

HE3B Series Pushbutton Assembly Enabling Switch

HE3B

Key features include:

- 3 position functionality (OFF – ON – OFF) as required for manual robotic control
- Provides a high level of safety based on human behavioral studies that determine personnel may squeeze OR let go when presented with a panic situation
- Contacts will not re-close when released from Off→On (3→1) (per IEC60204-1; 9.2.5.8)
- Multiple contacts for enhanced reliability
- Snap acting contacts from position 1 to 2
- Available with or without rubber cover




B

Safety Products

| | | | |
|---|----------------------------------|---|---|
| Specifications | Conforming to Standards | | IEC60947-5-1, EN60947-5-1, JIS C8201-5-1, UL508, CSA C22.2 No 14 |
| | Approvals | | ISO12100/EN292, IEC60204-1/EN60204-1, ISO11161/prEN11161, ISO10218/EN775, ANSI/RIA R15.06 |
| | Operating Temperature | | -25 to +60°C (no freezing) |
| | Operating Humidity | | 45 to 85% RH maximum (no condensation) |
| | Storage Temperature | | -40 to +80°C (no freezing) |
| | Pollution Degree | | 3 |
| | Contact Resistance | | 50mΩ maximum (beginning stage) |
| | Insulation Resistance | | Between live & dead metal parts: 100MΩ maximum (at 500VDC mega) |
| | | | Between positive & negative live parts: 100MΩ minimum (at 500VDC mega) |
| | Impulse Withstand Voltage | | 1.5kV |
| | Operating Frequency | | 1200 operations/hour |
| | Mechanical Life | | Position 1→2 1 million minimum |
| | | | Position 1→2→3→1: 100 thousand minimum |
| | Electrical Life | | 100,000 minimum at rated load |
| | Shock Resistance | Operating Extremes | 100m/s ² |
| | | Damage Limits | 1000m/s ² |
| | Vibration Resistance | Operating Extremes | 5 to 55Hz, amplitude 0.5mm minimum |
| | | Damage Limits | 16.7Hz, amplitude 1.5mm minimum |
| | Terminal | | 0.110" quick connect / solder terminal |
| | Recommended Wire Size | | 0.5mm ² maximum / 1 line |
| Solder Heat Resistance | | 260°C / 3 seconds maximum | |
| Terminal Pulling Strength | | 20N minimum | |
| Recommended Screw Torque | | 0.68 to 0.88N • m | |
| Degree of Protection | | with rubber cover: IP65, without rubber cover: IP40 (IEC 60529), | |
| Conditional Short-Circuit Current | | 50A (125V) | |
| Recommended Short Circuit Protection | | 125V/10A fast blow fuse (IEC 60127-1) | |
| Weight | | without rubber cover - Approx. 14g with rubber cover - Approx. 18g | |
| Circuit Opening Force | | 500N minimum | |

Part Numbers

Part Numbers

| | Type | No of Contacts | Part Numbers |
|---|----------------------|-----------------------|--------------|
|  | Without Rubber Cover | 2 (3 Position Switch) | HE3B-M2 |
|  | With Rubber Cover | | HE3B-M2P① |

B



In place of ① specify the rubber cover color code:
Y: yellow, B: black

Ratings

Contact Ratings

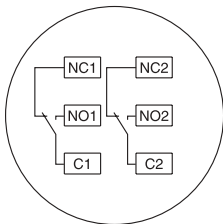
| | | | |
|--|----|------------------------|------|
| Rated Insulation Voltage (Ui) | | 125V | |
| Thermal Current (Ith) | | 3A | |
| Rated Operating Voltage (Ue) | | 30V | 125V |
| Rated Operating Current (Ie) | AC | Resistive Load (AC-12) | 1A |
| | | Inductive Load (AC-15) | 0.7A |
| | DC | Resistive Load (DC-12) | 0.2A |
| | | Inductive Load (DC-13) | 0.1A |
| Contact Structure (3 Position Switch) | | 2 contacts | |



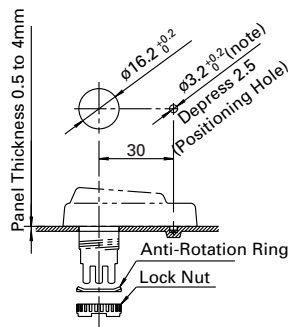
The minimum applicable load (reference) = AC/DC3V • 5mA

Circuit Diagrams

Terminal Circuit Diagrams (bottom view)



