# 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 | | |
| | | | PC Board Terminal | | | |
| | | | Connector | 125V | | |
| Rated Thermal Current (Ith) | | | | 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<br>IEC60947-5-5 (Note), EN60947-5-5<br>JIS C8201-5-1, UL508, UL991, NFPA79,<br>CSA C22.2 No. 14, GB14048.5 |
| Operating Temperature | Non-illuminated: –25 to +60°C (no freezing)<br>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<br>Pull to reset: 21N<br>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)<br>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/s²<br>Damage limits: 1000 m/s² |
| Vibration Resistance | Operating extremes: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s²<br>Damage limits: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s² |
| Mechanical Life | 250,000 operations minimum |
| Electrical Life | 100,000 operations minimum<br>250,000 operations minimum (24V AC/DC, 100 mA) |
| Degree of Protection | Panel front: IP65, IP67 (IEC 60529)<br>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,<br>M3 screw terminal, Connector |
| Recommended Tightening Torque for Locking Ring | 2.0 N·m |
| Connectable Wire | Screw terminal: 0.75 to 1.25 mm² (AWG18 to 16)<br>Solder terminal / PC board terminal:<br>1.25 mm² maximum (AWG16 maximum)<br>Connector style: 0.3 to 0.85 mm² (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 mm² (AWG22).



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# ø22 XW Series Emergency Stop Switches

## 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 | |
| ø40mm Mushroom  | 1NC | — | XW1E-BV401MF① | XW1E-BV401M① | R: Dark red<br>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 | |
| ø60mm Mushroom  | 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 | |
| ø40mm Mushroom  | 1NC | — | XW1E-BV401① | XW1E-BV401V① | R: Dark red<br>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 |
|---|---|---|---|---|
| ø40mm Mushroom  | 3NC | — | XW1E-BV403V①-BC | R: Dark red<br>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 |
| ø40mm Mushroom  | 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 |
| ø40mm Mushroom  | 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 |
| ø40mm Mushroom  | 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. |
|---|---|---|---|---|---|
| ø40mm Mushroom  | 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.

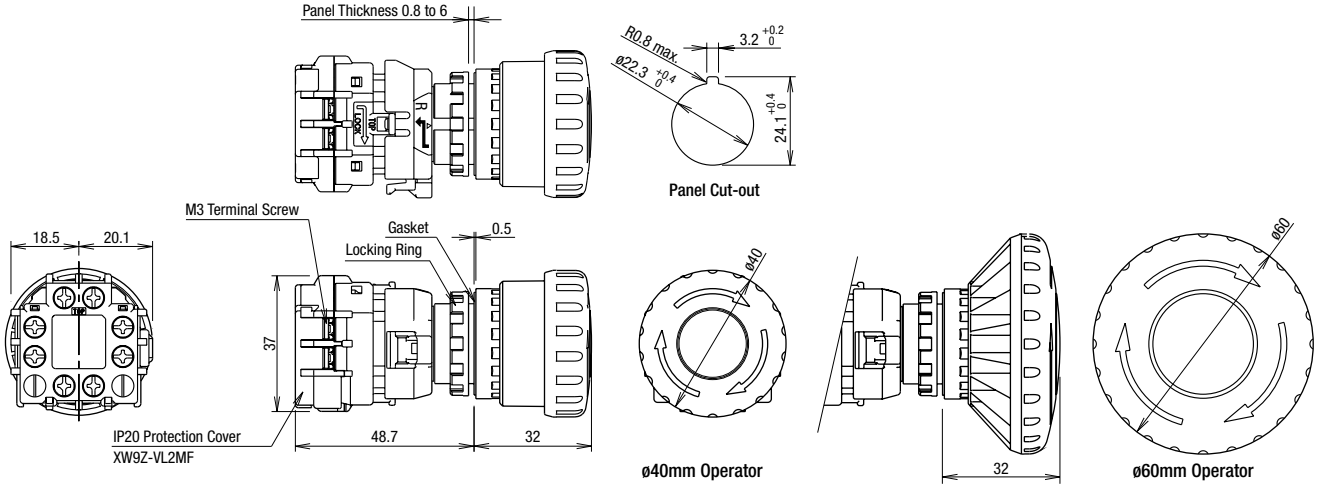
See D-036 for applicable connectors.

