



*Think Automation and beyond...*



## ***IDEC*** Safety Interlock Switches

# IDEC Safety Components

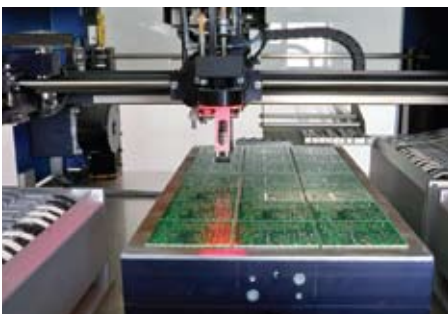
*Providing reliable, human-machine safety components*



As increasingly more complex tasks are taken over by machines, it has become common for people and machines to interact closely on a daily basis. In these human-machine interactions, it is critical that safety components are used as a countermeasure to avoid injuries.

As machine safeguarding continues to evolve both in products and regulations, IDEC Corporation has created a family of safety components to meet industry demands and needs. With six decades of experience in industrial automation, IDEC continues to produce the same high-quality and globally-recognized products that can be relied upon for machine safety control throughout the world.

To us, safety isn't just about meeting safety requirements; it's about protecting people and productivity.



## IDEC Safety Interlock Switch Family

### Compact, High-Quality Designs

Often used for gate and door monitoring or locking, IDEC safety interlock switches are created with a high-quality and compact design aimed at achieving the ultimate goal of maximum personnel safety.

When installed correctly in a safety circuit, IDEC HS safety switches ensure that doors, gates and guards are closed before a process or machine can start up. When the gate or door is opened, the actuating key is removed from the switch thus signaling a safety logic device.

### Safety Made Simple

Simple to install, HS safety interlock switches feature metal or plastic heads or bodies of different shapes, sizes and connection methods to cover most safeguarding applications, while complying with both domestic and European safety standards. For some international standards, such as EN1088, applications can only use proprietary actuators to prevent tampering of the gate or door. HS switches are perfect for this, as they meet or exceed all standards.

### Variety to Choose From

Available in a variety of sizes, contact arrangements and functions, IDEC HS safety interlock switches can be used in a wide-range of safety system applications from machine tools and semiconductor equipment to packaging and material handling equipment.



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## IDEC has a variety of gate/door switches to meet all your needs!

### Basic Safety Interlock Switches



#### Subminiature - HS6B

30 x 15 x 78mm  
2 or 3 contacts  
Integrated cable  
Plastic body  
(page 5)



#### Miniature - HS5D

30 x 30 x 90mm  
2 or 3 contacts  
Screw termination  
Metal or plastic head  
(page 6)



#### Full Size - HS1B

52 x 35 x 125mm  
2 contacts  
Screw termination  
Die-cast aluminum body  
(page 7)

### Solenoid Locking Safety Interlock Switches



#### Subminiature - HS6E

75 x 15 x 75mm  
500N  
5 contacts  
Integrated cable  
Plastic body  
(page 8)



#### Miniature - HS5E

35 x 40 x 146mm  
1400N  
4 contacts  
Integrated cable  
Metal head, plastic body  
(page 10)



#### Full Size - HS1E

104 x 35 x 129mm  
1500N  
3-4 contacts  
Screw termination  
Plastic body  
(page 12)



#### Full Size - HS1C

106 x 35 x 125mm  
1500N  
3-4 contacts  
Screw termination  
Die-cast aluminum body  
(page 16)



#### Full Size - HS1L

104 x 35 x 129mm  
3000N  
6 contacts  
Screw termination  
Plastic body  
(page 14)

# Subminiature HS6B

## HS6B features:

- Only 78 x 30 x 15mm
- Two actuator entrances provide flexibility for installation options
- Integral molded cable reduces wiring time
- IP67 (IEC60529)
- Direct Opening Action
- Actuators comply with ISO14119 and EN1088



## Part Numbers

Contact Configuration	Cable Length	Part Number
1NC-1NO 	1m	HS6B-11B01
	<b>3m</b>	<b>HS6B-11B03</b>
	5m	HS6B-11B05
2NC 	1m	HS6B-02B01
	<b>3m</b>	<b>HS6B-02B03</b>
	5m	HS6B-02B05
2NC-1NO 	1m	HS6B-12B01
	<b>3m</b>	<b>HS6B-12B03</b>
	5m	HS6B-12B05
3NC 	1m	HS6B-03B01
	<b>3m</b>	<b>HS6B-03B03</b>
	5m	HS6B-03B05

Standard stock items in bold.

## Actuator Keys

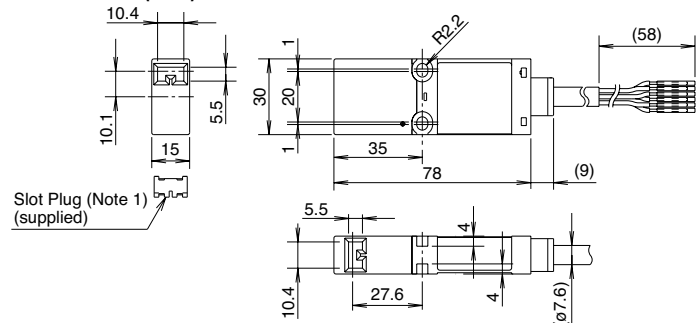
Appearance	Part Number	Shape
	HS9Z-A61	Straight
	HS9Z-A62	Right-angle
	HS9Z-A65	Adjustable actuator 90° angle
	HS9Z-A66	Adjustable actuator 180° angle

Actuators are not included and must be ordered separately.

## Specifications

Conforming to Standards	EN1088, IEC60947-5-1, EN60947-5-1, GS-ET-15, IEC60664-1, IEC60204-1, EN60204-1, UL508, CSA C22.2 No. 14				
Operating Temperature	-25 to +70°C (no freezing)				
Storage Temperature	-40 to +80°C (no freezing)				
Relative Humidity	45 to 85% (no condensation)				
Storage Humidity	95% maximum (no condensation)				
Rated Insulation Voltage (U <sub>i</sub> )	300V				
Degree of Protection	IP67 (IEC60529)				
Direct Opening Travel	8mm minimum				
Direct Opening Force	60N minimum				
Thermal Current (I <sub>th</sub> )	2.5A				
Rated Operating Current (I <sub>e</sub> )	Rated Voltage (U <sub>e</sub> )		30V	125V	250V
	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
			(2A)	(0.4A)	(0.2A)
		Inductive load (DC-13)	2.3A	0.55A	0.27A
(1A)			(0.22A)	(0.1A)	
Operating Frequency	1200 operations/hour				
Mechanical Life	1,000,000 operations (GS-ET-15)				
Electrical Life	100,000 operations (at full rated load)				
Weight	120g - 1m cable type, 270g - 3m cable type, 420g - 5m cable type				