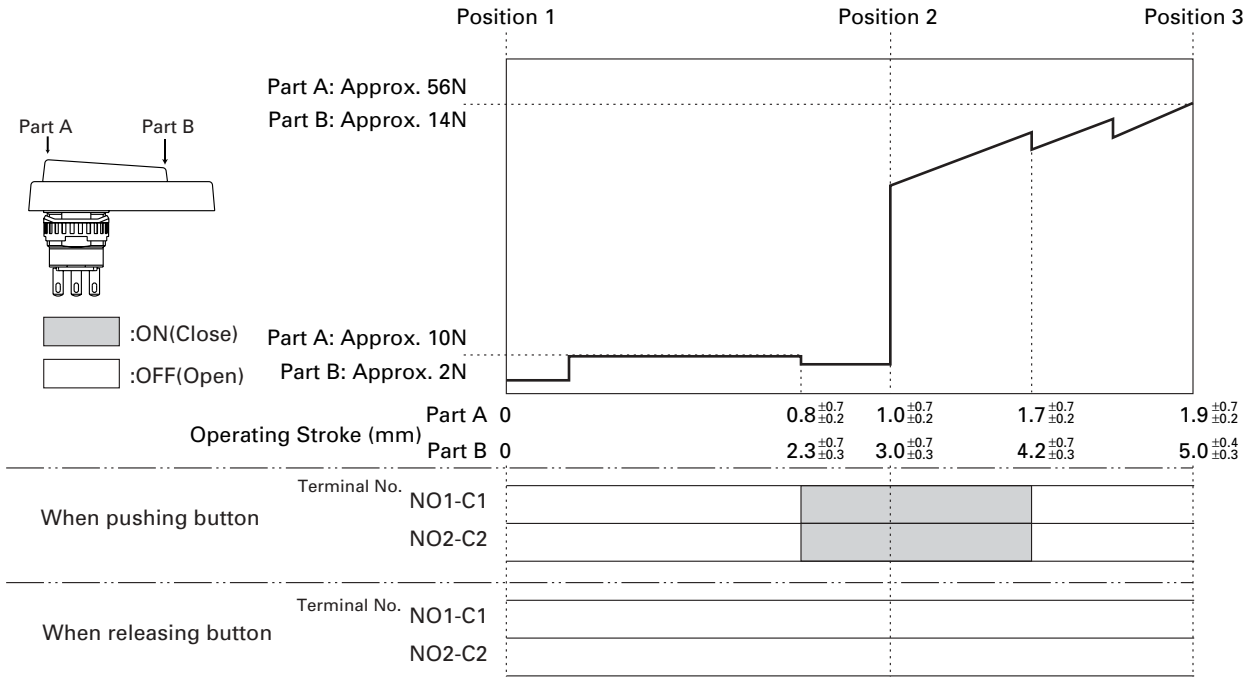
1. 3 position switch: 2 contacts, terminal no. = between NO1-C1, between NO2-C2
2. Use between NO-C for OFF → On → OFF 3 position switch (NC is not used).



1. Recommended Lock Nut Torque: 0.68 to 0.88N • m.
2. Use a lock nut tool to screw on the lock nut (see page B-47).
3. To retain the switches waterproof performance, do not penetrate the positioning hole.
4. Remove the rubber cover projection if you do not want a positioning hole. (Do not penetrate the rubber cover).

Operating Characteristics

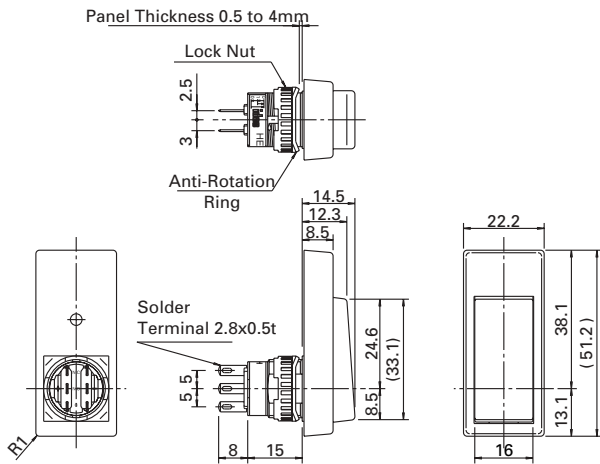
Operating Characteristics (without rubber cover/pushing button part A and B)



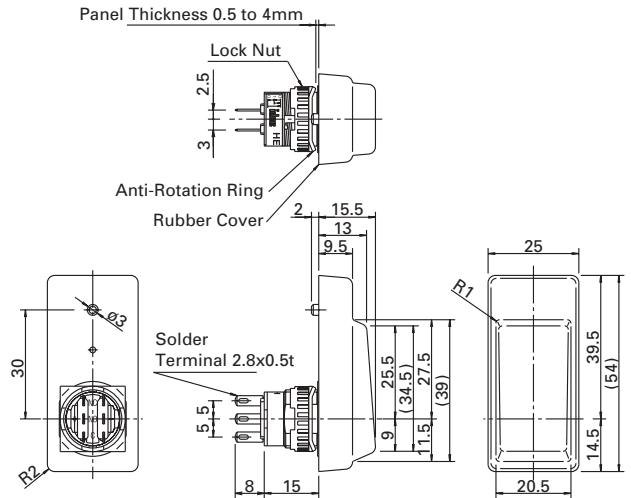
B Safety Products

Dimensions

Without Rubber Cover



With Rubber Cover



Accessories

Part Numbers: Replacement Rubber Cover

| Appearance | Part Number | Material |
|------------|-------------|----------------|
| | HE9Z-D3① | Silicon Rubber |



In place of ① specify rubber cover color:
Y: yellow and B: black.

