

# ø22 XW Series Emergency Stop Switches

ø22 mm, 4-contact Emergency Stop Switch. Compact size—only 37.1 mm deep behind the panel (screw terminal style 48.7 mm with terminal cover). Reliable “Safe break action.”

- The depth behind the panel is only 37.1 mm for 1 to 4 contacts (screw terminal style 48.7 mm with terminal cover).
- The same depth behind the panel for illuminated and non-illuminated switches.
- IDEC's original “Safe break action” ensures that the contacts open when the contact block is detached from the operator.
- 1 to 4NC main contacts and 1 or 2NO monitor contact
- Push-to-lock, Pull or Turn-to-reset operator
- Direct opening action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Safety lock mechanism (IEC60947-5-5, 6.2)
- Degree of protection IP65, IP67 (IEC60529)
- Durable, silver with gold contacts.
- Screw terminal style is finger-safe (IP20).
- Two operator sizes: ø40 and ø60 mm
- Dark red (Munsell 5R4/12) or bright red (Munsell 7.5R4.5/14) colors are available for the non-illuminated operator.
- Push-ON illumination available (operator size: ø60)
- Connector style available to reduce wiring time and wiring mistakes.



## Standards and Specifications

### Contact Ratings

(NC main contacts/NO monitor contact)

Rated Insulation Voltage (Ui)		Screw Terminal		250V			
		Solder Terminal		300V			
Rated Thermal Current (Ith)		PC Board Terminal		125V			
		Connector		5A (connector style: 2.5A)			
Rated Operating Voltage (Ue)		30V		125V		250V (Note 3)	
Rated Operating Current	Main Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	5A (Note 1)	3A	
			Inductive Load (AC-15)	–	3A (Note 2)	1.5A	
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A	
			Inductive Load (DC-13)	1A	0.22A	0.1A	
	Monitor Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	1.2A	0.6A	
			Inductive Load (AC-14)	–	0.6A	0.3A	
DC		Resistive Load (DC-12)	2A	0.4A	0.2A		
		Inductive Load (DC-13)	1A	0.22A	0.1A		

- Minimum applicable load: 5V AC/DC, 1 mA (reference value) (Operating area depends on the operating conditions and load types.)
- The rated operating currents are measured at resistive/inductive load types specified in JIS C8201-5-1.

Note 1: Solder terminal/PC board terminal: 3A, Connector: 2.5A

Note 2: Solder terminal/PC board terminal: 1.5A

Note 3: Except for connector style.

### Illumination Ratings

Rated Voltage	Operating Voltage	Rated Current
24V AC/DC	24V AC/DC ±10%	15 mA

Note: An LED lamp is built into the contact block and cannot be replaced.

### Specifications

Applicable Standards	IEC60947-5-1, EN60947-5-1, IEC60947-5-5 (Note), EN60947-5-5, JIS C8201-5-1, UL508, UL991, NFPA79, CSA C22.2 No. 14, GB14048.5	
Operating Temperature	Non-illuminated: –25 to +60°C (no freezing) LED illuminated: –25 to +55°C (no freezing)	
Storage Temperature	–45 to +80°C	
Operating Humidity	45 to 85% RH (no condensation)	
Operating Force	Push to lock: 32N Pull to reset: 21N Turn to reset: 0.27 N·m	
Minimum Force Required for Direct Opening Action	80N	
Minimum Operator Stroke Required for Direct Opening Action	4.0 mm	
Maximum Operator Stroke	4.5 mm	
Contact Resistance	50 mΩ maximum (initial value) Connector style: 30 mΩ (Note)	
Insulation Resistance	100 MΩ minimum (500V DC megger)	
Overvoltage Category	II	
Impulse Withstand Voltage	2.5 kV	
Pollution Degree	3 (connector style: 2)	
Operation Frequency	900 operations/hour	
Shock Resistance	Operating extremes: 150 m/s <sup>2</sup> Damage limits: 1000 m/s <sup>2</sup>	
Vibration Resistance	Operating extremes: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup> Damage limits: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup>	
Mechanical Life	250,000 operations minimum	
Electrical Life	100,000 operations minimum 250,000 operations minimum (24V AC/DC, 100 mA)	
Degree of Protection	Panel front: IP65, IP67 (IEC 60529) Terminal Protection: IP20 (screw terminal, when using XW9Z-VL2MF)	
Short-circuit Protection	250V/10A fuse (Type aM, IEC60269-1/IEC60269-2)	
Conditional Short-circuit Current	1000A	
Terminal Style	Solder terminal, PC board terminal, M3 screw terminal, Connector	
Recommended Tightening Torque for Locking Ring	2.0 N·m	
Connectable Wire	Screw terminal: 0.75 to 1.25 mm <sup>2</sup> (AWG18 to 16) Solder terminal / PC board terminal: 1.25 mm <sup>2</sup> maximum (AWG16 maximum) Connector style: 0.3 to 0.85 mm <sup>2</sup> (AWG22 to 18)	
Soldering Conditions	310 to 350°C, 3 seconds maximum	
Recommended Tightening Torque for Terminal Screw	0.6 to 1.0 N·m	
Weight	ø40 mm: 72g ø60 mm: 81g	

Note: When connecting the applicable connector to a 1m wire of 0.3 mm<sup>2</sup> (AWG22).



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## XW Series Emergency Stop Switches

## Non-illuminated Pushlock Pull / Turn Reset (Screw Terminal)

Shape	NC Main Contact	NO Monitor Contact	Part No.		①Operator Color Code
			IP20	w/Terminal Cover	
	1NC	—	XW1E-BV401MF①	XW1E-BV401M①	R: Dark red RH: Bright red
	2NC	—	XW1E-BV402MF①	XW1E-BV402M①	
	3NC	—	XW1E-BV403MF①	XW1E-BV403M①	
	4NC	—	XW1E-BV404MF①	XW1E-BV404M①	
	1NC	1NO	XW1E-BV411MF①	XW1E-BV411M①	
	2NC	1NO	XW1E-BV412MF①	XW1E-BV412M①	
	3NC	1NO	XW1E-BV413MF①	XW1E-BV413M①	
	2NC	2NO	XW1E-BV422MF①	XW1E-BV422M①	
	1NC	—	XW1E-BV501MF①	XW1E-BV501M①	
	2NC	—	XW1E-BV502MF①	XW1E-BV502M①	
	3NC	—	XW1E-BV503MF①	XW1E-BV503M①	
	4NC	—	XW1E-BV504MF①	XW1E-BV504M①	
	1NC	1NO	XW1E-BV511MF①	XW1E-BV511M①	
	2NC	1NO	XW1E-BV512MF①	XW1E-BV512M①	
	3NC	1NO	XW1E-BV513MF①	XW1E-BV513M①	
	2NC	2NO	XW1E-BV522MF①	XW1E-BV522M①	


- Specify a color code in place of ① in the Part No.
- IP20 types can be connected to solid wires only.
- For EMO Switches, see D-052.

## Non-illuminated Pushlock Pull/Turn Reset (Solder Terminal/PC Board Terminal)

Shape	NC Main Contact	NO Monitor Contact	Part No.		①Operator Color Code
			Solder Terminal	PC Board Terminal	
	1NC	—	XW1E-BV401①	XW1E-BV401V①	R: Dark red RH: Bright red
	2NC	—	XW1E-BV402①	XW1E-BV402V①	
	3NC	—	XW1E-BV403①	XW1E-BV403V①	
	4NC	—	XW1E-BV404①	XW1E-BV404V①	
	1NC	1NO	XW1E-BV411①	XW1E-BV411V①	
	2NC	1NO	XW1E-BV412①	XW1E-BV412V①	
	3NC	1NO	XW1E-BV413①	XW1E-BV413V①	
	2NC	2NO	XW1E-BV422①	—	

- Specify a color code in place of ① in the Part No.
- Terminal cover (XA9Z-VL2) is ordered separately.