## Dimensions (mm)



# Miniature HS5D

## HS5D features:

- Detects detachment of head for enhanced safety
- Compact dimensions with up to three contacts
- The head orientation can be rotated, allowing 8 different actuator entries
- NC contacts with direct opening action (IEC/EN60947-5-1)
- M3 terminal screws for easy wiring
- Gold-plated contacts suitable for small loads



## Part Numbers

Contact Configuration	Gland Port Size	Plastic Head Type	Metal Head Type
1NC-1NO Main Circuit ⊖ 11 12 Monitor Circuit ⊖ 23 24	G1/2	HS5D-11RN	HS5D-11ZRN
	PG13.5	HS5D-11RNP	HS5D-11ZRNP
	M20	HS5D-11RNM	HS5D-11ZRNM
2NC Main Circuit ⊖ 11 12 Monitor Circuit ⊖ 21 22	G1/2	<b>HS5D-02RN</b>	<b>HS5D-02ZRN</b>
	PG13.5	HS5D-02RNP	HS5D-02ZRNP
	M20	HS5D-02RNM	HS5D-02ZRNM
2NC-1NO Main Circuit ⊖ 11 12 Main Circuit ⊖ 21 22 Monitor Circuit ⊖ 33 34	G1/2	<b>HS5D-12RN</b>	<b>HS5D-12ZRN</b>
	PG13.5	HS5D-12RNP	HS5D-12ZRNP
	M20	HS5D-12RNM	HS5D-12ZRNM
	G1/2	<b>HS5D-03RN</b>	<b>HS5D-03ZRN</b>
3NC Main Circuit ⊖ 11 12 Main Circuit ⊖ 21 22 Monitor Circuit ⊖ 31 32	PG13.5	HS5D-03RNP	HS5D-03ZRNP
	M20	HS5D-03RNM	HS5D-03ZRNM

Standard stock items in bold.

## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A51	Straight
	HS9Z-A51A	Straight w/rubber bushings
	HS9Z-A52	Right-angle
	HS9Z-A52A	Right-angle w/rubber bushings
	HS9Z-A55	Angle Adjustable (vertical/horizontal)
	HS9Z-A5P	Plug Actuator
	HS9Z-SH5	Sliding Actuator
	HS9Z-PH5	Padlock Hasp

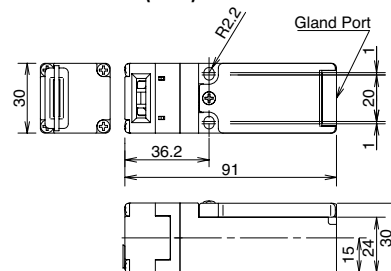
Actuators are not included and must be ordered separately.

## Specifications

Conforming to Standards	ISO14119, EN1088, IEC60947-5-1, EN60947-5-1 (TÜV approval), GS-ET-15 (TÜV approval), UL508, CSA C22.2 No. 14, GB14048.5 (CCC approval), IEC60204-1/EN60204-1 (applicable standards for use)				
Operating Temperature	−30 to +70°C (no freezing)				
Storage Temperature	−40 to +80°C (no freezing)				
Relative Humidity	45 to 85% (no condensation)				
Rated Insulation Voltage (U <sub>i</sub> )	300V				
Degree of Protection	IP67 (IEC60529)				
Actuator Operating Speed	0.05 to 1.0m/s				
Direct Opening Travel	10mm minimum				
Direct Opening Force	50N minimum				
Thermal Current (I <sub>m</sub> )	10A				
Rated Current (I <sub>n</sub> )*	Rated Voltage (U <sub>e</sub> )		30V	125V	250V
	AC	Resistive load (AC-12)	10A	10A	6A
		Inductive Load (AC-15)	10A	5A	3A
	DC	Resistive load (DC-12)	8A	2.2A	1.1A
Inductive Load (DC-13)		4A	1.1A	0.6A	
Minimum Applicable Load (reference)	5V AC/DC, 1mA (Applicable range may vary with operating conditions and load types.)				
Operating Frequency	900 operations per hour				
Mechanical Life	1,000,000 operations minimum (GS-ET-15)				
Electrical Life	100,000 operations minimum (AC-12 250V, 6A)				
	1,000,000 operations minimum (24V AC/DC, 100mA) (operation frequency: 900 operations per hour)				
Weight (approx.)	Plastic head: 80g, Metal head: 110g				

\*TÜV rating: AC-15 3A/250V, DC-13 4A/30V

## Dimensions (mm)



# Full Size HS1B

## HS1B features:

- Rugged aluminum die-cast housing
- Direct Opening Action
- Available with or without an indicator (red or green)
- Flexible Installation: Two actuator entries and three conduit ports are provided
- Select from two circuit configurations (1NO-1NC or 2NC).
- IP67



## Part Numbers

Model	Contact Configuration	Pilot Light	Part Number
	1NC-1NO	Without	<b>HS1B-11R</b>
		Red LED	HS1B-114R-R
		Green LED	HS1B-114R-G
	2NC	Without	<b>HS1B-02R</b>
		Red LED	HS1B-024R-R
		Green LED	<b>HS1B-024R-G</b>

Standard stock items in bold.

## Actuator Keys & Accessories

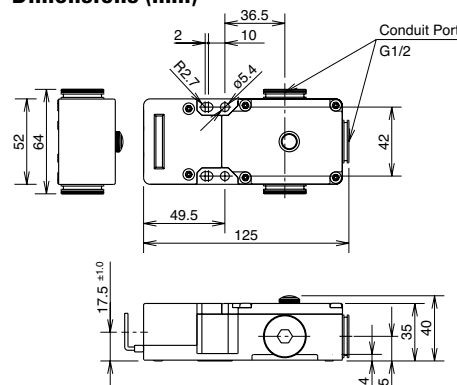
Appearance	Part Number	Description
	HS9Z-A1	Straight Actuator (Mainly for sliding doors)
	HS9Z-A2	Right-angle Actuator (Mainly for rotating doors)
	HS9Z-A3	Adjustable Actuator
	HS9Z-T1	Key Wrench (included with switch)
	HS9Z-P1	Conduit Opening Plug

Actuators are not included and must be ordered separately.

