

HE2B Series Redundant (Double) Basic Enabling Switch

HE2B

Key features include:

- 3 position functionality (OFF – ON –OFF) as required for manual robotic control
- Ideally suited for use as enabling (aka "deadman") switch on teach pendants
- 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
- Snap acting contacts from Off→On (1→ 2)
- Positive action contacts from On→Off (2 → 3) ensure no contact welding (per EN60947-5-1 / IEC60947-5-1)
- Contacts will not re-close when released from Off→On (3→1) (per IEC60204-1; 9.2.5.8)
- Multiple contacts for enhanced reliability
- Monitoring contacts in addition to main load contacts
- Available with or without rubber cover (cover provides IP65 watertight seal)

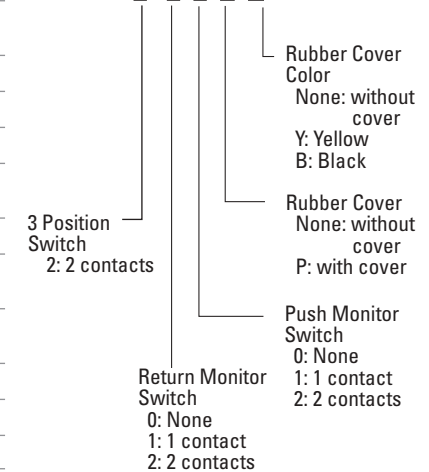


Safety Products

B

Ordering Information



HE2B - M 2 0 0 P Y



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 (no condensation)	
	Storage Temperature	-40 to +80°C (no freezing)	
	Pollution Degree	2 (inside of panel/contact side) 3 (outside of panel/operating side)	
	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	2.5kV	
	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 (at full 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	
	Recommend Wire Size	0.5mm ² maximum / 1 line	
Solder Heat Resistance	260°C / 3 seconds maximum		
Terminal Pulling Strength	20N minimum		
Recommended Screw Torque	0.5 to 0.8N • m		
Degree of Protection	with rubber cover: IP65, without rubber cover: IP40 (IEC 60529),		
Conditional Short-Circuit Current	50A (250V)		
Recommended Short Circuit Protection	250V/10A fast blow fuse (IEC 60127-1)		
Weight	Approx. 26g (without cover), 30g (with cover)		
Circuit Opening Force	60N minimum (button return monitor & button push monitor)		
Actuating Force (Operating)	500N minimum		

Part Numbers

Part Numbers

Type		Number of Contacts			Part Number
		3 Position Switch	Push Monitor Switch	Return Monitor Switch	
 Without Rubber Cover	2	0	0	HE2B-M200	
	2	1	1	HE2B-M211	
	2	2	2	HE2B-M222	
 With Rubber Cover	2	0	0	HE2B-M200P ^①	
	2	1	1	HE2B-M211P ^①	
	2	2	2	HE2B-M222P ^①	



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

Ratings

Contact Ratings

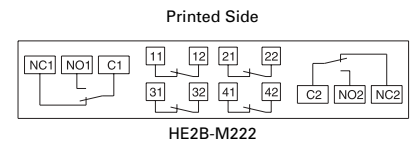
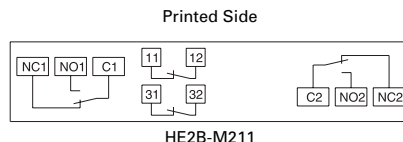
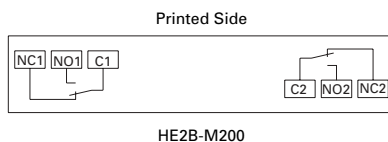
Rated Insulation Voltage (Ui)				250V		
Thermal Current (Ith)				3A		
Rated Operating Voltage (Ue)				30V	125V	250V
Rated Operating Current (Ie)	3 Position Switch	AC	Resistive Load (AC-12)	–	1A	0.5A
			Inductive Load (AC-15)	–	0.7A	0.5A
		DC	Resistive Load (DC-12)	1A	0.2A	–
			Inductive Load (DC-13)	0.7A	0.1A	–
	Push/return Monitor Switch (NC Contacts)	AC	Resistive Load (AC-12)	–	2A	1A
			Inductive Load (AC-15)	–	1A	0.5A
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A
			Inductive Load (DC-13)	1A	0.22A	0.1A
Contact Structure		3 Position Switch	2 contacts			
		Button Return Monitor Switch	0 to 2 contacts			
		Button Push Monitor Switch	0 to 2 contacts			



Minimum applicable load (reference) = AC/DC3V • 5mA
(for reference only, varies depending on operating conditions)