## Pushlock Pull/Turn Reset (Connector)

Shape	NC Main Contact	NO Monitor Contact	Part No.	①Operator Color Code
	3NC	—	XW1E-BV403V①-BC	R: Dark red RH: Bright red

- Specify a color code in place of ① in the Part No.
- See D-036 for applicable connectors.

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## XW Series Emergency Stop Switches

### LED Illuminated Pushlock Pull/Turn Reset (Screw Terminal)

Shape	Illumination	Rated Voltage	NC Main Contact	NO Monitor Contact	Part No.	
					IP20	w/Terminal Cover
	LED	24V AC/DC	1NC	—	XW1E-LV401Q4MFR	XW1E-LV401Q4MR
			2NC	—	XW1E-LV402Q4MFR	XW1E-LV402Q4MR
			3NC	—	XW1E-LV403Q4MFR	XW1E-LV403Q4MR
			4NC	—	XW1E-LV404Q4MFR	XW1E-LV404Q4MR
			1NC	1NO	XW1E-LV411Q4MFR	XW1E-LV411Q4MR
			2NC	1NO	XW1E-LV412Q4MFR	XW1E-LV412Q4MR
			3NC	1NO	XW1E-LV413Q4MFR	XW1E-LV413Q4MR
			2NC	2NO	XW1E-LV422Q4MFR	XW1E-LV422Q4MR


- The operator color is red only.
- IP20 types can be connected to solid wires only.

### LED Illuminated Pushlock Pull/Turn Reset (Solder Terminal/PC Board Terminal)

Shape	Illumination	Rated Voltage	NC Main Contact	NO Monitor Contact	Part No.	
					Solder Terminal	PC Board Terminal
	LED	24V AC/DC	1NC	—	XW1E-LV401Q4R	XW1E-LV401Q4VR
			2NC	—	XW1E-LV402Q4R	XW1E-LV402Q4VR
			3NC	—	XW1E-LV403Q4R	XW1E-LV403Q4VR
			4NC	—	XW1E-LV404Q4R	XW1E-LV404Q4VR
			1NC	1NO	XW1E-LV411Q4R	XW1E-LV411Q4VR
			2NC	1NO	XW1E-LV412Q4R	XW1E-LV412Q4VR
			3NC	1NO	XW1E-LV413Q4R	XW1E-LV413Q4VR
			2NC	2NO	XW1E-LV422Q4R	—


- The operator color is red only.
- Terminal cover (XA9Z-VL2) is ordered separately.

### Push-ON LED Illuminated Pushlock Pull/Turn Reset (Screw Terminal)

Shape	Illumination	Rated Voltage	NC Main Contact	NO Monitor Contact	Part No.	
					IP20	w/Terminal Cover
	LED	24V AC/DC	3NC	—	XW1E-TV403Q4MFR	XW1E-TV403Q4MR
			2NC	1NO	XW1E-TV412Q4MFR	XW1E-TV412Q4MR

- The operator color is red only.
- Push-ON is illuminated when the operator is latched, and turns off when reset.
- IP20 types can be connected to solid wires only.

### Push-ON LED Illuminated Pushlock Pull/Turn Reset (Connector)

Shape	Illumination	Rated Voltage	NC Main Contact	NO Monitor Contact	Part No.
	LED	24V AC/DC	3NC	—	XW1E-TV403Q4VR-BC

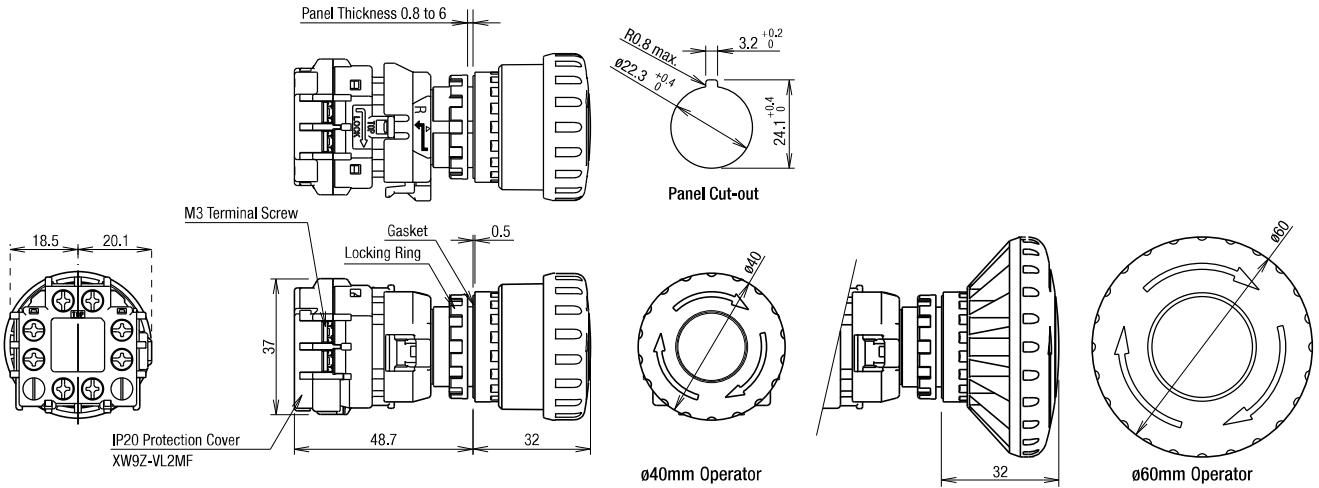
- The operator color is red only.
  - Push-ON is illuminated when the operator is latched, and turns off when reset.
- See **D-036** for applicable connectors.



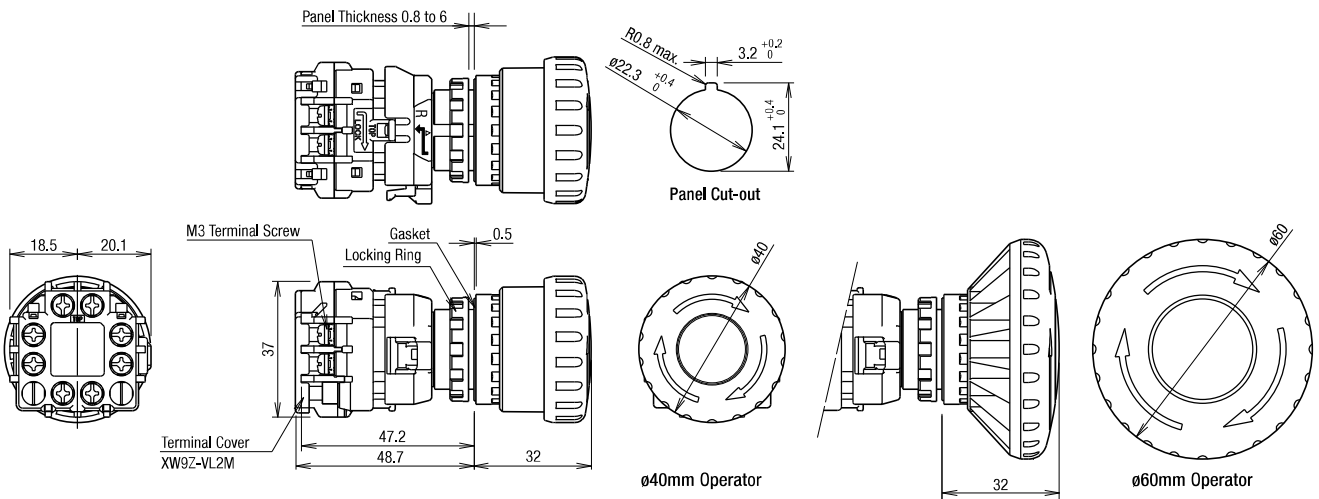
ø22 XW Series Emergency Stop Switches

Dimensions (Non-Illuminated)

Screw Terminal (IP20)