## Specifications

Conforming to Standards	IEC60947-5-1, EN60947-5-1, GS-ET-15, UL508, CSA C22.2 No. 14				
Operating Temperature	-20 to +70°C (no freezing)				
Storage Temperature	-40 to +80°C				
Relative Humidity	45 to 85% (no condensation)				
Rated Insulation Voltage (U <sub>i</sub> )	300V (between LED and ground: 60V)				
Degree of Protection	IP67 (IEC60529)				
Actuator Operating Speed	0.05 to 1.0m/s				
Direct Opening Travel	11mm minimum				
Direct Opening Force	20N minimum				
Thermal Current (I <sub>m</sub> )	10A				
Rated Operating Current (I <sub>e</sub> )	AC	Rated Voltage (U <sub>e</sub> )	30V	125V	250V
		Resistive load (AC-12)	10A	10A	6A
	DC	Inductive load (AC-15)	10A	5A	3A
		Resistive load (DC-12)	8A	2.2A	1.1A
Inductive load (DC-13)	4A	1.1A	0.6A		
Operating Frequency	900 operations/hour				
Mechanical Life	1,000,000 operations				
Electrical Life	100,000 operations (rated load)				
Recommended Short Circuit Protection	250V, 10A fuse (Type D01 based on IEC60269-1, 60269-2)				
Indicator	Operating Voltage	24V DC			
	Current	10mA			
	Light Source	LED lamp			
	Light Lens Color	Red or Green (12mm dia. Lens)			
Weight (approx)	280g				

## Dimensions (mm)



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# Subminiature

## HS6E features:

- Compact body: 75 × 15 × 75mm  
15mm wide, thinnest solenoid interlock switch in the world
- Reversible mounting and angled cable allow four actuator insertion directions
- Energy saving: 24V DC, 110mA (solenoid: 100mA, LED: 10mA)
- Manual unlocking possible on three sides
- LED indicator shows solenoid operation
- 500N locking retention force



## Part Numbers

Mechanical Spring Lock (power solenoid to unlock)			Solenoid Lock (remove power to solenoid to unlock)		
Contact Configuration	Cable Length	Part Number	Contact Configuration	Cable Length	Part Number
(Actuator inserted) (Solenoid OFF)			(Actuator inserted) (Solenoid ON)		
Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-L44B01-G <b>HS6E-L44B03-G</b> HS6E-L44B05-G	Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-L7Y4B01-G <b>HS6E-L7Y4B03-G</b> HS6E-L7Y4B05-G
Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-M44B01-G <b>HS6E-M44B03-G</b> HS6E-M44B05-G	Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-M7Y4B01-G <b>HS6E-M7Y4B03-G</b> HS6E-M7Y4B05-G
Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-N44B01-G <b>HS6E-N44B03-G</b> HS6E-N44B05-G	Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-N7Y4B01-G <b>HS6E-N7Y4B03-G</b> HS6E-N7Y4B05-G
Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-P44B01-G <b>HS6E-P44B03-G</b> HS6E-P44B05-G	Main Circuit: Monitor Circuit: Monitor Circuit:	1m 3m 5m	HS6E-P7Y4B01-G <b>HS6E-P7Y4B03-G</b> HS6E-P7Y4B05-G

1. Contact configuration shows the contact status when actuator is inserted and solenoid off for spring lock.
2. Contact configuration shows the contact status when actuator is inserted and solenoid on for solenoid lock.
3. Indicator LED color is green.
4. Actuator keys are not supplied with the interlock switch and must be ordered separately.
5. Standard stock items in bold.

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## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A61	Straight
	HS9Z-A62	Right-angle (actuator retention force 100N max)
	HS9Z-A62S	Right-angle with Mounting Plate
	HS9Z-A65	Angle adjustable with hex screw (horizontal or vertical configurable)
	HS9Z-A66	Angle Adjustable (horizontal or vertical configurable)
	HS9Z-T3	Manual Unlock Key (long type - metal)

1. Actuators are not included and must be ordered separately.
2. Plastic Manual Unlock Key supplied with each unit

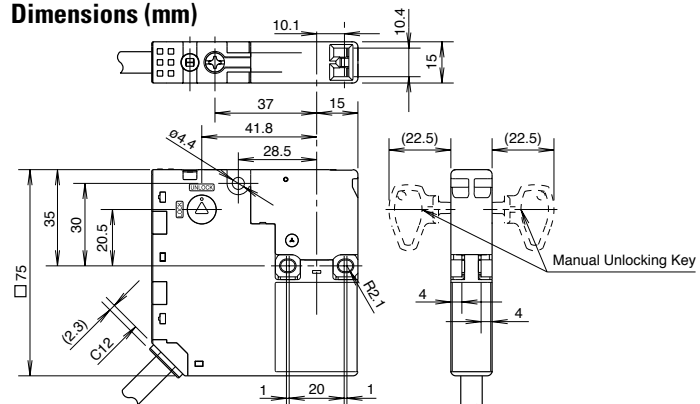


## Specifications

Conforming to Standards		UL 508, CSA C22.2, No. 14, ISO 14119, IEC 60947-5-1, EN 60947-5-1 (TÜV approval), EN 1088 (TÜV approval), GS-ET-19, IEC 60204-1/EN 60204-1 (applicable standards for use)					
Operating Temperature		-25 to +50°C (no freezing)					
Storage Temperature		-40 to +80°C (no freezing)					
Relative Humidity		45 to 85% (no condensation)					
Rated Insulation Voltage (U <sub>i</sub> )		300V (door monitor contact), 150V (lock monitor contact), 30V (between LED or solenoid and ground)					
Electric Shock Protection Class		Class II (IEC 61140)					
Degree of Protection		IP67 (IEC 60529)					
Actuator Operating Speed		0.05 to 1.0m/s					
Direct Opening Travel		8.0mm minimum					
Direct Opening Force		60N minimum					
Thermal Current (I <sub>th</sub> )		Operating temperature (-25 to 35°C)	2.5A (up to 2 circuits) 1.0A (3 or more circuits)				
		Operating temperature (35 to 50°C)	1.0A (1 circuit) 0.5A (2 or more circuits)				
Rated Operating Current (I <sub>e</sub> )		Rated Voltage (U <sub>e</sub> )		30V	125V	250V	
		Main & Lock Monitor Circuit	AC	Resistive load (AC-12) Inductive load (AC-15)	-	2A 1A	-
			DC	Resistive load (DC-12) Inductive load (DC-13)	2A 1A	0.4A 0.22A	-
		Door Monitor Circuit	AC	Resistive load (AC-12) Inductive load (AC-15)	-	2.5A 1.5A	1.5A 0.75A
			DC	Resistive load (DC-12) Inductive load (DC-13)	2.5A 2.3A	1.1A 0.55A	0.55A 0.27A
		Minimum Applicable Load (reference)		3V AC/DC, 5 mA			
Actuator Retention Force		500N maximum (GS-ET-19)					
Operating Frequency		900 operations/hour					
Mechanical Life		1,000,000 operations minimum (GS-ET-19)					
Electrical Life		100,000 operations minimum (rated load) 1,000,000 operations minimum (24V AC/DC, 100mA) (operating frequency 900 operations/hr)					
Cable		UL2464, No. 22 AWG (12-core: 0.3mm <sup>2</sup> or equivalent/core)					
Cable Diameter		ø7.6mm					
Weight		220g - 1m cable type, 410g - 3m cable type, 600g - 5m cable type					

