

Latching Interlock Switch

IDEC HS5L Series

• HS5L-VA44M-G [Spring Lock]

Please contact us if you require a different contact configuration.



Note: Information in this document is derived from the manufacturers data sheet for the IDEC HS5L Series. Please contact us if you require this or more information.

- Compact body: 35 × 40 × 127mm
- The locking strength is 1400N.
- Spring clamp terminal block prevents loosening of wires due to vibration.
- A variety of circuits. Dual safety circuit and four-circuit independent outputs available.
- Gold-plated contacts suitable for small loads.
- Spring lock models (unlocks when the solenoid is energized) and solenoid lock models (locks when solenoid is energized) are available.
- The head orientation can be rotated, allowing 8 different actuator entries.
- Actuators can be used with other HS5 series interlock switches. Spring loaded actuator exclusive for HS5L available.
- LED indicator shows solenoid operation.

Spring Lock

- Automatically locks the actuator without power applied to the solenoid.
- After the machine stops, unlocking is completed by the solenoid, providing high safety features.
- Manual unlocking is possible in the event of power failure or maintenance using a manual unlocking key.

Solenoid Lock

- The actuator is locked when energized.
- The actuator is unlocked when de-energized.
- Flexible locking function can be achieved, for an application where locking is not required and sudden stopping of a machine must be prevented.

Circuit Code	Contact Configuration	Gland Port Size	Spring lock	Solenoid
			Part No.	Part No.
VA	<p>Door Monitor (Actuator inserted) Lock Monitor (Spring lock → Solenoid OFF) (Solenoid lock → Solenoid ON)</p> <p>Door Monitor: 1NC, 1NO Lock Monitor Circuit: 1NC, 1NO</p> <p>Monitor Circuit: 11, 12, 23, 24, 41, 42, 53, 54</p>	M20	HS5L-VA44M-G	HS5L-VA7Y4M-G

Specifications

Applicable Standards	EN ISO14119, GS-ET-19 (TÜV approval), EN60947-5-1 (TÜV approval), UL508 (UL Listing), CSA C22.2 No.14 (c-UL listed), GB14048.5(CCC approval) IEC60204-1/EN60204-1 (Applicable standards for use)
Type and Coded Level	Type 2 low level coded interlocking device (ISO14119)
Operating Temperature	-25 to + 55°C (no freezing)
Relative Humidity	20 to 95% (no condensation)
Storage Temperature	-40 to +80°C (no freezing)
Pollution Degree	3
Impulse Withstand Voltage	2.5kV (between LED, solenoid and grounding: 0.5kV)
Insulation Resistance (500V DC megger)	Between live and dead metal parts: 100MΩ min. Between terminals of different poles: 100MΩ min.
Electric Shock Protection	Class II (IEC61140)
Degree of Protection	IP67 (IEC60529) Type 4X Indoor Use Only
Shock Resistance	Operating extremes: 100m/s ² (10G), Damage limits: 1000m/s ² (100G)
Vibration Resistance	Operating extremes: 10 to 55Hz, amplitude 0.35 min. Damage limits: 30Hz, amplitude 1.5mm min.
Actuator Operating Speed	0.05 to 1.0m/s
Direct Opening Travel	11.0mm min. (Actuator: HS9Z-A51/A5F) 12.0mm min. (Actuator: HS9Z-A52/A51A/A52A/A53/A55/SH5/SH5L) 24.5mm min. (Actuator: HS9Z-BA5)
Direct Opening Force	120N min.
Actuator Retention Force (Note)	Fzh = 1400N min. (GS-ET-19) However, Fzh=500N min. when HS9Z-A55 is used
Operating Frequency	900 operations per hour
Rear Unlocking Button Mechanical Durability	3,000 times min. (HS5L-□□L)
Mechanical Durability	2,000,000 times min. (Operation frequency 900 times/hour, actuator insert/remove, solenoid operation) 100,000 times min. when HS9Z-SH5/SH5L (actuator insert/remove)
Electrical Durability	100,000 times min. (Operating Frequency: 900 operations per hour) 2,000,000 times min. (24V AC/DC, 100mA)
Conditional Short-circuit Current	50A (250V) (Use 250V/10A fast-blow fuse for short-circuit protection.)
Cable	0.3mm ² min. and 1.5mm ² max. or AWG22 min. to AWG16 max. strand wire or single wire
Weight (Approx.)	300g

Note: See page 16 regarding actuator retention force.