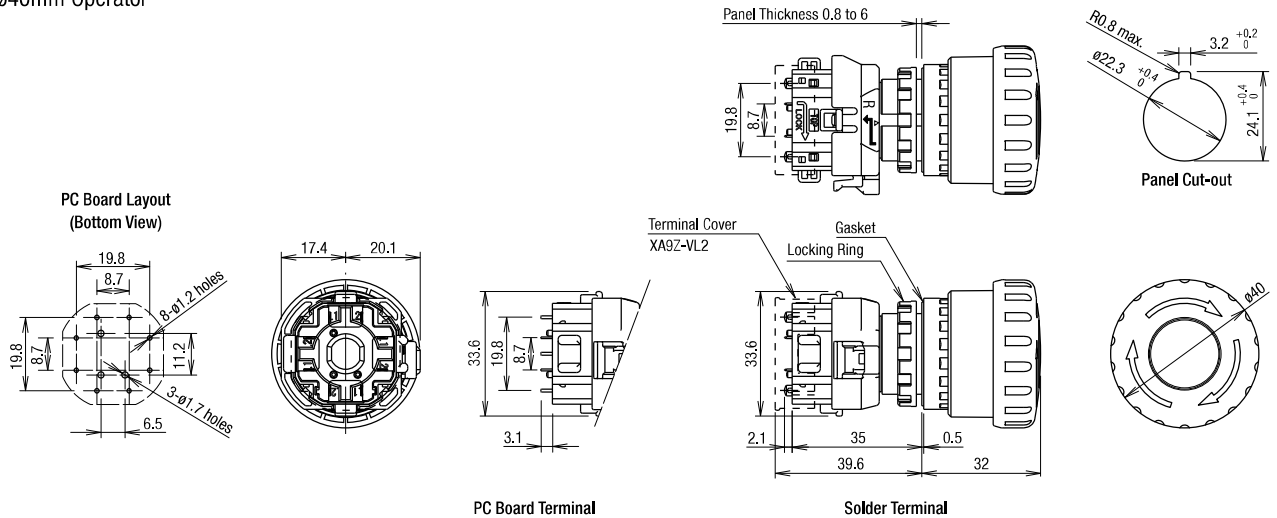


Screw Terminal (w/terminal cover)



Solder Terminal and PC Board Terminal

ø40mm Operator



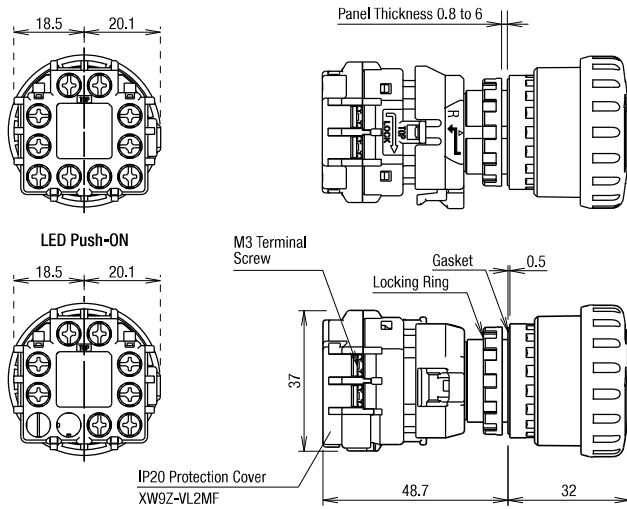
All dimensions in mm.

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- XA
- XW**
- XN
- SEMI

Dimensions (Illuminated)

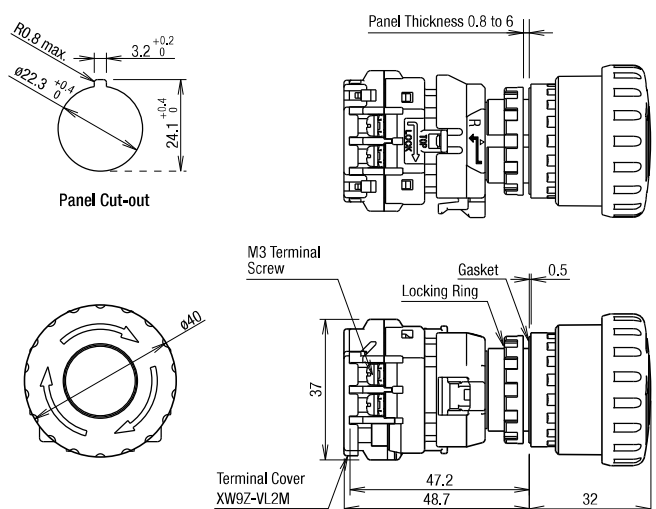
Screw Terminal (IP20) LED Illuminated

ø40mm Operator



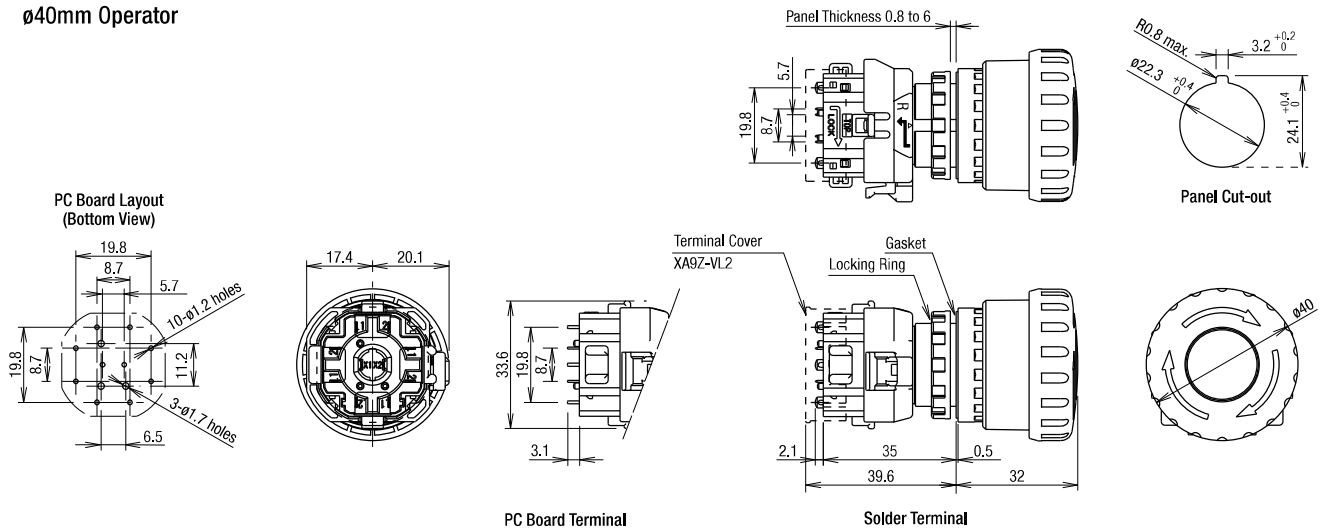
Screw Terminal (w/terminal cover) LED Illuminated

ø40mm Operator



Solder Terminal and PC Board Terminal LED Illuminated

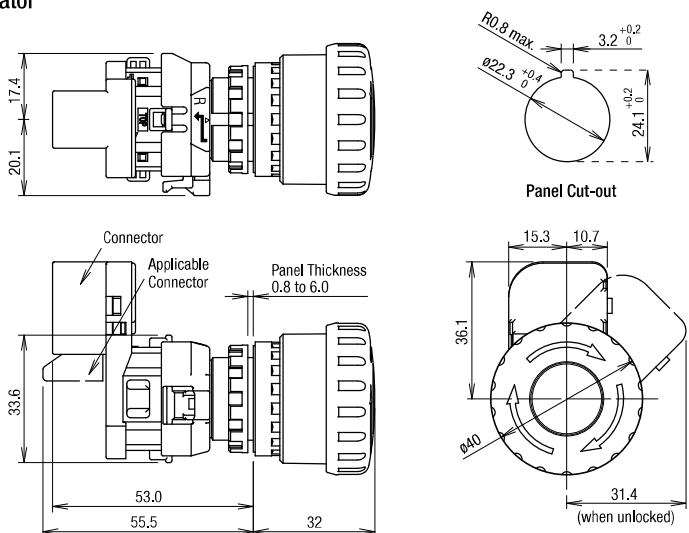
ø40mm Operator



Dimensions (Connector Style)

Non-illuminated / LED Push-ON

ø40mm Operator



For applicable connectors, see D-036.

