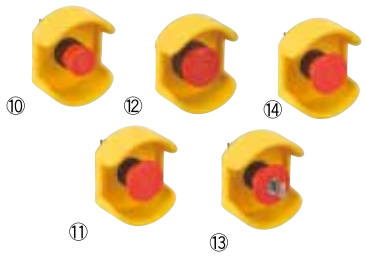
HW9Z-KG3



HW9Z-KG4



HW9Z-KG4



Note:
EMO switch guards have been designed for applications in semiconductor manufacturing equipment only. Do not use EMO switch guards with emergency stop switches which are installed on machine tools or food processing machines. (Machinery Directive of the European Commission and IEC 60204-1 require that emergency stop switches be installed in a readily accessible area, and the usage of switch guards is not permitted.)

About SEMI

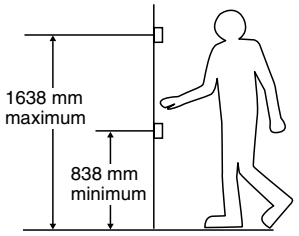
SEMI is an international industry association whose member companies produce materials, equipment, and related technology for manufacturing semiconductor, flat panel display (FPD), and micro-electromechanical systems (MEMS) products. The SEMI safety guideline was published for the semiconductor industry and it is observed with the same importance as standards.

SEMI S2-0706, 12.1 describes as follows; “The equipment should have an ‘emergency off’ (EMO) circuit. The EMO actuator (e.g., button), when activated, should place the equipment into a safe shutdown condition, without generating any additional hazard to personnel or the facility.” Because the semiconductor environment involves solvents and chemicals in many cases, some of which are toxic, interrupting the power source may cause secondary accidents. SEMI safety guideline requires the installation of an emergency off switch which disconnects only the part responsible for the hazardous situation, and maintains the functions of safety-related devices (e.g., smoke detectors, gas/water leak detectors, pressure measurement devices, etc.).

Emergency off buttons should be located or guarded to minimize accidental activation (SEMI S2-0706, 12.5.1). The emergency off button should be red and mushroom shaped. A yellow background for the EMO should be provided (SEMI S2-0706, 12.3).

- Location of EMO switches on semiconductor manufacturing equipment
  Acceptance criteria: controls should not be located above 1638 mm (64.5 in.) or below 838 mm (33 in.) (SEMI S8-0705, 9.1.2).
- No operation or regularly scheduled maintenance location should require more than 3 m (10 feet) travel to an EMO button (S2-0706, 12.5.2).

(3 m maximum) (3 m maximum)
EMO button ◄——► **Operator** ◄——► **EMO button**

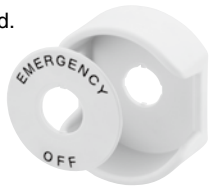


SEMI EMO Switch Guards

SEMI S2 Compliant Switch Guards

Switch Guards

Package Quantity: 1

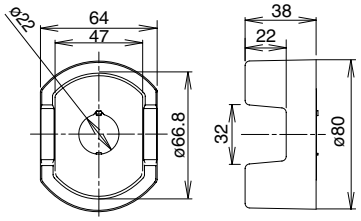
Series	Description & Shape	Part No.	Applicable Switches	Remarks
ø22mm HW Series	ø22 mm EMO Switch Guard 	**HW9Z-KG1**	**HW1B-V3** **HW1B-V4** **HW1B-X4** **HW1B-Y2** **HW1E-BV4** **HW1E-LV4**	• SEMI S2-0703, 12.5.1 compliant. • Widely used switch guard in many applications.
	ø22 mm EMO Switch Guard 	**HW9Z-KG2**	**HW1B-V3** **HW1B-V4** **HW1B-X4** **HW1B-Y2** **HW1E-BV4** **HW1E-LV4**	• SEMI S2-0703, 12.5.1 compliant. • SEMATECH Application Guide for SEMI S2-93, 12.4. compliant. • The round shape is effective to prevent inadvertent operation from any direction.
	ø22 mm EMO Switch Guard 	**HW9Z-KG3**	**HW1B-V3** **HW1B-V4** **HW1B-X4** **HW1B-Y2**	• SEMI S2 compliant (The combination of IDEC's emergency stop switches and EMO switch guards are approved by TÜV Rheinland for compliance with SEMI S2 standard.) • The smallest switch guard for ø22 series switches. • Can be installed on FB control boxes.
	ø22 mm EMO Switch Guard 	**HW9Z-KG4**∗	**HW1B-V3** **HW1B-V4** **HW1B-X4** **HW1B-Y2** **HW1E-BV4** **HW1E-LV4**	• SEMI S2 compliant (The combination of IDEC's emergency stop switches and EMO switch guards are approved by TÜV Rheinland for compliance with SEMI S2 standard.) • SEMATECH Application Guide for SEMI S2-93, 12.4. compliant. • Narrower than HW9ZKG5. Saves more space. • Can be installed on FB control boxes. • Available in white.
	ø22 mm EMO Switch Guard 	**HW9Z-KG5**∗	**HW1B-V3** **HW1B-V4** **HW1B-X4** **XW1B-Y2** **HW1E-BV4** **HW1E-LV4**	• SEMI S2 compliant (The combination of IDEC's emergency stop switches and EMO switch guards are approved by TÜV Rheinland for compliance with SEMI S2 standard.) • SEMATECH Application Guide for SEMI S2-93, 12.4. compliant. • A nameplate can be installed. • Available in white. 

• Specify a color code in place of *. Blank: yellow (Munsell 2.5Y8/10 or equivalent), -W: white (Munsell N9.5)
• Material: polyamide (PA6), degree of protection: IP65 (IEC 60529)

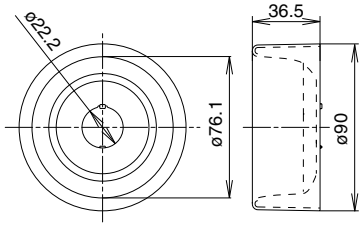
SEMI S2 Compliant Switch Guards

Dimensions

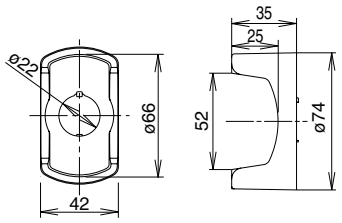
HW9Z-KG1



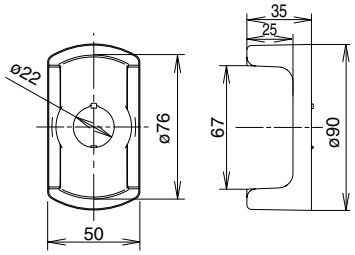
HW9Z-KG2



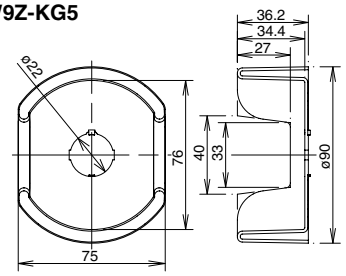
HW9Z-KG3



HW9Z-KG4



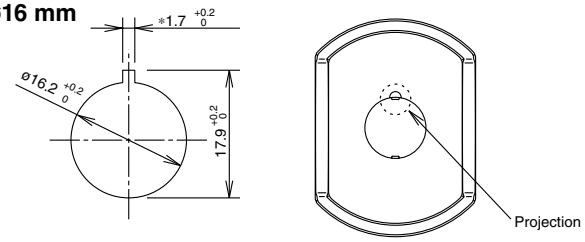
HW9Z-KG5



- Panel thickness: 1.2 to 4.0 mm
  (1.2 to 2.6 mm when using an HWAV nameplate)

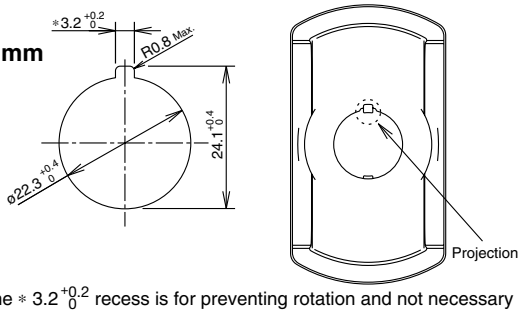
Panel Cut-out

ø16 mm



The ∗ 1.7 $^{+0.2}_{0}$ recess is for preventing rotation and not necessary when anti-rotation is not used.

ø22 mm

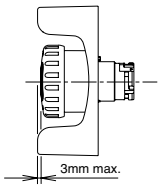


The ∗ 3.2 $^{+0.2}_{0}$ recess is for preventing rotation and not necessary when anti-rotation is not used.

When anti-rotation is not required or when the panel cut-out does not have anti-rotation recess, remove the projection using pliers.

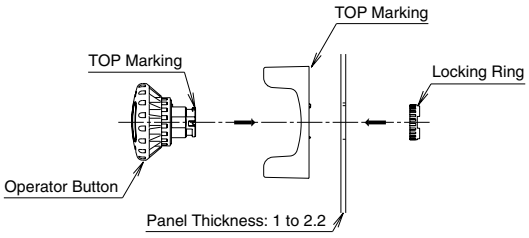
All dimensions in mm.

Note: The height of the applicable switch and guard will be 3 mm or less as shown in the diagram on the right.



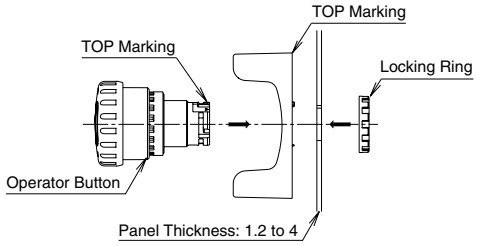
Installation

ø16 mm



To tighten the locking ring, use locking ring wrench MT-100 and tighten to a torque of 0.88 N·m.

ø22 mm

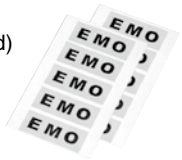


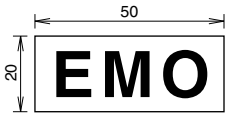
To tighten the locking ring, use locking ring wrench MW9Z-T1 and tighten to a torque of 2.0 N·m.

All dimensions in mm.

EMO Sticker

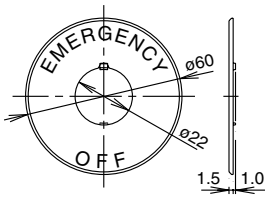
Part No.: HW9Z-EMO-NPP
Color: Yellow (red legend)
Package Quantity: 10





Nameplate (for ø22 mm Emergency Stop Switches)

Name	Legend	Part No.	Remarks
For ø40mm Mushroom	EMERGENCY OFF	**HWAV-74-Y**	• Nameplate color: yellow • Legend color: black



Stop Switches

ø22mm HW series Stop Switches

Package quantity: 1

Description & Shape	Contact Configuration	Part No.		
		ø29mm Mushroom	ø40mm Mushroom	ø60mm Jumbo Mushroom
Pushlock Turn Reset (Photo: ø29mm Mushroom) 	1NC	**HW1B-V301Y**	**HW1B-V401Y**	**HW1B-V501Y**
	1NO-1NC	**HW1B-V311Y**	**HW1B-V411Y**	**HW1B-V511Y**
	2NC	**HW1B-V302Y**	**HW1B-V402Y**	**HW1B-V502Y**
	2NO-2NC	**HW1B-V322Y**	**HW1B-V422Y**	**HW1B-V522Y**
Push-Pull ø40mm Mushroom (2-position) 	1NC	—	**HW1B-Y201Y**	—
	1NO-1NC	—	**HW1B-Y211Y**	—
	2NC	—	**HW1B-Y202Y**	—

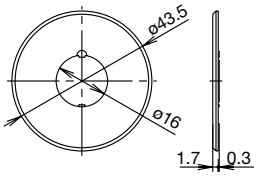
- Pushlock turn reset is locked when pressed, and reset when turned clockwise.
- Push-pull is a 2-position switch which is maintained in both pressed and reset (pull) positions.
- See page 6 for specifications and instructions.

Nameplates (White)

Shape	Description	Part No.	Material	Plate Color	Legend
For ø16mm Series 	For ø29mm Mushroom	**HAAV-0-W**	Polyamide	White (Munsell N9.5)	Blank
	For ø49mm Mushroom	**HAAV4-0-W**			
For ø22mm Series 	For ø40mm Mushroom	**HWAV-0-W**			
	For ø60mm Mushroom	**HWAV5-0-W**			

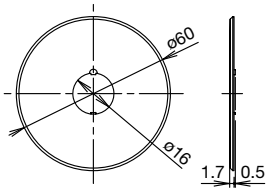
Dimensions

For ø16mm Series (Nameplate for ø29mm Mushroom)



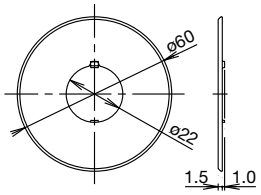
Panel thickness: 0.5 to 2 mm when using a nameplate

(Nameplate for ø40mm Mushroom)



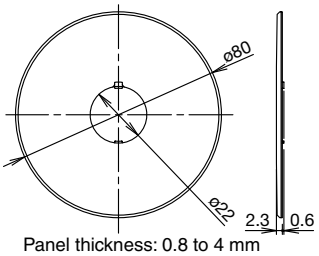
Panel thickness: 0.5 to 2 mm when using a nameplate

For ø22mm Series (Nameplate for ø40mm Mushroom)



Panel thickness: 0.8 to 4.5 mm when using a nameplate

(Nameplate for ø60mm Mushroom)



Panel thickness: 0.8 to 4 mm when using a nameplate

Switch Guard (White)

Description & Shape	Part No.	Remarks
For ø22mm HW Series 	**HW9Z-KG4-W**	• Inside diameter ø76mm • Space-saving, 50 mm-wide.

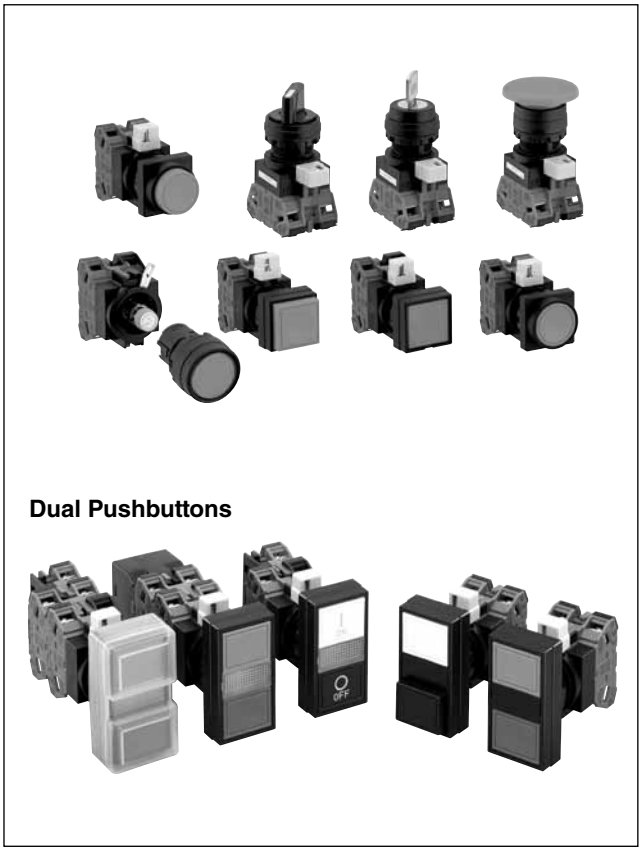
ø22 HW Series Control Units

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

- Locking lever removable contact blocks
- Spring-up screw and finger-safe (IP20) contact blocks are available.
- Self-cleaning rolling action contacts have a raked contact surface.
- Degree of protection: IP65 (except dual pushbutton: IP40)
- Dual pushbutton switches available with two pushbuttons and a pilot light integrated into one space-saving control unit.
- A wide range of operating voltages for worldwide application
- UL, CSA rated, and EN compliant.

Application for dual pushbuttons:
Ideal for use as power switches and start/stop switches (available with I/ON and O/OFF markings on the buttons and a pilot light in the center).
Interlock type prevents two pushbuttons from being pressed at the same time, providing the best solution for up/down switches.

Applicable Standards	Mark	File No. or Organization
UL508		UL Listing File No. E68961
CSA C22.2 No.14		CSA File No. LR92374
EN60947-5-1		TÜV Rheinland
		EU Low Voltage Directive
GB14048.5		CCC No. 2005010305145656 No. 2011010304454933 (pilot light)



Dual Pushbuttons

Specifications and Ratings

Contact Ratings

Pushbuttons Illuminated Pushbuttons Dual Pushbuttons Selector Switches Illuminated Selector Switches Pushbutton Selectors	Contact Block	HW-G / HW-F
	Rated Insulation Voltage	600V
	Rated Thermal Current	10A
	Contact Ratings by Utilization Category IEC 60947-5-1	AC-15 (A600) DC-13 (P600)

Characteristics

Contact Ratings by Utilization Category

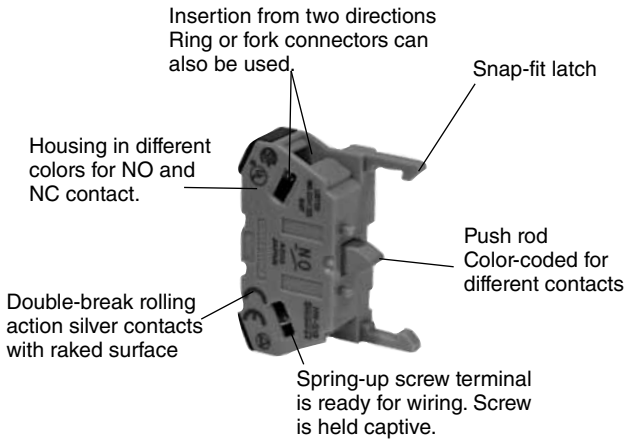
Operating Voltage				24V	48V	50V	110V	220V	440V
Operational Current	AC 50/60 Hz	AC-12	Control of resistive loads and solid state loads	10A	—	10A	10A	6A	2A
		AC-15	Control of electromagnetic loads (> 72 VA)	10A	—	7A	5A	3A	1A
	DC	DC-12	Control of resistive loads and solid state loads	8A	4A	—	2.2A	1.1A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

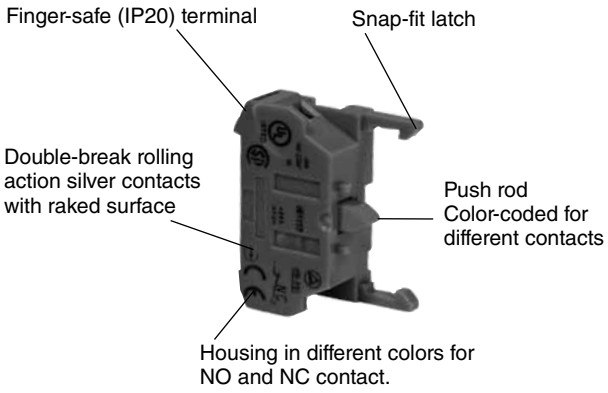
For the control units listed below, the rated current (load switching current) is reduced to a half of the rated operational current of the contact block. The rated insulation voltage (600V) and the rated thermal current (10A) remain unchanged.
- 3-position selector switches which contain J or S following 3 in the Part 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 (circuit symbols E, F, N)

Contact Blocks

HW-G (Spring-up Screw Terminal)



HW-F (IP20 Finger-Safe Screw Terminal)



Note: HW-G and HW-F contact blocks have different dimensions. For dimensions, see page 61.

Contact Blocks

Part No.	HW-G10 HW-F10	HW-G01 HW-F01	HW-G10R HW-F10R	HW-G01R HW-F01R
Contact	NO	NC	NO (early make)	NC (late break)
Housing	Blue	Purple red	Blue	Purple red
Push Rod	Green	Red	Black	White

• Up to 2 layers (4 blocks) can be attached.

LED Illuminated Unit Specifications

Unit	Color Code ②	Input Type	Operating Voltage	LED Lamp		
				Lamp Base	Part 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-6**②	6V AC/DC±10%
			12V AC/DC		**LSTD-1**②	12V AC/DC±10%
			24V AC/DC		**LSTD-2**②	24V AC/DC±10%
		Transformer	100/110V AC 115/120V AC 200/220V AC 230/240V AC 380V AC 400/440V AC 480V AC (50/60 Hz)		**LSTD-6**②	6V AC/DC±10%
		DC-DC Converter	110V DC		**LSTD-6**②	6V AC/DC±10%

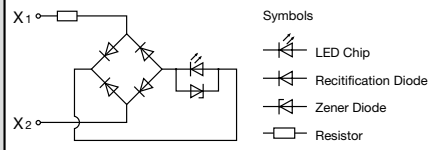
• Use a pure white LED for yellow illumination.
• Yellow cannot be used with dual pushbuttons.