Ratings

Contact Ratings

Rated Insulation Voltage (Ui)	250V (between LED, solenoid and grounding: 30V)				
Rated Current (Ith)	2.5A				
Rated Voltage (Ue)*	30V	125V	250V		
Rated Current (Ie)*	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
		Inductive Load (DC-13)	2.3A	0.55A	0.27A

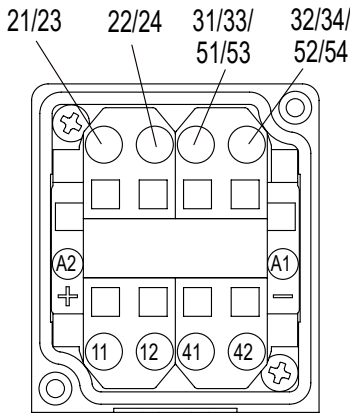
Minimum applicable load (reference): 3V AC/DC, 5mA
 (Applicable range may vary with operating conditions and load types.)
 UL, c-UL rating: Pilot Duty AC 0.75A/250V,
 Pilot Duty DC 1.0A/30V
 TUV rating: AC-15 0.75A/250V, DC-13 2.3A/30V
 CCC rating: AC-15 0.75A/250V, DC-13 2.3A/30V

Solenoid

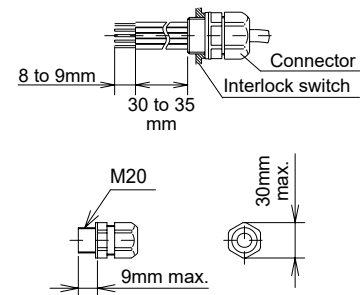
Locking Mechanism	Spring Lock	Solenoid Lock
Rated Voltage	100% duty cycle 24V DC	
Rated Current	200mA (initial value)	
Coil Resistance	120Ω (at 20°C)	
Pickup Voltage	Rated voltage × 85% max. (at 20°C)	
Dropout Voltage	Rated voltage × 10% min. (at 20°C)	
Maximum Continuous Applicable Voltage	Rated voltage × 110%	
Maximum Continuous Applicable Time	Continuous	
Insulation Class	Class F	

Indicator

Rated Voltage	24V DC
Rated Current	10mA
Light Source	LED
Illumination Color	G (Green)



Lead-in Wire Length & Cable Gland Spec



Circuit Diagrams and Operating Characteristics

4-Contact (Spring lock)

	Status 1	Status 2	Status 3	Status 4	When unlocking manually
Interlock Switch Status	Door Closed Machine ready to operate Solenoid de-energized	Door Closed Machine cannot be operated Solenoid energized	Door open Machine cannot be operated Solenoid energized	Door open Machine cannot be operated Solenoid de-energized	Door Closed Machine cannot be operated Solenoid de-energized
Door Status					 · Turn the manual unlock key (Note 1) · Press the rear unlocking button (Note 2)
Circuit Example: HS5L-VA4	 11 12 41 42 23 24 53 54	 11 12 41 42 23 24 53 54	 11 12 41 42 23 24 53 54	 11 12 41 42 23 24 53 54	 11 12 41 42 23 24 53 54

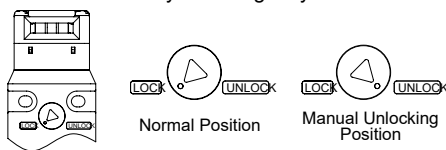
Manual Unlocking

Spring lock

The spring lock interlock switch allows manual unlocking of the actuator to precheck proper door movement before wiring or turning power on, as well as for emergency use such as a power failure.

Solenoid lock

The solenoid interlock switch does not unlock even when the solenoid is de-energized. However, the interlock switch can be unlocked manually in emergency cases.



When locking or unlocking the interlock switch manually, turn the key fully using the manual unlock key supplied with the interlock switch. Using the interlock switch with the key not fully turned (less than 90°) may cause damage to the interlock switch or operation failures (when manually unlocked, the interlock switch will keep the main circuit disconnected and the door unlocked). Do not apply excessive force to the manual unlock, otherwise the manual unlock will become damaged. Do not leave the manual unlock key attached to the interlock switch during operation. This is dangerous because the interlock switch can always be unlocked while the machine is in operation.

Safety Precautions

Before manually unlocking the interlock switch, make sure that the machine has come to a complete stop. Manual unlocking during operation may unlock the interlock switch before the machine stops, and the function of interlock switch with solenoid is lost.

Cautions for Wiring

Use the following applicable wiring.
Stranded wire or solid wire (1 wire):
0.3 to 1.5mm² (AWG22 to AWG16)
Make sure to strip the wire insulation 8 to 9mm from the end. If the strip length is too short, the wire may fall out. If the strip length is too long, it may short circuit with other wires.
Twist the wires and make sure that there are no wire whiskers.
When using stranded wires without ferrules, make sure that the core wires have not been loosened.

- For wiring, use screwdrivers as shown in the right. (The shape of the tip of the screwdriver is in accordance with DIN 5264)
- The inserting port of the wire and screwdriver, and direction of the tip is as shown in the diagram below.