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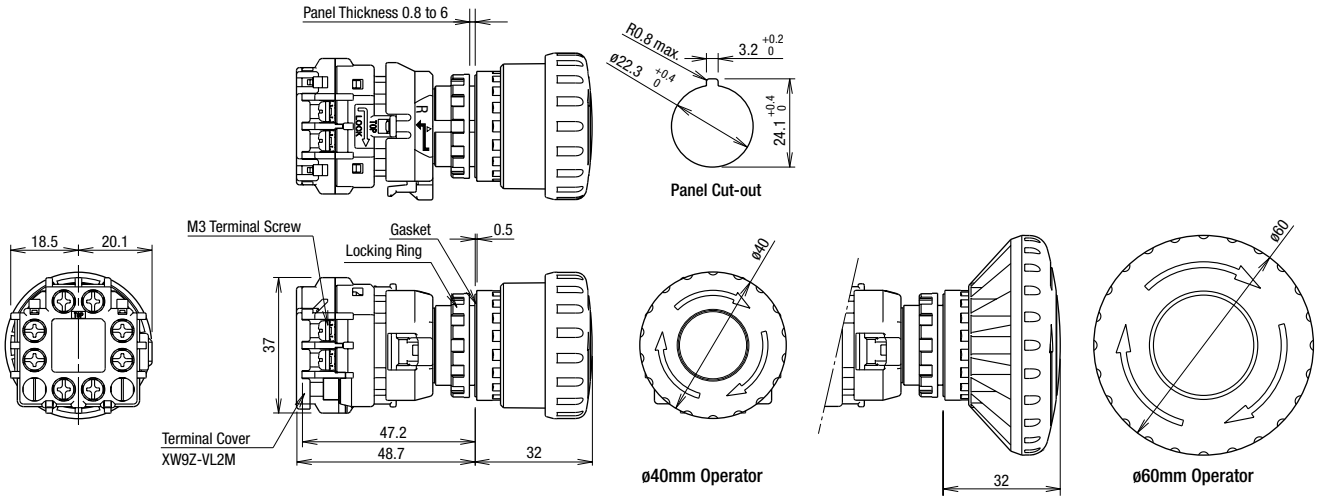
APEM
Switches & Pilot Lights
Control Boxes
Emergency Stop Switches
Enabling Switches
Safety Products
Explosion Proof
Terminal Blocks
Relays & Sockets
Circuit Protectors
Power Supplies
LED Illumination
Controllers
Operator Interfaces
Sensors
AUTO-ID
X6
XA
XW
XN
SEMI

## Dimensions (Non-Illuminated)

### Screw Terminal (IP20)

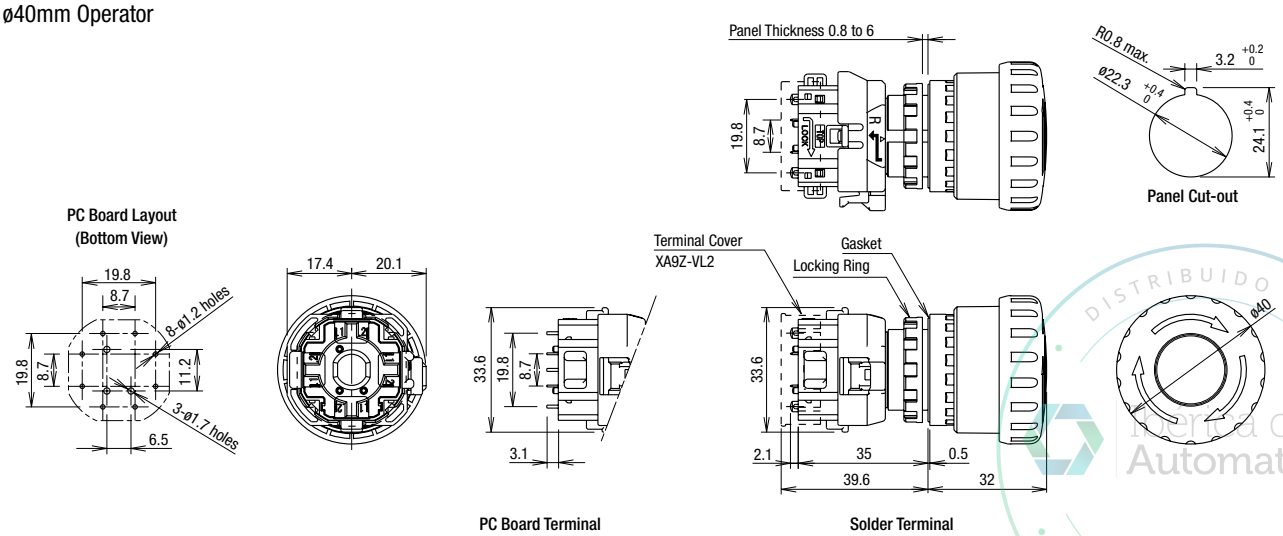



### Screw Terminal (w/terminal cover)




### Solder Terminal and PC Board Terminal

ø40mm Operator



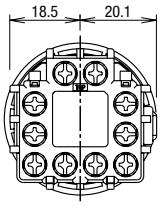

All dimensions in mm.

