

HE1B Series Basic Enabling Switch

HE1B 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
- Positive action contacts “On” (pos. 2) to “Off” (pos. 3) ensure no contact welding (per EN60947-5-1 / IEC60947-5-1)
- Contacts will not close when released from “Off” (pos. 3) to “Off” (pos. 1) (per IEC60204-1; 9.2.5.8)
- Small, lightweight and highly reliable



Specifications

Conforming to Standards	IEC60947-5-1, EN60947-5-1, JIS C8201-5-1, UL508, CSA C22.2 No 14	
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	2	
Initial Contact Resistance	50mΩ maximum	
Insulation Resistance	100MΩ minimum	
Impulse Withstand Voltage	2.5kV	
Operating Frequency	1200 operations/hour	
Mechanical Life	Position 1→2: 1,000,000 operations minimum Position 1→2→3→1: 100,000 operations minimum	
Electrical Life	100,000 operations minimum at rated load	
Shock Resistance	Operating Extremes	100m/s ² (10G)
	Damage Limits	1000m/s ² (100G)
Vibration Resistance	Operating Extremes	5 to 55Hz, amplitude 0.5mm minimum
	Damage Limits	16.7Hz, amplitude 1.5mm minimum
Terminal Shape	Solder Terminal	
Recommended Wire	0.5mm ² maximum / 1 line (20AWG)	
Solder Heat Resistance	260°C / 3 seconds maximum	
Terminal Pulling Strength	20N minimum	
Recommended Screw Torque	HE1B-M1: M3 screw / 0.5 to 0.8Nm	
Degree of Protection	IP40 (IEC 60529) excluding terminal part	
Conditional Short-Circuit Current	50A (250V)	
Recommended Short Circuit Protection	250V, 10A fast blow fuse (IEC 60127-1)	
Weight	Approx. 6g	
Circuit Opening Force	30N minimum (position 2→3)	
Control Resistance (Operating)	250N minimum	

Part Numbers

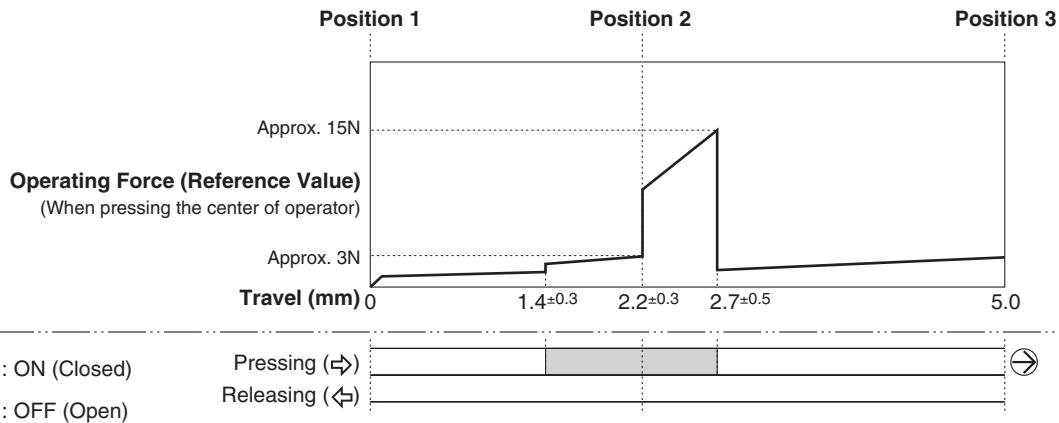
Item	Installation	Part Number
	Side	HE1B-M1
	Front	HE1B-M1N

Current Ratings

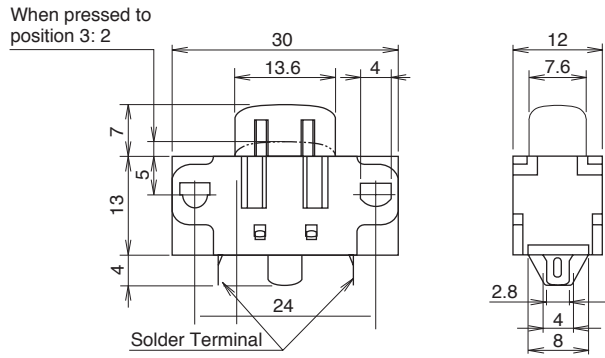
Rated Insulation Voltage (Ui)		AC / DC250V			
Thermal Current (Ith)		5A			
Rated Operating Voltage (Ue)		30V	125V	250V	
Rated Operating Current (Ie)	AC 50/60Hz	Resistive Load (AC-12)	–	3A	1.5A
		Inductive Load (AC-15)	–	1.5A	0.75A
	DC	Resistive Load (DC-12)	2A	0.4A	0.2A
		Inductive Load (DC-13)	1A	0.22A	0.1A
Contact Structure		SPST-NO three position (OFF-ON-OFF)			

 Minimum applicable load: AC/DC3V • 5mA (For reference only).