Incandescent Illuminated Unit Specifications

Unit	Color Code ②	Input Type	Operating Voltage	LED Lamp		
				Lamp Base	Part No.	Voltage
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 115/120V AC 200/220V AC 230/240V AC 380V AC 400/440V AC 480V AC (50/60 Hz)		**LS-6**	1W (6.3V)

• For LED and incandescent unit specifications of jumbo dome pilot lights, see page 20.

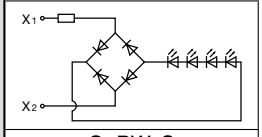
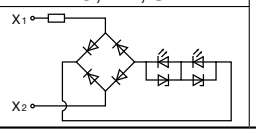
LED Lamp Ratings (LSTD)
(Except Jumbo Dome Pilot Lights)

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

Incandescent Lamp Ratings (LS)
(Except Jumbo Dome Pilot Lights)

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

LED Lamp Ratings (LSTDB)
(For Jumbo Dome Pilot Lights Only)

Part No.	LSTDB-2②
Rated Voltage	24V AC/DC
Voltage Range	24V AC/DC ±10%
Current Draw	15 mA
Color Code	A (amber), G (green), PW (pure white), R (red), S (blue), W (white)
Life (reference value)	Approx. 20,000 hours (until the brightness reduces to 50% the initial value when lit at complete direct current of the rated voltage under 25°C environment.)
Internal Circuit	A, R, W  G, PW, S 

• Use a pure white LED for yellow illumination.

Incandescent Lamp Ratings (LSB)
(For Jumbo Dome Pilot Lights Only)

Part No.	LSB-2
Rated Voltage	24V AC/DC
Wattage	3.6W
Lamp Rating	28V, 0.17A
Life (reference value)	Approx. 1,000 hours (Mean value at the rated voltage.)

• Use incandescent lamp types for displaying the muting status (temporary automatic suspension of a safety function, required by IEC61496-1) of equipment such as light curtains.

Specifications

Operating Temperature	–25 to +60°C (no freezing) Illuminated units: –25 to +50°C Jumbo dome pilot lights: –25 to +55°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 (Note)	Between live and dead metal parts: 2,500V AC, 1 minute (Full voltage illuminated units: 2,000V AC, 1 minute)
Vibration Resistance	Damage limits, Operating extremes: 5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	Damage limits: 1,000 m/s² Operating extremes: 100 m/s²
Mechanical Life (minimum operations)	Pushbuttons, Illuminated pushbuttons Momentary: 5,000,000 Maintained: 500,000 Dual pushbuttons: 500,000 Selector switches: 500,000 Key selector switches Disc tumbler: 500,000 Pin tumbler: 100,000 Illuminated selector switches: 500,000 Pushbutton selectors: 250,000 Mono-lever switches: 250,000
Electrical Life (minimum operations)	Pushbuttons, Illuminated pushbuttons: 500,000 ∗1 Dual pushbuttons: 500,000 ∗1 Selector switches: 500,000 ∗2 Key selector switches Disc tumbler: 500,000 ∗2 Pin tumbler: 100,000 ∗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%
Weight	66g (HW1B-M122), 20g (HW1P-1Q4), 84g (HW1L-M122Q4), 66g (HW1S-2T22), 94g (HW1K-2A22), 72g (HW1K-2JPC11), 84g (HW1F-222Q4), 71g (HW1R-2A22), 82g (HW1M-2222-22N9), 72g (HW7D-B111111), 90g (HW7D-L111111Q4)

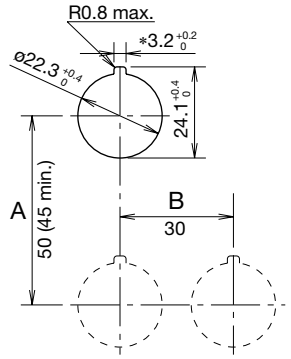
Note: Dielectric strength for dual pushbuttons are as follows:
Without pilot light: 2,500V AC, 1 minute (between live and dead metal parts)
With pilot light:
Full voltage type: 1,000V AC, 1 minute (between live and dead metal parts)
Transformer and DC-DC converter types: 2,000V AC, 1 minute (between live and dead metal parts)

Degree of Protection

Unit	NEMA ICS 6-110	IEC 60529
All units except dual pushbutton switches	Type 1, 2, 3, 3R, (3S), 4, 5, 12,13	IP65 (Note 1)
Dual pushbutton switches		IP40 (Note 2)

Note 1: When using a nameplate with the control unit, IP65 protection degree is achieved only when nameplates shown on page 58 are used.
Note 2: IP65 protection degree when HW9Z-D7D button cover is used.

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	A	B
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
Jumbo dome pilot	85 mm	85 mm
Dual pushbutton switches	55 mm	30 mm
Illuminated selector switches	50 mm	50 mm

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

Ordering Information

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

Pushbuttons

HW1B-M1 F 11 R -MAU

- Optional contact
  - MAU: Gold-plated silver contact
- Button/lens color code
- Contact arrangement code
  - 10: 1NO 01: 1NC
  - 11: 1NO-1NC 20: 2NO
  - 02: 2NC 21: 2NO-1NC
  - 12: 1NO-2NC 30: 3NO
  - 03: 3NC 31: 3NO-1NC
  - 22: 2NO-2NC 13: 1NO-3NC
  - 40: 4NO 04: 4NC
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw

Pilot Lights

HW1P-1 F H 2 R

- Lens color code
- Lamp code
  - 0: Without lamp
  - 2: LED (6V: LSTD)
  - 3: LED (12V: LSTD)
  - 4: LED (24V: LSTD)
  - 5: Incandescent (6V: LS-6)
  - 6: Incandescent (12V: LS-8)
  - 7: Incandescent (24V: LS-3)
- Operating voltage code
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw

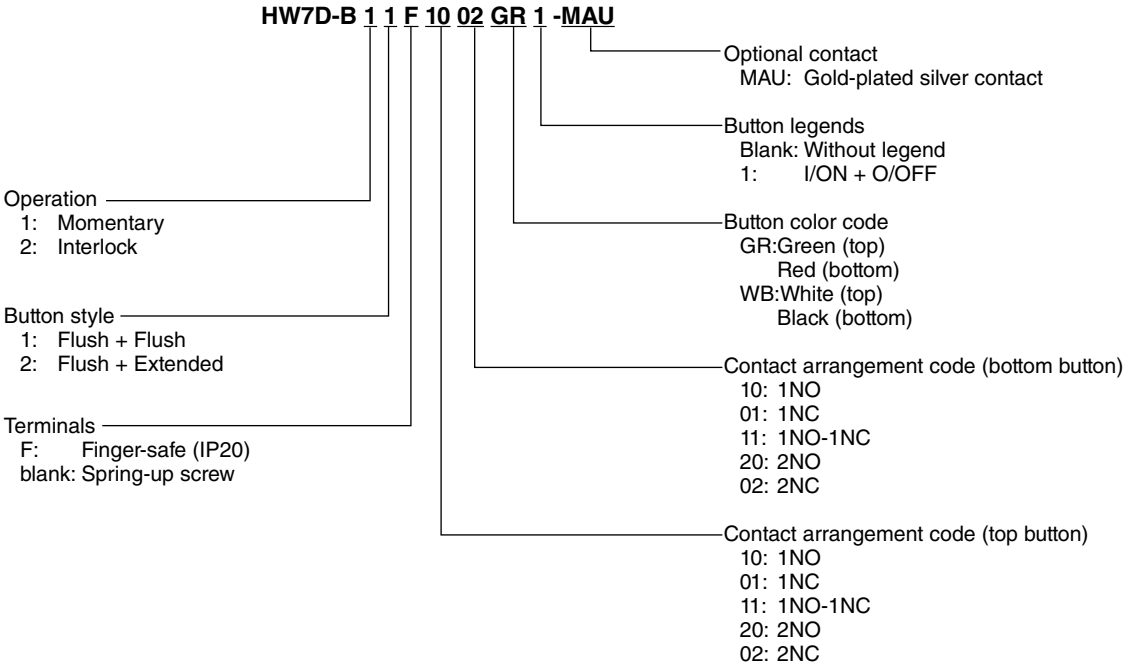
Illuminated Pushbuttons

HW1L-M1 F 11 H 2 R -MAU

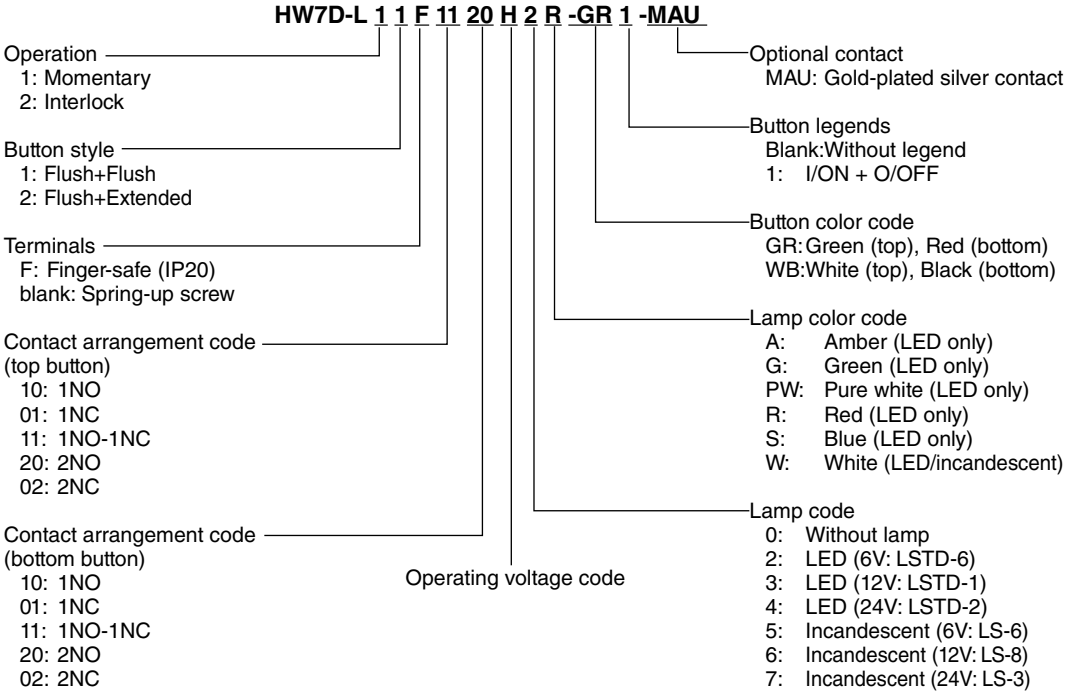
- Optional contact
  - MAU: Gold-plated silver contact
- Lens color code
- Lamp code
  - 0: Without lamp
  - 2: LED (6V: LSTD)
  - 3: LED (12V: LSTD)
  - 4: LED (24V: LSTD)
  - 5: Incandescent (6V: LS-6)
  - 6: Incandescent (12V: LS-8)
  - 7: Incandescent (24V: LS-3)
- Operating voltage code
- Contact arrangement code
  - 10: 1NO 01: 1NC
  - 11: 1NO-1NC 20: 2NO
  - 02: 2NC 21: 2NO-1NC
  - 12: 1NO-2NC 30: 3NO
  - 03: 3NC 31: 3NO-1NC
  - 22: 2NO-2NC 13: 1NO-3NC
  - 40: 4NO 04: 4NC
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw

Note: Transformer and DC-DC converter types can have two or four contact blocks only.

Dual Pushbutton Switches without Pilot Light



Dual Pushbutton Switches with Pilot Light



Note: Transformer and DC-DC converter types can have two or four contact blocks only.

Selector Switches

HW1S-J S T F 22N9 -MAU

- Cam code
- Knob operator
- Optional contact
  - MAU: Gold-plated silver contact
- Contact code
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw

Illuminated Selector Switches

HW1F-2 F 11 H 2 R -MAU

- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw
- Optional contact
  - MAU: Gold-plated silver contact
- Lens color code
- Lamp code
  - 0: Without lamp
  - 2: LED (6V: LSTD)
  - 3: LED (12V: LSTD)
  - 4: LED (24V: LSTD)
  - 5: Incandescent (6V: LS-6)
  - 6: Incandescent (12V: LS-8)
  - 7: Incandescent (24V: LS-3)
- Operating voltage code

Pushbutton Selectors

HW1R-2 D F 22N1 B -MAU

- Circuit category
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw
- Optional contact
  - MAU: Gold-plated silver contact
- Button color code
- Contact code

Key Selector Switches (Pin Tumbler Key)

HW1K-2 J P A F 01-501-MAU

- Optional contact
  - MAU: Gold-plated silver contact
- Not specified: 500 (default key)
  - 501-515: The key number is engraved on the key cylinder. (default key is not engraved with a number)
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw
- Key removal/retained positions
  - 2-position
    - A: Removable in all positions
    - B: Removable in the left only
    - C: Removable in the right only
  - 3-position
    - A: Removable in all positions
    - B: Removable in the left and center
    - C: Removable in the right and center
    - D: Removable in center only
    - E: Removable in right and left
    - G: Removable in left only
    - H: Removable in right only
  - Note: The key cannot be removed in a spring return position.
- Cam code
- Operator position code
  - 2: 2-position, maintained
  - 21: 2-position, spring return from right
  - 3: 3-position, maintained
  - 31: 3-position, spring return from right
  - 32: 3-position, spring return from left
  - 33: 3-position, spring return two way

Key Selector Switches (Disc Tumbler Key)

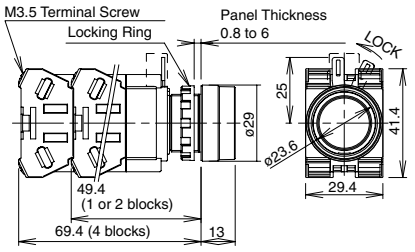
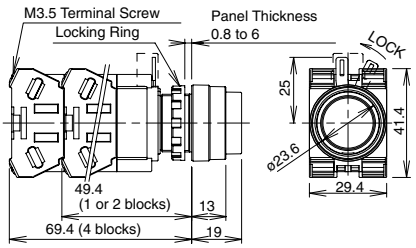
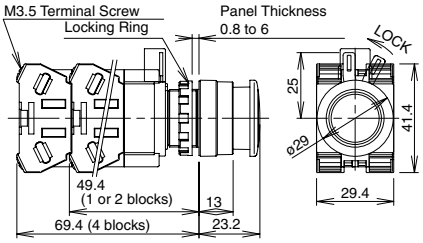
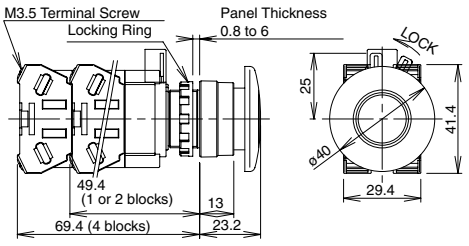
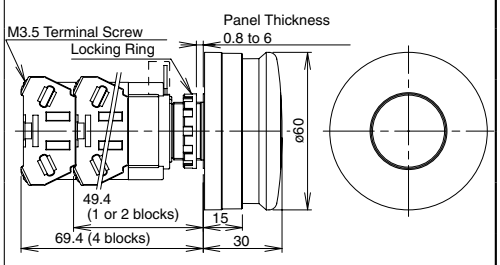
HW1K-3 J A F 22 - 1H -MAU

- Optional contact
  - MAU: Gold-plated silver contact
- Different key number
  - 1H /2H / 3H
- Terminals
  - F: Finger-safe (IP20)
  - blank: Spring-up screw
- Key removal/retained positions
- Cam code
- Operator position code

Note: Key removal/retained positions, cam codes, and operator position codes are the same as pin tumbler keys

Flush / Extended / Mushroom Pushbuttons

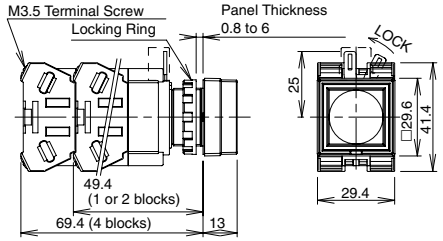
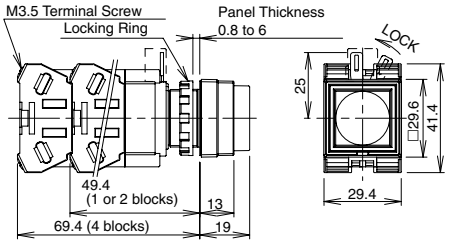
Package Quantity: 1

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm) (Spring-up screw terminal)
Flush HW1B-M1 HW1B-A1 	Momentary	1NO	**HW1B-M1⑥10①**	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	**HW1B-M1⑥01①**		
		1NO-1NC	**HW1B-M1⑥11①**		
		2NO	**HW1B-M1⑥20①**		
		2NC	**HW1B-M1⑥02①**		
		2NO-2NC	**HW1B-M1⑥22①**		
	Maintained	1NO	**HW1B-A1⑥10①**		
		1NC	**HW1B-A1⑥01①**		
		1NO-1NC	**HW1B-A1⑥11①**		
		2NO	**HW1B-A1⑥20①**		
		2NC	**HW1B-A1⑥02①**		
		2NO-2NC	**HW1B-A1⑥22①**		
Extended HW1B-M2 HW1B-A2 	Momentary	1NO	**HW1B-M2⑥10①**		
		1NC	**HW1B-M2⑥01①**		
		1NO-1NC	**HW1B-M2⑥11①**		
		2NO	**HW1B-M2⑥20①**		
		2NC	**HW1B-M2⑥02①**		
		2NO-2NC	**HW1B-M2⑥22①**		
	Maintained	1NO	**HW1B-A2⑥10①**		
		1NC	**HW1B-A2⑥01①**		
		1NO-1NC	**HW1B-A2⑥11①**		
		2NO	**HW1B-A2⑥20①**		
		2NC	**HW1B-A2⑥02①**		
		2NO-2NC	**HW1B-A2⑥22①**		
ø29mm Mushroom HW1B-M3 HW1B-A3 	Momentary	1NO	**HW1B-M3⑥10①**		
		1NC	**HW1B-M3⑥01①**		
		1NO-1NC	**HW1B-M3⑥11①**		
		2NO	**HW1B-M3⑥20①**		
		2NC	**HW1B-M3⑥02①**		
		2NO-2NC	**HW1B-M3⑥22①**		
	Maintained	1NO	**HW1B-A3⑥10①**		
		1NC	**HW1B-A3⑥01①**		
		1NO-1NC	**HW1B-A3⑥11①**		
		2NO	**HW1B-A3⑥20①**		
		2NC	**HW1B-A3⑥02①**		
		2NO-2NC	**HW1B-A3⑥22①**		
ø40mm Mushroom HW1B-M4 HW1B-A4 	Momentary	1NO	**HW1B-M4⑥10①**		
		1NC	**HW1B-M4⑥01①**		
		1NO-1NC	**HW1B-M4⑥11①**		
		2NO	**HW1B-M4⑥20①**		
		2NC	**HW1B-M4⑥02①**		
		2NO-2NC	**HW1B-M4⑥22①**		
	Maintained	1NO	**HW1B-A4⑥10①**		
		1NC	**HW1B-A4⑥01①**		
		1NO-1NC	**HW1B-A4⑥11①**		
		2NO	**HW1B-A4⑥20①**		
		2NC	**HW1B-A4⑥02①**		
		2NO-2NC	**HW1B-A4⑥22①**		
ø60mm Mushroom HW1B-M5 	Momentary	1NO	**HW1B-M⑤⑥10①**	Specify a button color code in place of ① in the Part No. B: black G: green R: red	
		1NC	**HW1B-M⑤⑥01①**		
		1NO-1NC	**HW1B-M⑤⑥11①**		
		2NO	**HW1B-M⑤⑥20①**		
		2NC	**HW1B-M⑤⑥02①**		
		2NO-2NC	**HW1B-M⑤⑥22①**		

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 21.
- The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

Square Flush / Square Extended Pushbuttons

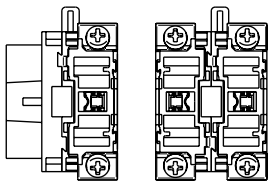
Package Quantity: 1

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm) (Spring-up screw terminal)
Square Flush HW2B-M1 HW2B-A1 	Momentary	1NO	**HW2B-M1⑥10①**	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	**HW2B-M1⑥01①**		
		1NO-1NC	**HW2B-M1⑥11①**		
		2NO	**HW2B-M1⑥20①**		
		2NC	**HW2B-M1⑥02①**		
		2NO-2NC	**HW2B-M1⑥22①**		
	Maintained	1NO	**HW2B-A1⑥10①**		
		1NC	**HW2B-A1⑥01①**		
		1NO-1NC	**HW2B-A1⑥11①**		
		2NO	**HW2B-A1⑥20①**		
		2NC	**HW2B-A1⑥02①**		
		2NO-2NC	**HW2B-A1⑥22①**		
Square Extended HW2B-M2 HW2B-A2 	Momentary	1NO	**HW2B-M2⑥10①**		
		1NC	**HW2B-M2⑥01①**		
		1NO-1NC	**HW2B-M2⑥11①**		
		2NO	**HW2B-M2⑥20①**		
		2NC	**HW2B-M2⑥02①**		
		2NO-2NC	**HW2B-M2⑥22①**		
	Maintained	1NO	**HW2B-A2⑥10①**		
		1NC	**HW2B-A2⑥01①**		
		1NO-1NC	**HW2B-A2⑥11①**		
		2NO	**HW2B-A2⑥20①**		
		2NC	**HW2B-A2⑥02①**		
		2NO-2NC	**HW2B-A2⑥22①**		

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 21.
- The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

Contact Block (Bottom View)

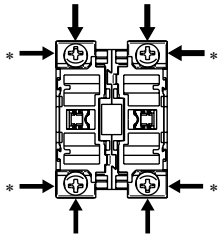
Spring-up screw terminal



1 contact block 2 contact blocks 4 contact blocks

Terminal Wiring

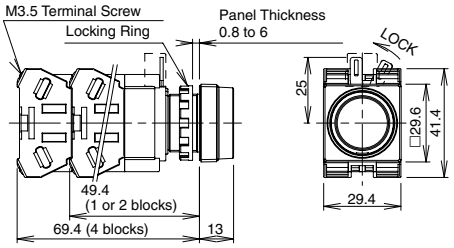
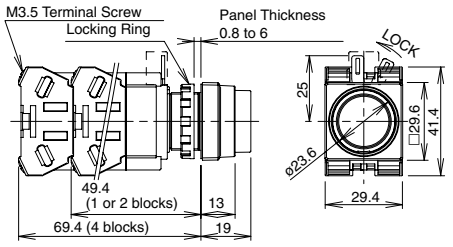
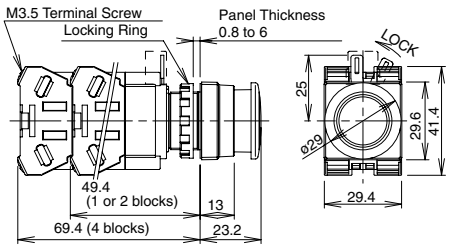
Arrows indicate access directions for wiring.