1. UL, c-UL rating: Main/Lock monitor circuit: 125V AC, 1A Pilot duty, 125V DC, 0.22A Pilot duty  
Door monitor circuit: 240V AC, 0.75A Pilot duty 250V DC, 0.27A Pilot duty
2. TÜV rating: Main/Lock monitor circuit: AC-15 125V/1A, DC-13 125V/0.22A  
Door monitor circuit: AC-15 240V/0.75A, DC-13 250V/0.27A

## Dimensions (mm)



# Miniature

## HS5E features:

- World's smallest 4 contact solenoid interlock switch (35 x 40 x 146mm)
- Flexible installation - the head can rotate, allowing 8 different actuator entries
- Metal actuator entry slot ensures long life
- Actuator locking strength is 1400N minimum (GS-ET-19)
- LED pilot light indicates the solenoid status
- IP67 (IEC60529)



## Part Numbers

Mechanical Spring Lock (power solenoid to unlock)			
Contact Arrangement	Pilot Light	Cable Length	Part Number
Door Monitor (Actuator inserted) Lock Monitor (Solenoid OFF)  Main Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 53 54	No	1m 3m 5m	HS5E-A4001 HS5E-A4003 HS5E-A4005
	Yes	1m	HS5E-A4401-G
		3m	<b>HS5E-A4403-G</b>
5m		HS5E-A4405-G	
Main Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 51 52	No	1m 3m 5m	HS5E-B4001 HS5E-B4003 HS5E-B4005
	Yes	1m	HS5E-B4401-G
		3m	<b>HS5E-B4403-G</b>
5m		HS5E-B4405-G	
Main Circuit: ⊕11 12 41 42 Monitor Circuit: ⊕21 22 Monitor Circuit: 51 52	No	1m 3m 5m	HS5E-D4001 <b>HS5E-D4003</b> HS5E-D4005
	Yes	1m	HS5E-D4401-G
		3m	<b>HS5E-D4403-G</b>
5m		HS5E-D4405-G	
Monitor Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 53 54	Yes	1m	HS5E-VA4401-G
		3m	HS5E-VA4403-G
		5m	HS5E-VA4405-G
Monitor Circuit: ⊕11 12 41 42 Monitor Circuit: ⊕21 22 Monitor Circuit: 51 52	Yes	1m	HS5E-VD4401-G
		3m	<b>HS5E-VD4403-G</b>
		5m	HS5E-VD4405-G
Main Circuit: ⊕11 12 41 42 Main Circuit: ⊕21 22 51 52	Yes	1m	HS5E-DD4401-G
		3m	<b>HS5E-DD4403-G</b>
		5m	HS5E-DD4405-G
Main Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 53 54	Yes	1m	HS5E-A44L01-G
		3m	HS5E-A44L03-G
		5m	HS5E-A44L05-G
Main Circuit: ⊕11 12 41 42 Monitor Circuit: ⊕21 22 Monitor Circuit: 51 52	Yes	1m	HS5E-D44L01-G
		3m	<b>HS5E-D44L03-G</b>
		5m	HS5E-D44L05-G


Solenoid Lock (remove power to solenoid to unlock)			
Contact Arrangement	Pilot Light	Cable Length	Part Number
Door Monitor (Actuator inserted) Lock Monitor (Solenoid ON)  Main Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 53 54	No	1m 3m 5m	HS5E-A7Y001 HS5E-A7Y003 HS5E-A7Y005
	Yes	1m	HS5E-A7Y401-G
		3m	<b>HS5E-A7Y403-G</b>
5m		HS5E-A7Y405-G	
Main Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 51 52	No	1m 3m 5m	HS5E-B7Y001 HS5E-B7Y003 HS5E-B7Y005
	Yes	1m	HS5E-B7Y401-G
		3m	HS5E-B7Y403-G
5m		HS5E-B7Y405-G	
Main Circuit: ⊕11 12 41 42 Monitor Circuit: ⊕21 22 Monitor Circuit: 51 52	No	1m 3m 5m	HS5E-D7Y001 <b>HS5E-D7Y003</b> HS5E-D7Y005
	Yes	1m	HS5E-D7Y401-G
		3m	<b>HS5E-D7Y403-G</b>
5m		HS5E-D7Y405-G	
Monitor Circuit: ⊕11 12 41 42 Monitor Circuit: 23 24 Monitor Circuit: 53 54	Yes	1m	HS5E-VA7Y401-G
		3m	HS5E-VA7Y403-G
		5m	HS5E-VA7Y405-G
Monitor Circuit: ⊕11 12 41 42 Monitor Circuit: ⊕21 22 Monitor Circuit: 51 52	Yes	1m	HS5E-VD7Y401-G
		3m	<b>HS5E-VD7Y403-G</b>
		5m	HS5E-VD7Y405-G

Rear Button  
Unlock Type



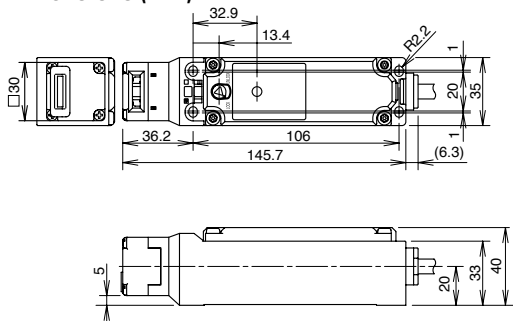
1. Contact configuration shows the contact status when actuator is inserted and solenoid off for spring lock.
2. Contact configuration shows the contact status when actuator is inserted and solenoid on for solenoid lock.
3. Main circuit has door and lock monitor contacts wired in series internally.
4. Standard stock items in bold.

## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A51	Straight
	HS9Z-A52	Right-angle
	HS9Z-A53	Angle adjustable vertical operation
	HS9Z-A55	Angle adjustable horizontal/vertical operation <sup>Note 1</sup>
	HS9Z-A5P	Plug Actuator (allows switch to be used as interlock plug unit)
	HS9Z-PH5	Padlock Hasp (prevents unauthorized insertion of actuator)
	HS9Z-SP51	Mounting Plate (allows easy mounting to aluminum frames)
	HS9Z-T3	Manual unlock key (long type - metal)
	HS9Z-SH5	Sliding Actuator

