








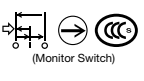


# Enabling Switch and Grip Style Enabling Switch Selection Chart

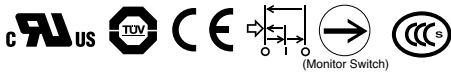
## Enabling Switch Selection Chart According to ISO/IEC Standards

			Model	Standards	Marks	Page		
<p>ISO 12100-2: 2003 Control mode for setting, teaching, process changeover, fault-finding, cleaning or maintenance 4.11.9 permits operation of the hazardous elements only by continuous actuation of an enabling device, a hold-to-run control device or a two-hand control device;</p>	For Installation in Equipment	3-position Switch with 1 Contact (2 switches are used for duplication)	Panel Top Installation	IP40	 HE1B-M1N IEC/EN60947-5-8 UL508 CSA C22.2 No. 14	7		
			Panel Side Installation	IP40	 HE1B-M1 IEC/EN60947-5-8 UL508 CSA C22.2 No. 14			
<p>IEC 60204-1: 1997 9.2.5.8 When an enabling device is provided as a part of a system, it shall be designed to allow motion when actuated in one position only. In any other position motion shall be stopped.</p>	For Direct Operation with Hand	3-position Switch with 2 Contacts	Installed in Rectangular Panel Cut-out (4-finger operation)	w/o Monitor Switch for Position Detection	IP40	9		
				HE2B-M200	IP40		 HE2B-M200 IEC/EN60947-5-8 UL508 CSA C22.2 No. 14 GB14048.5	
<p>ANSI/ RIA R15.06 4.7.3 Enabling device The pendant or teaching control device shall have an enabling device using a three position switch, which continuously held in a detented position, permits motion.</p>			Installed in Rectangular Panel Cut-out (4-finger operation)	w/ Monitor Switch for Position Detection	IP65	9		
				HE2B-M211 HE2B-M222	IP40		 HE2B-M211 HE2B-M222 IEC/EN60947-5-8 UL508 CSA C22.2 No. 14 GB14048.5 (Monitor Switch)	
<p>ANSI B11.19 12.3.1.1 Enabling devices shall be designed and constructed to permit limited and supervised machine motion while personnel are inside a hazard area.</p>			Installed in Rectangular Panel Cut-out (1- or 2-finger operation)	w/o Monitor Switch for Position Detection	IP65	17		
				HE2B-M211P* HE2B-M222P*	IP65		 HE2B-M211P* HE2B-M222P* IEC/EN60947-5-8 UL508 GS-ET-22 CSA C22.2 No. 14 GB14048.5 KS C IEC60947-5-8/S1-G-1/S2-W-5 (Monitor Switch)	
<p>SEMI S2-0703 20.4 Industrial robots and industrial robot systems should meet the requirements of appropriate national or international standards, e.g., ANSI/RIA R15.06, ISO standards 10218, EN 775.</p>			Installed in Rectangular Panel Cut-out (1- or 2-finger operation)	w/ Monitor Switch for Position Detection	IP65	17		
				HE6B-M200	IP65		 HE6B-M200 IEC/EN60947-5-1 IEC/EN60947-5-8 GS-ET-22 UL508 CSA C22.2 No.14 GB14048.5	
				HE6B-M211	IP65		 HE6B-M211 IEC/EN60947-5-1 IEC/EN60947-5-8 GS-ET-22 UL508 CSA C22.2 No.14 GB14048.5 (Monitor Switch)	
			Installed in ø16mm Round Hole (thumb or 3-finger operation)		IP40	12		
					HE3B-M2		IP40	 HE3B-M2 IEC/EN60947-5-8 UL508 CSA C22.2 No. 14 GB14048.5
					HE3B-M2P*		IP65	 HE3B-M2P* IEC/EN60947-5-8 UL508 CSA C22.2 No. 14 GB14048.5
			Installed in ø16mm Round Hole (thumb operation)		IP65	14		
					HE5B-M2P*	 HE5B-M2P* IEC/EN60947-5-8 UL508 CSA C22.2 No. 14 GB14048.5		

# HE6B Rectangular Three-position Enabling Switches

## 3-position enabling switch with monitoring contacts—Smallest in its class.

- Ergonomically-designed OFF-ON-OFF operation.
- The switch does not turn ON while returning from position 3 (OFF) to position 1 (OFF)  
IEC 60204-1 (2005), 10.9  
IEC 60947-5-8 (2006), 7.1.9
- Some teach pendants are equipped with two 3-position enabling switches, and when one switch is pressed to position 3 (OFF), the other switch must not enable machine operation even when pressed to position 2. Enabling of machine operation must resume after both switches are released. The monitoring switches monitor the OFF status of 3-position enabling switch, whether the button is returned to position 1 or the button is pressed to position 3 (monitor switches have direct opening action mechanism.)
- Two contacts are provided in a 3-position enabling switch so that even if one contact fails due to welding or short circuit, the other contact can disable machine operation.
- The waterproof rubber boot provides IP65 protection.