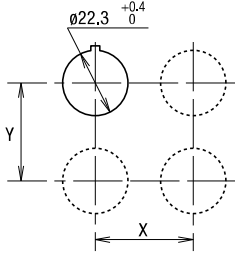
All dimensions in mm.



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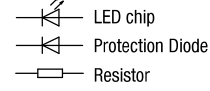
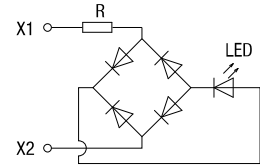
## Mounting Hole Layout



	X	Y
Screw Terminal	70 mm minimum	
Solder/PC Board Terminal	50 mm minimum	
Connector Style	50 mm minimum	70 mm minimum

• The values shown above are the minimum dimensions for mounting with other ø22mm pushbuttons. For other control units of different sizes and styles, determine the values according to the dimensions, operation, and wiring convenience.

## LED Internal Circuit



## Terminal Arrangement (Bottom View)

### Screw Terminal Non-illuminated

<p><b>NC main contacts only</b> NC main contacts: Terminals 1-2</p> <p>1NC: Terminals on right 2NC: Terminals on right and left 3NC: Terminals on right, left, and top</p>	<p><b>With 1NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>1NC: Terminals on top 2NC: Terminals on right and left</p>	<p><b>With 2NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p>
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### Screw Terminal Illuminated

<p><b>NC main contacts only</b> NC main contacts: Terminals 1-2</p> <p>1NC: Terminals on right 2NC: Terminals on right and left 3NC: Terminals on right, left, and top</p>	<p><b>With 1NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>1NC: Terminals on top 2NC: Terminals on right and left</p>	<p><b>With 2NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p>
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### Screw Terminal Illuminated Push-ON

<p><b>NC main contacts only</b> NC main contacts: Terminals 1-2</p>	<p><b>With 1NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p>
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### Terminal Marking Development

- Contact  
1-2: NC main contact  
3-4: NO monitor contact
- Contact Number (1-4)  
Starting with the contact of TOP side, in a counterclockwise direction.

(Example: 1NO-3NC contact)

• On solder terminal and PC board terminal, the contact block is marked with contact codes (NC main contact 1-2: black, NO monitor contact 3-4: blue).

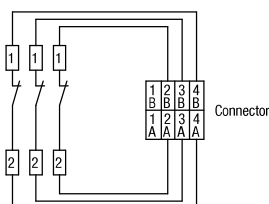
### Solder Terminal / PC Board Terminal Non-illuminated

<p><b>NC main contacts only</b> NC main contacts: Terminals 1-2</p> <p>1NC: Terminals on right 2NC: Terminals on right and left 3NC: Terminals on right, left, and top</p>	<p><b>With 1NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>1NC: Terminals on top 2NC: Terminals on right and left</p>	<p><b>With 2NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>Solder Terminal only</p>
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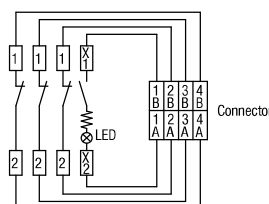
### Solder Terminal / PC Board Terminal Illuminated

<p><b>NC main contacts only</b> NC main contacts: Terminals 1-2</p> <p>1NC: Terminals on right 2NC: Terminals on right and left 3NC: Terminals on right, left, and top</p>	<p><b>With 1NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>1NC: Terminals on top 2NC: Terminals on right and left</p>	<p><b>With 2NO monitor contacts</b> NC main contacts: Terminals 1-2 NO monitor contacts: Terminals 3-4</p> <p>Solder Terminal only</p>
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### Connector Style Non-illuminated



### Connector Style Push-ON



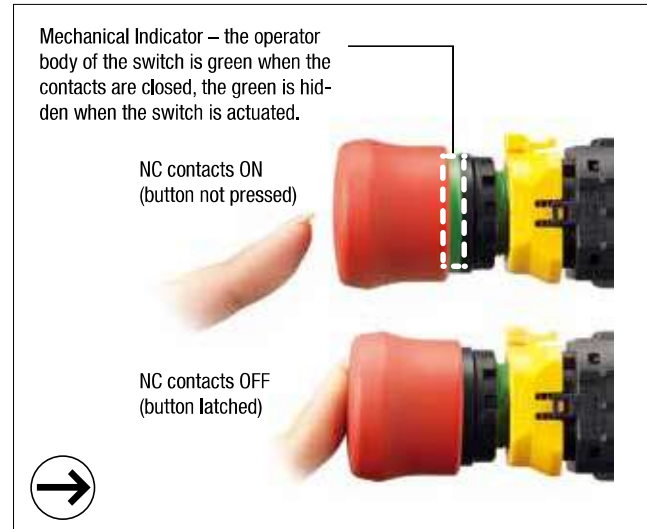
For applicable connectors, see [D-036](#).

All dimensions in mm.

# ø22 XW Series Emergency Stop Switches (Mechanical Indicator)

High level of safety with Safe Break Action. Mechanical indicator on the operator body shows the contact status - green when NC contacts are closed - reducing the maintenance work.

- IDEC's original "Safe Break Action" and "Reverse Energy Structure" ensure the safety of operator and system, when the switch is damaged due to excessive shocks.
- The mechanical indicator on the operator body shows the normal/latched status (green: normal). Reduces maintenance work and improves operation efficiency.
- Illuminated model also available (same size as non-illuminated)
- The depth behind the panel is only 46.4 mm (w/terminal cover).
- 1 to 4NC main contacts and 1 or 2NO monitor contact
- Push-to-lock, Pull or Turn-to-reset operator
- Direct opening action mechanism (IEC 60947-5-5, 5.2, IEC 60947-5-1, Annex K)
- Safety lock mechanism (IEC 60947-5-5, 6.2)
- Degree of protection: IP65 (IEC 60529)
- Durable, silver with gold contacts.
- Finger-safe structure (IP20)
- UL NISD category



## Standards and Specifications

### Contact Ratings

(NC main contacts/NO monitor contact)

Rated Insulation Voltage (Ui)		Screw Terminal		250V		
Rated Thermal Current (Ith)		5A				
Rated Operating Voltage (Ue)		30V	125V	250V		
Rated Operating Current	Main Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	5A	3A
			Inductive Load (AC-15)	–	3A	1.5A
	DC	Resistive Load (DC-12)	2A	0.4A	0.2A	
		Inductive Load (DC-13)	1A	0.22A	0.1A	
Monitor Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	1.2A	0.6A	
		Inductive Load (AC-14)	–	0.6A	0.3A	
	DC	Resistive Load (DC-12)	2A	0.4A	0.2A	
		Inductive Load (DC-13)	1A	0.22A	0.1A	

- Minimum applicable load: 5V AC/DC, 1 mA (reference value) (Operating area depends on the operating conditions and load types.)
- The rated operating currents are measured at resistive/inductive load types specified in JIS C8201-5-1.

### Illumination Ratings

Rated Voltage	Operating Voltage	Rated Current
24V AC/DC	24V AC/DC ±10%	15 mA

Note: An LED lamp is built into the contact block and cannot be replaced.

