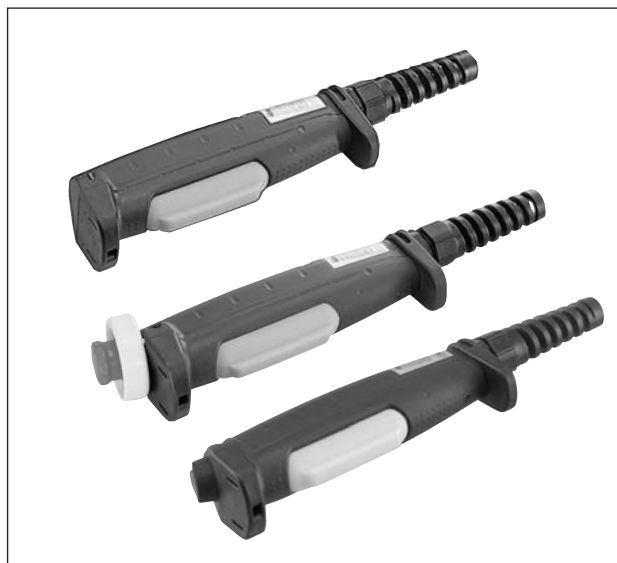


HE1G Grip Switch

Ergonomically designed grip switch with two 3-position enabling switches.

- Ergonomically-designed OFF-ON-OFF operation.
- Direct opening action mechanism for shifting from position 2 (ON) to position 3 (OFF) (EN 60977-5-1/IEC 60947-5-1, Annex K).
- The switch does not turn ON when being released from position 3 (OFF when pressed) to position 1 (OFF when released) (IEC60204-1, 9.2.5.8).
- Two contacts are provided so that even if one contact fails due to welding or short-circuit, the other contact can disable machine operation.
- Emergency stop switch and momentary pushbutton versions are available.
- Conduit connector supplied.
- HE1G-21SM is IP66 waterproof.
- Can be used for applications required by the ANSI robot standard.



Types

Contact Configuration			Rubber Boot	Ordering Type No.	Package Quantity
3-position Switch	Monitor Switch	Pushbutton			
2 contacts	With (1NC)	Without	Silicon Rubber / yellow	HE1G-21SM	1
			NBR / PVC Polyblend / gray	HE1G-21SM-1N	
		Momentary Pushbutton (1NO)	Silicon Rubber / yellow	HE1G-21SMB	
			NBR / PVC Polyblend / gray	HE1G-21SMB-1N	
	Without	Emergency Stop Switch (2NC)	Silicon Rubber / yellow	HE1G-20ME	
			NBR / PVC Polyblend / gray	HE1G-20ME-1N	
		Momentary Pushbutton (2NO)	Silicon Rubber / yellow	HE1G-20MB	
			NBR / PVC Polyblend / gray	HE1G-20MB-1N	

Ratings

• Contact Ratings

Rated Insulation Voltage (Ui)				250V (momentary pushbutton switch: 125V)		
Rated Thermal Current (Ith)				3A		
Rated Voltage (Ue)				30V	125V	250V
Rated Current (Ie)	3-position Switch (terminal No. 1-2, 3-4)	AC	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
	Monitor Switch (HE1G-21SM, terminal No. 5-6)	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
	Emergency Stop Switch (HE1G-20ME, terminal No. 5-6, 7-8)	AC	Resistive Load (AC-12)	—	—	—
			Inductive Load (AC-15)	—	—	0.5A
		DC	Resistive Load (DC-12)	—	—	—
			Inductive Load (DC-13)	—	—	0.1A
	Momentary Pushbutton Switch (HE1G-20MB, terminal No. 5-6, 7-8)	AC	Resistive Load (AC-12)	—	0.5A	—
			Inductive Load (AC-15)	—	0.3A	—
		DC	Resistive Load (DC-12)	1A	0.2A	—
			Inductive Load (DC-13)	0.7A	0.1A	—
Contact Configuration	3-position Switch			2 contacts		
	Monitor Switch			0 or 1 contact		
	Emergency Stop Switch			0 or 2 contacts		
	Momentary Pushbutton Switch			0 to 2 contacts		

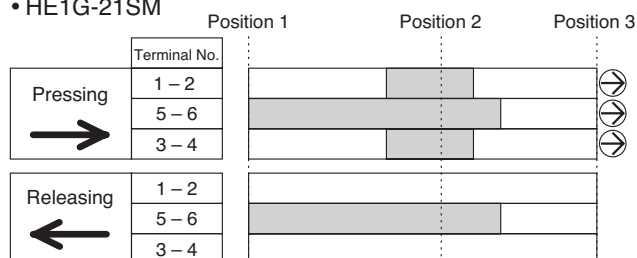
- Minimum applicable load (reference value): 3V AC/DC, 5 mA
- Applicable operation area depends on the operating conditions and load.