Operating Characteristics



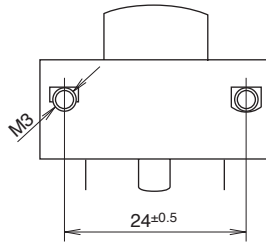
Dimensions (mm)



Installation Dimensions (mm)

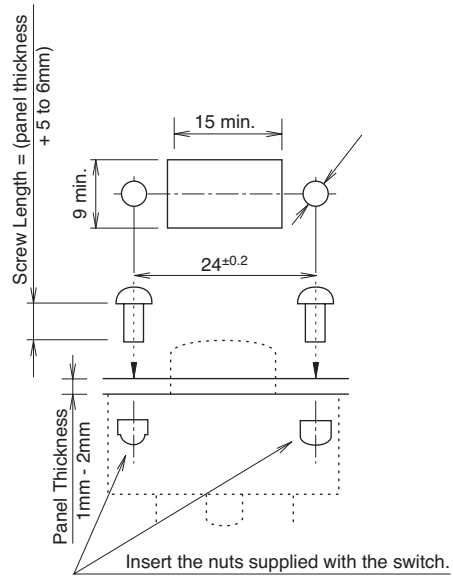
HE1B-M1 (Side Mounting)

1. M3 Screw (not provided)
2. Thread built in



HE1B-M1N (Front Mounting)

1. M3 Screw (not provided)
2. Locking nut (2 pcs) included



When using a panel thicker than 2mm, the button will be lower than the surface of the panel

General Information

Safety Precautions

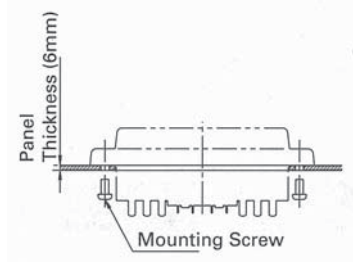
- In order to avoid electric shock or fire, turn power off before installation, removal, wire connection, maintenance or inspection of switch.
- Follow specification when installing. Improper electrical load may damage switch, cause electric shock, or fire.

- 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.



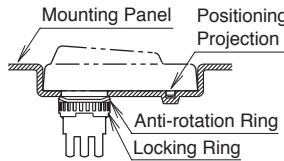
HE2B/HE3B

- 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.

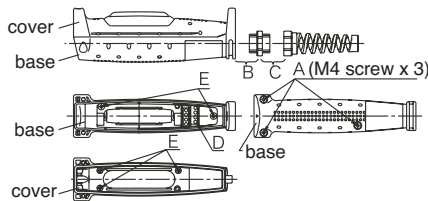


Wiring Precautions

HE1B/HE2B/HE3B

- Applicable wire size is 0.5mm² (20AWG) (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.

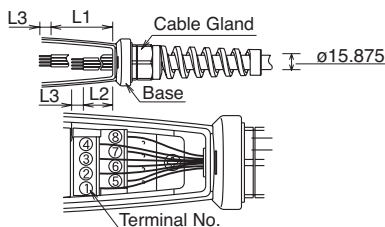
- Recommended Torque



HE1G

- Wire Stripping Information

Wire Length	Terminal Number 1-4	Terminal Number 5-8
L1, L2 (mm)	L1=40mm	L2=27mm
L3 (mm)	L3=6mm	



- Applicable Wire Size: 0.14 to 1.5mm² (24 - 16AWG, one wire per terminal)

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.

	See Drawing Above	Recommended Torque
Rubber Boot & Base	A	1.2±0.1Nm
Connector & Grip Switch	B	4.0±0.3Nm
Connector	C	4.0±0.3Nm
Terminal Screw	D	0.5±0.6Nm
Do Not Remove	E	