∗Spring-up screw terminals only.

Round Button with Square Bezel Pushbuttons

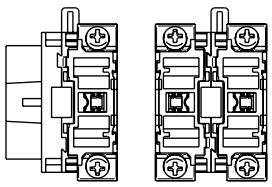
Package Quantity: 1

Shape	Operation	Contact	Part No.	① Button Color Code	Dimensions (mm) (Spring-up screw terminal)
Round Flush with Square Bezel HW3B-M1 HW3B-A1 	Momentary	1NO	**HW3B-M1⑥10①**	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow	
		1NC	**HW3B-M1⑥01①**		
		1NO-1NC	**HW3B-M1⑥11①**		
		2NO	**HW3B-M1⑥20①**		
		2NC	**HW3B-M1⑥02①**		
		2NO-2NC	**HW3B-M1⑥22①**		
	Maintained	1NO	**HW3B-A1⑥10①**		
		1NC	**HW3B-A1⑥01①**		
		1NO-1NC	**HW3B-A1⑥11①**		
		2NO	**HW3B-A1⑥20①**		
		2NC	**HW3B-A1⑥02①**		
		2NO-2NC	**HW3B-A1⑥22①**		
Round Extended with Square Bezel HW3B-M2 HW3B-A2 	Momentary	1NO	**HW3B-M2⑥10①**		
		1NC	**HW3B-M2⑥01①**		
		1NO-1NC	**HW3B-M2⑥11①**		
		2NO	**HW3B-M2⑥20①**		
		2NC	**HW3B-M2⑥02①**		
		2NO-2NC	**HW3B-M2⑥22①**		
	Maintained	1NO	**HW3B-A2⑥10①**		
		1NC	**HW3B-A2⑥01①**		
		1NO-1NC	**HW3B-A2⑥11①**		
		2NO	**HW3B-A2⑥20①**		
		2NC	**HW3B-A2⑥02①**		
		2NO-2NC	**HW3B-A2⑥22①**		
ø29mm Mushroom with Square Bezel HW3B-M3 HW3B-A3 	Momentary	1NO	**HW3B-M3⑥10①**		
		1NC	**HW3B-M3⑥01①**		
		1NO-1NC	**HW3B-M3⑥11①**		
		2NO	**HW3B-M3⑥20①**		
		2NC	**HW3B-M3⑥02①**		
		2NO-2NC	**HW3B-M3⑥22①**		
	Maintained	1NO	**HW3B-A3⑥10①**		
		1NC	**HW3B-A3⑥01①**		
		1NO-1NC	**HW3B-A3⑥11①**		
		2NO	**HW3B-A3⑥20①**		
		2NC	**HW3B-A3⑥02①**		
		2NO-2NC	**HW3B-A3⑥22①**		

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- Pushbuttons with one or three contact blocks contain a dummy block.
- Other contact arrangements and gold-plated silver contacts are also available. See page 21.
- The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.*

Contact Block (Bottom View)

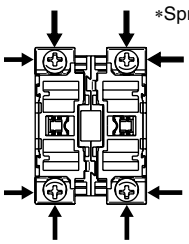
Spring-up screw terminal



1 contact block 2 contact blocks
4 contact blocks

Terminal Wiring

Arrows indicate access directions for wiring.*



*Spring-up screw terminals only.

Round Flush / Dome / Square Flush / Jumbo Dome Pilot Lights

Package Quantity: 1

Shape	Lamp	Part No.	② Lens/Illumination Color Code
Round Flush HW1P-1  (Photo: Full Voltage)	Without Lamp	**HW1P-1⑥Q0②**	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	**HW1P-1⑥③②**	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	**HW1P-1⑥③②**	A: amber, G: green, R: red, S: blue, W: white
Dome HW1P-2  (Photo: Full Voltage)	Without Lamp	**HW1P-2⑥Q0②**	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	**HW1P-2⑥③②**	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	**HW1P-2⑥③②**	A: amber, G: green, R: red, S: blue, W: white
Square Flush HW2P-1  (Photo: Transformer)	Without Lamp	**HW2P-1⑥Q0②**	A: amber, G: green, R: red, S: blue, W: white, Y: yellow
	LED	**HW2P-1⑥③②**	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	**HW2P-1⑥③②**	A: amber, G: green, R: red, S: blue, W: white
Jumbo Dome Pilot Light HW1P-5 	LED	**HW1P-5Q4②**	A: amber, G: green, PW: pure white, R: red, S: blue, W: white, Y: yellow
	Incandescent	**HW1P-5Q7②**	A: amber, G: green, R: red, S: blue, W: white, Y: yellow

Designation Code

Specify an designation code in place of ③, or ⑥ in the Part No.

③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
LED	Incandescent		
Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	Specify a terminal style code in place of ⑥. F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
Q3: 12V AC/DC	Q6: 12V AC/DC		
Q4: 24V AC/DC	Q7: 24V AC/DC		
H2: 100/110V AC	H5: 100/110V AC	Transformer	
H22: 115/120V AC	H25: 115/120V AC		
M2: 200/220V AC	M5: 200/220V AC		
M42: 230/240V AC	M45: 230/240V AC		
S2: 380V AC	S5: 380V AC		
T2: 400/440V AC	T5: 400/440V AC		
T82: 480V AC	T85: 480V AC		
D2: 110V DC	—	DC-DC Converter*	

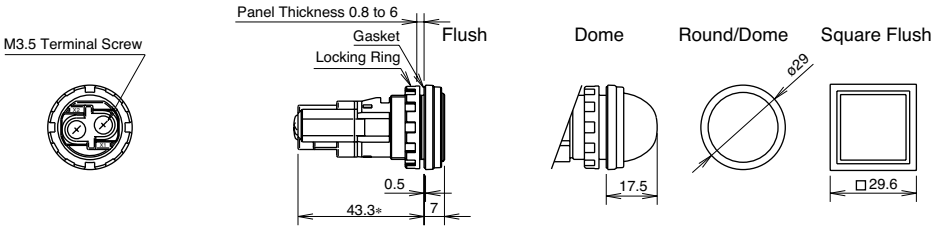
- Use a pure white LED lamp for yellow illumination.
- Jumbo dome pilot lights contain an exclusive LED and incandescent lamp. See page 63.

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

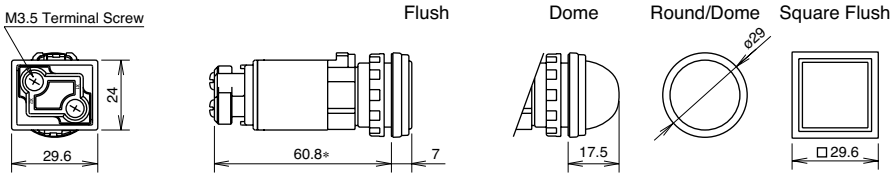
Dimensions

Pilot Light (except jumbo dome pilot light)

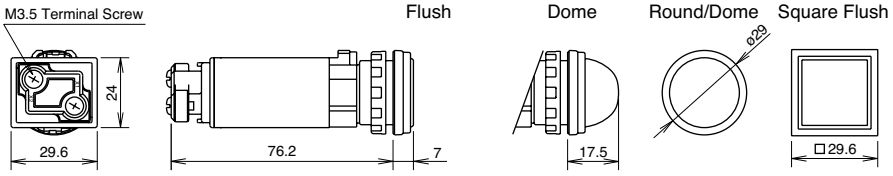
[Full Voltage]



[Transformer]



[DC-DC Converter]

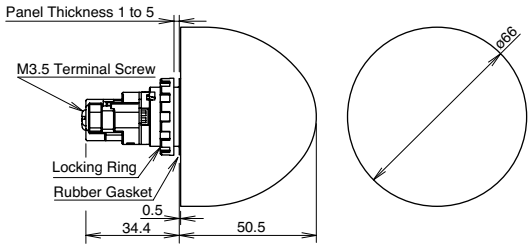


The above figures illustrate the spring-up screw pilot lights.

All dimensions in mm.

*The depths of finger-safe (IP20) pilot lights are as follows:
[Full Voltage] 44.7 mm
[Transformer] 72.1 mm

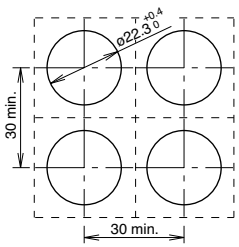
Jumbo Dome Pilot Light



Mounting Hole Layout

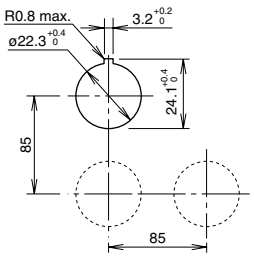
Pilot Light (except jumbo dome pilot light)

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.

Jumbo Dome Pilot Light



Round Flush Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
Round Flush HW1L-M1 HW1L-A1 	Momentary	Without Lamp	1NO	**HW1L-M1⑥10Q0②**
			1NC	**HW1L-M1⑥01Q0②**
			1NO-1NC	**HW1L-M1⑥11Q0②**
			2NO	**HW1L-M1⑥20Q0②**
			2NC	**HW1L-M1⑥02Q0②**
			2NO-2NC	**HW1L-M1⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-M1⑥10③②** (Note)
			1NC	**HW1L-M1⑥01③②** (Note)
			1NO-1NC	**HW1L-M1⑥11③②**
			2NO	**HW1L-M1⑥20③②**
			2NC	**HW1L-M1⑥02③②**
			2NO-2NC	**HW1L-M1⑥22③②**
	Maintained	Without Lamp	1NO	**HW1L-A1⑥10Q0②**
			1NC	**HW1L-A1⑥01Q0②**
			1NO-1NC	**HW1L-A1⑥11Q0②**
			2NO	**HW1L-A1⑥20Q0②**
			2NC	**HW1L-A1⑥02Q0②**
			2NO-2NC	**HW1L-A1⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-A1⑥10③②** (Note)
			1NC	**HW1L-A1⑥01③②** (Note)
			1NO-1NC	**HW1L-A1⑥11③②**
			2NO	**HW1L-A1⑥20③②**
			2NC	**HW1L-A1⑥02③②**
			2NO-2NC	**HW1L-A1⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow (Note)	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter∗	

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.

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

Note: For A (amber), G (green), R (red) and S (blue) LED illumination, add **W** before the color code when white lens unit (clear lens + white marking plate) is required. (Eg: HW1L-M111Q4**W**A)

Round Extended Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
Round Extended HW1L-M2 HW1L-A2 	Momentary	Without Lamp	1NO	**HW1L-M2⑥10Q0②**
			1NC	**HW1L-M2⑥01Q0②**
			1NO-1NC	**HW1L-M2⑥11Q0②**
			2NO	**HW1L-M2⑥20Q0②**
			2NC	**HW1L-M2⑥02Q0②**
			2NO-2NC	**HW1L-M2⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-M2⑥10③②** (Note)
			1NC	**HW1L-M2⑥01③②** (Note)
			1NO-1NC	**HW1L-M2⑥11③②**
			2NO	**HW1L-M2⑥20③②**
			2NC	**HW1L-M2⑥02③②**
			2NO-2NC	**HW1L-M2⑥22③②**
	Maintained	Without Lamp	1NO	**HW1L-A2⑥10Q0②**
			1NC	**HW1L-A2⑥01Q0②**
			1NO-1NC	**HW1L-A2⑥11Q0②**
			2NO	**HW1L-A2⑥20Q0②**
			2NC	**HW1L-A2⑥02Q0②**
			2NO-2NC	**HW1L-A2⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-A2⑥10③②** (Note)
			1NC	**HW1L-A2⑥01③②** (Note)
			1NO-1NC	**HW1L-A2⑥11③②**
			2NO	**HW1L-A2⑥20③②**
			2NC	**HW1L-A2⑥02③②**
			2NO-2NC	**HW1L-A2⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow (Note)	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

• Use a pure white LED lamp for yellow illumination.
• Other contact arrangements and gold-plated silver contacts available. See page 21.
*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC)
Note: For A (amber), G (green), R (red) and S (blue) LED illumination, add **W** before the color code when white lens unit (clear lens + white marking plate) is required. (Eg: HW1L-M211Q4**W**A)

Round Extended with Full Shroud Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
Round Extended with Full Shroud HW1L-MF2 HW1L-AF2 	Momentary	Without Lamp	1NO	**HW1L-MF2⑥10Q0②**
			1NC	**HW1L-MF2⑥01Q0②**
			1NO-1NC	**HW1L-MF2⑥11Q0②**
			2NO	**HW1L-MF2⑥20Q0②**
			2NC	**HW1L-MF2⑥02Q0②**
			2NO-2NC	**HW1L-MF2⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-MF2⑥10③②** (Note)
			1NC	**HW1L-MF2⑥01③②** (Note)
			1NO-1NC	**HW1L-MF2⑥11③②**
			2NO	**HW1L-MF2⑥20③②**
			2NC	**HW1L-MF2⑥02③②**
			2NO-2NC	**HW1L-MF2⑥22③②**
	Maintained	Without Lamp	1NO	**HW1L-AF2⑥10Q0②**
			1NC	**HW1L-AF2⑥01Q0②**
			1NO-1NC	**HW1L-AF2⑥11Q0②**
			2NO	**HW1L-AF2⑥20Q0②**
			2NC	**HW1L-AF2⑥02Q0②**
			2NO-2NC	**HW1L-AF2⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-AF2⑥10③②** (Note)
			1NC	**HW1L-AF2⑥01③②** (Note)
			1NO-1NC	**HW1L-AF2⑥11③②**
			2NO	**HW1L-AF2⑥20③②**
			2NC	**HW1L-AF2⑥02③②**
			2NO-2NC	**HW1L-AF2⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow (Note)	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.

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

Note: For A (amber), G (green), R (red) and S (blue) LED illumination, add **W** before the color code when white lens unit (clear lens + white marking plate) is required. (Eg: HW1L-M211Q4**W**A)

Square Flush Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
Square Flush HW2L-M1 HW2L-A1 	Momentary	Without Lamp	1NO	**HW2L-M1⑥10Q0②**
			1NC	**HW2L-M1⑥01Q0②**
			1NO-1NC	**HW2L-M1⑥11Q0②**
			2NO	**HW2L-M1⑥20Q0②**
			2NC	**HW2L-M1⑥02Q0②**
			2NO-2NC	**HW2L-M1⑥22Q0②**
		LED / Incandescent	1NO	**HW2L-M1⑥10③②** (Note)
			1NC	**HW2L-M1⑥01③②** (Note)
			1NO-1NC	**HW2L-M1⑥11③②**
			2NO	**HW2L-M1⑥20③②**
			2NC	**HW2L-M1⑥02③②**
			2NO-2NC	**HW2L-M1⑥22③②**
	Maintained	Without Lamp	1NO	**HW2L-A1⑥10Q0②**
			1NC	**HW2L-A1⑥01Q0②**
			1NO-1NC	**HW2L-A1⑥11Q0②**
			2NO	**HW2L-A1⑥20Q0②**
			2NC	**HW2L-A1⑥02Q0②**
			2NO-2NC	**HW2L-A1⑥22Q0②**
		LED / Incandescent	1NO	**HW2L-A1⑥10③②** (Note)
			1NC	**HW2L-A1⑥01③②** (Note)
			1NO-1NC	**HW2L-A1⑥11③②**
			2NO	**HW2L-A1⑥20③②**
			2NC	**HW2L-A1⑥02③②**
			2NO-2NC	**HW2L-A1⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow (Note)	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

• Use a pure white LED lamp for yellow illumination.
• Other contact arrangements and gold-plated silver contacts available. See page 21.
*DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC)
Note: For A (amber), G (green), R (red) and S (blue) LED illumination, add **W** before the color code when white lens unit (clear lens + white marking plate) is required. (Eg: HW2L-M111Q4**W**A)

Round Flush with Square Bezel Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
Round Flush with Square Bezel HW3L-M1 HW3L-A1 	Momentary	Without Lamp	1NO	**HW3L-M1⑥10Q0②**
			1NC	**HW3L-M1⑥01Q0②**
			1NO-1NC	**HW3L-M1⑥11Q0②**
			2NO	**HW3L-M1⑥20Q0②**
			2NC	**HW3L-M1⑥02Q0②**
			2NO-2NC	**HW3L-M1⑥22Q0②**
		LED / Incandescent	1NO	**HW3L-M1⑥10③②** (Note)
			1NC	**HW3L-M1⑥01③②** (Note)
			1NO-1NC	**HW3L-M1⑥11③②**
			2NO	**HW3L-M1⑥20③②**
			2NC	**HW3L-M1⑥02③②**
			2NO-2NC	**HW3L-M1⑥22③②**
	Maintained	Without Lamp	1NO	**HW3L-A1⑥10Q0②**
			1NC	**HW3L-A1⑥01Q0②**
			1NO-1NC	**HW3L-A1⑥11Q0②**
			2NO	**HW3L-A1⑥20Q0②**
			2NC	**HW3L-A1⑥02Q0②**
			2NO-2NC	**HW3L-A1⑥22Q0②**
		LED / Incandescent	1NO	**HW3L-A1⑥10③②** (Note)
			1NC	**HW3L-A1⑥01③②** (Note)
			1NO-1NC	**HW3L-A1⑥11③②**
			2NO	**HW3L-A1⑥20③②**
			2NC	**HW3L-A1⑥02③②**
			2NO-2NC	**HW3L-A1⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow (Note)	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter∗	

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.

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

Note: For A (amber), G (green), R (red) and S (blue) LED illumination, add **W** before the color code when white lens unit (clear lens + white marking plate) is required. (Eg: HW3L-M111Q4**W**A)

Mushroom (ø29mm) Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
ø29mm Mushroom HW1L-M3 HW1L-A3 	Momentary	Without Lamp	1NO	**HW1L-M3⑥10Q0②**
			1NC	**HW1L-M3⑥01Q0②**
			1NO-1NC	**HW1L-M3⑥11Q0②**
			2NO	**HW1L-M3⑥20Q0②**
			2NC	**HW1L-M3⑥02Q0②**
			2NO-2NC	**HW1L-M3⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-M3⑥10③②** (Note)
			1NC	**HW1L-M3⑥01③②** (Note)
			1NO-1NC	**HW1L-M3⑥11③②**
			2NO	**HW1L-M3⑥20③②**
			2NC	**HW1L-M3⑥02③②**
			2NO-2NC	**HW1L-M3⑥22③②**
	Maintained	Without Lamp	1NO	**HW1L-A3⑥10Q0②**
			1NC	**HW1L-A3⑥01Q0②**
			1NO-1NC	**HW1L-A3⑥11Q0②**
			2NO	**HW1L-A3⑥20Q0②**
			2NC	**HW1L-A3⑥02Q0②**
			2NO-2NC	**HW1L-A3⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-A3⑥10③②** (Note)
			1NC	**HW1L-A3⑥01③②** (Note)
			1NO-1NC	**HW1L-A3⑥11③②**
			2NO	**HW1L-A3⑥20③②**
			2NC	**HW1L-A3⑥02③②**
			2NO-2NC	**HW1L-A3⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.