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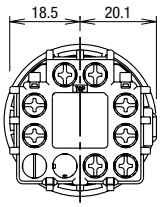
## Dimensions (Illuminated)

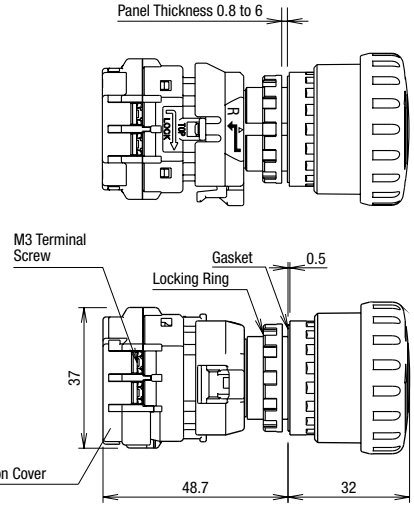
### Screw Terminal (IP20) LED Illuminated

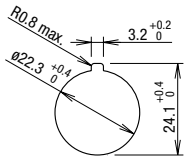
ø40mm Operator



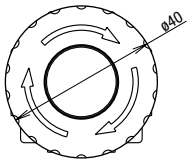

LED Push-ON



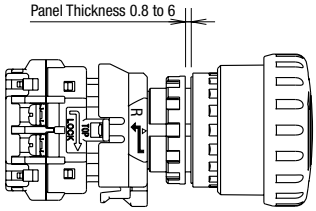

Panel Cut-out

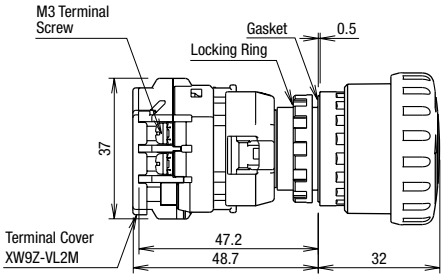



### Screw Terminal (w/terminal cover)

LED Illuminated

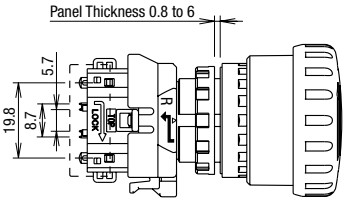
ø40mm Operator

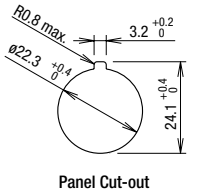



### Solder Terminal and PC Board Terminal LED Illuminated

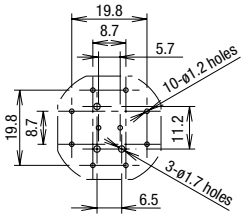
ø40mm Operator

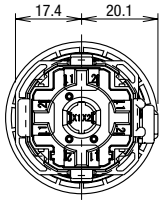


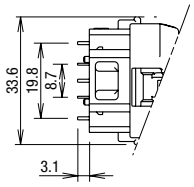




Panel Cut-out

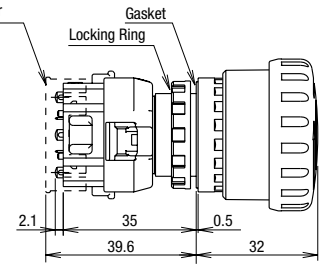
PC Board Layout (Bottom View)