### Specifications

Applicable Standards	IEC60947-5-5, EN60947-5-5 JIS C8201-5-1, UL508, UL991, NFPA79, EN418 CSA C22.2 No. 14, GB14048.5
Operating Temperature	Non-illuminated: –25 to +60°C (no freezing) LED illuminated: –25 to +55°C (no freezing)
Storage Temperature	–45 to +80°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)
Operating Force	Push to lock: 32N Pull to reset: 21N Turn to reset: 0.27 N·m
Minimum Force Required for Direct Opening Action	80N
Minimum Operator Stroke Required for Direct Opening Action	4.0 mm
Maximum Operator Stroke	4.5 mm
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Overvoltage Category	II
Impulse Withstand Voltage	2.5 kV
Pollution Degree	3
Operation Frequency	900 operations/hour
Shock Resistance	Operating extremes: 150 m/s <sup>2</sup> Damage limits: 1000 m/s <sup>2</sup>
Vibration Resistance	Operating extremes: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup> Damage limits: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup>
Mechanical Life	250,000 operations minimum
Electrical Life	100,000 operations minimum 250,000 operations minimum (24V AC/DC, 100 mA)
Degree of Protection	Panel front: IP65 (IEC 60529) Terminal Protection: IP20 (screw terminal, when using XW9Z-VL2MF)
Short-circuit Protection	250V/10A fuse (Type aM, IEC60269-1/IEC60269-2)
Conditional Short-circuit Current	1000A
Terminal Style	M3 screw terminal
Recommended Tightening Torque for Locking Ring	2.0 N·m
Connectable Wire	0.75 to 1.25 mm <sup>2</sup> (AWG18 to 16)
Recommended Tightening Torque for Terminal Screw	0.6 to 1.0 N·m



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## ø22 XW Series Emergency Stop Switches (Mechanical Indicator)

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## Non-illuminated Pushlock Pull/Turn Reset (Screw Terminal)


Package quantity: 1

Shape	NC Main Contact	NO Monitor Contact	Part No.		Button Color Code
			IP20	w/Terminal Cover	
	1NC	—	XW1E-BV4TG01MFR	XW1E-BV4TG01MR	R (red)
	2NC	—	XW1E-BV4TG02MFR	XW1E-BV4TG02MR	
	3NC	—	XW1E-BV4TG03MFR	XW1E-BV4TG03MR	
	4NC	—	XW1E-BV4TG04MFR	XW1E-BV4TG04MR	
	1NC	1NO	XW1E-BV4TG11MFR	XW1E-BV4TG11MR	
	2NC	1NO	XW1E-BV4TG12MFR	XW1E-BV4TG12MR	
	3NC	1NO	XW1E-BV4TG13MFR	XW1E-BV4TG13MR	
	2NC	2NO	XW1E-BV4TG22MFR	XW1E-BV4TG22MR	

- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- IP20 types can be connected to solid wires only.

## Illuminated Pushlock Pull/Turn Reset (Screw Terminal)

Package quantity: 1

Shape	Illumination	Rated Voltage	NC Main Contact	NO Monitor Contact	Part No.		Button Color Code
					IP20	w/Terminal Cover	
	LED	24V AC/DC	1NC	—	XW1E-LV4TG01Q4MFR	XW1E-LV4TG01Q4MR	R (red)
			2NC	—	XW1E-LV4TG02Q4MFR	XW1E-LV4TG02Q4MR	
			3NC	—	XW1E-LV4TG03Q4MFR	XW1E-LV4TG03Q4MR	
			4NC	—	XW1E-LV4TG04Q4MFR	XW1E-LV4TG04Q4MR	
			1NC	1NO	XW1E-LV4TG11Q4MFR	XW1E-LV4TG11Q4MR	
			2NC	1NO	XW1E-LV4TG12Q4MFR	XW1E-LV4TG12Q4MR	
			3NC	1NO	XW1E-LV4TG13Q4MFR	XW1E-LV4TG13Q4MR	
			2NC	2NO	XW1E-LV4TG22Q4MFR	XW1E-LV4TG22Q4MR	

- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- IP20 types can be connected to solid wires only.
- LED lamp is not removable.

X6

XA

XW

XN

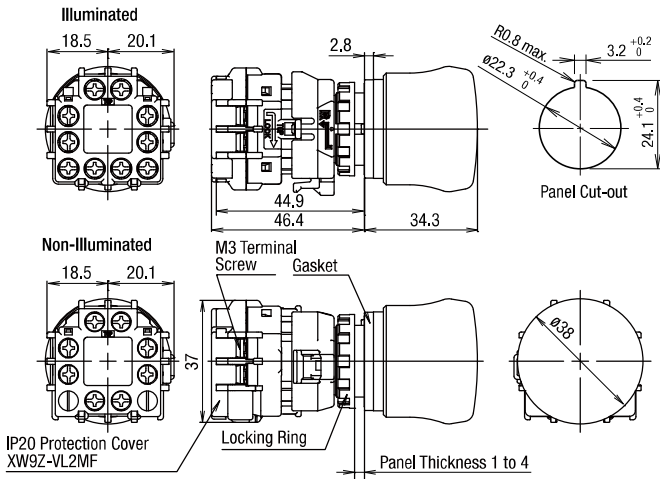
SEMI



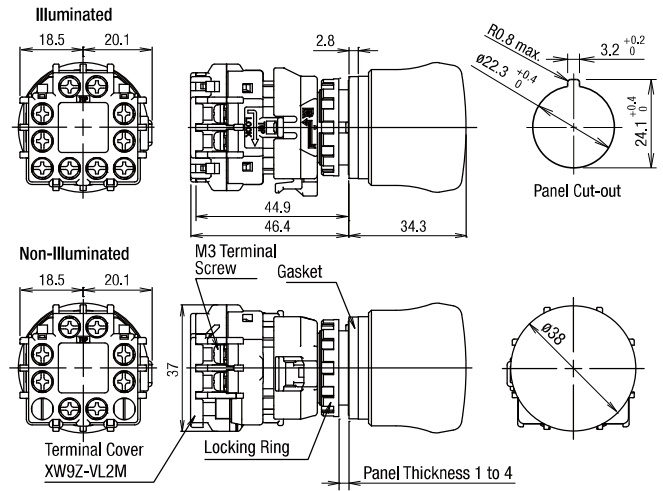
APEM  
Switches & Pilot Lights  
Control Boxes  
Emergency Stop Switches  
Enabling Switches  
Safety Products  
Explosion Proof  
Terminal Blocks  
Relays & Sockets  
Circuit Protectors  
Power Supplies  
LED Illumination  
Controllers  
Operator Interfaces  
Sensors  
AUTO-ID  
  
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Dimensions

Screw Terminal (IP20)

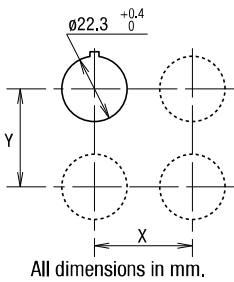


Screw Terminal (w/terminal cover)



All dimensions in mm.

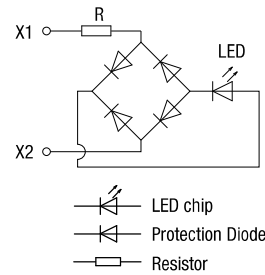
Mounting Hole Layout



	X	Y
Screw Terminal	70 mm minimum	

• The values shown above are the minimum dimensions for mounting with other ø22mm emergency stop switches. For other emergency stop switches of different sizes and styles, determine the values according to the dimensions, operation, and wiring convenience.