*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 Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
ø29mm Mushroom with Square Bezel HW3L-M3 HW3L-A3 	Momentary	Without Lamp	1NO	**HW3L-M3⑥10Q0②**
			1NC	**HW3L-M3⑥01Q0②**
			1NO-1NC	**HW3L-M3⑥11Q0②**
			2NO	**HW3L-M3⑥20Q0②**
			2NC	**HW3L-M3⑥02Q0②**
			2NO-2NC	**HW3L-M3⑥22Q0②**
		LED / Incandescent	1NO	**HW3L-M3⑥10③②** (Note)
			1NC	**HW3L-M3⑥01③②** (Note)
			1NO-1NC	**HW3L-M3⑥11③②**
			2NO	**HW3L-M3⑥20③②**
			2NC	**HW3L-M3⑥02③②**
			2NO-2NC	**HW3L-M3⑥22③②**
	Maintained	Without Lamp	1NO	**HW3L-A3⑥10Q0②**
			1NC	**HW3L-A3⑥01Q0②**
			1NO-1NC	**HW3L-A3⑥11Q0②**
			2NO	**HW3L-A3⑥20Q0②**
			2NC	**HW3L-A3⑥02Q0②**
			2NO-2NC	**HW3L-A3⑥22Q0②**
		LED / Incandescent	1NO	**HW3L-A3⑥10③②** (Note)
			1NC	**HW3L-A3⑥01③②** (Note)
			1NO-1NC	**HW3L-A3⑥11③②**
			2NO	**HW3L-A3⑥20③②**
			2NC	**HW3L-A3⑥02③②**
			2NO-2NC	**HW3L-A3⑥22③②**

Note: Only full voltage types are available.

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.

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

Mushroom (ø40mm) Illuminated Pushbuttons

Package Quantity: 1

Shape	Operation	Lamp	Contact	Part No.
ø40mm Mushroom HW1L-M4 HW1L-A4 	Momentary	Without Lamp	1NO	**HW1L-M4⑥10Q0②**
			1NC	**HW1L-M4⑥01Q0②**
			1NO-1NC	**HW1L-M4⑥11Q0②**
			2NO	**HW1L-M4⑥20Q0②**
			2NC	**HW1L-M4⑥02Q0②**
			2NO-2NC	**HW1L-M4⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-M4⑥10③②** (Note)
			1NC	**HW1L-M4⑥01③②** (Note)
			1NO-1NC	**HW1L-M4⑥11③②**
			2NO	**HW1L-M4⑥20③②**
			2NC	**HW1L-M4⑥02③②**
			2NO-2NC	**HW1L-M4⑥22③②**
	Maintained	Without Lamp	1NO	**HW1L-A4⑥10Q0②**
			1NC	**HW1L-A4⑥01Q0②**
			1NO-1NC	**HW1L-A4⑥11Q0②**
			2NO	**HW1L-A4⑥20Q0②**
			2NC	**HW1L-A4⑥02Q0②**
			2NO-2NC	**HW1L-A4⑥22Q0②**
		LED / Incandescent	1NO	**HW1L-A4⑥10③②** (Note)
			1NC	**HW1L-A4⑥01③②** (Note)
			1NO-1NC	**HW1L-A4⑥11③②**
			2NO	**HW1L-A4⑥20③②**
			2NC	**HW1L-A4⑥02③②**
			2NO-2NC	**HW1L-A4⑥22③②**

Note: Only full voltage types are available.

Designation Code

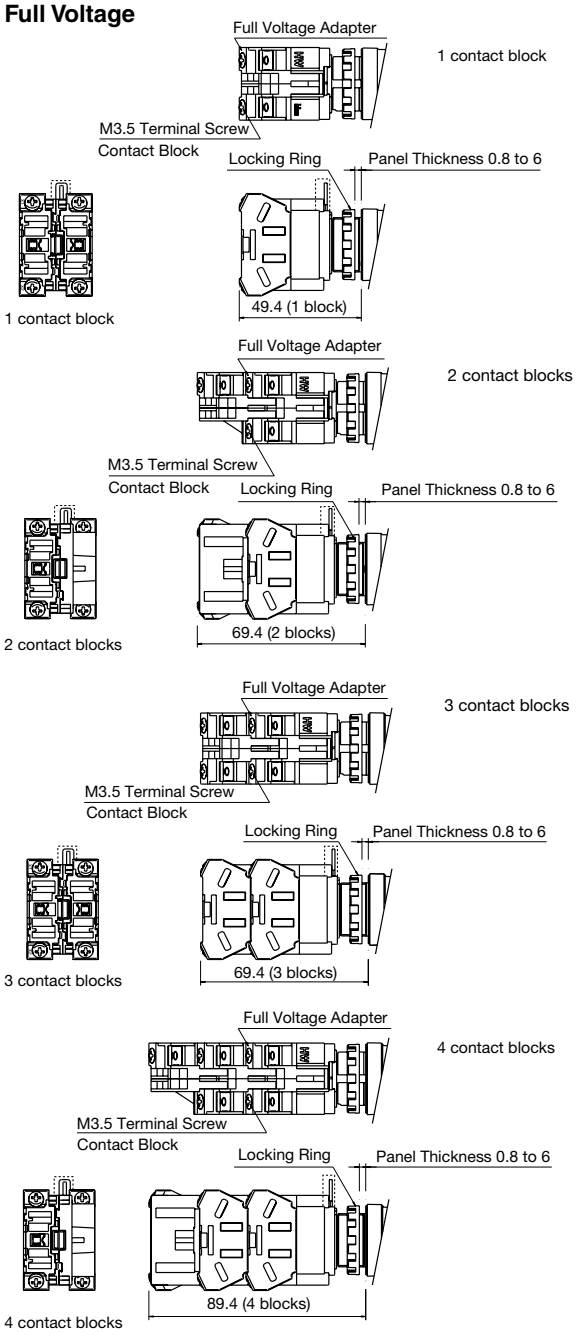
Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code			③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp	LED	Incandescent	LED	Incandescent		
A: amber G: green R: red S: blue W: white Y: yellow	A: amber G: green PW: pure white R: red S: blue W: white Y: yellow	A: amber G: green R: red S: blue W: white	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
			Q3: 12V AC/DC	Q6: 12V AC/DC		
			Q4: 24V AC/DC	Q7: 24V AC/DC		
			H2: 100/110V AC	H5: 100/110V AC	Transformer	
			H22: 115/120V AC	H25: 115/120V AC		
			M2: 200/220V AC	M5: 200/220V AC		
			M42: 230/240V AC	M45: 230/240V AC		
			S2: 380V AC	S5: 380V AC		
			T2: 400/440V AC	T5: 400/440V AC		
			T82: 480V AC	T85: 480V AC		
			D2: 110V DC	—	DC-DC Converter*	

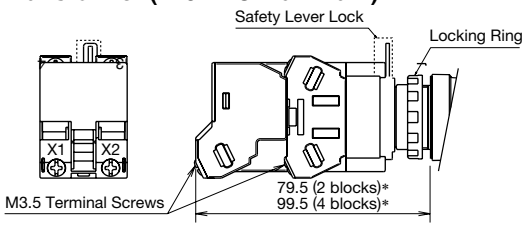
- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 21.
- *DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC)

Dimensions

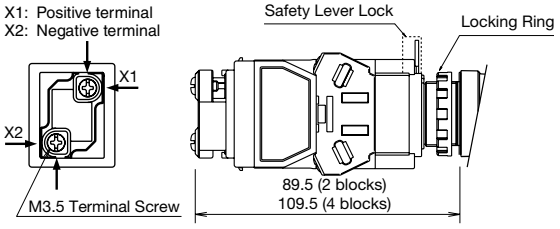
Full Voltage



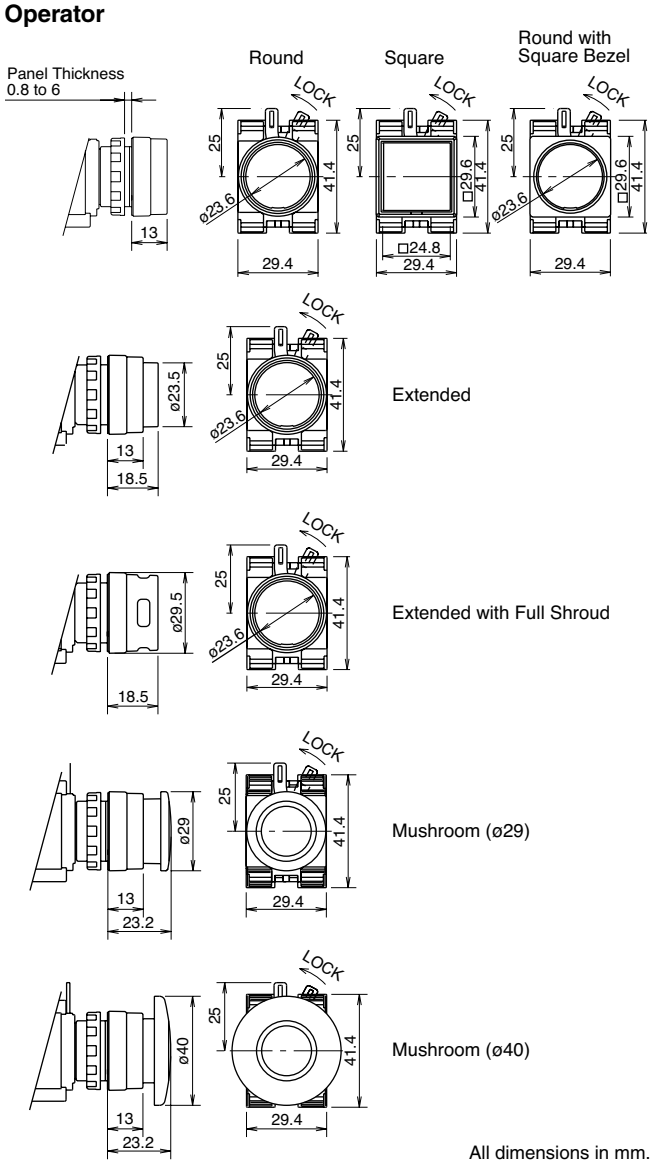
Transformer (240V AC maximum)



Transformer (380V AC minimum)
DC-DC Converter



Operator

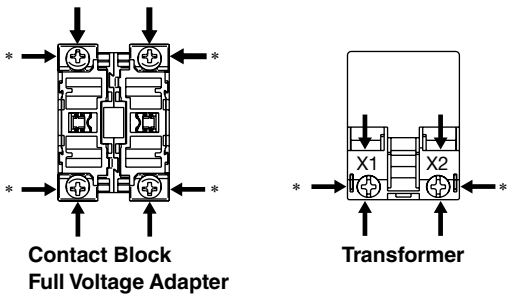


All dimensions in mm.

Terminal Wiring

Arrows indicate access directions for wiring.

Spring-up screw terminal



*Spring-up screw terminals only

The above figures illustrate spring-up screw contact blocks.

The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

*The depths of finger-safe (IP20) contact blocks are as follows:

Transformer Type (240V AC maximum):	89.5 (2 blocks)
	109.5 (4 blocks)

Dual Pushbuttons

Without Pilot Light

Package Quantity: 1

Operation	Button Style	Contact Arrangement		Part No.	④ Button Color Code	⑤ Legend Code
		Top Button	Bottom Button			
Momentary	Flush (top) Flush (bottom) 	1NO	1NC	**HW7D-B11⑥1001④⑤**	GR: Green (top) Red (bottom) WB: White (top) Black (bottom)	Blank: Without legend 1: I/ON (top) O/OFF (bottom)
		1NO	1NO	**HW7D-B11⑥1010④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-B11⑥1111④⑤**		
		2NO	2NC	**HW7D-B11⑥2002④⑤**		
		2NO	2NO	**HW7D-B11⑥2020④⑤**		
	Flush (top) Extended (bottom) 	1NO	1NC	**HW7D-B12⑥1001④⑤**		
		1NO	1NO	**HW7D-B12⑥1010④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-B12⑥1111④⑤**		
		2NO	2NC	**HW7D-B12⑥2002④⑤**		
		2NO	2NO	**HW7D-B12⑥2020④⑤**		
Interlock	Flush (top) Flush (bottom) 	1NO	1NC	**HW7D-B21⑥1001④⑤**		
		1NO	1NO	**HW7D-B21⑥1010④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-B21⑥1111④⑤**		
		2NO	2NC	**HW7D-B21⑥2002④⑤**		
		2NO	2NO	**HW7D-B21⑥2020④⑤**		
	Flush (top) Extended (bottom) 	1NO	1NC	**HW7D-B22⑥1001④⑤**		
		1NO	1NO	**HW7D-B22⑥1010④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-B22⑥1111④⑤**		
		2NO	2NC	**HW7D-B22⑥2002④⑤**		
		2NO	2NO	**HW7D-B22⑥2020④⑤**		

• Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw

Momentary: Two independent momentary switches are contained in one unit.
The contact operates when the button is pressed. When the button is released, the contact goes back to the original position.

Interlock: Momentary operation. When one of the buttons are pressed, the other button cannot be operated.
Do not operate top and bottom buttons at the same time. Operating the buttons at the same time may lead to malfunctions.

Other contact arrangements and gold-plated silver contacts are also available. See page 22.

Dual Pushbuttons

With Pilot Light

Package Quantity: 1

Operation	Lamp	Contact Arrangement		Part No.	④ Button Color Code	⑤ Legend Code
		Top Button	Bottom Button			
Momentary	Without Lamp	1NO	1NC	**HW7D-L1①⑥1001Q0W④⑤**	GR: Green (top) Red (bottom) WB: White (top) Black (bottom)	Blank: Without legend 1: I/ON (top) O/OFF (bottom)
		1NO	1NO	**HW7D-L1①⑥1010Q0W④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L1①⑥1111Q0W④⑤**		
		2NO	2NC	**HW7D-L1①⑥2002Q0W④⑤**		
		2NO	2NO	**HW7D-L1①⑥2020Q0W④⑤**		
	LED	1NO	1NC	**HW7D-L1①⑥1001③②④⑤**		
		1NO	1NO	**HW7D-L1①⑥1010③②④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L1①⑥1111③②④⑤**		
		2NO	2NC	**HW7D-L1①⑥2002③②④⑤**		
		2NO	2NO	**HW7D-L1①⑥2020③②④⑤**		
	Incandescent	1NO	1NC	**HW7D-L1①⑥1001③W④⑤**		
		1NO	1NO	**HW7D-L1①⑥1010③W④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L1①⑥1111③W④⑤**		
		2NO	2NC	**HW7D-L1①⑥2002③W④⑤**		
		2NO	2NO	**HW7D-L1①⑥2020③W④⑤**		
Interlock	Without Lamp	1NO	1NC	**HW7D-L2①⑥1001Q0W④⑤**		
		1NO	1NO	**HW7D-L2①⑥1010Q0W④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L2①⑥1111Q0W④⑤**		
		2NO	2NC	**HW7D-L2①⑥2002Q0W④⑤**		
		2NO	2NO	**HW7D-L2①⑥2020Q0W④⑤**		
	LED	1NO	1NC	**HW7D-L2①⑥1001③②④⑤**		
		1NO	1NO	**HW7D-L2①⑥1010③②④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L2①⑥1111③②④⑤**		
		2NO	2NC	**HW7D-L2①⑥2002③②④⑤**		
		2NO	2NO	**HW7D-L2①⑥2020③②④⑤**		
	Incandescent	1NO	1NC	**HW7D-L2①⑥1001③W④⑤**		
		1NO	1NO	**HW7D-L2①⑥1010③W④⑤**		
		1NO-1NC	1NO-1NC	**HW7D-L2①⑥1111③W④⑤**		
		2NO	2NC	**HW7D-L2①⑥2002③W④⑤**		
		2NO	2NO	**HW7D-L2①⑥2020③W④⑤**		

Designation Codes

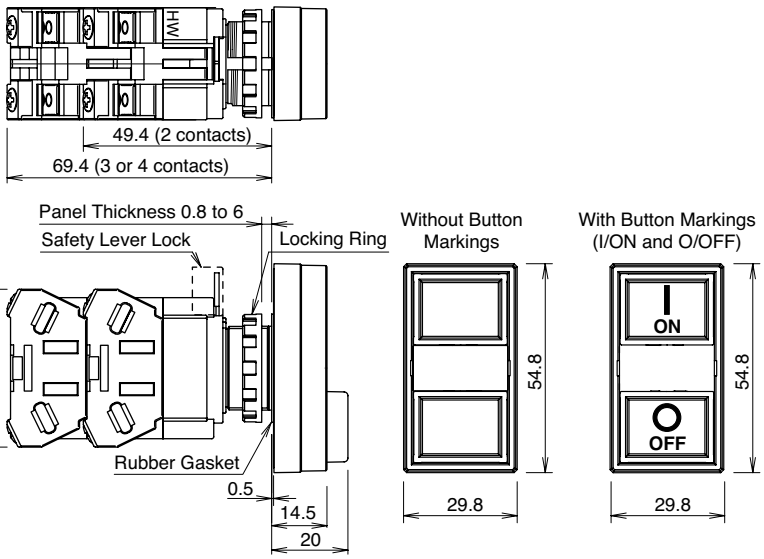
Specify designation codes ① to ③ in the Part No.

① Button Style Code	③ Operating Voltage Code		Input Type	② LED Color Code
	LED	Incandescent		
 1: Flush (top) Flush (bottom)	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	A: amber G: green PW: pure white R: red S: blue W: white White lens only.
	Q3: 12V AC/DC	Q6: 12V AC/DC		
	Q4: 24V AC/DC	Q7: 24V AC/DC		
	H2: 100/110V AC	H5: 100/110V AC	Transformer	
	H22: 115/120V AC	H25: 115/120V AC		
	M2: 200/220V AC	M5: 200/220V AC		
 2: Flush (top) Extended (bottom)	M42: 230/240V AC	M45: 230/240V AC		
	S2: 380V AC	S5: 380V AC		
	T2: 400/440V AC	T5: 400/440V AC		
	T82: 480V AC	T85: 480V AC		
	D2: 110V DC	—	DC-DC Converter*	

- White lamp and white lens only for incandescent illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 22.

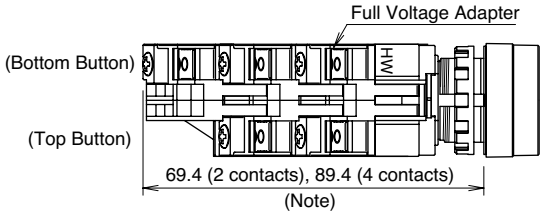
Dimensions

Without Pilot Light



With Pilot Light

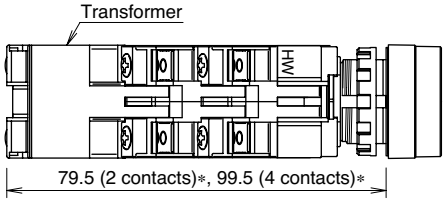
Full Voltage



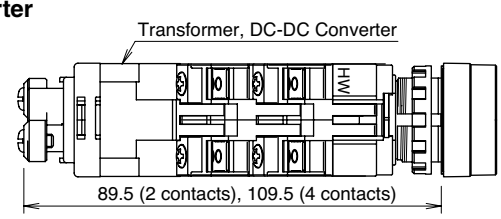
Note: The depth of 3-contact type depends on the combination of contact blocks at top and bottom pushbuttons

Top Button	1 contact block	2 contact blocks
Bottom Button	2 contact blocks	1 contact block
Depth	89.4 mm	69.4 mm

Transformer (240V AC maximum)



Transformer (380V AC minimum)
DC-DC Converter



All dimensions in mm.

The above figures illustrate spring-up screw contact blocks.