Specifications

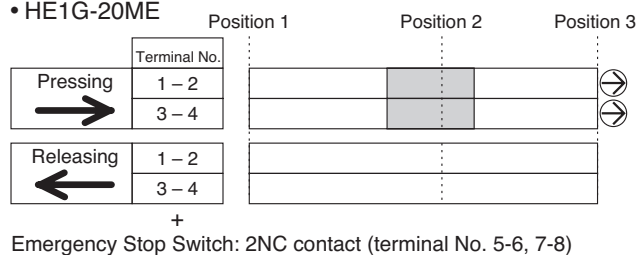
Applicable Standards	IEC 60947-5-1, EN 60947-5-1 (BG approval), GS-ET-22 (BG approval), UL508 (UL listed), CSA C22.2, No. 14 (c-UL listed), JIS C8201-5-1
Applicable Standards for Use	ISO 12100 / EN 292, IEC 60204-1 / EN 60204-1, ISO11161 / prEN11161, ISO 10218 / EN 775, ANSI/RIA R15.06, ANSI B11.19
Operating Temperature	Silicon rubber boot: -25 to 60°C (no freezing) NBR/PVC Polyblend rubber boot: -10 to 60°C (no freezing)
Relative Humidity	45 to 85% (no condensation)
Storage Temperature	-40 to +80°C (no freezing)
Pollution Degree	3
Contact Resistance	100 mΩ maximum (initial value)
Insulation Resistance	Between live and dead metal parts: 100 MΩ minimum (500V DC megger) Between terminals of different pole: 100 MΩ minimum (500V DC megger)
Impulse Withstand Voltage	2.5 kV (except for momentary pushbuttons)
Electric Shock Protection Class	Class II (IEC 61140)
Operating Frequency	1,200 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
Shock Resistance	Operating extremes: 150 m/s ² Damage limits: 1,000 m/s ²
Vibration Resistance	Operating extremes: 5 to 55 Hz, amplitude 0.5 mm minimum Damage limits: 16.7 Hz, amplitude 1.5 mm minimum
Applicable Wire	0.14 to 1.5 mm ²
Applicable Cable	Outside diameter ø7 to 13 mm
Conduit Size	M20 (connector is supplied with the grip switch)
Terminal Tensile Strength	20N minimum
Terminal Screw Tightening Torque	0.5 to 0.6 N·m
Degree of Protection	HE1G-21SM: IP66 (IEC 60529) HE1G-20ME: IP65 (IEC 60529) HE1G-20MB: IP65 (IEC 60529) HE1G-21SMB: IP65 (IEC 60529)
Conditional Short-circuit Current	50A (250V) (Use 250V/10A fast acting type fuse for short circuit protection.)
Weight (approx.)	HE1G-21SM: 210g HE1G-20ME: 250g HE1G-20MB: 220g

Operating Characteristics

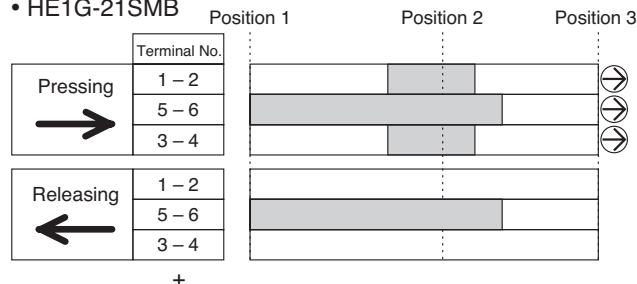
• HE1G-21SM



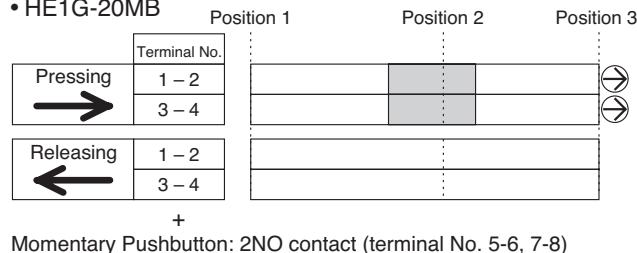
• HE1G-20ME



• HE1G-21SMB



• HE1G-20MB



Momentary Pushbutton: 1NO contact (terminal No. 7-8)