LED Internal Circuit



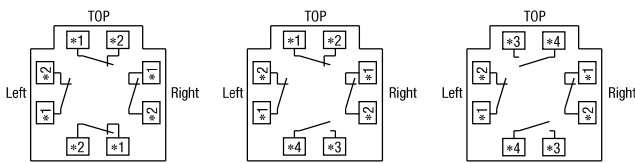
Terminal Arrangement (Bottom View)

Screw Terminal Non-illuminated

NC main contacts only  
NC main contacts: Terminals 1-2

With 1NO monitor contacts  
NC main contacts: Terminals 1-2  
NO monitor contacts: Terminals 3-4

With 2NO monitor contacts  
NC main contacts: Terminals 1-2  
NO monitor contacts: Terminals 3-4



1NC: Terminals on right  
2NC: Terminals on right and left  
3NC: Terminals on right, left, and top

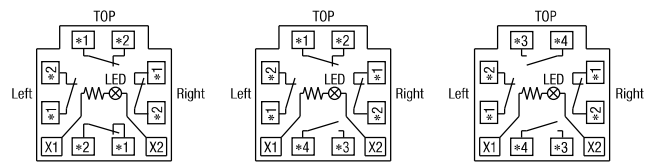
1NC: Terminals on top  
2NC: Terminals on right and left

Screw Terminal Illuminated

NC main contacts only  
NC main contacts: Terminals 1-2

With 1NO monitor contacts  
NC main contacts: Terminals 1-2  
NO monitor contacts: Terminals 3-4

With 2NO monitor contacts  
NC main contacts: Terminals 1-2  
NO monitor contacts: Terminals 3-4



1NC: Terminals on right  
2NC: Terminals on right and left  
3NC: Terminals on right, left, and top

1NC: Terminals on top  
2NC: Terminals on right and left

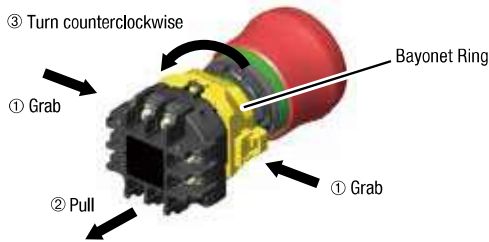
## Safety Precautions

- Turn off power to the XW series emergency stop switch before starting installation, removal, wiring, maintenance, and inspection of the relays. Failure to turn power off may cause electrical shock or fire hazard.
- For wiring, use wires of the proper size to meet the voltage and current requirements. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m. Failure to tighten the terminal screws may cause overheating and fire.

## Instructions

### Removing the Contact Block

First unlock the operator button. Grab the bayonet ring ① and pull back the bayonet ring until the latch pin clicks ②, then turn the contact block counterclockwise and pull out ③.

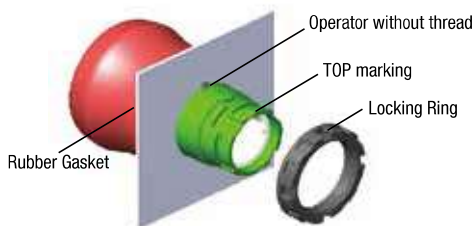


#### Notes for removing the contact block

1. When the contact block is removed, the monitor contact (NO contact) is closed.
2. While removing the contact block, do not exert excessive force, otherwise the switch may be damaged.
3. An LED lamp is built into the contact block for illuminated push-buttons. When removing the contact block, pull the contact block straight to prevent damage to the LED lamp. If excessive force is exerted, the LED lamp may be damaged and fail to light.

### Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side without thread on the operator with TOP marking upward, and tighten the locking ring.

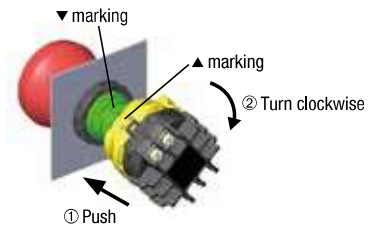


#### Notes for panel mounting

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. Use a nameplate for emergency stop switches (with anti-rotation function) when mounting onto a panel. Use an anti-rotation ring (HW9Z-RL) if a nameplate is not used. (Mechanical indicator types have a projection on the operator so an anti-rotation ring is not required.)

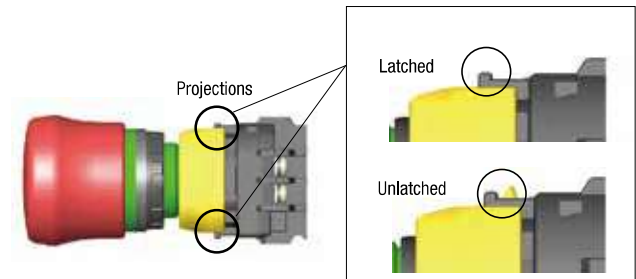
### Installing the Contact Block

First unlock the operator button. Align the small ▼ marking on the edge of the operator with the small ▲ marking on the yellow bayonet ring. Hold the contact block, not the bayonet ring. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.



#### Notes for installing the contact block

Make sure that the bayonet ring is in the locked position. Check that the two projections on the bayonet ring are securely in place.



## Wiring

### Solder Terminal

1. The applicable wire size is 1.25 mm<sup>2</sup> maximum.
2. Solder the terminal at a temperature of 310 to 350°C within 3 seconds using a soldering iron. Sn-Ag-Cu type is recommended when using lead-free solder. When soldering, do not touch the enabling switch with the soldering iron. Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.
3. Use a non-corrosive rosin flux.
4. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes to avoid burning of wire coating or short circuit.

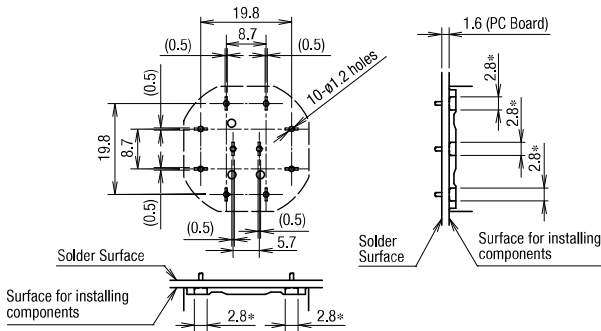
### PC Board Terminal

1. When mounting a contact block on a PC board, provide sufficient rotating space for the PC board when installing and removing the contact block.
2. When mounting an XW emergency stop switch on a PC board, make sure that the operator is securely installed.
3. Do not solder by flow soldering. Otherwise, damage may be caused.

## Instructions

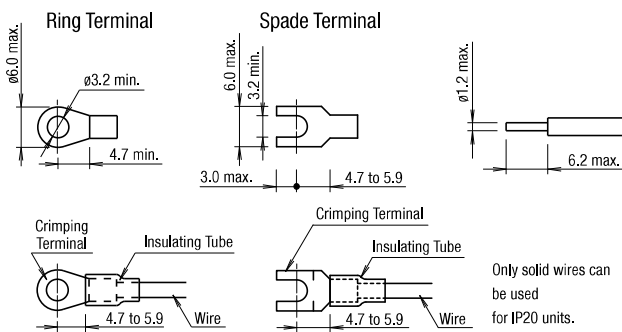
### About PC Board and Circuit Design

1. Use PC boards made of glass epoxy copper-clad laminated sheets of 1.6 mm in thickness, with double-sided through hole.
2. PC boards and circuits must withstand rated voltage and current, including the instantaneous current and voltage at switching.
3. The minimum applicable load is 5V AC/DC, 1 mA. This value may vary according to the operating environment and load.
4. Within the 2.8\* mm areas shown in the figure below, terminals touch the PC board, resulting in possible short circuit on the printed circuit. When designing a PC board pattern, take this possibility into consideration.



### Screw Terminal

#### Applicable Crimping Terminals



1. Wire thickness: 0.75 to 1.25 mm<sup>2</sup> (AWG18 to 16)
- Be sure to install an insulating tube on the crimping terminal.
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

### Connector

1. Connector shape
  - Tyco Electronics, D-2000 series Part No. 1376009-1 (tab header, board mount)
2. Applicable connectors (to be supplied by user)
  - Tyco Electronics, D-2000 series Part No. 1-1318119-4 (receptacle housing)
  - Tyco Electronics, D-2000 series Part No. 1318107-1 (receptacle contact)
3. To prepare correct receptacles for the connector, read the instruction sheet and catalog of Tyco Electronics and understand the installation and wiring method.
4. Fasten the cable so that the connector is not pulled. Otherwise the switch may be deformed and damaged, causing malfunction or operation failure.