The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

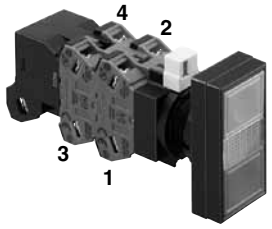
*The depths of finger-safe (IP20) types are as follows:
Transformer Type (240V AC maximum): 89.5 (2 blocks)
109.5 (4 blocks)

Contact Arrangement Chart

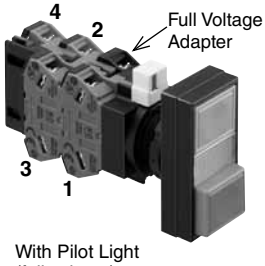
Contact Arrangement			Contact Block		Top Button		Bottom Button	
Top Button	Bottom Button	Contact Code	Mounting Position	Contact	Normal	Push	Normal	Push
1NO	1NO	1010	**1**	NO		●		
			2	NO				●
1NO	1NC	1001	**1**	NO		●		
			2	NC			●	
1NC	1NO	0110	**1**	NC	●			
			2	NO				●
1NC	1NC	0101	**1**	NC	●			
			2	NC			●	
1NO	2NO	1020	**1**	NO		●		
			2	NO				●
			3	Dummy				
			4	NO				●
1NO	1NO-1NC	1011	**1**	NO		●		
			2	NO				●
			3	Dummy				
			4	NC			●	
1NO	2NC	1002	**1**	NO		●		
			2	NC			●	
			3	Dummy				
			4	NC			●	
1NC	2NO	0120	**1**	NC	●			
			2	NO				●
			3	Dummy				
			4	NO				●
1NC	1NO-1NC	0111	**1**	NC	●			
			2	NO				●
			3	Dummy				
			4	NC			●	
1NC	2NC	0102	**1**	NC	●			
			2	NC			●	
			3	Dummy				
			4	NC			●	
2NO	1NO	2010	**1**	NO		●		
			2	NO				●
			3	NO		●		
			4	Dummy				
2NO	1NC	2001	**1**	NO		●		
			2	NC			●	
			3	NO		●		
			4	Dummy				
1NO-1NC	1NO	1110	**1**	NO		●		
			2	NO				●
			3	NC	●			
			4	Dummy				
1NO-1NC	1NC	1101	**1**	NO		●		
			2	NC			●	
			3	NC	●			
			4	Dummy				

- Transformer and DC-DC converter types can have two or four contact blocks only.
- Contact blocks 1 and 3 are actuated by the top button. Contact blocks 2 and 4 are actuated by the bottom button.

Contact Block Mounting Position and Contact Arrangement Chart



Without Pilot Light
With Pilot Light
(transformer)



With Pilot Light
(full voltage)

Contact Block		Top Button		Bottom Button	
		Normal	Push	Normal	Push
1	NO		●		
2	NO				●
3	NC	●			
4	NC			●	

Part No. Development

HW7D - B 12 11 11 GR

- 11 (last): Contact code (1NO-1NC) of bottom button
- 11 (first): Contact code (1NO-1NC) of top button

Contact Arrangement Chart

Contact Arrangement			Contact Block		Top Button		Bottom Button	
Top Button	Bottom Button	Contact Code	Mounting Position	Contact	Normal	Push	Normal	Push
2NC	1NO	0210	1	NC	●			
			2	NO				●
			3	NC	●			
			4	Dummy				
2NC	1NC	0201	1	NC	●			
			2	NC			●	
			3	NC	●			
			4	Dummy				
2NO	2NO	2020	1	NO		●		
			2	NO				●
			3	NO		●		
			4	NO				●
2NO	1NO-1NC	2011	1	NO		●		
			2	NO				●
			3	NO		●		
			4	NC			●	
2NO	2NC	2002	1	NO		●		
			2	NC			●	
			3	NO		●		
			4	NC			●	
1NO-1NC	2NO	1120	1	NO		●		
			2	NO				●
			3	NC	●			
			4	NO				●
1NO-1NC	1NO-1NC	1111	1	NO		●		
			2	NO				●
			3	NC	●			
			4	NC			●	
1NO-1NC	2NC	1102	1	NO		●		
			2	NC			●	
			3	NC	●			
			4	NC			●	
2NC	2NO	0220	1	NC	●			
			2	NO				●
			3	NC	●			
			4	NO				●
2NC	1NO-1NC	0211	1	NC	●			
			2	NO				●
			3	NC	●			
			4	NC			●	
2NC	2NC	0202	1	NC	●			
			2	NC			●	
			3	NC	●			
			4	NC			●	

Selector Switches

Package Quantity: 1

HW1S

Dimensions on page 50.

90° 2-position / 60° 2-position

Contact Code	Contact Block: Mounting Position	Contact Block: Contact	Operator Position: 1	2	Maintained (90°)	Spring Return from Right (60°)	—	—
10 (1NO)	1	NO		●	HW1S-2T⑥10	HW1S-21T⑥10		
	2	Dummy						
11 (1NO-1NC)	1	NO		●	HW1S-2T⑥11	HW1S-21T⑥11		
	2	NC	●					
20 (2NO)	1	NO		●	HW1S-2T⑥20	HW1S-21T⑥20	—	—
	2	NO		●				
22 (2NO-2NC)	1	NO		●	HW1S-2T⑥22	HW1S-21T⑥22		
	2	NC	●					
	3	NO		●				
	4	NC	●					

45° 3-position

Contact Code	Contact Block: Mounting Position	Contact Block: Contact	Operator Position: 1	0	2	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way
20 (2NO)	1	NO	●			HW1S-3T⑥20	HW1S-31T⑥20	HW1S-32T⑥20	HW1S-33T⑥20
	2	NO			●				
02 (2NC)	1	NC		▬		HW1S-3T⑥02	HW1S-31T⑥02	HW1S-32T⑥02	HW1S-33T⑥02
	2	NC	▬						
22N1 (2NO-2NC)	1	NO	●			HW1S-3T⑥22N1	HW1S-31T⑥22N1	HW1S-32T⑥22N1	HW1S-33T⑥22N1
	2	NO			●				
	3	NC		▬					
	4	NC	▬						
22N9 (2NO-2NC) ★☆	1	NC			●	HW1S-3ST⑥22N9	—	—	—
	2	NC	●						
	3	$\overline{\text{NO}}$	▬						
	4	NO			●				
40 (4NO)	1	NO	●			HW1S-3T⑥40	HW1S-31T⑥40	HW1S-32T⑥40	HW1S-33T⑥40
	2	NO			●				
	3	NO	●						
	4	NO			●				
40N2 (4NO) ★☆	1	$\overline{\text{NO}}$	●			HW1S-3ST⑥40N2	—	—	—
	2	$\overline{\text{NO}}$		▬					
	3	NO	●						
	4	NO			●				
04 (4NC)	1	NC		▬		HW1S-3T⑥04	HW1S-31T⑥04	HW1S-32T⑥04	HW1S-33T⑥04
	2	NC	▬						
	3	NC		▬					
	4	NC	▬						
21N1 (2NO-1NC) ★☆	1	NO	●			HW1S-3JT⑥21N1	—	—	—
	2	NO			●				
	3	NC		●					
	4	Dummy							

30° 5-position / 45° 4-position

Contact Code	Contact Block: Mounting Position	Contact Block: Contact	Operator Position: 1	2	3	4	5	Maintained	Maintained
13N6 (1NO-3NC) ★☆	1	$\overline{\text{NC}}$		▬	▬	▬		HW1S-4T⑥13N6	—
	2	NC		●					
	3	NC			●				
	4	NO				●			
22N3 (2NO-2NC) ★☆	1	NO	●					HW1S-4T⑥22N3	—
	2	NC		●					
	3	NC			●				
	4	NO				●			
12 (1NO-2NC) ★☆	1	NO	●					HW1S-4T⑥12	—
	2	NC		●					
	3	NC			●				
	4	Dummy							
22N3 (2NO-2NC) ★☆	1	NO	●					—	HW1S-5T⑥22N3
	2	NC		●					
	3	NC				●			
	4	NO					●		

Contact Block Mounting Position

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- 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.
- For models with ☆, contacts may overlap when the operator position is changed.
- 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 51 to 55.

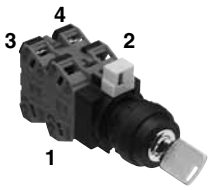
Key Selector Switches (Pin Tumbler Key)

Package Quantity: 1

Shape	No. of Positions	Contact Code	Contact Block		Operator Position		Cam Code	Maintained 1 2	Operator Position		Cam Code	Maintained 2 1
			Mounting Position	Contact	1	2			2	1		
	90° 2-position	1NC (01)	**1**	NC	●		—	**HW1K-2PA⑥01**		●	J	**HW1K-2JPA⑥01**
			2	—	Dummy				Dummy			
		1NO-1NC (11)	**1**	NO		●	—	**HW1K-2PA⑥11**	●		J	**HW1K-2JPA⑥11**
			2	NC	●					●		
		2NC (02)	**1**	NC	●		—	**HW1K-2PA⑥02**		●	J	**HW1K-2JPA⑥02**
			2	NC	●					●		
		2NO-1NC (21)	**1**	NO		●	—	**HW1K-2PA⑥21**	●		J	**HW1K-2JPA⑥21**
			2	NO		●			●			
			3	NC	●					●		
			4	—	Dummy				Dummy			
		1NO-2NC (12)	**1**	NO		●	—	**HW1K-2PA⑥12**	●		J	**HW1K-2JPA⑥12**
			2	NC	●					●		
			3	NC	●					●		
			4	—	Dummy				Dummy			
		3NC (03)	**1**	NC	●		—	**HW1K-2PA⑥03**		●	J	**HW1K-2JPA⑥03**
			2	NC	●					●		
			3	NC	●					●		
			4	—	Dummy				Dummy			
		2NO-2NC (22)	**1**	NO		●	—	**HW1K-2PA⑥22**	●		J	**HW1K-2JPA⑥22**
			2	NC	●					●		
			3	NO		●			●			
			4	NC	●					●		
		4NC (04)	**1**	NC	●		—	**HW1K-2PA⑥04**		●	J	**HW1K-2JPA⑥04**
			2	NC	●					●		
			3	NC	●					●		
			4	NC	●					●		

- Specify a terminal style code in place of ⑥ in the Part No.
  F: Finger-safe (IP20), blank: Spring-up screw.
- For contact block mounting position, see the figure on the right.
- Each key selector switch is supplied with two keys.
- 15 types of key numbers are available in addition to standard (500) key.
- Spring-return type is also available.
- Key retained position can be selected. See table below for key retained positions.
- See page 50 for dimensions.

Contact Block Mounting Position



Ordering Information

Example: **HW1K-2JPA01-501**

- Not specified: 500 (default key)
- 501-515: The key number is engraved on the key cylinder. (default key is not engraved with a number)
- Key removal/retained positions
  A: Removable in all positions
  B: Removable in the left only
  C: Removable in the right only
- Cam code: Blank or J
- Operator position code:
  2: 2-position, maintained
  21: 2-position, spring return from right

Maintained (90° 2-position)		Spring Return (60° 2-position)
1 2	2 1	1 2 Spring Return from Right
Cam code: blank	Cam code: J	Cam code: blank

- For more contact arrangement, see pages 51 to 55.

Key Retained Position		
A (removable in all positions)	B (removable in left only)	C (removable in right only)
① ②	① ❷	❶ ②
Cam code: blank		

Key Removal Position		
A (removable in all positions)	B (removable in left only)	C (removable in right only)
② ①	② ❶	❷ ①
Cam code: J		

❶❷: Key retained position
Note: The key cannot be removed in a spring return position.

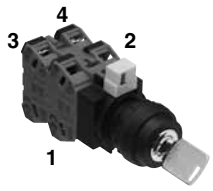
Key Selector Switches (Pin Tumbler Key)

Package Quantity: 1

Shape	No. of Positions	Contact Code	Contact Block No.	Contact Block Contact	Operator Position 1	Operator Position 0	Operator Position 2	Cam Code	Maintained (1 0 2)
	45° 3-position	2NC (02)	1	NC		—		—	**HW1K-3PA⑥02**
			2	NC	—				
		2NO-2NC (22N1)	1	NO	●			—	**HW1K-3PA⑥22N1**
			2	NO			●		
			3	NC		—			
			4	NC	—				
		4NC (04)	1	NC		—		—	**HW1K-3PA⑥04**
			2	NC	—				
			3	NC		—			
			4	NC	—				
		2NO-1NC (21N1) ★☆	1	NO	●			J	**HW1K-3JPA⑥21N1**
			2	NO			●		
			3	NC		●			
			4	—	Dummy				
		2NO-2NC (22N9) ★☆	1	NC			●	S	**HW1K-3SPA⑥22N9**
			2	NC	●				
			3	NO	—				
			4	NO			●		
UL LISTED CSA TÜV CE		4NC (04) ★	1	NC			●	S	**HW1K-3SPA⑥04**
			2	NC	●				
			3	NC			●		
			4	NC	●				

- Specify a terminal style code in place of ⑥ in the Part No.
  F: Finger-safe (IP20), blank: Spring-up screw
- 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.
- For models with ☆, contacts may overlap when the operator position is changed.
- For contact block mounting position, see the figure on the right.
- Each key selector switch is supplied with two keys.
- 15 types of key numbers are available in addition to standard (500) key.
- Spring-return type is also available.
- Key retained position can be selected. See table below for key retained positions.
- See page 50 for dimensions.

Contact Block Mounting Position



Ordering Information

Example: **HW1K-3SPA04-501**

- 501: Not specified: 500 (default key)
  501-515: The key number is engraved on the key cylinder. (default key is not engraved with a number)
- Key removal/retained positions
  A: Removable in all positions
  B: Removable in the left and center
  C: Removable in the right and center
  D: Removable in center only
  E: Removable in right and left
  G: Removable in left only
  H: Removable in right only
  Note: The key cannot be removed in a spring return position.
- Cam code: Blank, J, or S
- Operator position code:
  3: 3-position, maintained
  31: 3-position, spring return from right
  32: 3-position, spring return from left
  33: 3-position, spring return two way

Maintained (45° 3-position)	Spring Return (45° 3-position)		
Maintained (1 0 2)	Spring Return from Right (1 0 2) (Spring Return from Right)	Spring Return from Left (1 0 2) (Spring Return from Left)	Spring Return Two-way (1 0 2) (Spring Return Two-way)
Cam code: blank, J, or S	Cam code: blank		

- For more contact arrangement, see pages 51 to 55.

Key Retained Position (45° 3-position)			
A (removable in all positions) ① ⓪ ②	B (removable in left and center) ① ⓪ ❷	C (removable in right and center) ❶ ⓪ ②	D (removable in center only) ❶ ⓪ ❷
E (removable in right and left only) ① ⓿ ②	G (removable in left only) ① ⓿ ❷	H (removable in right only) ❶ ⓿ ②	

❶⓪❷: Key retained position
Note: The key cannot be removed in a spring return position.

Key Selector Switches (Disc Tumbler Key)

Package Quantity: 1

Disc Tumbler Key
HW1K

Dimensions on page 50.

No. of Positions	Contact Code	Contact Block: Mounting Position	Contact Block: Contact	Mounting Position: 1	Mounting Position: 2	Cam Code	Maintained (90°) 1 2	Spring Return from Right (60°) 1 2	Mounting Position: 2	Mounting Position: 1	Cam Code	Maintained (90°) 2 1
90° 2-position / 60° 2-position	1NO (10)	1	NO		●	—	HW1K-2A⑥10	HW1K-21B⑥10	●		J	HW1K-2JA⑥10
		2	—	Dummy					Dummy			
	1NC (01)	1	NC	●		—	HW1K-2A⑥01	HW1K-21B⑥01		●	J	HW1K-2JA⑥01
		2	—	Dummy					Dummy			
	1NO-1NC (11)	1	NO		●	—	HW1K-2A⑥11	HW1K-21B⑥11	●		J	HW1K-2JA⑥11
		2	NC	●						●		
	2NO (20)	1	NO		●	—	HW1K-2A⑥20	HW1K-21B⑥20	●		J	HW1K-2JA⑥20
		2	NO		●				●			
	2NC (02)	1	NC	●		—	HW1K-2A⑥02	HW1K-21B⑥02		●	J	HW1K-2JA⑥02
		2	NC	●						●		
	2NO-1NC (21)	1	NO		●	—	HW1K-2A⑥21	HW1K-21B⑥21	●		J	HW1K-2JA⑥21
		2	NO		●				●			
		3	NC	●						●		
		4	—	Dummy					Dummy			
	1NO-2NC (12)	1	NO		●	—	HW1K-2A⑥12	HW1K-21B⑥12	●		J	HW1K-2JA⑥12
		2	NC	●						●		
		3	NC	●						●		
		4	—	Dummy					Dummy			
	3NC (03)	1	NC	●		—	HW1K-2A⑥03	HW1K-21B⑥03		●	J	HW1K-2JA⑥03
		2	NC	●						●		
		3	NC	●						●		
		4	—	Dummy					Dummy			
	2NO-2NC (22)	1	NO		●	—	HW1K-2A⑥22	HW1K-21B⑥22	●		J	HW1K-2JA⑥22
		2	NC	●						●		
		3	NO		●				●			
		4	NC	●						●		
	4NC (04)	1	NC	●		—	HW1K-2A⑥04	HW1K-21B⑥04		●	J	HW1K-2JA⑥04
		2	NC	●						●		
		3	NC	●						●		
		4	NC	●						●		

- Specify a terminal style code in place of ⑥ in the Part No.
  F: Finger-safe (IP20), blank: Spring-up screw
- Each key selector switch is supplied with two keys.
- 3 types of key numbers are available in addition to standard key.
- Key retained position can be selected. See table below for key retained positions.

Contact Block Mounting Position

Ordering Information

Example: **HW1K-2JA01-1H**

- Not specified / 1H / 2H / 3H — 0H: The key number is engraved on the key cylinder. (default key is not engraved with a number)
- Key removal/retained positions
  A: Removable in all positions
  B: Removable in the left only
  C: Removable in the right only
- Cam code: Blank or J
- Operator position code:
  2: 2-position, maintained
  21: 2-position, spring return from right

Maintained (90° 2-position)		Spring Return (60° 2-position)
1 2	2 1	1 2 Spring Return from Right
Cam code: blank	Cam code: J	Cam code: blank

- For more contact arrangement, see pages 51 to 55.

Key Retained Position		
A (removable in all positions) ① ②	B (removable in left only) ① ❷	C (removable in right only) ❶ ②
Cam code: blank		

Key Removal Position		
A (removable in all positions) ② ①	B (removable in left only) ② ❶	C (removable in right only) ❷ ①
Cam code: J		

❶❷: Key retained position
Note: The key cannot be removed in a spring return position.

Key Selector Switches (Disc Tumbler Key)

Package Quantity: 1

No. of Positions: 45° 3-position

Disc Tumbler Key
HW1K

Dimensions on page 50.

Contact Code	Contact Block: Mounting Position	Contact Block: Contact	Mounting Position: 1	Mounting Position: 0	Mounting Position: 2	Cam Code	Maintained (1 0 2)	Spring return from right (1 0 2)	Spring Return from Left (1 0 2)	Spring Return Two-way (1 0 2)
2NO (20)	1	NO	●			—	HW1K-3A⑥20	HW1K-31B⑥20	HW1K-32C⑥20	HW1K-33D⑥20
	2	NO			●					
2NC (02)	1	NC				—	HW1K-3A⑥02	HW1K-31B⑥02	HW1K-32C⑥02	HW1K-33D⑥02
	2	NC	▬							
2NO-2NC (22N1)	1	NO	●			—	HW1K-3A⑥22N1	HW1K-31B⑥22N1	HW1K-32C⑥22N1	HW1K-33D⑥22N1
	2	NO			●					
	3	NC		▬						
	4	NC	▬							
2NO-2NC (22N9) ★☆	1	NC			●	S	HW1K-3SA⑥22N9	—	—	—
	2	NC	●							
	3	NO	▬							
	4	NO			●					
4NO (40)	1	NO	●			—	HW1K-3A⑥40	HW1K-31B⑥40	HW1K-32C⑥40	HW1K-33D⑥40
	2	NO			●					
	3	NO	●							
	4	NO			●					
4NO (40N2) ★☆	1	NO	●			S	HW1K-3SA⑥40N2	—	—	—
	2	NO		▬						
	3	NO	●							
	4	NO			●					
4NO (04)	1	NC		▬		—	HW1K-3A⑥04	HW1K-31B⑥04	HW1K-32C⑥04	HW1K-33D⑥04
	2	NC	▬							
	3	NC		▬						
	4	NC	▬							
4NC (04) ★	1	NC			●	S	HW1K-3SA⑥04	—	—	—
	2	NC	●							
	3	NC			●					
	4	NC	●							
2NO-2NC (21N1) ★☆	1	NO	●			J	HW1K-3JA⑥21N1	—	—	—
	2	NO			●					
	3	NC		●						
	4	—	Dummy							

- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- 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.
- For models with ☆ , contacts may overlap when the operator position is changed.
- 3 types of key numbers are available in addition to standard key.
- Key retained position can be selected. See table below for key retained positions.

Contact Block Mounting Position

Ordering Information

Example: **HW1K-3SA04-1H**

- Not specified
- 1H
- 2H
- 3H
- 0H: The key number is engraved on the key cylinder. (default key is not engraved with a number)

Key removal/retained positions
A: Removable in all positions
B: Removable in the left and center
C: Removable in the right and center
D: Removable in center only
E: Removable in right and left
G: Removable in left only
H: Removable in right only
Note: The key cannot be removed in a spring return position.

Cam code: Blank or J

Operator position code:
3: 3-position, maintained
31: 3-position, spring return from right
32: 3-position, spring return from left
33: 3-position, spring return two way

Maintained (45° 3-position)	Spring Return (45° 3-position)		
Maintained (1 0 2)	Spring Return from Right (1 0 2) (Spring Return from Right)	Spring Return from Left (1 0 2) (Spring Return from Left)	Spring Return Two-way (1 0 2) (Spring Return Two-way)
Cam code: blank, J, or S	Cam code: blank		

- For more contact arrangement, see pages 51 to 55.