1. The actuator tensile strength is 500N minimum.
2. Actuators are not included and must be ordered separately.

## Dimensions (mm)



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## Specifications

Conforming to Standards	ISO14119, IEC60947-5-1, EN60947-5-1 (TÜV approval), EN1088, GS-ET-19 (BG approval), UL508, CSA C22.2, No. 14, GB 140485.5 (CCC approval) IEC60204-1/EN60204-1				
Operating Temperature	-25 to 50°C (no freezing)				
Relative Humidity	45 to 85% (no condensation)				
Rated Insulation Voltage (U <sub>i</sub> ) <sup>Note 1</sup>	250V (between LED, solenoid and grounding: 30V)				
Storage Temperature	-40 to +80°C (no freezing)				
Actuator Operating Speed	0.05 to 1.0m/s				
Direct Opening Travel	Actuator HS9Z-A51: 11mm minimum Actuator HS9Z-A52/A53/A55: 12mm minimum				
Direct Opening Force	80N minimum				
Thermal Current (I <sub>th</sub> )	2.5A				
Rated Operating Current (I <sub>e</sub> ) <sup>Note 2</sup>	AC	Rated Voltage (U <sub>e</sub> )	30V	125V	250V
		Resistive load (AC-12)	—	2A	1A
	DC	Inductive Load (AC-15)	—	1A	0.5A
		Resistive load (DC-12)	2A	0.4A	0.2A
		Inductive Load (DC-13)	1A	0.22A	0.1A
Minimum Applicable Load (reference)	3V AC/DC, 5mA				
Actuator Retention Force	1400N minimum (GS-ET-19)				
Operating Frequency	900 operations per hour				
Mechanical Life	1,000,000 operations minimum (GS-ET-19)				
Electrical Life	100,000 operations minimum (operating frequency 900 operations per hour, rated load AC-12, 250V, 1A)				
Cable	UL2464, No. 21AWG - 8-core: 0.5mm <sup>2</sup> or equivalent/core (HS5E-V types: No. 22AWG - 12-core :0.3mm <sup>2</sup> on equivalent/ core)				
Cable Diameter	ø7.6mm				
Solenoid	Rated Voltage	24V DC (100% duty cycle)			
	Current	266mA (initial value)			
Pilot Light	Rated Voltage	24V DC			
	Current	10mA			
Weight (approx.)	400g - 1m cable type, 580g - 3m cable type, 760g - 5m cable type				

1. UL rating: 125V
2. TUV, BG rating: AC-15, 0.5A/250V, DC-13, 0.22A/125V  
UL, c-UL rating: Pilot duty AC 0.5A/125V, Pilot duty DC 0.22A/125V



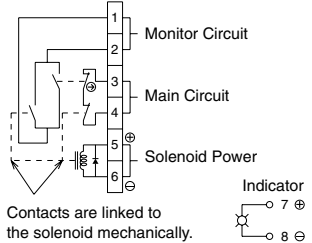
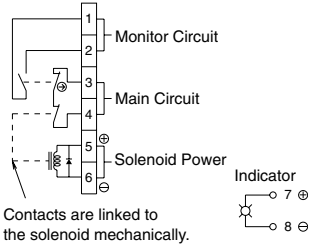
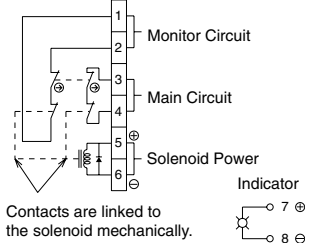
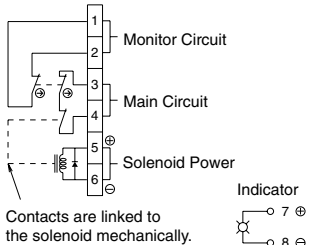
# Full Size

## HS1E features:

- Plastic Housing: Lightweight
- 1500N locking retention force
- Available with a red or green indicator
- Choose from 4 circuit configurations
- Flexible Installation: The actuator can be accessed from two directions
- Ease of Wiring: M3.5 termination screws








## Part Numbers (Mechanical Spring Lock only)

Contact Configuration	LED	Standard	Manual Unlock Key
Main circuit: 1NC + 1NC Monitor circuit: 1NO/1NO  <p>Contacts are linked to the solenoid mechanically.</p>	None	HS1E-40R	HS1E-40KR
	Green	HS1E-44R-G	HS1E-44KR-G
	Red	HS1E-44R-R	HS1E-44KR-R
Main circuit: 1NC + 1NC Monitor circuit: 1NO  <p>Contacts are linked to the solenoid mechanically.</p>	None	HS1E-140R	HS1E-140KR
	Green	HS1E-144R-G	HS1E-144KR-G
	Red	HS1E-144R-R	HS1E-144KR-R
Main circuit: 1NC + 1NC Monitor circuit: 1NC + 1NC  <p>Contacts are linked to the solenoid mechanically.</p>	None	HS1E-240R	HS1E-240KR
	Green	HS1E-244R-G	HS1E-244KR-G
	Red	HS1E-244R-R	HS1E-244KR-R
Main circuit: 1NC + 1NC Monitor circuit: 1NC  <p>Contacts are linked to the solenoid mechanically.</p>	None	HS1E-340R	HS1E-340KR
	Green	HS1E-344R-G	HS1E-344KR-G
	Red	HS1E-344R-R	HS1E-344KR-R

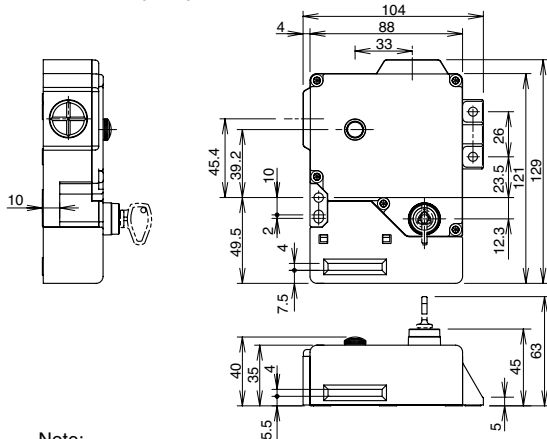
1. Key wrench for TORX screws (HS9Z-T1) is supplied with the interlock switch.
2. Actuator is not supplied with the interlock switch, and must be ordered separately.
3. TORX is a registered trademark of Camcar Textron.

## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A1	Straight Actuator
	HS9Z-A2	Right-angle Actuator
	HS9Z-A3	Angle Adjustable Actuator
	HS9Z-T1	Key Wrench (included with switch)
	HS9Z-P1	Conduit Opening Plug (G1/2)

Actuators are not included and must be ordered separately.

## Dimensions (mm)



Note:  
Plug the unused actuator entry slot using the slot plug supplied with the interlock switch.



