

HS5L Interlock Switch with Solenoid (4-Contact)

Four-contact solenoid interlock switches ideal for use on limited mounting spaces such as small doors.

- 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.
- Head removal detection circuitry (spring lock models only).

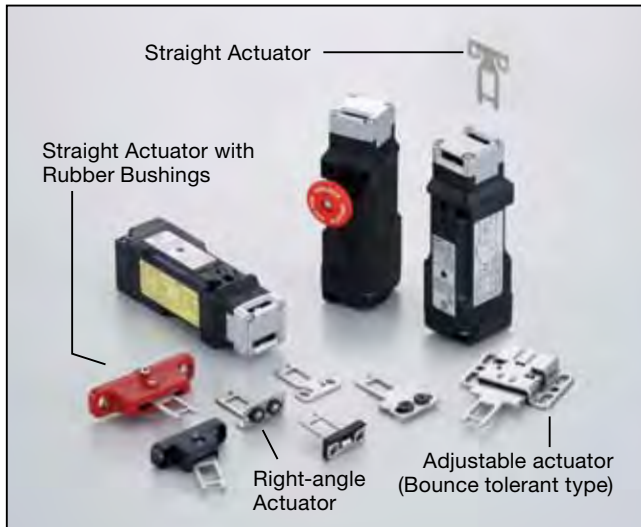
Solenoid Lock

- 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.

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/A5P) 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)	F _{zh} = 1400N min. (GS-ET-19) However, F _{zh} =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.



• Korean S Mark approval application pending

Marking for Locking Monitoring

The marking for lock monitoring described in clause 9.2.1 of ISO14119 can be used by satisfying the requirements in general requirements (5.7.1), locking monitoring (5.7.2.2), and ISO13849-1 (safety-related parts of control systems). This marking has been added to the 2013 edition of ISO14119. However, this marking cannot be applied to solenoid lock switches according to general requirement (5.7.1).

Ratings

Contact Ratings

Rated Insulation Voltage (U _i)	250V (between LED, solenoid and grounding: 30V)				
Rated Current (I _{th})	2.5A				
Rated Voltage (U _e)*	30V	125V	250V		
Rated Current (I _e)*	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

TÜV 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)