Key Retained Position (45° 3-position)			
A (removable in all positions) ① ⓪ ②	B (removable in left and center) ① ⓪ ❷	C (removable in right and center) ❶ ⓪ ②	D (removable in center only) ❶ ⓪ ❷
E (removable in right and left only) ① ⓿ ②	G (removable in left only) ① ⓿ ❷	H (removable in right only) ❶ ⓿ ②	

⓪❶❷: Key retained position
Note: The key cannot be removed in a spring return position.

Illuminated Selector Switches (90° 2-position / 60° 2-position)

Package Quantity: 1

HW1F

Knob Operator

Lever Operator

Dimensions on page 50.

Contact Code	Contact Block		Operator Position		Lamp	Maintained (90°) 1 2	Spring Return from Right (60°) 1 2
	Mounting Position	Contact	1	2			
11 (1NO-1NC)	**1**	NO		●	Without Lamp	**HW1F-2⑥11Q0②**	**HW1F-21⑥11Q0②**
	2	NC	●		LED / Incandescent	**HW1F-2⑥11③②**	**HW1F-21⑥11③②**
20 (2NO)	**1**	NO		●	Without Lamp	**HW1F-2⑥20Q0②**	**HW1F-21⑥20Q0②**
	2	NO		●	LED / Incandescent	**HW1F-2⑥20③②**	**HW1F-21⑥20③②**
22 (2NO-2NC)	**1**	NO		●	Without Lamp	**HW1F-2⑥22Q0②**	**HW1F-21⑥22Q0②**
	2	NC	●				
	3	NO		●	LED / Incandescent	**HW1F-2⑥22③②**	**HW1F-21⑥22③②**
	4	NO	●				

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code		③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp / LED	Incandescent	LED	Incandescent		
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	Q2: 6V AC/DC	Q5: 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
		Q3: 12V AC/DC	Q6: 12V AC/DC		
		Q4: 24V AC/DC	Q7: 24V AC/DC		
		H2: 100/110V AC	H5: 100/110V AC	Transformer	
		H22: 115/120V AC	H25: 115/120V AC		
		M2: 200/220V AC	M5: 200/220V AC		
		M42: 230/240V AC	M45: 230/240V AC		
		S2: 380V AC	S5: 380V AC		
		T2: 400/440V AC	T5: 400/440V AC		
		T82: 480V AC	T85: 480V AC		

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 23.

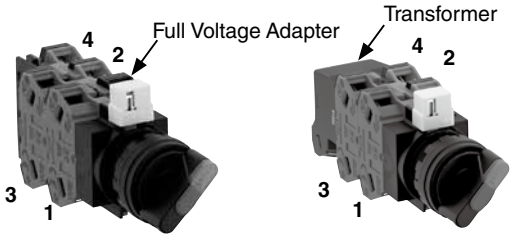
∗ DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC)

Lever Operator

Lever operators available.
To order lever operators, specify "L" in the Part No. as shown below.

Example: **HW1F-211Q7②** → **HW1F-2L11Q7②**
(knob operator) (lever operator)

Contact Block Mounting Position



Full Voltage **Transformer**

Illuminated Selector Switches (45° 3-position)

Package Quantity: 1

Contact Code	Contact Block		Operator Position			Lamp	Maintained	Spring Return from Right	Spring Return from Left	Spring Return Two-way
	Mounting Position	Contact	1	0	2		1 0 2	1 0 2	1 0 2	1 0 2
20 (2NO)	1	NO	●			Without Lamp	**HW1F-3⑥20Q0②**	**HW1F-31⑥20Q0②**	**HW1F-32⑥20Q0②**	**HW1F-33⑥20Q0②**
	2	NO			●	LED / Incandescent	**HW1F-3⑥20③②**	**HW1F-31⑥20③②**	**HW1F-32⑥20③②**	**HW1F-33⑥20③②**
02 (2NC)	1	NC		▬	▬	Without Lamp	**HW1F-3⑥02Q0②**	**HW1F-31⑥02Q0②**	**HW1F-32⑥02Q0②**	**HW1F-33⑥02Q0②**
	2	NC	▬	▬		LED / Incandescent	**HW1F-3⑥02③②**	**HW1F-31⑥02③②**	**HW1F-32⑥02③②**	**HW1F-33⑥02③②**
22N1 (2NO-2NC)	1	NO	●			Without Lamp	**HW1F-3⑥22N1Q0②**	**HW1F-31⑥22N1Q0②**	**HW1F-32⑥22N1Q0②**	**HW1F-33⑥22N1Q0②**
	2	NO			●					
	3	NC		▬	▬	LED / Incandescent	**HW1F-3⑥22N1③②**	**HW1F-31⑥22N1③②**	**HW1F-32⑥22N1③②**	**HW1F-33⑥22N1③②**
	4	NC	▬	▬						
40 (4NO)	1	NO	●			Without Lamp	**HW1F-3⑥40Q0②**	**HW1F-31⑥40Q0②**	**HW1F-32⑥40Q0②**	**HW1F-33⑥40Q0②**
	2	NO			●					
	3	NO	●			LED / Incandescent	**HW1F-3⑥40③②**	**HW1F-31⑥40③②**	**HW1F-32⑥40③②**	**HW1F-33⑥40③②**
	4	NO			●					
04 (4NC)	1	NC		▬	▬	Without Lamp	**HW1F-3⑥04Q0②**	**HW1F-31⑥04Q0②**	**HW1F-32⑥04Q0②**	**HW1F-33⑥04Q0②**
	2	NC	▬	▬						
	3	NC		▬	▬	LED / Incandescent	**HW1F-3⑥04③②**	**HW1F-31⑥04③②**	**HW1F-32⑥04③②**	**HW1F-33⑥04③②**
	4	NC	▬	▬						

Designation Code

Specify a designation code in place of ②, ③, or ⑥ in the Part No.

② Lens/Illumination Color Code		③ Operating Voltage Code		Input Type	⑥ Terminal Style Code
Without Lamp / LED	Incandescent	LED	Incandescent		
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	Q2 : 6V AC/DC	Q5 : 6V AC/DC	Full Voltage	F: Finger-safe (IP20) blank: Spring-up screw Only spring-up screw terminals are available on DC-DC converter types.
		Q3 : 12V AC/DC	Q6 : 12V AC/DC		
		Q4 : 24V AC/DC	Q7 : 24V AC/DC		
		H2 : 100/110V AC	H5 : 100/110V AC	Transformer	
		H22 : 115/120V AC	H25 : 115/120V AC		
		M2 : 200/220V AC	M5 : 200/220V AC		
		M42 : 230/240V AC	M45 : 230/240V AC		
		S2 : 380V AC	S5 : 380V AC		
		T2 : 400/440V AC	T5 : 400/440V AC		
		T82 : 480V AC	T85 : 480V AC		

- Use a pure white LED lamp for yellow illumination.
- Other contact arrangements and gold-plated silver contacts available. See page 23.

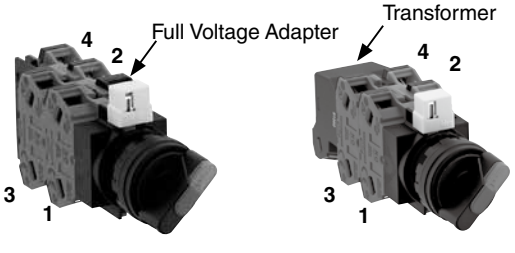
∗ DC-DC converter types are not approved by UL, CSA, and TÜV, and not CE compliant (operating voltage 90 to 140V DC)

Lever Operator

Lever operators available.
To order lever operators, specify "L" in the Part No. as shown below.

Example: **HW1F-211Q7②** → **HW1F-2L11Q7②**
(knob operator) (lever operator)

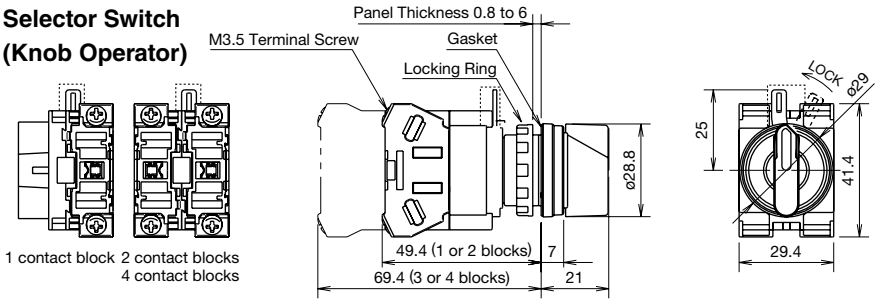
Contact Block Mounting Position



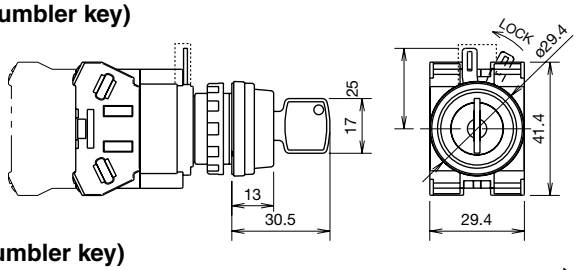
Full Voltage **Transformer**

Dimensions

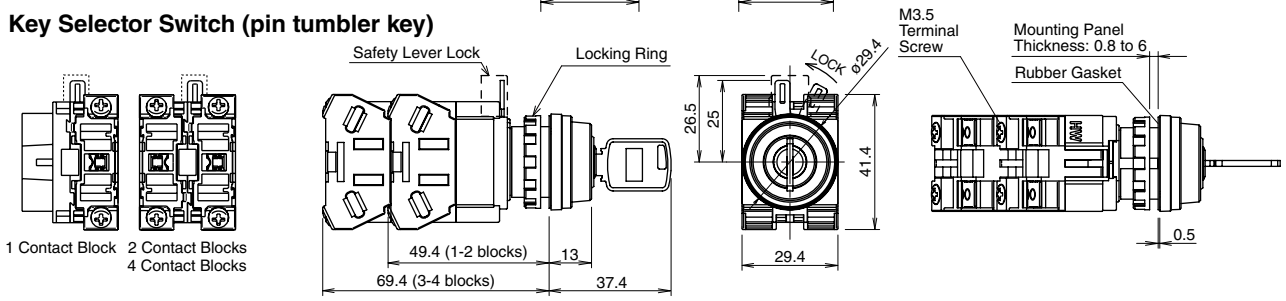
Selector Switch (Knob Operator)



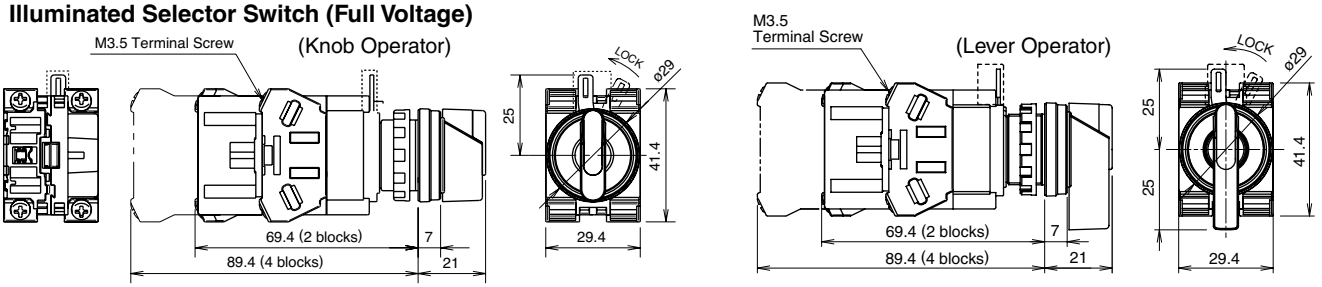
Key Selector Switch (disc tumbler key)



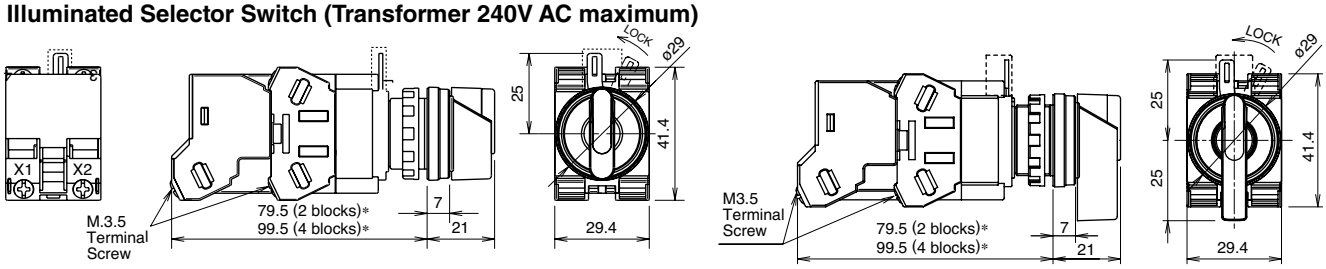
Key Selector Switch (pin tumbler key)



Illuminated Selector Switch (Full Voltage)



Illuminated Selector Switch (Transformer 240V AC maximum)



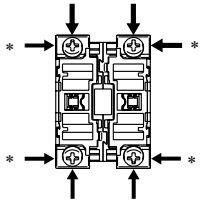
The above figures illustrate spring-up screw contact blocks.
The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.
*The depth of finger-safe (IP20) contact blocks are as follows:
Transformer : 89.5 (2 blocks)
109.5 (4 blocks)
For dimensions of transformer types (380V AC minimum), see page 37.

All dimensions in mm.

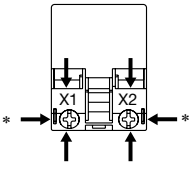
Terminal Wiring

Arrows indicate access directions for wiring.

Spring-up screw terminal



Contact Block
Full Voltage Adapter



Transformer

*Spring-up screw terminals only.

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

Contact Code	Contact Block		Operator Position		Operator Availability						Cam Code	Remarks
					1 2			1 2				
	Mounting Position	Contact	1	2	Knob	Key	Illuminated	Knob	Key	Illuminated		
10 (1NO)	**1**	NO		●	×	×	×	×	×	×	—	Standard
	2	Dummy										
01 (1NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	Dummy										
11 (1NO-1NC)	**1**	NO		●	×	×	×	×	×	×	—	Standard
	2	NC	●									
11N1 (2NO-2NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	NO		●								
20 (2NO)	**1**	NO		●	×	×	×	×	×	×	—	Standard
	2	NO		●								
02 (2NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	NC	●									
22 (2NO-2NC)	**1**	NO		●	×	×	×	×	—	×	–	Standard
	2	NC	●									
	3	NO		●								
	4	NC	●									
22N2 (2NO-2NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	NO		●								
	3	NC	●									
	4	NO		●								
22N1 (2NO-2NC)	**1**	NO		●	×	×	×	×	—	×	—	
	2	NO		●								
	3	NC	●									
	4	NC	●									
22N4 (2NO-2NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	NO		●								
	3	NO		●								
	4	NC	●									
31N1 (3NO-1NC)	**1**	NC	●		×	×	×	×	—	×	—	
	2	NO		●								
	3	NO		●								
	4	NO		●								
40 (4NO)	**1**	NO		●	×	×	×	×	—	×	—	
	2	NO		●								
	3	NO		●								
	4	NO		●								
7S ★ (1NO-1NC)	**1**	$\overline{\text{NO}}$		▬	×	×	×	×	—	×	—	
	2	$\overline{\text{NC}}$	▬									
8S ★ (2NO-2NC)	**1**	$\overline{\text{NO}}$		▬	×	×	×	×	—	×	—	
	2	$\overline{\text{NC}}$	▬									
	3	$\overline{\text{NO}}$		▬								
	4	$\overline{\text{NC}}$	▬									
22N7 ★ (2NO-2NC)	**1**	$\overline{\text{NC}}$	▬		×	×	×	×	—	×	—	
	2	$\overline{\text{NO}}$		▬								
	3	$\overline{\text{NC}}$	▬									
	4	$\overline{\text{NO}}$		▬								
03 (3NO)	**1**	NC	●		×	×	×	×	×	×	—	
	2	NC	●									
	3	NC	●									
	4	Dummy										
21 (2NO-2NC)	**1**	NO		●	×	×	×	×	×	×	—	
	2	NC	●									
	3	NO		●								
	4	Dummy										
12 (1NO-2NC)	**1**	NO		●	×	×	×	×	×	×	—	
	2	NC	●									
	3	NC	●									
	4	Dummy										

• 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 Part No. shown in the standard Part No. on preceding pages. For other contact arrangements, see Part No. Development on page 55.

90° 2-position (Cam Reversed)

Contact Code	Contact Block		Operator Position		Operator Availability			Cam Code	Remarks
					2 1				
	Mounting Position	Contact	2	1	Knob	Key	Illuminated		
10 (1NO)	1	NO	●		○	○	○	J	Standard
	2	Dummy							
01 (1NO)	1	NC		●	○	○	○	J	
	2	Dummy							
11 (1NO-1NC)	1	NO	●		○	○	○	J	Standard
	2	NC		●					
11N1 (1NO-1NC)	1	NC		●	○	○	○	J	0
	2	NO	●						
20 (2NO)	1	NO	●		○	○	○	J	Standard
	2	NO	●						
02 (2NC)	1	NC		●	○	○	○	J	0
	2	NC		●					
22 (2NO-2NC)	1	NO	●		○	○	○	J	Standard
	2	NC		●					
	3	NO	●						
	4	NC		●					
22N2 (2NO-2NC)	1	NC		●	○	○	○	J	
	2	NO	●						
	3	NC		●					
	4	NO	●						
22N1 (2NO-2NC)	1	NO	●		○	○	○	J	
	2	NO	●						
	3	NC		●					
	4	NC		●					
22N4 (2NO-2NC)	1	NC		●	○	○	○	J	
	2	NO	●						
	3	NO	●						
	4	NC		●					
31N1 (3NO-1NC)	1	NC		●	○	○	○	J	
	2	NO	●						
	3	NO	●						
	4	NO	●						
40 (4NO)	1	NO	●		○	○	○	J	
	2	NO	●						
	3	NO	●						
	4	NO	●						
7S ★ (1NO-1NC)	1	$\overline{\text{NO}}$	▬		○	○	○	J	
	2	$\overline{\text{NC}}$		▬					
8S ★ (2NO-2NC)	1	$\overline{\text{NO}}$	▬		○	○	○	J	
	2	$\overline{\text{NC}}$		▬					
	3	$\overline{\text{NO}}$	▬						
	4	$\overline{\text{NC}}$		▬					
22N7 ★ (2NO-2NC)	1	$\overline{\text{NC}}$		▬	○	○	○	J	
	2	$\overline{\text{NO}}$	▬						
	3	$\overline{\text{NC}}$		▬					
	4	$\overline{\text{NO}}$	▬						
03 (3NC)	1	NC		●	○	○	○	J	
	2	NC		●					
	3	NC		●					
	4	Dummy							
21 (2NO-1NC)	1	NO	●		○	○	○	J	
	2	NC		●					
	3	NO	●						
	4	Dummy							
12 (1NO-2NC)	1	NO	●		○	○	○	J	
	2	NC		●					
	3	NC		●					
	4	Dummy							

• 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 Part No. shown in the standard Part No. on preceding pages. For other contact arrangements, see Part No. Development on page 55.

45° 3-position

Contact Code	Contact Block		Operator Position			Operator Availability												Cam Code	Remarks
						1 0 2			1 0 2			1 0 2			1 0 2				
	Mounting Position	Contact	1	0	2	Knob	Key	Illuminated	Knob	Key	Illuminated	Knob	Key	Illuminated	Knob	Key	Illuminated		
11 (1NO-1NC)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NC	▬	▬															
11N1 (1NO-1NC)	1	NC		▬	▬	×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NO			●														
7S ★☆ (1NO-1NC)	1	NO	●		●	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NC	▬	▬															
11N1 ★☆ (1NO-1NC)	1	NC		●		×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
20 (2NO)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	Standard
	2	NO			●														
1S (2NO)	1	NO	●		●	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
2S ★ (2NO)	1	NO		●		×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NC	▬	▬															
02 (2NC)	3	NC		▬	▬	×	×	×	×	×	×	×	×	×	×	×	×	—	Standard
	4	NC	▬	▬															
22N1 (2NO-2NC)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	Standard
	2	NO			●														
	3	NC		▬	▬														
	4	NC	▬	▬															
22N2 (2NO-2NC)	1	NC		▬	▬	×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NO			●														
	3	NC		▬	▬														
	4	NO			●														
8S ★☆ (2NO-2NC)	1	NO	●		●	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NC	▬	▬															
	3	NO	●		●														
	4	NC	▬	▬															
22N8 ★☆ (2NO-2NC)	1	NO	●		●	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NC	▬	▬															
	3	NC		●															
	4	NO			●														
22N2 ★☆ (2NO-2NC)	1	NC		●		×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
	3	NC		●															
	4	NO			●														
31 (3NO-1NC)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NC	▬	▬															
	3	NO	●																
	4	NO			●														
31N1 (3NO-1NC)	1	NC		▬	▬	×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NO			●														
	3	NO	●																
	4	NO			●														
13 (1NO-3NC)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	
	2	NC	▬	▬															
	3	NC		▬	▬														
	4	NC	▬	▬															
13N3 ★☆ (1NO-3NC)	1	NC		●		×	×	×	—	—	—	—	—	—	—	—	—	J	
	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.
- For models with ☆, contacts may overlap when the operator position is changed.