## Specifications

Conforming to Standards	EN1088, IEC60947-5-1, EN60947-5-1(TUV), ISO14119, GS-ET-19 (BG), UL508, CSA C22.2 No. 14, GB14048.5 (CCC approval), IEC60204-1, EN60204-1 (applicable standards for use)					
Operating Temperature	-20 to +40°C (no freezing)					
Storage Temperature	-40 to +80°C					
Relative Humidity	45 to 85% (no condensation)					
Electric Shock Protection	Class II (according to IEC61140)					
Degree of Protection	IP67 (IEC60529)					
Vibration Resistance	Operating Extremes	10 to 55Hz (amplitude 0.35mm)				
	Damage Limits	10Hz (amplitude 1.5m)				
Shock Resistance	1,000m/sec <sup>2</sup> (approx. 100G)					
Actuator Retention Force	1,500N minimum (per GS-ET-19)					
Actuator Operating Speed	0.05 to 1.0m/s					
Direct Opening Travel	11mm minimum					
Direct Opening Force	20N minimum					
Thermal Current (I <sub>th</sub> )	Main circuit: 10A, Auxiliary circuit: 3A					
Rated Operating Current (I <sub>e</sub> )	Rated Voltage (U <sub>e</sub> )		30V	125V	250V	
	Main Circuit	AC	Resistive load (AC-12)	10A	10A	6A
		Inductive load (AC-15)	10A	5A	3A	
	DC	Resistive load (DC-12)	6A	-	-	
		Inductive load (DC-13)	3A	0.9A	-	
	Auxiliary Circuit	AC	Resistive load (AC-12)	-	3A	3A
Inductive load (AC-15)		-	-	3A		
DC	Resistive load (DC-12)	3A	-	-		
	Inductive load (DC-13)	-	0.9A	-		
Operating Frequency	900 operations/hour max.					
Mechanical Life	1,000,000 operations min. (at full rated load) 900 ops/hr (AC-12/250V, 6A)					
Electrical Life	100,000 operations (rated load)					
Solenoid Unit	Operating Voltage	24V DC (100% duty cycle)				
	Current	292mA (initial value)				
	Coil Resistance	102Ω (at 20°C)				
	Pickup Voltage	20.4V maximum (at 20°C)				
	Drop Out Voltage	2.4V minimum (at 20°C)				
	Allowable Voltage	26.4V max (continuous)				
	Insulation Class	Class F				
Indicator	Operating Voltage	24V DC				
	Current	10mA				
	Light Source	LED lamp				
	Lens Color	Red or Green				
Weight (approx)	500g					

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# Full Size

## HS1L features:

- 3,000N locking retention force
- LED indicator
- Energy-efficient solenoid
- 6 contacts with easy-to-wire terminations
- M3 terminal screws for easy wiring



## Part Numbers

Mechanical Spring Lock (power solenoid to unlock)			
Contact Configuration	Conduit Size	LED	Part Number
	G1/2	Red	HS1L-R44KMSR-R
		Green	<b>HS1L-R44KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Monitor circuit: ⊖ 21   22 Monitor circuit: 33   34 Monitor circuit: 51   52 Monitor circuit: 61   62	PG13.5	Red	HS1L-R44KMSRP-R
		Green	HS1L-R44KMSRP-G
	M20	Red	HS1L-R44KMSRM-R
		Green	HS1L-R44KMSRM-G
	G1/2	Red	HS1L-DQ44KMSR-R
		Green	<b>HS1L-DQ44KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Main circuit: ⊖ 21   22   51   52 Monitor circuit: 33   34 Monitor circuit: 63   64	PG13.5	Red	HS1L-DQ44KMSRP-R
		Green	HS1L-DQ44KMSRP-G
	M20	Red	HS1L-DQ44KMSRM-R
		Green	HS1L-DQ44KMSRM-G
	G1/2	Red	HS1L-DT44KMSR-R
		Green	<b>HS1L-DT44KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Main circuit: ⊖ 21   22   51   52 Monitor circuit: ⊖ 31   32 Monitor circuit: 61   62	PG13.5	Red	HS1L-DT44KMSRP-R
		Green	HS1L-DT44KMSRP-G
	M20	Red	HS1L-DT44KMSRM-R
		Green	HS1L-DT44KMSRM-G


Solenoid Lock (remove power to solenoid to unlock)			
Contact Configuration	Conduit Size	LED	Part Number
	G1/2	Red	HS1L-R7Y4KMSR-R
		Green	<b>HS1L-R7Y4KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Monitor circuit: ⊖ 21   22 Monitor circuit: 33   34 Monitor circuit: 51   52 Monitor circuit: 61   62	PG13.5	Red	HS1L-R7Y4KMSRP-R
		Green	HS1L-R7Y4KMSRP-G
	M20	Red	HS1L-R7Y4KMSRM-R
		Green	HS1L-R7Y4KMSRM-G
	G1/2	Red	HS1L-DQ7Y4KMSR-R
		Green	<b>HS1L-DQ7Y4KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Main circuit: ⊖ 21   22   51   52 Monitor circuit: 33   34 Monitor circuit: 63   64	PG13.5	Red	HS1L-DQ7Y4KMSRP-R
		Green	HS1L-DQ7Y4KMSRP-G
	M20	Red	HS1L-DQ7Y4KMSRM-R
		Green	HS1L-DQ7Y4KMSRM-G
	G1/2	Red	HS1L-DT7Y4KMSR-R
		Green	<b>HS1L-DT7Y4KMSR-G</b>
Main circuit: ⊖ 11   12   41   42 Main circuit: ⊖ 21   22   51   52 Monitor circuit: ⊖ 31   32 Monitor circuit: 61   62	PG13.5	Red	HS1L-DT7Y4KMSRP-R
		Green	HS1L-DT7Y4KMSRP-G
	M20	Red	HS1L-DT7Y4KMSRM-R
		Green	HS1L-DT7Y4KMSRM-G

1. Contact configuration shows the contact status when actuator is inserted and solenoid off for spring lock.
2. Contact configuration shows the contact status when actuator is inserted and solenoid on for solenoid lock.
3. Actuators are not supplied with the interlock switch and must be ordered separately.
4. Standard stock items in bold.



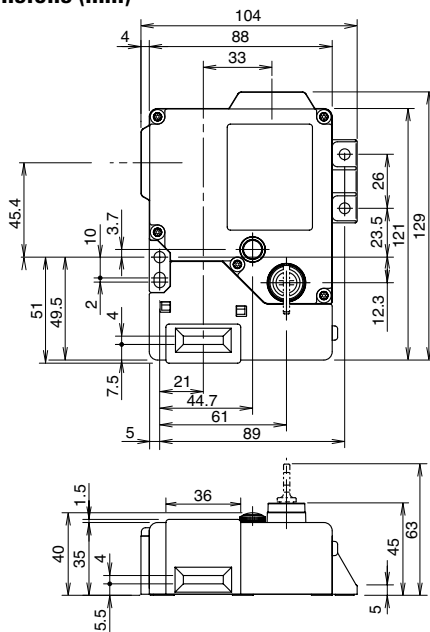
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## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A1S	Straight Actuator
	HS9Z-A2S	L-shaped Actuator
	HS9Z-A3S	Angle Adjustable Actuator (vertical operation only)
	HS9Z-T1	Key Wrench (included with switch)
	HS9Z-P1	Conduit Opening Plug (G1/2)

Actuators are not included and must be ordered separately.