Part Numbers: Lock Nut Tool

| Appearance | Part Number | Material |
|------------|-------------|----------|
| | MT-001 | Metal |

General Information for Enabling Switches

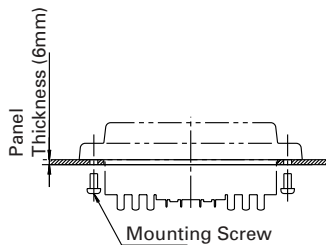
Safety Precautions

- In order to avoid electric shock or fire, turn power off before installation, removal, wire connection, maintenance or inspection of switch.
- Follow specification when installing. Improper electrical load may damage switch, cause electric shock, or fire.
- Use proper wire diameter to meet voltage and current requirements. Using improper wires or incomplete soldering may cause fire due to abnormal heat generation.

Installation Precautions

HE2B

- M3 nut is inside the rubber cover.



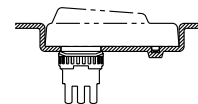
HE2B/HE3B

- A change in internal air pressure may cause the rubber boot to expand and shrink on an enabling switch that has the rubber boot sealed. This may affect the performance of the switch. Periodically check to ensure that the enabling switch is operating correctly.

- If the panel is not level when mounting an enabling switch, the waterproof feature cannot be guaranteed.

HE3B

- The rubber boot has a tab to be used for orientation. When making a positioning hole in a panel, do not make a hole in the rubber boot, or the waterproof feature cannot be guaranteed. When the positioning hole is not on the panel, remove the tab, but do not make a hole in the rubber boot.
- When tightening the locking ring, secure the flange to prevent the enabling switch from rotating. In applications where the enabling switch is to be rotated, mount the switch in a recess on the panel as shown.



Wiring Precautions

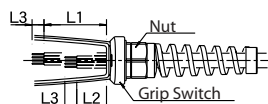
HE1B/HE2B/HE3B

- Applicable wire size is 0.5mm (maximum) / 1 line.
- When soldering the terminal, solder at a temperature of 260°C within 3 seconds. Use non-corrosive liquid rosin as soldering flux.

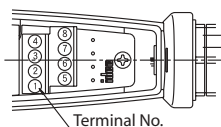
HE1G

- Wire Stripping Information

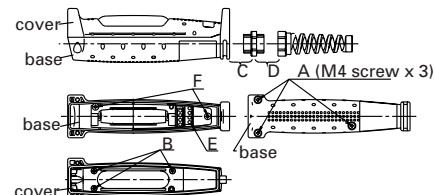
| Wire Length | Terminal No. 1-4 | Terminal No. 5-8 |
|-------------|------------------|------------------|
| L1, L2 (mm) | L1=40mm | L2=27mm |
| L3 (mm) | L3=6mm | |



- Applicable Wire Size: 0.14 to 1.5mm² (one wire per terminal)



- Recommended Torque (wire diameter range .276 - .512")



| | See Drawing Above | Recommended Torque |
|---------------------|-------------------|--------------------|
| Case Installation | A | 1.2±0.1N • m |
| Rubber Installation | B | .09±0.1N • m |
| Connector | C | 3.0±0.3N • m |
| Strain Relief | D | 6.0±0.3N • m |
| Wire terminals | E | 0.3±0.2N • m |
| Do Not Remove | F | — |



The above values apply when using IDEC strain relief. If using other, contact manufacturer.

Use Precautions

HE2B/HE3B/HE1G

- To ensure the highest level of reliability connect both contacts to a monitoring device such as a safety relay.

HE1B/HE2B/HE3B

- When installing the enabling switch ensure that it cannot be accidentally activated. For example, a protrusion from a teaching pendant could cause the enabling switch to be activated by the weight of the teaching pendant.

IDEC Oiltight Emergency Stop Pushbuttons

Pushlock Turn Resets

L6 Series

Safety Products

B

(see page A38 for more information)



HA1B ø25 mm

- ø25 mm red button
- Mounting hole: ø16.2 mm
- Solder or PC board terminal
- 1NC or 2NC contacts
- Contact rating: 250V AC/1.5A
- Positive action contacts
- Degree of protection: IP65

HW Series

(see page A75 for more information)

HW1B ø 29 mm

- ø29 mm red button
- Mounting hole: ø22.3 mm
- 1NO-1NC, 1NC, 1NO-1NC, or 2NC contacts
- Contact rating: 220V AC/3A
- EN418 compliance
- Degree of protection: IP65



HW1E ø 40 mm Unibody

- ø40 mm red button
- Mounting hole ø22.3 mm
- 1NO-1NC, 1NC, 1NO-1NC, or 2NC contacts
- Contact rating: 220V AC/3A
- EN418 compliance
- Degree of protection: IP65



HW1X E-stop Station

- ø40 mm red button
- 1NO-1NC, 1NC, 1NO-1NC, or 2NC contacts
- Contact rating: 220V AC/3A
- Box color: Yellow (top), Black (bottom)
- EN418 compliance
- Degree of protection: IP65