Remarks: When ordering the contact arrangement indicated with “Standard” in the table above, specify the Part No. shown in the standard Part No. on preceding pages. For other contact arrangements, see Part No. Development on page 55.

45° 3-position

Contact Code	Contact Block		Operator Position			Operator Availability												Cam Code	Remarks
						1 0 2			1 0 2			1 0 2			1 0 2				
	Mounting Position	Contact	1	0	2	Knob	Key	Illuminated	Knob	Key	Illuminated	Knob	Key	Illuminated	Knob	Key	Illuminated		
40 (4NO)	1	NO	●			×	×	×	×	×	×	×	×	×	×	×	×	—	Standard
	2	NO			●														
	3	NO	●																
	4	NO			●														
40N1 ★ (4NO)	1	$\overline{\text{NO}}$	●		●	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
	3	$\overline{\text{NO}}$	●		●														
	4	NO			●														
04 (4NC)	1	NC		▬	▬	×	×	×	×	×	×	×	×	×	×	×	×	—	Standard
	2	NC	▬	▬															
	3	NC		▬	▬														
	4	NC	▬	▬															
04N2 ★ (4NC)	1	NC		●		×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	$\overline{\text{NC}}$	▬	▬															
	3	NC		●															
	4	$\overline{\text{NC}}$	▬	▬															
22 ★☆ (2NO-2NC)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NC		●															
	3	NO	●																
	4	NC		●															
21N1 ★☆ (2NO-1NC)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	S	Standard
	2	NO			●														
	3	NC		●															
	4	Dummy																	
40N2 ★☆ (4NO)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	S	Standard
	2	$\overline{\text{NO}}$		▬	▬														
	3	NO	●																
	4	NO			●														
22N9 ★☆ (2NO-2NC)	1	NC			●	×	×	×	—	—	—	—	—	—	—	—	—	J	Standard
	2	NC	●																
	3	$\overline{\text{NO}}$	▬	▬															
	4	NO			●														
31N4 ★☆ (3NO-1NC)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	$\overline{\text{NC}}$	▬	▬															
	3	$\overline{\text{NO}}$	●		●														
	4	NO			●														
13N1 ★☆ (1NO-3NC)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	$\overline{\text{NC}}$	▬	▬															
	3	NC		●															
	4	$\overline{\text{NC}}$	▬	▬															
22N5 ★☆ (2NO-2NC)	1	$\overline{\text{NC}}$		▬	▬	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
	3	NC		●															
	4	NO			●														
31N2 ★☆ (3NO-1NC)	1	NO	●			×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	NO			●														
	3	NC		●															
	4	NO			●														
13N2 ★☆ (1NO-3NC)	1	$\overline{\text{NC}}$		▬	▬	×	×	×	—	—	—	—	—	—	—	—	—	J	
	2	$\overline{\text{NC}}$	▬	▬															
	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.
- For models with ☆, contacts may overlap when the operator position is changed.

Remarks: When ordering the contact arrangement indicated with "Standard" in the table above, specify the Part No. shown in the standard Part No. on preceding pages. For other contact arrangements, see Part No. Development on page 55.

45° 4-position

Contact Code	Contact Block		Operator Position				Operator Availability	Cam Code	Remarks
	Mounting Position	Contact	1	2	3	4	Knob		
12 ★☆ (1NO-2NC)	1	NO	●				×	—	Standard
	2	NC		●					
	3	NC			●				
	4	Dummy							
04N3 ★☆ (4NC)	1	$\overline{\text{NC}}$		▬	▬	▬	×	—	
	2	NC		●					
	3	NC			●				
	4	$\overline{\text{NC}}$	▬	▬	▬				
13N6 ★☆ (1NO-3NC)	1	$\overline{\text{NC}}$		▬	▬	▬	×	—	Standard
	2	NC		●					
	3	NC			●				
	4	NO				●			
13N5 ★☆ (1NO-3NC)	1	NO	●				×	—	
	2	NC		●					
	3	NC			●				
	4	$\overline{\text{NC}}$	▬	▬	▬				
22N3 ★☆ (2NO-2NC)	1	NO	●				×	—	Standard
	2	NC		●					
	3	NC			●				
	4	NO				●			

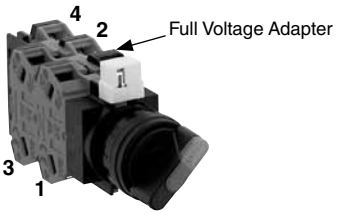
30° 5-position

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

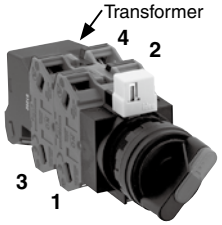
- On the contact arrangement marked with ★ in the table above, the rated current (load switching current) is reduced to a half of the rated current of the contact block.The rated insulation voltage and the rated thermal current remain unchanged.
- For models with ☆, contacts may overlap when the operator position is changed.

Contact Block Mounting Position and Contact Arrangement Chart

Non-illuminated Selector
Illuminated Selector
(Transformer)



Illuminated Selector
(Full Voltage)



Illuminated Selector
(Transformer)

Part No. Development

When cam code is not required

HW1S - 2 T F 11
- 11 — Contact code (1NO-1NC)
- F — "T" for knob operator
- T — 2-position
- 2 — 2-position

When cam code is required

HW1K - 3 J A F 22N2
- 22N2 — Contact code (2NO-2NC)
- A — Key removal option code
- F — Cam code (J, S, or none)
- J — Cam code (J, S, or none)
- 3 — 3-position

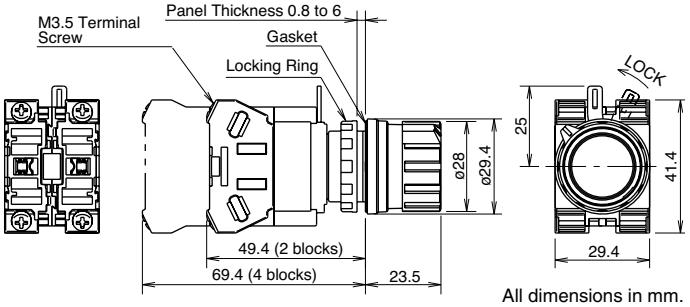
Pushbutton Selectors

Package Quantity: 1

Shape	Circuit Category	Contact Code	Contact Block						Part No.	① Button Color Code
			Mounting Position	Contact	Normal	Depressed	Normal	Depressed		
HW1R	A	11 (1NO-1NC)	1	NO		●		●	**HW1R-2A⑥11①**	Specify a button color code in place of ① in the Part No. B: black G: green R: red S: blue W: white Y: yellow
			2	NC	●					
		20 (2NO)	1	NO		●		●	**HW1R-2A⑥20①**	
			2	NO		●	▬			
		22 (2NO-2NC)	1	NO		●		●	**HW1R-2A⑥22①**	
			2	NC	●					
			3	NO		●		●		
			4	NC	●					
	D	20 (2NO)	1	NO		●			**HW1R-2D⑥20①**	
			2	NO				●		
		22N1 (2NO-2NC)	1	NO		●			**HW1R-2D⑥22N1①**	
			2	NO				●		
			3	NC	●		▬			
			4	NC	▬		●			
	E	22N1 ★ (2NO-2NC)	1	NO		●			**HW1R-2E⑥22N1①**	
			2	NO				●		
			3	NC			▬			
			4	NC	▬					
	F	22N1 ★ (2NO-2NC)	1	NO				●	**HW1R-2F⑥22N1①**	
			2	NO		●				
			3	NC			●			
			4	NC	●					
	N	22N2 ★ (2NO-2NC)	1	NC			●		**HW1R-2N⑥22N2①**	
			2	NO		●		●		
			3	NC			●			
			4	NO		●		●		
	T	22N1 ★ (2NO-2NC)	1	NO		●	●	Blocked	**HW1R-2T⑥22N1①**	
			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.
- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw
- 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

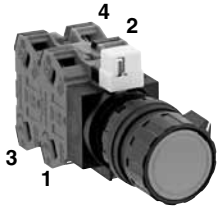


All dimensions in mm.

The above figure illustrates spring-up screw contact blocks.

The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

Contact Block Mounting Position and Contact Arrangement Chart



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

Mono-Lever Switches

Package Quantity: 1

Shape	Positions	Part No.
HW1M Standard Lever 	2-position	**HW1M-1010-⑥20**
		HW1M-2020-⑥20
		HW1M-0101-⑥20
		HW1M-0202-⑥20
		HW1M-0101-⑥40
		HW1M-0202-⑥40
	4-position	**HW1M-1111-⑥22N9**
		HW1M-2222-⑥22N9
HW1M-L Interlocking Lever 	2-position	**HW1M-L1010-⑥20**
		HW1M-L2020-⑥20
		HW1M-L0101-⑥20
		HW1M-L0202-⑥20
		HW1M-L0101-⑥40
		HW1M-L0202-⑥40
	4-position	**HW1M-L1111-⑥22N9**
		HW1M-L2222-⑥22N9

- 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.
- Specify a terminal style code in place of ⑥ in the Part No. F: Finger-safe (IP20), blank: Spring-up screw

Contact Arrangement Chart

2-position (Right/Left)

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

Ordering Information

HW1M-L — **1 1 1 1** (Up R Dn L) — **F** — **22N9**

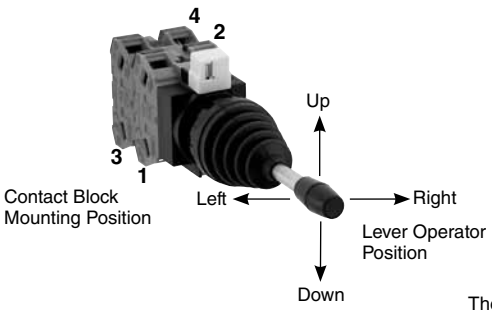
Model
HW1M: Standard HW1M-L: Interlocking

Lever Operation Mode
Order of Entry Up → Right → Down → Left 1: Maintained 2: Spring returned 0: Blocked

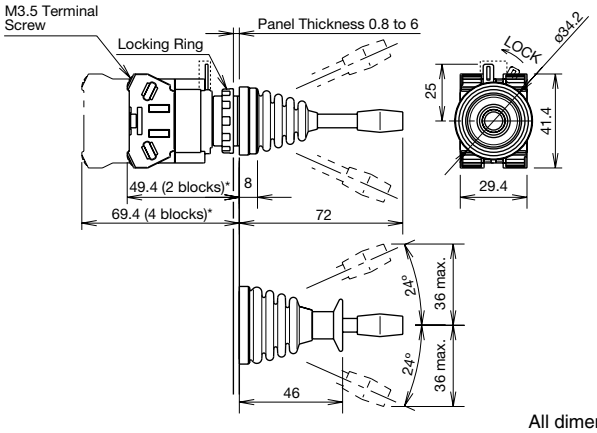
Terminal Style Code
F: Finger-safe (IP20) blank: Spring-up screw

Contact Code
Select a required contact operation at each lever operator position from the contact arrangement charts above and specify the Contact Code.

Contact Block Mounting Position and Lever Operator Position



Dimensions



All dimensions in mm.

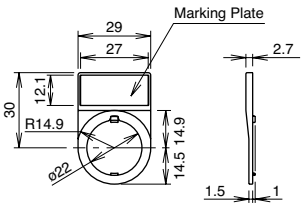
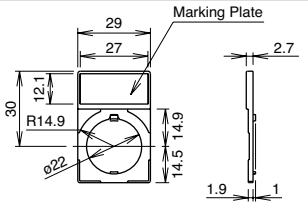
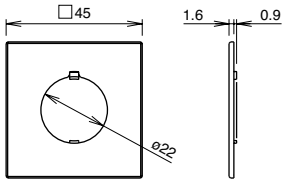
The above figure illustrates spring-up screw contact blocks.

The depth of each finger-safe (IP20) contact block is 0.9 mm longer than that of a spring-up screw contact block.

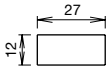
Accessories

Nameplates

HWAM, HWAQ, HWAS, and HWAV

Description	Legend	Material	Part No.	Ordering 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	

Making Plate

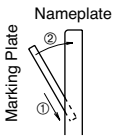
Description	Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
HWNP	Aluminum (black) 1.0 mm thick	**HWNP-∗**	**HWNP∗**	1	White legend on black background. 
			HWNP-∗PN10	10	

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

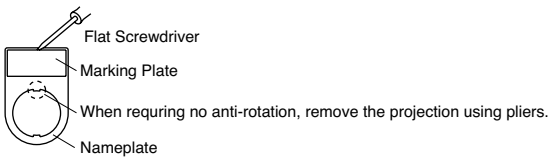
Legends

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

• Installing the marking plate on a nameplate

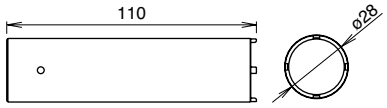
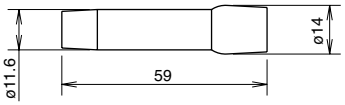
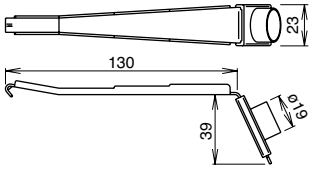
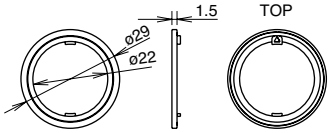
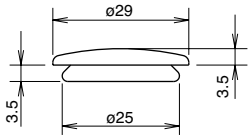
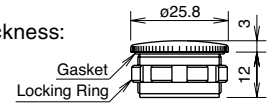
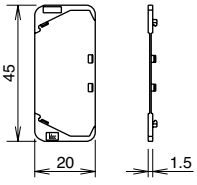


• To remove the marking plate, insert the flat screwdriver between the marking plate and nameplate.

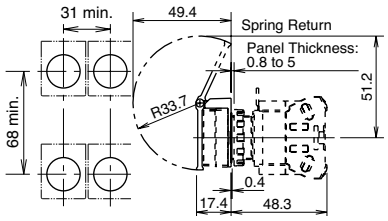
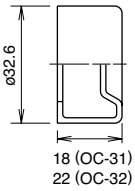
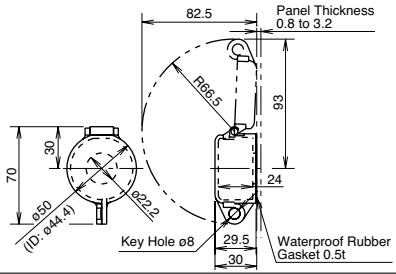
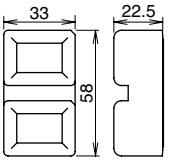


Note: When using an nameplate, the mounting panel thickness is decreased by 1.5 mm.

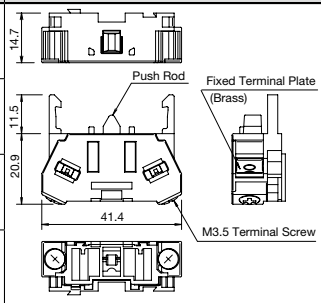
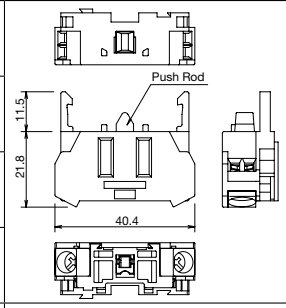
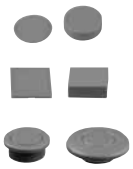
Accessories

Shape	Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
Locking Ring Wrench 	Metal (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	**OR-55**	**OR-55**	1	• Used to install and remove the LED/ incandescent lamps. 
Contact Block Removal Tool 	Metal/ Rubber	**TW-KC1**	**TW-KC1**	1	• Used to remove the contact block and transformer, and also to install/remove the pilot light and illuminated pushbutton lens. 
Anti-rotation Ring 	Plastic	**HW9Z-RL**	**HW9Z-RLPN10**	10	• Used to prevent the operator from turning. Generally used when using no nameplates on selector switches and pushbutton selectors. 
Rubber Mounting Hole Plug 	Rubber (black)	**OB-31**	**OB-31PN05**	5	• Used to plug the unused ø22.2mm mounting holes. 
Metallic Mounting Hole Plug 	Diecast Metal (locking ring: polyamide plastic)	**LW9Z-BM**	**LW9Z-BM**	1	• 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 Mounting Hole Plug 	Plastic (polyamide)	**LW9Z-BP1**	**LW9Z-BP1**	1	• Used to plug the unused ø22.2mm mounting holes. • Tighten the locking ring to a torque of 2.0 N·m. IP65 • Mounting panel thickness: 0.8 to 6 mm
Barrier 	Plastic (polyamide)	**HW-VG1**	**HW-VG1PN10**	10	• Used to prevent contact between adjacent lead wires when units are mounted closely. Barriers should always be used in close mounting. 

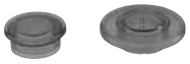
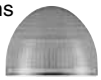
Accessories

Shape		Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
Switch Guard 	Spring Return	Plastic	**HW9Z-K1**	**HW9Z-K1**	1	• 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	
Button Clear Boot 	For flush pushbuttons	Rubber (EPDM)	**OC-31**	**OC-31**	1	• 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. • Cannot be used with nameplates HWAM, HWAQ, HWAS, or HWAV. 
	For extended pushbuttons		**OC-32**	**OC-32**	1	
Padlock Cover 		Polyarylate (gasket: nitryl rubber)	**HW9Z-KL1**	**HW9Z-KL1**	1	• Used to protect pushbuttons, illuminated pushbuttons, selector switches, and key selector switches. 
Rubber Boot for Dual Pushbutton Switches 		Clear Silicon Rubber	**HW9Z-D7D**	**HW9Z-D7D**	1	• Degree of proctection: IP65 
Ring Adapter 		Rubber	**HW9Z-A25**	**HW9Z-A25PN05**	5	• Used to install the HW/TW units into ø25 mm mounting holes. • IP65 • Cannot be used with anti-rotation ring and nameplate. • Mounting panel thickness: 1.2 to 6.0 mm
Ring Adapter 		Gasket: nylon Washer: metal (brass)	**HW9Z-A30**	**HW9Z-A30PN02**	2	• Used to install the HW units into ø30 mm mounting holes (except for HW1E, HW1B-M5/V5, and HW7D). • 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
Ring Adapter 		Gasket: rubber Washer: metal	**HW9Z-A30E**	**HW9Z-A30EPN02**	2	• Used to install HW1B-M5/HW1P-5Q units into ø30 mm mounting holes.