■ : contact ON (closed) □ : contact OFF (open)

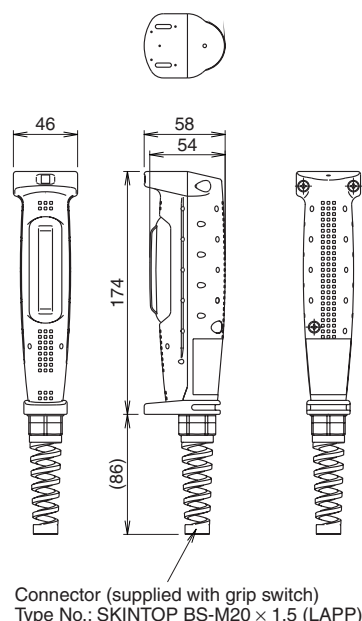
Notes:

- 3-position switches operate with direct opening action ↻ when shifting from position 2 to position 3.
- For the output of the enabling device, use terminals 1-2 and 3-4.
- The above operation characteristics show when the center of the button is pressed.

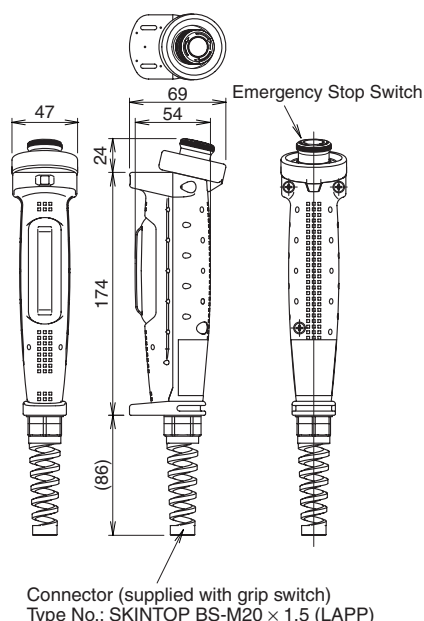
HE1G Grip Switch

Dimensions

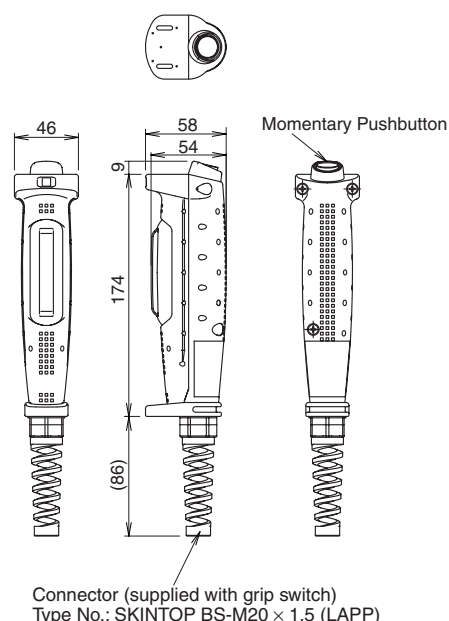
• HE1G-21SM



• HE1G-21SM

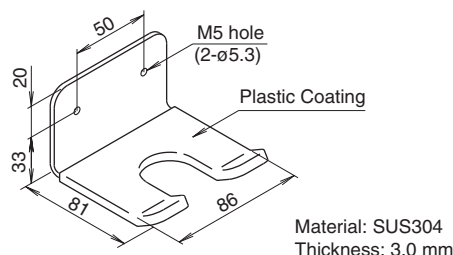


• HE1G-20MB / HE1G-21SMB



Accessories

• Mounting Bracket (for hanging grip switch)



• Rubber Boot Kit (replacement)



Rubber Boot Material	Type No.
Silicon Rubber / yellow	HE9Z-GBK1
NBR/PVC Polyblend / gray	HE9Z-GBK1-1N

All dimensions in mm.



Safety Precautions

- Turn off power before starting installation, removal, wiring, maintenance, and inspection of HE1G grip switches. Failure to turn power off may cause electric shock or fire hazard.
- Install the HE1G grip switches according to the instructions on page 19 to achieve strength against operating force. Insufficient strength and excessive force may damage grip switches, resulting in possible electric shock or fire hazard.
- Use wires of the proper size to meet the voltage and current requirements. Solder the terminal properly according to the instructions on page 19. Improper soldering may cause overheating, resulting in fire hazard.