Circuit Diagrams

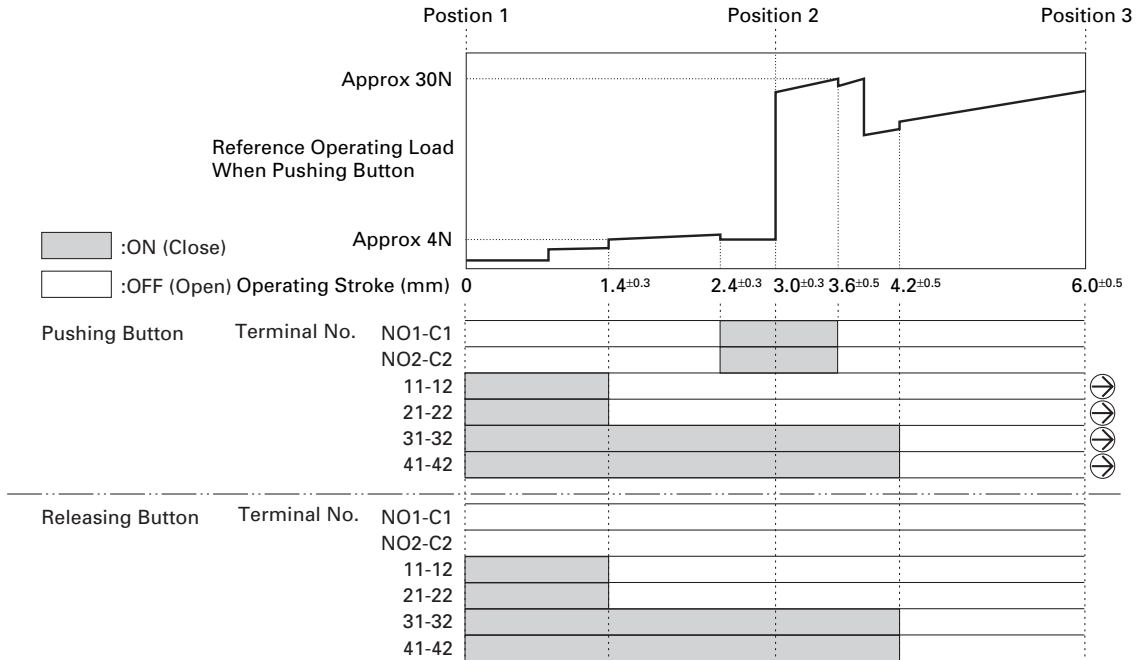
Terminal Circuit Diagrams (bottom view)



- 3 position switch: 2 contacts, terminal no. = between NO1-C1, between NO2-C2
- Button return monitoring contact: 0 to 2 contacts, terminal no. = between 11-12, between 21-22
- Button activate monitor contact: 0 to 2 contacts, terminal no. = between 31-32, between 41-42
- Use between NO-C for OFF → On → OFF 3 position switch (NC is not used).

Operating Characteristics

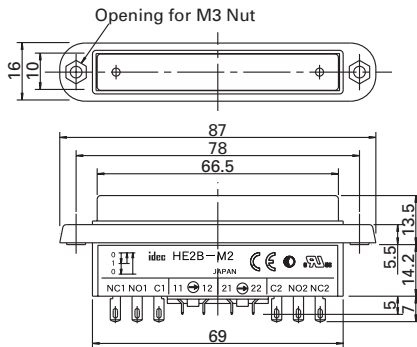
Operating Characteristics (without rubber cover/center of button being pushed)



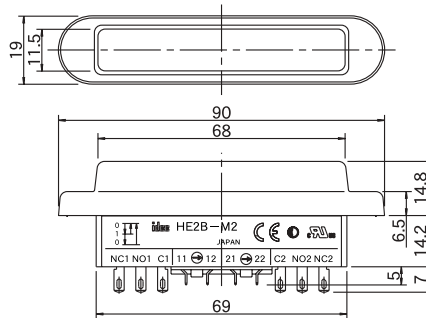
Using rubber cover will change the operating load because the operating temperature would increase

Dimensions

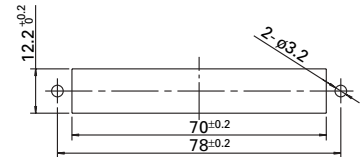
Without Rubber Cover



With Rubber Cover



Installation Dimensions



Accessories

Part Number: Replacement Rubber Cover

Appearance	Part Number	Material
	HE9Z-D2①	Silicon Rubber



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

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.

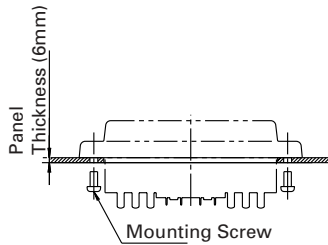
B

Safety Products

Installation Precautions

HE2B

- M3 nut is inside the rubber cover.



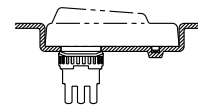
HE2B/HE3B

- 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

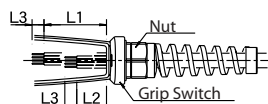
HE1B/HE2B/HE3B

- 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.

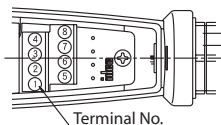
HE1G

- Wire Stripping Information

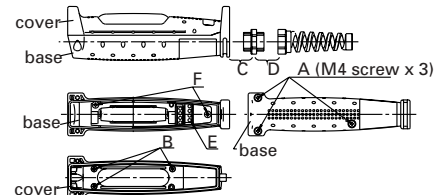
Wire Length	Terminal No. 1-4	Terminal No. 5-8
L1, L2 (mm)	L1=40mm	L2=27mm
L3 (mm)	L3=6mm	



- 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

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



Safety Products