## Dimensions (mm)



## Specifications

Conforming to Standards	ISO14119, IEC60947-5-1, EN60947-5-1 (TÜV approval), GS-ET-19 (TÜV approval), UL508, CSA C22.2 No. 14 IEC60204-1/EN60204-1 (applicable standards for use)				
Operating Temperature	-20 to +55°C (no freezing)				
Storage Temperature	-40 to +80°C (no freezing)				
Relative Humidity	45 to 85% (no condensation)				
Rated Insulation Voltage (U <sub>i</sub> )	300V				
Overvoltage Category	III				
Electric Shock Protection	Class II (IEC 61140)				
Degree of Protection	IP67 (IEC 60529)				
Shock Resistance	Damage limits: 1000m/s <sup>2</sup>				
Actuator Retention Force	3000N minimum (GS-ET-19)				
Actuator Operating Speed	0.05 to 1.0m/s				
Direct Opening Travel	11mm minimum				
Direct Opening Force	50N minimum				
Thermal Current (I <sub>th</sub> )	10A				
Rated Operating Current (I <sub>e</sub> )	Rated Voltage (U <sub>e</sub> )	30V	125V	250V	
	AC	Resistive Load (AC-12)	10A	10A	6A
		Inductive Load (AC-15)	10A	5A	3A
	DC	Resistive Load (DC-12)	8A	2.2A	1.1A
Inductive Load (DC-13)		4A	1.1A	0.6A	
Operating Frequency	900 operations per hour				
Mechanical Life	1,000,000 operations minimum (GS-ET-19)				
Electrical Life	100,000 operations minimum (AC-15 3A/250V)				
	1,000,000 operations minimum (24V AC/DC, 100mA) (operating frequency 900 operations per hour)				
Solenoid Unit	Rated Operating Voltage	24V DC (100% duty cycle)			
	Rated Current	200mA (initial value)			
Indicator	Rated Operating Voltage	24V DC			
	Rated Current	10mA			
	Light Source	LED			
	Illumination Color	Green (G), Red (R)			
Weight (approx.)	450g (HS1L-DQ44)				

1. Minimum applicable load (reference value): 3V AC/DC, 5mA (Applicable range may vary with operating conditions and load types.)
2. TÜV rating: AC-15 3A/250V, DC-13 4A/30V  
UL, c-UL rating: A300, Pilot duty: AC 3A/250V, Pilot duty: DC 4A/30V



# Full Size

## HS1C features:

- Rugged aluminum die-cast housing
- 1500N locking retention force
- Flexible Installation: The actuator can be accessed from two directions
- Select from four different circuit configurations
- IP67



## Part Numbers (Mechanical Spring Lock Only)

Contact Configuration	Indicator LED	Part Number	Contact Configuration	Indicator LED	Part Number
Main Circuit: 1NC+1NC Auxiliary Circuit: 1NO/1NO 	Green	HS1C-R44R-G	Main Circuit: 1NC+1NC Auxiliary Circuit: 1NC+1NC 	Green	HS1C-R244R-G
	Red	HS1C-R44R-R		Red	HS1C-R244R-R
Main Circuit: 1NC+1NC Auxiliary Circuit: 1NO 	Green	HS1C-R144R-G	Main Circuit: 1NC+1NC Auxiliary Circuit: 1NC 	Green	HS1C-R344R-G
	Red	HS1C-R144R-R		Red	HS1C-R344R-R

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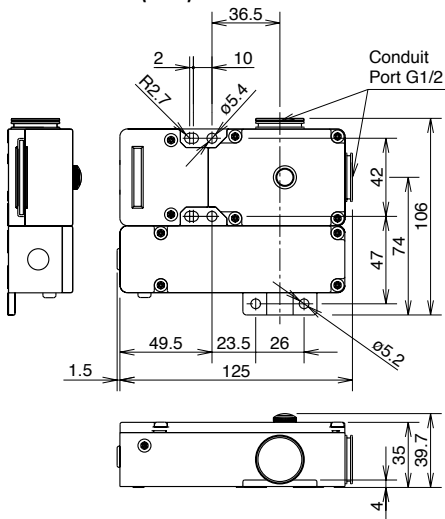


## Actuator Keys & Accessories

Item	Part Number	Description
	HS9Z-A1	Straight Actuator
	HS9Z-A2	Right-angle Actuator
	HS9Z-A3	Adjustable Actuator
	HS9Z-T1	Key Wrench (included with switch)
	HS9Z-P1	Conduit Opening Plug (G1/2)

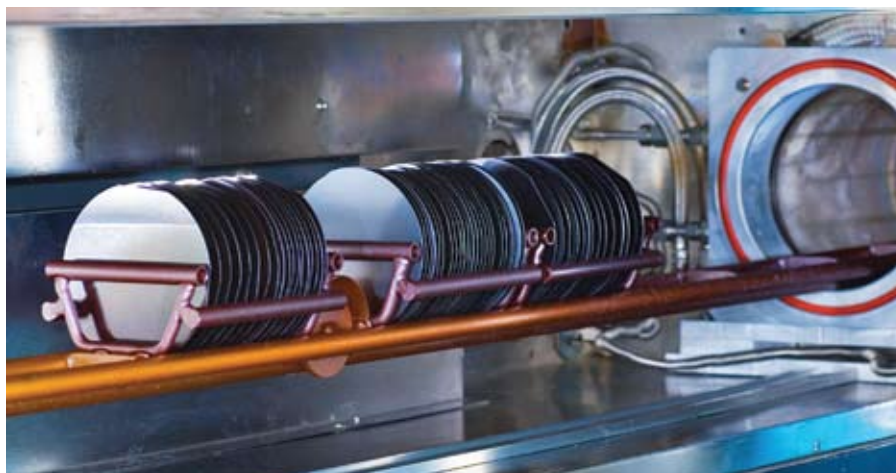
Actuators are not included and must be ordered separately.

## Dimensions (mm)



## Specifications

Conforming to Standards	EN1088, IEC60947-5-1, EN60947-5-1, GS-ET-19, UL508, GB 140485.5 (CCC approval), CSA C22.2 No. 14					
Operating Temperature	-20 to +40°C (no freezing)					
Storage Temperature	-40 to +80°C					
Relative Humidity	40 to 85% (no condensation)					
Rated Insulation Voltage (U <sub>i</sub> )	300V (between LED or solenoid and ground: 60V)					
Actuator Retention Force	1,500N minimum					
Actuator Operating Speed	0.05 to 1.0m/s					
Direct Opening Travel	11mm minimum					
Direct Opening Force	20N minimum					
Thermal Current (I <sub>m</sub> )	Main circuit: 10A, Auxiliary circuit: 3A					
Rated Operating Current (I <sub>e</sub> )	Rated Voltage (U <sub>e</sub> )		30V	125V	250V	
	Main Circuit	AC	Resistive load (AC-12)	10A	10A	6A
			Inductive load (AC-15)	10A	5A	3A
	DC	Resistive load (DC-12)	6A	-	-	
Inductive load (DC-13)		3A	0.9A	-		
Auxiliary Circuit	AC	Resistive load (AC-12)	-	3A	3A	
		Inductive load (AC-15)	-	-	3A	
	DC	Resistive load (DC-12)	3A	-	-	
		Inductive load (DC-13)	-	0.9A	-	
Operating Frequency	900 operations/hour max.					
Mechanical Life	1,000,000 operations					
Electrical Life	100,000 operations (rated load)					
Recommended Short Circuit Protection	250V, 10A fuse (Type D01 based on IEC60269-1, 60269-2)					
Solenoid Unit	Operating Voltage	24V DC (100% duty cycle)				
	Current	415mA (initial value)				
Indicator	Operating Voltage	24V DC				
	Current	10mA				
	Light Source	LED lamp				
	Lens Color	Red or Green				
Weight (approx)	660g					