## HE6B

Style		Contact Configuration/No. of Contacts			Part No.	Ordering No.	Package Quantity
		3-position Switch	Return Monitor Switch (→)	Depress Monitor Switch (→)			
With Rubber Boot	Rubber Boot Material: Silicon Rubber	2	0	0	HE6B-M200*	HE6B-M200*	1
						HE6B-M200*PN10	10
	Color: Y: yellow B: black	2	1	1	HE6B-M211*	HE6B-M211*	1
						HE6B-M211*PN10	10

- Specify rubber boot color code in place of \* in the Part No.

## Part No. Development

<b>HE6B - M 2 0 0 *</b>	
<p>3-position Switch ————</p> <p>2: 2 contacts</p> <p>Monitor Switch ————</p> <p>00: No switch</p> <p>11: 1 contact of return monitor switch 1 contact of depress monitor switch</p> <p>20: 2 contacts of return monitor switch</p> <p>02: 2 contacts of depress monitor switch (20 and 02 are not standard. Contact IDEC for details.)</p>	<p>Rubber Boot Material, Color</p> <p>Blank: No rubber boot</p> <p>Y: Silicon rubber, yellow (Note 1)</p> <p>B: Silicon rubber, black (Note 1)</p> <p>[N1]: NBR/PVC polyblend, gray (Not standard. Contact IDEC) (Note 2)</p>

Note 1: Silicon rubber: Can be used in general factories. Remaining flexible in cold temperatures. Suitable for applications in a wide operating temperature range.

Note 2: NBR/PVC polyblend: Oil-proof. Suitable for environments subjected to machine oil and for painting robots where silicon rubber cannot be used.

## Accessories

### Replacement Rubber Boot

Material, Color	Part No.	Ordering No.	Package Quantity
Silicon Rubber Y: yellow B: black	HE9Z-D6*	HE9Z-D6*PN10	10



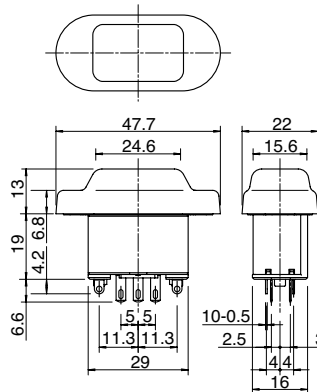
- Specify rubber boot color code in place of \* in the Ordering No.

# HE6B Rectangular Three-position Enabling Switches

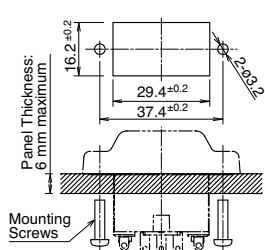
## Specifications

Applicable Standards	IEC/EN60947-5-1 IEC/EN60947-5-8 (TÜV approval) GS-ET-22 (TÜV approval) UL508 (UL recognized) CSA C22.2 No.14 (c-UL recognized) GB14048.5 (CCC approval)
Applicable Standards for Use	ISO12100/EN ISO12100 IEC60204-1/EN60204-1 ISO11161/EN ISO11161 ISO10218-1/EN ISO10218-1 ANSI/RIA/ISO10218-1 ANSI/RIA/R15.06, ANSI B 11.19 ISO13849-1/EN ISO13849-1
Operating Temperature	-25 to +60°C (no freezing)
Relative Humidity	45 to 85% RH (no condensation)
Storage Temperature	-40 to +80°C (no freezing)
Pollution Degree	2 (inside panel, terminal side) 3 (outside panel, operator side)
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	Between live and dead metal parts: 100 MΩ minimum (500V DC megger) Between terminals of different poles: 100 MΩ minimum (500V DC megger)
Impulse Withstand Voltage	1.5 kV (3 position switch) 2.5 kV (monitor switch)
Operating Frequency	1200 operations per hour
Mechanical Durability	Position 1→2→1: 1,000,000 operations minimum Position 1→2→3→1: 100,000 operations minimum
Electrical Durability	100,000 operations minimum (rated load) 1,000,000 operations minimum (24V AC/DC, 100 mA)
Shock Resistance	Operating extremes: 150 m/s <sup>2</sup> Damage limits: 500 m/s <sup>2</sup>
Vibration Resistance	Operating extremes: 5 to 55 Hz, amplitude 0.5 mm Damage limits: 16.7 Hz, amplitude 1.5 mm
Terminal Style	Solder terminal
Applicable Wire	1 cable, 0.5 mm <sup>2</sup> maximum
Solder Terminal Heat Resistance	310 to 350°C, 3 seconds maximum
Terminal Tensile Strength	20N minimum
Locking Ring Recommended Tightening Torque	0.5 to 0.8 N·m
Degree of Protection	IP65 (IEC 60529)
Conditional Short-circuit Current	50A (125V): 3-position switch (Use 120V/10A fast acting type fuse for short circuit protection.) (IEC 60127-1) 50A (250V): monitor switch (Use 250V/10A fast acting type fuse for short circuit protection.) (IEC 60127-1)
Direct Opening Force	40N minimum (monitor switch)
Direct Opening Stroke (when pressing the entire button surface)	0.9 mm minimum (return monitor switch) 4.0 mm minimum (depress monitor switch)
Operator Strength	250N minimum (when pressing the entire button surface)
Weight (approx.)	17g