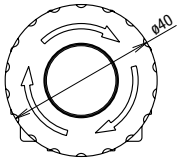




PC Board Terminal



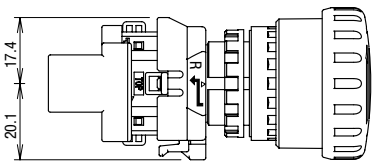

Solder Terminal

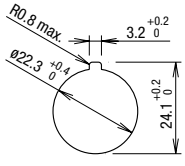



## Dimensions (Connector Style)

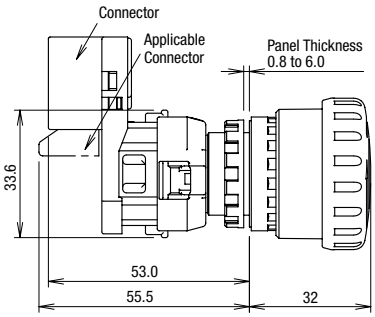
### Non-illuminated / LED Push-ON

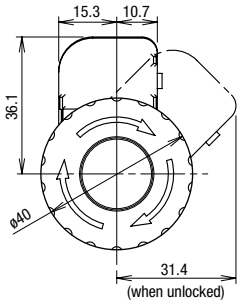
ø40mm Operator




Panel Cut-out



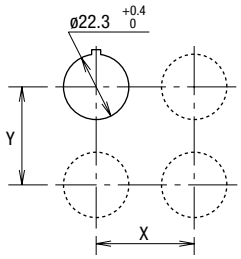

For applicable connectors, see D-036.

All dimensions in mm.

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# ø22 XW Series Emergency Stop Switches

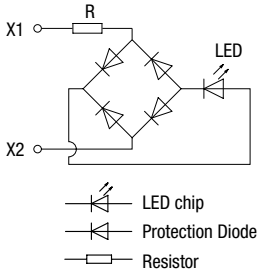
## Mounting Hole Layout




| | 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.

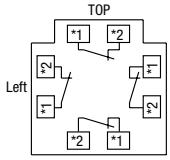
## LED Internal Circuit




## Terminal Arrangement (Bottom View)

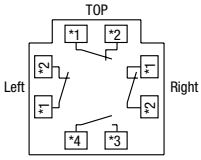
### Screw Terminal Non-illuminated

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



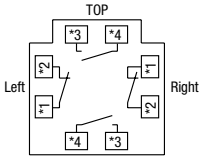

1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

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



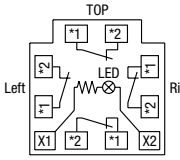

1NC: Terminals on top
2NC: Terminals on right and left

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



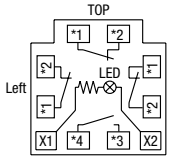

### Screw Terminal Illuminated

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



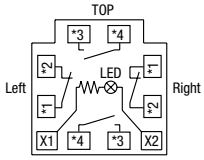

1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

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



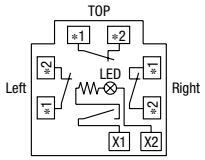

1NC: Terminals on top
2NC: Terminals on right and left

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

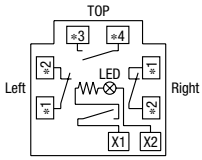



### Screw Terminal Illuminated Push-ON

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



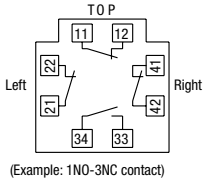

**With 1NO monitor contacts**
NC main contacts:
Terminals 1-2
NO monitor contacts:
Terminals 3-4




### 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.

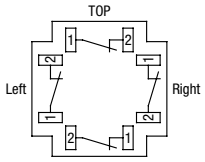



(Example: 1NO-3NC contact)

- 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).

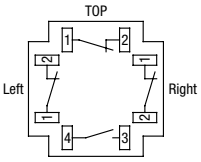
### Solder Terminal / PC Board Terminal Non-illuminated

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



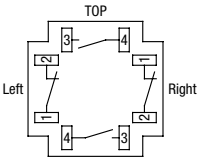

1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

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




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

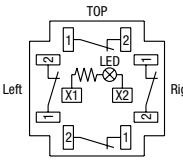
**With 2NO monitor contacts**
NC main contacts:
Terminals 1-2
NO monitor contacts:
Terminals 3-4




Solder Terminal only

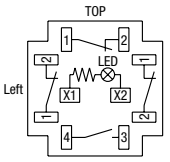
### Solder Terminal / PC Board Terminal Illuminated

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



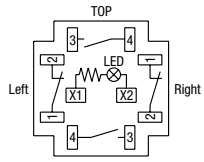

1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

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



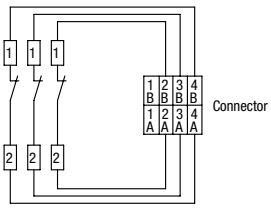

1NC: Terminals on top
2NC: Terminals on right and left

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

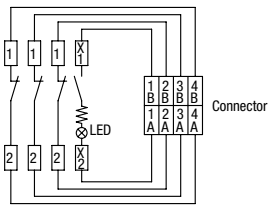



Solder Terminal only

### Connector Style Non-illuminated




### Connector Style Push-ON




For applicable connectors, see D-036.

All dimensions in mm.

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