### Installing & Removing Terminal Covers

#### XA9Z-VL2 (Terminal Cover for Solder Terminals)

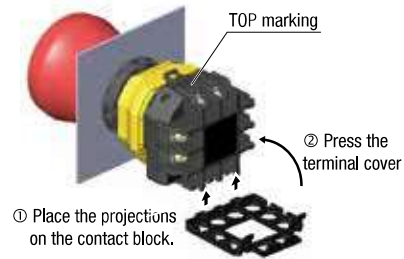
To install the terminal cover, align the TOP marking on the terminal cover with TOP marking on the contact block, and press the terminal cover toward the contact block.



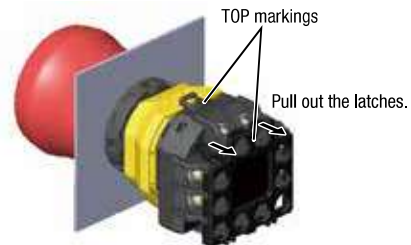
Note: For wiring, insert the wires into the holes in the terminal cover before soldering.

#### XW9Z-VL2M (Terminal Cover for Screw Terminals)

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover toward the contact block.

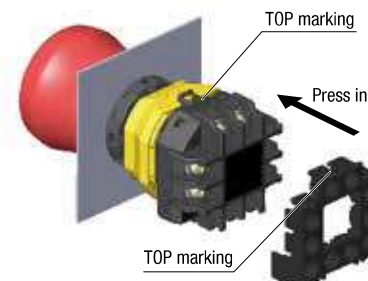


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



#### XW9Z-VL2MF (IP20 Protection Terminal Cover)

To install the IP20 protection cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



Notes:

1. Once installed, the XW9Z-VL2MF cannot be removed.
2. The XW9Z-VL2MF cannot be installed after wiring.
3. With the XW9Z-VL2MF installed, crimping terminals cannot be used. Use solid wires.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shocks may occur.

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## Instructions

### Contact Bounce

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

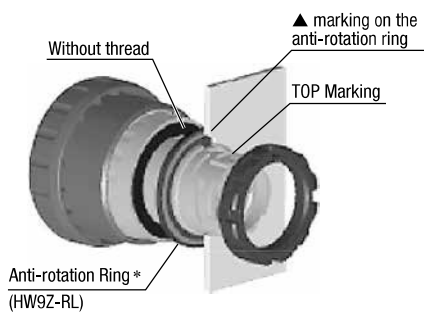
When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

### LED Illuminated Switches

An LED lamp is built into the contact block and cannot be replaced.

### Installing the Anti-rotation Ring HW9Z-RL

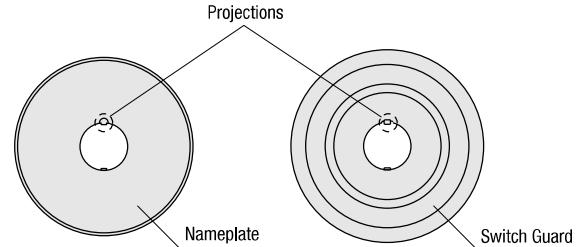
Align the side without thread on the operator with TOP marking, the small ▲ marking on the anti-rotation ring, and the recess on the mounting panel.



\* Not required for mechanical indicator types.

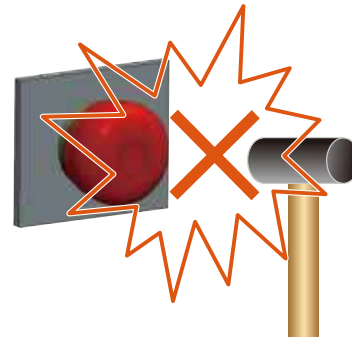
### Nameplate or Switch Guard

When anti-rotation is not required, remove the projection from the nameplate or switch guard using pliers. Mechanical indicator types have projections on the operator. Make sure to remove the projection on the nameplate or switch guard.



### Handling

Do not expose the switch to excessive shocks and vibrations, otherwise the switch may be deformed or damaged, causing malfunction or operation failure.



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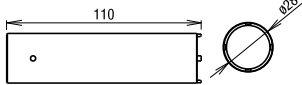

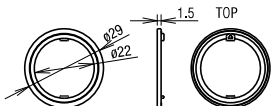




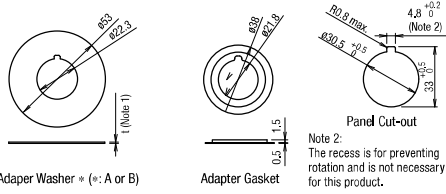
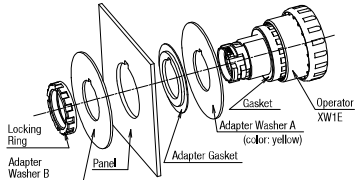
XA

XW

XN

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Accessories (ø22 XW Series Emergency Stop Switches)

Description & Shape	Material	Part No.	Ordering No.	Package Quantity	Remarks
 <p>Ring Wrench</p>	Metal (nickel-plated brass) (weight: approx. 150g)	MW9Z-T1	MW9Z-T1	1	<ul style="list-style-type: none"> <li>Used to tighten the locking ring when installing the XW emergency stop switch onto a panel.</li> </ul> 
 <p>Anti-rotation Ring</p>	Ring: Polyamide Gasket: Nitril rubber	HW9Z-RL	HW9Z-RLPN10	10	<ul style="list-style-type: none"> <li>The anti-rotation ring is used for preventing the operator from turning.</li> </ul> 
 <p>Terminal Cover</p>	PBT	XA9Z-VL2	XA9Z-VL2PN02	2	<ul style="list-style-type: none"> <li>White</li> <li>Used for solder terminals.</li> </ul>
 <p>Terminal Cover</p>	PPE	XW9Z-VL2M	XW9Z-VL2MPN02	2	<ul style="list-style-type: none"> <li>Black</li> <li>Used for screw terminals.</li> <li>Attached to IP20 protection cover units.</li> </ul>
 <p>IP20 Protection Cover</p>	Polyamide	XW9Z-VL2MF	XW9Z-VL2MFPN02	2	<ul style="list-style-type: none"> <li>Black</li> <li>Used on terminals for IP20 finger protection.</li> <li>Only solid wires can be used.</li> <li>The IP20 protection cover cannot be removed once installed.</li> </ul>
 <p>Ring Adapter</p>	Rubber on metal base	XW9Z-A30E	XW9Z-A30EPN02	2	<ul style="list-style-type: none"> <li>Yellow panel surface</li> <li>Used for installing XW1E emergency stop switches in ø30mm mounting hole.</li> <li>Can be used for XW1E emergency stop switches only.</li> <li>IP65 protection.</li> <li>Cannot be used with nameplates. Panel thickness when mounted: 0.8 to 3.0 mm</li> </ul>  <p>Adapter Washer * (*: A or B)</p> <p>Note 1: Adapter washer thickness (t) A = 1.2 mm B = 0.8 mm</p> <p>Adapter Gasket</p> <p>Note 2: The recess is for preventing rotation and is not necessary for this product.</p> <ul style="list-style-type: none"> <li>Panel Mounting</li> </ul> 

Notes:

- XW emergency stop switches of screw terminal are provided with a terminal cover.
- All dimensions in mm.