## Dimensions



## Mounting Hole Layout



- Mounting screws: M3 screw × 2 (not attached and must be supplied by the user)
- Mounting screw length: 5 to 6 mm (panel thickness + gasket)

All dimensions in mm.

## Ratings

Rated Insulation Voltage (Ui)		125V (monitor switch: 250V)				
Rated Thermal Current (Ith)		3A				
Rated Voltage (Ue)		30V	125V	250V		
Rated Current (Ie)	3-position switch	AC	Resistive Load (AC-12)	—	0.5A	—
			Inductive Load (AC-15)	—	0.3A	—
		DC	Resistive Load (DC-12)	1A	—	—
		Inductive Load (DC-13)	0.7A	—	—	
	Return monitor switch	AC	Resistive Load (AC-12)	—	2.5A	1.5A
			Inductive Load (AC-15)	—	1.5A	0.75A
DC		Resistive Load (DC-12)	2.5A	1.1A	0.55A	
Depress monitor switch (NC)		Inductive Load (DC-13)	2.3A	0.55A	0.27A	
	Contact Configuration		3-position switch	2 contacts		
			Return monitor switch	0 to 1 contact		
			Depress monitor switch	0 to 1 contact		

- Minimum applicable load (reference value): 3V AC/DC, 5 mA (Applicable operation area depends on the operating conditions and load.)

### TÜV ratings:

3 position switch:  
 AC-12 125V/0.5A  
 DC-12 30V/1A  
 DC-13 30V/0.7A

Monitor Switch:  
 AC-15 250V/0.75A  
 DC-13 125V/0.22A  
 DC-13 30V/2.3A

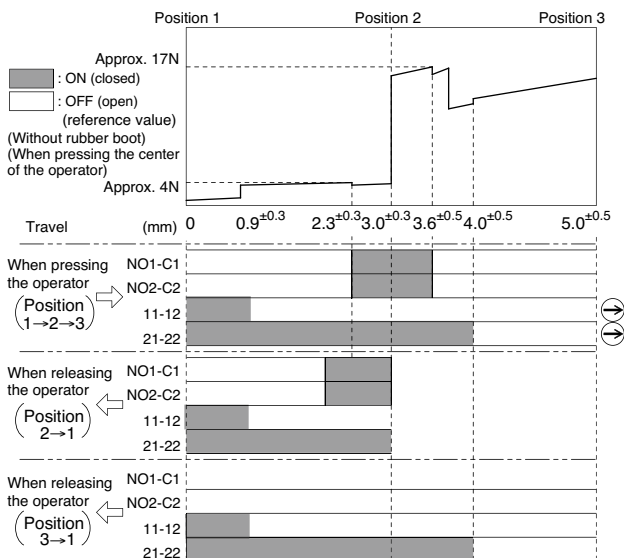
### UL ratings:

3-position switch:  
 125V AC/0.5A (Resistive)  
 30V DC/1A (Resistive)  
 30V DC/0.7A (Pilot Duty)

Monitor switch:  
 250V AC/0.5A (General use)  
 30V DC/1A (General use)  
 250V AC/0.75A (Pilot Duty)  
 30V DC/2.3A (Pilot Duty)

## Operating Characteristics

### HE6B-M211

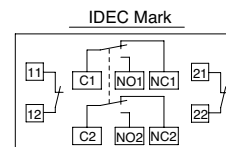


### Notes:

- When a rubber boot is used, the operating force depends on the operating temperature.
- The operating force to move the button from position 2 to position 3 can be changed. For details, contact IDEC.

## Terminal Arrangement (bottom view)

### HE6B-M211



- 3-position switch (Note): 2 contacts
- Return monitor switch: 1 contact, terminal nos. 11-12
- Depress monitor switch: 1 contact, terminal nos. 21-22
- There are no terminal nos. 11-22 and 21-22 for HE6B-M200.

Note: Use NO and C terminals for OFF→ON→OFF 3-position switch (NC terminal is not used.)