Maintenance Parts

Shape	Specification		Part No.	Ordering No.	Package Quantity	Remarks
Contact Block Spring-up screw 	NO 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	
Contact Block Finger-safe (IP20) 	1NO contact		**HW-F10**	**HW-F10**	1	
	1NC contact		**HW-F01**	**HW-F01**	1	
	EM (early make) contact		**HW-F10R**	**HW-F10R**	1	
	LB (late break) contact		**HW-F01R**	**HW-F01R**	1	
Dummy Block 	Nylon		**TW-DB**	**TW-DBPN10**	10	
Full Voltage Adapter  (Photo: Spring-up screw)	Spring-up screw		**HW-GA1**	**HW-GA1PN02**	2	
	Finger-safe (IP20)		**HW-DA1FB**	**HW-DA1FB**	1	
Transformer  (Photo: Spring-up screw)	100/110V AC	Spring-up screw	**HW-T16**	**HW-T16**	1	• For illuminated pushbuttons and illuminated selector switches.
		Finger-safe (IP20)	**TW-F16B**	**TW-F16B**	1	
	115/120V AC	Spring-up screw	**HW-T126**	**HW-T126**	1	
		Finger-safe (IP20)	**TW-F126B**	**TW-F126B**	1	
	200/220V AC	Spring-up screw	**HW-T26**	**HW-T26**	1	
		Finger-safe (IP20)	**TW-F26B**	**TW-F26B**	1	
	230/240V AC	Spring-up screw	**HW-T246**	**HW-T246**	1	
		Finger-safe (IP20)	**TW-F246B**	**TW-F246B**	1	
	380V AC	Spring-up screw	—	—	—	
		Finger-safe (IP20)	**TW-F386B**	**TW-F386B**	1	
	400/440V AC	Spring-up screw	**HW-L46**	**HW-L46**	1	
		Finger-safe (IP20)	**TW-F46B**	**TW-F46B**	1	
	480V AC	Spring-up screw	**HW-L486**	**HW-L486**	1	
		Finger-safe (IP20)	**TW-F486B**	**TW-F486B**	1	
DC-DC Converter 	110V DC	Spring-up screw	**HW-L16D**	**HW-L16D**	1	
Button 	Round flush with round or square bezel	Polyacetal	**HW1A-B1①**	**HW1A-B1①PN05**	5	• Specify a button color code in place of ①. B (black) G (green) R (red) S (blue) W (white) Y (yellow)
	Round extended with round or square bezel		**HW2A-B1①**	**HW2A-B1①PN05**	5	
	Square flush		**HW2A-B2①**	**HW2A-B2①PN05**	5	
	Square extended		**HW1A-B3①**	**HW1A-B3①PN02**	2	
	ø29mm mushroom		**HW1A-B4①**	**HW1A-B4①PN02**	2	
	ø40mm mushroom					

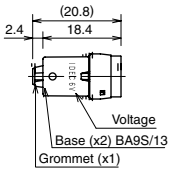
Maintenance Parts

Shape		Specification	Part No.	Ordering No.	Package Quantity	Color Code
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) Use a clear lens for pure white and 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	A (amber), Y (yellow)
	ø40mm mushroom		**ALW41L-②**	**ALW41L-②**	1	C (clear), G (green), R (red), S (blue)
			ALW41LD-②	**ALW41LD-②**	1	A (amber), Y (yellow)
Dome Lens for Pilot Light 		AS resin	**HW1A-P2②**	**HW1A-P2②PN05**	5	A (amber), G (green), R (red), S (blue), W (white), and Y (yellow)
Jumbo Dome Lens 		Polycarbonate	**HW1A-P5②**	**HW1A-P5②**	1	A: amber, G: green, R: red, S: blue, W: white, 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 		AS Resin	**HW9Z-FDY②**	**HW9Z-FDY②**	1	A (amber), G (green), R (red), S (blue), W (white), Y (yellow) Use a white (W) knob/lever for pure white illumination.
Operator Lever for Illuminated Selector Switch 			**HW9Z-FDL②**	**HW9Z-FDL②**	1	
Spare Key (Disc Tumbler Key) 		Metal (nickel-plated brass)	**HW9Z-SK-231**	**HW9Z-SK-231PN02**	2	
Spare Key (Pin Tumbler Key) 		Metal (nickel-plated brass)	**LW9Z-SK-500**	**LW9Z-SK-500PN02**	2	Standard key number
			LW9Z-SK-□	**LW9Z-SK-□ PN02**		Key number 501 to 515
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	
Diffusing Lens 		Polycarbonate	**HW9Z-PP5C**	**HW9Z-PP5C**	1	Diffusing lens is used for LED type jumbo dome pilot lights only.
Safety Lever Lock 		Plastic	**HW9Z-LS**	**HW9Z-LSPN10**	10	• Yellow
Gasket 		Rubber	**HW9Z-WM**	**HW9Z-WMP10**	10	

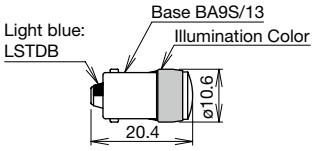
Note: Specify a button color code or lens color code in place of ① or ② in the Ordering No.

Maintenance Parts

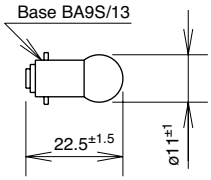
LED Lamps (LSTD) [except for HW Jumbo Dome pilot lights]

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

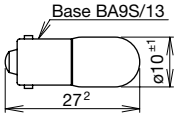
LED Lamps (LSTDB) [used for HW Jumbo Dome pilot lights only]

Operating Voltage	Current Draw AC	Current Draw DC	Part No.	Illumination Color Code	Package Quantity	Dimensions
24V AC/DC ±10% 	15 mA	15 mA	**LSTDB-2②**	Specify a color code in place of ② in the Ordering No. A: amber G: green PW: pure white R: red S: blue W: white Use a pure white (PW) LED lamp with yellow (Y) lens.	1	

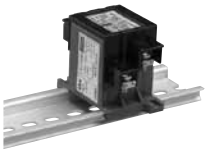
Incandescent Lamps (LS) [except for HW Jumbo Dome pilot lights]

Rated Operating Voltage	Lamp Ratings	Part No. (Ordering No.)	Package Quantity	Dimensions
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**		

Incandescent Lamps (LSB) [used for HW Jumbo Dome pilot lights only]

Rated Operating Voltage	Lamp Ratings	Part No.	Ordering No.	Package Quantity	Dimensions
24V AC/DC 	28V, 0.17A	**LSB-2**	**LSB-2PN02**	2	

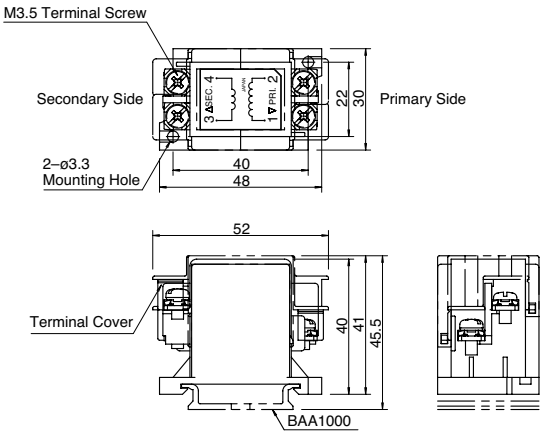
Transformer

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

Specifications

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

Dimensions

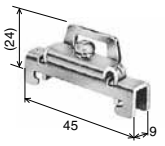


Accessories

DIN Rail

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

End Clip

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

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

Safety Precautions

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

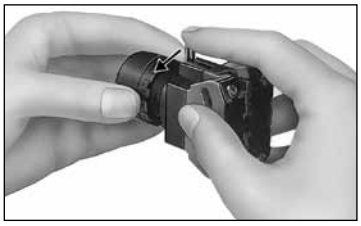
Instructions

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.

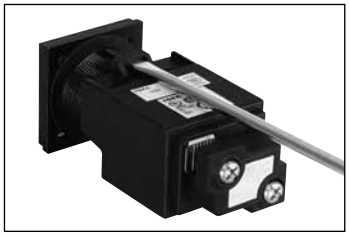
Removing and Installing the Contact Block

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.

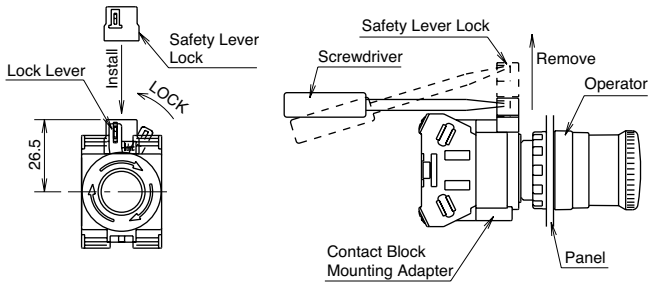
Notes for Illuminated Pushbuttons

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.

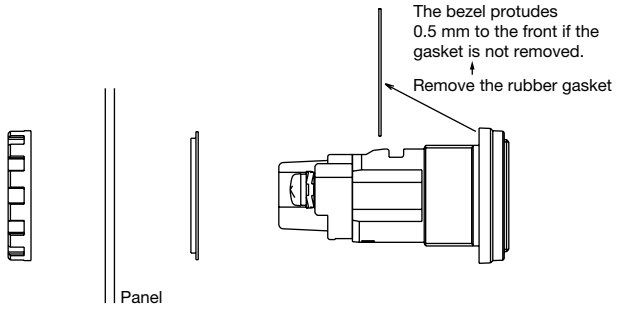


Installing **Removing**

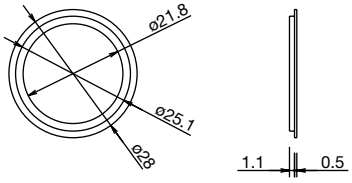
When removing safety lever, make sure that the screwdriver does not touch the contact block.

Ring Adapter

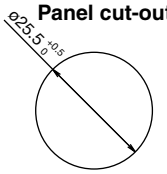
HW9Z-A25



Dimensions

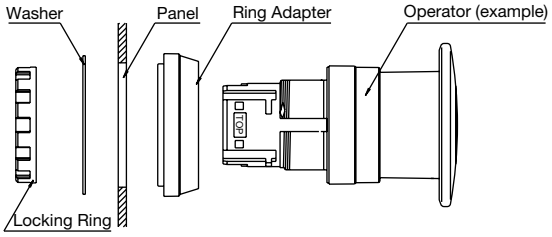


Panel cut-out

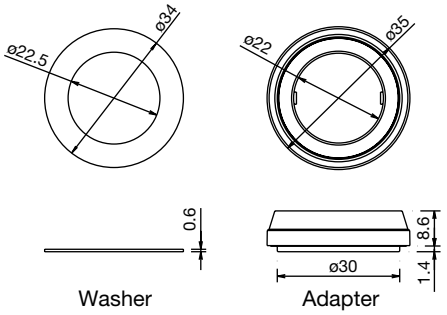


Instructions

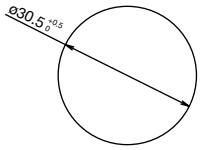
HW9Z-A30



Dimensions



Panel-Cut

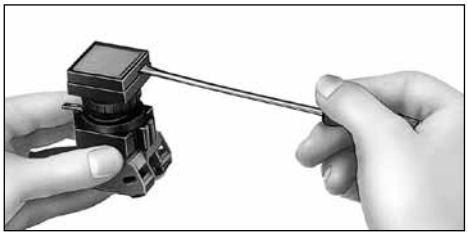


Replacement of Lens and Marking Plate

Removing

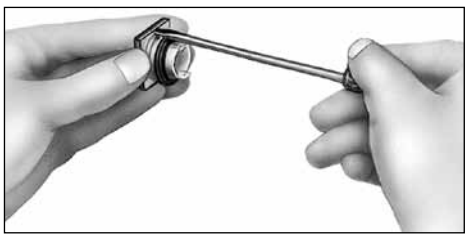
1. Remove the lens unit (color lens, marking plate, and lens holder) by inserting a screwdriver into the recess of the lens through the bezel.

[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.

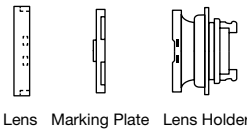
[Removing the Lens]



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

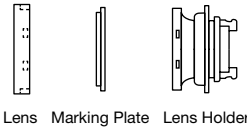
Installing

[For Round Lens]



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]

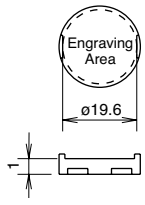
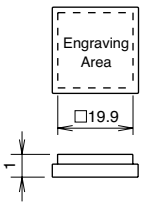
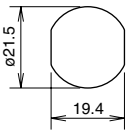
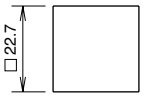


1. Place the marking plate on the lens holder and press the lens onto the lens holder to engage the latches.
2. Place the marking plate in the correct orientation.

Marking

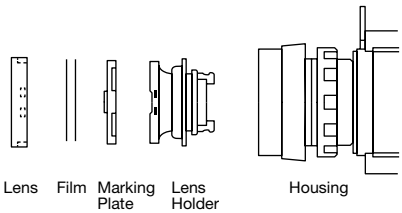
For HW series illuminated pushbuttons and pilot lights, legends and symbols can be engraved on the built-in marking plates, or printed film can be inserted under the lens for labeling purposes. Films are not supplied with illuminated pushbuttons, and may be provided by the user.

Marking Plates and Marking Film Size

Lens Style	Round Lens	Square Lens
Built-in Marking Plate		
	• Engraving must be made on the engraving area within 0.5mm deep. • The marking plate is made of white acrylic resin.	
Applicable Marking Film		
	• Mylar for printing labels is not supplied 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

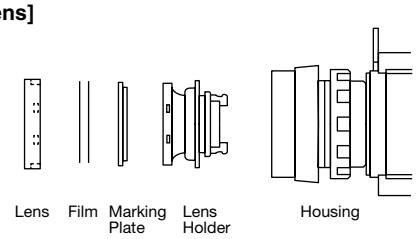
[Round Lens]



Note: Films are not supplied.

Instructions

[Square Lens]

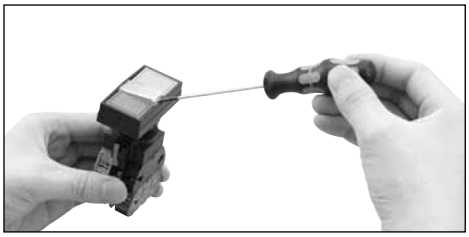


Note: Films are not supplied.

Replacement of Lens for Dual Pushbuttons

Removing

Remove the lens by inserting a screwdriver into the recess of the lens through the bezel.



Installing

Install the lens in the recess between the buttons by pressing against the bezel.

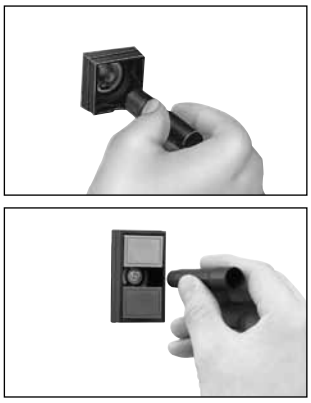
Replacement of Lamps

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

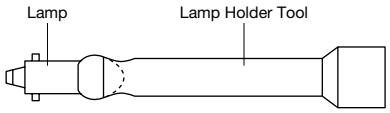
[How to Remove]

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

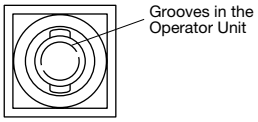


[How to Install]

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

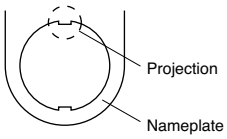


2. Place the pins on the lamp base to the grooves in the lamp socket. Insert the lamp and turn it clockwise.



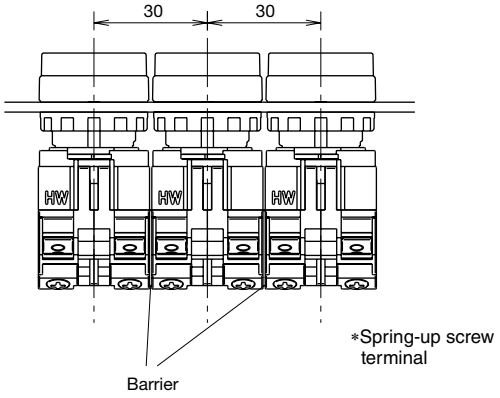
Nameplate

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

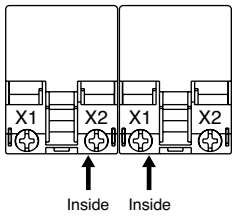


Close Mounting

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



When mounting transformer type illuminated units closely in a horizontal row on 30 mm 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 30 mm centers, keep the ambient temperature below 40°C.

Tightening Torque for Terminal Screws

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

Installation of LED Illuminated Units

1. When using full voltage type LED illuminated units, provide protection against electrical noise, if necessary.
2. Notes for Pure White LED Lamps

Instructions

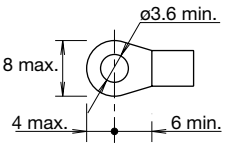
- Do not use the pure white LED outdoors, otherwise it will lead to the degradation of brightness and color. Do not remove or apply shock to the cap on the pure white LED lamp, otherwise it may break or damage the cap.
- Use a white lens. The illumination color will be dull if a different color lens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

Applicable Wiring

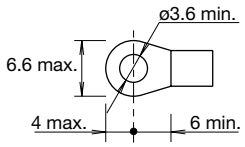
The applicable wire size is 2mm^2 maximum. (Solid wire ø1.6 mm max.) One or two wires can be connected.

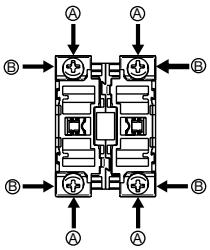
Applicable Crimping Terminal (for spring-up screw terminal)

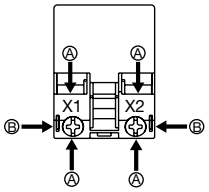
Crimping terminal for Ⓐ



Crimping terminal for Ⓑ



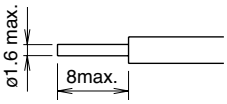




∗Spring-up screw terminal

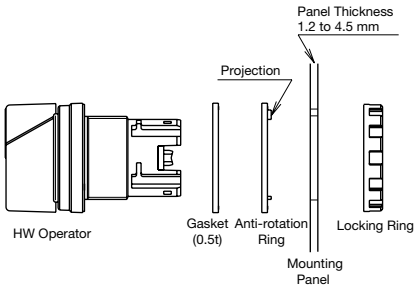
Be sure to use an insulation tube or cover on the crimping part of the crimping terminal to prevent electrical shocks.

Solid Wire



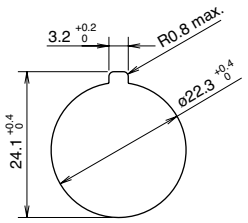
Anti-rotation Ring and Panel Cut-out

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



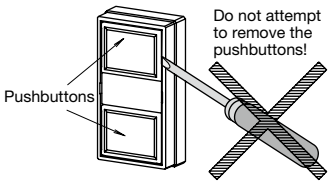
Panel Cut-out

(Complies with IEC60947-5-1)



Selector Switch

Be sure to turn the knob or key securely to each operator position.



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.

Dual Pushbutton Switches

The pushbuttons cannot be removed or replaced. Do not attempt to remove using a flat screwdriver or pincers, otherwise the pushbuttons may be damaged.

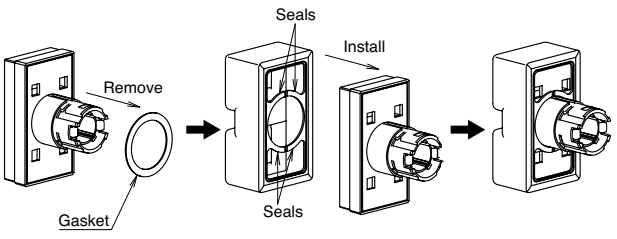
Installing the Rubber Boot for Dual Push-buttons

When using the HW7D pushbuttons in places where the pushbuttons are subject to water splash or an excessive amount of dust, make sure to use the HW9Z-D7D rubber boot (IP65) which is ordered separately.

Notes for Installing the Rubber Boot

Remove the gasket from the operator, and install the rubber boot on the operator. Pull out the seals of the rubber boot and place them around the operator sleeve as shown. Make sure that the seals are not twisted or tucked inside and that the gasket does not remain, otherwise the normal waterproof and dustproof characteristics are not ensured.

① Remove the gasket. ② Install the rubber boot on the pushbuttons. ③ Rubber boot is installed.



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

IDEC CORPORATION
6-64, Nishi-Miyahara 2-Chome, Yodogawa-ku, Osaka 532-0004, Japan
Tel: +81-6-6398-2571, Fax: +81-6-6392-9731
E-mail: marketing@idec.co.jp

IDEC CORPORATION (USA)
Tel: +1-408-747-0550 / (800) 262-IDEC (4332)
Fax: +1-408-744-9055 / (800) 635-6246
E-mail: opencontact@idec.com

IDEC CANADA LIMITED
Tel: +1-905-890-8561, Toll Free: (800) 262-IDEC (4332)
Fax: +1-905-890-8562
E-mail: sales@ca.idec.com

IDEC AUSTRALIA PTY. LTD.
Tel: +61-3-8523-5900, Toll Free: 1800-68-4332
Fax: +61-3-8523-5999
E-mail: sales@au.idec.com

IDEC ELECTRONICS LIMITED
Tel: +44-1256-321000, Fax: +44-1256-327755
E-mail: sales@uk.idec.com

IDEC ELEKTROTECHNIK GmbH
Tel: +49-40-25 30 54 - 0, Fax: +49-40-25 30 54 - 24
E-mail: service@idec.de

IDEC (SHANGHAI) CORPORATION
Tel: +86-21-6135-1515
Fax: +86-21-6135-6225 / +86-21-6135-6226
E-mail: idec@cn.idec.com

IDEC (BEIJING) CORPORATION
Tel: +86-10-6581-6131, Fax: +86-10-6581-5119

IDEC (SHENZHEN) CORPORATION
Tel: +86-755-8356-2977, Fax: +86-755-8356-2944

IDEC IZUMI (H.K.) CO., LTD.
Tel: +852-2803-8989, Fax: +852-2565-0171
E-mail: info@hk.idec.com

IDEC TAIWAN CORPORATION
Tel: +886-2-2698-3929, Fax: +886-2-2698-3931
E-mail: service@tw.idec.com

IDEC IZUMI ASIA PTE. LTD.
Tel: +65-6746-1155, Fax: +65-6844-5995
E-mail: info@sg.idec.com

IDEC ASIA (THAILAND) CO.,LTD.
Tel: +662-392-9765, Fax: +662-392-9768
E-mail: sales@th.idec.com

www.idec.com

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