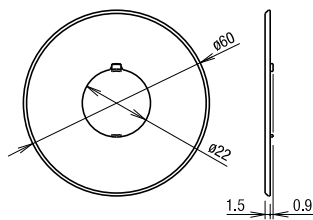
Download catalogs and CAD from <http://eu.idec.com/downloads>

## Nameplate (for ø22 Emergency Stop Switches)

Description	Legend	Part No.	Ordering No.	Package Quantity	Material	Plate Color	Legend Color
For ø40mm Operator	(blank)	HWAV-0-Y	HWAV-0-Y	1	Polyamide	Yellow	Black
	EMERGENCY STOP	HWAV-27-Y	HWAV-27-Y				
For ø60mm Operator	(blank)	HWAV5-0	HWAV5-0	10	PBT	Yellow	Black
	EMERGENCY STOP	HWAV5-27	HWAV5-27				
	EMERGENCY STOP	HWAV5F-27	HWAV5F-27PN10		PET film sticker		

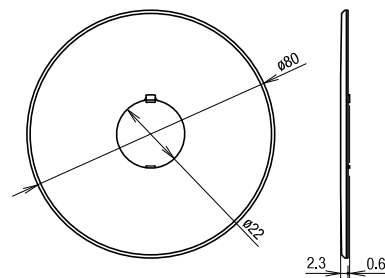
## Dimensions

## For ø40mm Operator

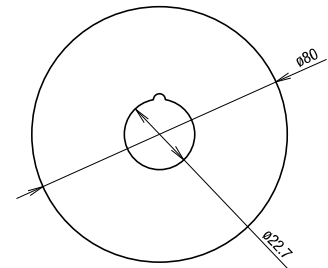


- Panel thickness when using the nameplate: 0.8 to 4.5 mm

## For ø60mm Operator



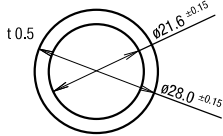



- Panel thickness when using the nameplate: 0.8 to 4 mm

Sticker Nameplate  
for ø60mm Operator

All dimensions in mm.

## Maintenance Parts (for ø22 Emergency Stop Switches)

Description & Shape	Material	Part No.	Ordering No.	Package Quantity	Dimensions (mm)
 ø28.4 H5 M22 P1	Polyamide (black)	HW9Z-LN	HW9Z-LNPN05	5	<ul style="list-style-type: none"> <li>• Cannot be used on XW Series (mechanical indicator)</li> </ul>
	Nityl rubber	HW9Z-WM	HW9Z-WMPN10	10	
 ø27.8 t=5.0	Polyamide	CW9Z-LN	CW9Z-LNPN05	5	<ul style="list-style-type: none"> <li>• For use on XW Series (mechanical indicator) only.</li> </ul>

## Emergency Stop Guard for Machinery (Protective Shroud)

If the safety requirements of ISO15380:2015 4.3.2 or 4.5 is satisfied, the switchguard can be used safely by combining IDEC's switchguard and emergency stop switch, which is approved by TÜV Rheinland in ISO13850:2015 to be used as protective shroud with emergency stop switch.

In the past, use of a switchguard (term: protective shroud) on devices such as a machine tool or food processing machines was not permitted under ISO/IEC. However, in the latest revision, the use of a protective shroud is permitted with conditions. This is because the "Prevention of unintended actuation of an emergency stop device" was added as a safety requirement and the definition of a protective shroud is as below.

**ISO13850:2015 3.7 protective shroud (protective shroud)**  
mechanical measure provided to reduce the possibility of unintended actuation of an emergency stop device.

Productive shroud can be used under the following conditions:

**ISO13850:2015 4.5 Prevention of unintended acuation of an emergency stop device**

The emergency stop device shall be designed to avoid unintended actuation.

The actuation of the emergency stop device shall not be impaired.

To prevent unintended actuation of the emergency stop device some precautions can be taken, e.g.:

- locate the emergency stop device away from foreseeable heavily trafficked areas,
- select the type of emergency stop device,
- select appropriate size or shape of the emergency stop device, or
- mount the emergency stop device within a recessed surface of the surrounding control panel.

The use of a protective shroud around the emergency stop device should be avoided, except when necessary to prevent unintended actuation and other measures are not practicable.

For emergency stop devices intended to be acutated by the hand the measures against unintended actuation shall not impede or hinder actuation with the palm of the hand, from any foreseeable position of the machine operator and others who could need to actuate them.

For details on protective shroud, see **D-055**.

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XW

XN

SEMI

				Model	Mark	Page
<p><b>New Concept</b> Reverse Energy Structure Safe Break Action</p> <p>ø16mm Mount Hole</p> <p>Non illuminated</p> <p>Detachable Contact Block</p> <p>Pushlock Pull or Turn Reset</p> <p>ø29mm Button</p> <p>ø40mm Button</p>	<p>ø16mm Mount Hole</p> <p>Non illuminated</p> <p>Detachable Contact Block</p> <p>Pushlock Pull or Turn Reset</p> <p>ø29mm Button</p> <p>ø40mm Button</p>	<p>Unibody (no safe break action)</p> <p>Pushlock Pull or Turn Reset</p> <p>ø29mm Button</p> <p>ø40mm Button</p>	<p>Pushlock Pull or Turn Reset</p> <p>ø29mm Button</p> <p>ø40mm Button</p>	XA1E-BV3 (Solder, PC Board Terminal)		D-018
				XA1E-BV4 (Solder, PC Board Terminal)		D-018
				AB6E-3BV (Solder Terminal)		D-010
				XA1E-BV3U (Solder, Solder/ Tab #110 Terminal)		D-016
				AB6E-4BV (Solder Terminal)		D-010
				XA1E-BV4U (Solder, Solder/ Tab #110 Terminal)		D-016
				XA1E-LV3 (Solder, PC Board Terminal)		D-018
				XA1E-LV4 (Solder, PC Board Terminal)		D-018
				XW1E-BV4TG (Screw Terminal)	<p>Mechanical Indicator Model</p>	D-033
				XW1E-BV4 (Screw Terminal)		D-027
				XW1E-BV4 (Solder, PC Board Terminal)		D-027
				<p><b>New Concept</b> Reverse Energy Structure Safe Break Action</p> <p>ø22mm Mount Hole</p> <p>Non illuminated</p> <p>Detachable Contact Block</p> <p>Pushlock Pull or Turn Reset</p> <p>ø40mm Button</p> <p>ø60mm Button</p>	<p>ø22mm Mount Hole</p> <p>Non illuminated</p> <p>Detachable Contact Block</p> <p>Pushlock Pull or Turn Reset</p> <p>ø40mm Button</p> <p>ø60mm Button</p>	<p>Pushlock Pull or Turn Reset</p> <p>ø40mm Button</p> <p>ø60mm Button</p>
XW1E-BV5 (Screw Terminal)		D-027				
XW1E-BV4TG (Screw Terminal)	<p>Mechanical Indicator Model</p>	D-033				
XW1E-LV4 (Screw Terminal)		D-028				
XW1E-LV4 (Solder, PC Board Terminal)		D-028				

(Continued on Next Page)



(Continued from previous page)

		Model	Mark	Page					
Push-ON	Detachable Contact Block	Pushlock Pull or Turn Reset	ø40mm Button	XW1E-TV4 (Screw Terminal)		D-028			
				XW1E-TV4 (Connector)		D-028			
New Concept Reverse Energy Structure Safe Break Action	ø30mm Mount Hole	Non illuminated	Detachable Contact Block	Pushlock Pull or Turn Reset	ø40mm Button	Plastic Bezel	XN1E-BV4 (Plastic Bezel)		D-039
							ø60mm Button	Flush Bezel	XN5E-BV4 (Flush Bezel)
Illuminated	Detachable Contact Block	Pushlock Pull or Turn Reset	ø40mm Button	Plastic Bezel	Flush Bezel	XN1E-BV5 (Plastic Bezel)			
						Pushlock Turn Reset	ø44mm Button	Padlockable	XN4E-BL4 (Padlockable)
Push-ON	Detachable Contact Block	Pushlock Pull or Turn Reset	ø40mm Button	Plastic Bezel	Flush Bezel				XN1E-LV4 (Plastic Bezel)
						Pushlock Turn Reset	ø44mm Button	Padlockable	XN5E-LV4 (Flush Bezel)
Push-ON	Detachable Contact Block	Pushlock Pull or Turn Reset	ø40mm Button	Plastic Bezel	Flush Bezel				XN1E-TV4 (Plastic Bezel)
						Pushlock Turn Reset	ø44mm Button	Padlockable	XN5E-TV4 (Flush Bezel)
Accessories	Emergency Stop Nameplate	Pushlock Turn Reset	ø44mm Button	Padlockable					
						ø16mm Mount Hole	HAAV		
ø22mm Mount Hole	HWAV	D-049							
ø30mm Mount Hole	HNAV	D-050							