# Additional Safety Products

## ■ FS1A Safety Controllers - Consolidate Multiple Safety Relays to One SmartSafety Relay

### FS1A features:

- No programming required
- Easily replaces 2 - 3 safety relay control modules
- 8 or 24 pre-programmed logic safety circuits
- Connect with various types of safety inputs
- Monitor status of safety I/Os and error codes
- IEC 61508 integrity level 3, ISO 13849-1 performance level e and EN954-1 safety category 4 compliant

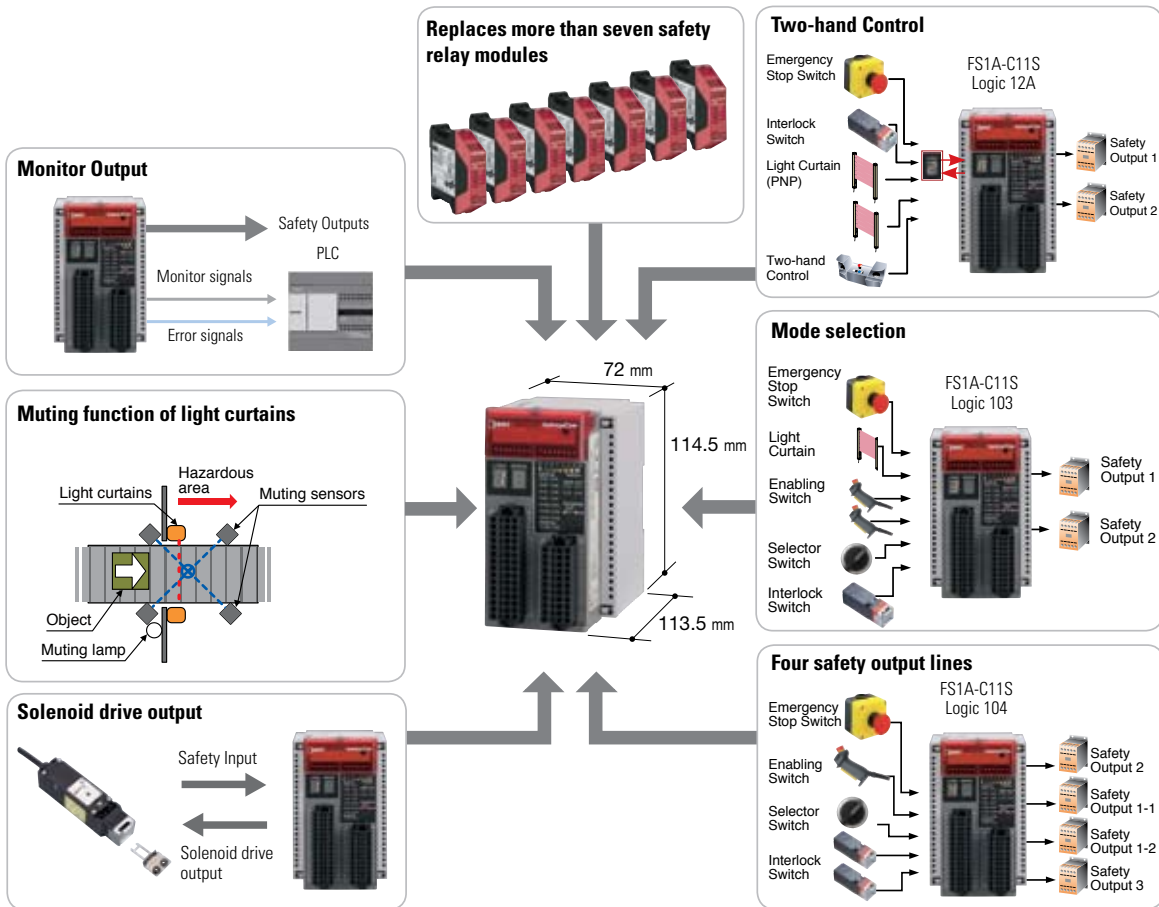


When you want a straightforward system that's safe, easy-to-install and won't cost an arm and a leg, an IDEC SafetyOne FS1A is the answer! The FS1A offers up to 24 pre-programmed logic safety circuits. That means you can configure a system without any programming, just by selecting one logic from either 8 (FS1A-C01S) or 24 (FS1A-C11S) to configure a safety system.

Unlike multiple safety relays, which require lots of cumbersome wiring and take up too much space, the entry-level safety controller makes it easy to consolidate basic safety circuits. At the same time they save space and minimize wiring.

FS1A SafetyOne can easily replace two to three safety relay control modules with no programming required. Not only that, SafetyOne can be configured simply by flipping dip switches to select a logic. One module can connect with various safety components such as Emergency Stop switches, light curtains, Interlock switches, two hand controls and auxiliary components such as muting lights, sensors and much more.

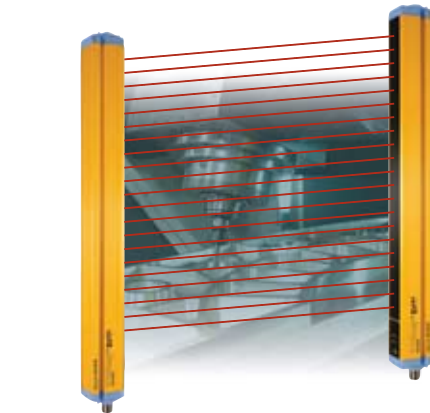
FS1A is UL listed, TÜV rated and CE marked, as well as meets IEC 61508 integrity level 3, ISO 13849-1 performance level e and EN954-1 safety category 4.



## ■ SG Safety Light Curtains - a Quality, Affordable Hazardous Area Access Solution

### SG Light Curtain features:

- Integrated light curtain for Finger or Body Protection
- Operating distance up to 6m or 19m
- Heights from 150 to 1800mm
- Compact 32 x 37mm profile
- Sturdy profile and rotating brackets
- User interface with display
- Alignment function



Hand Protection



Presence Protection



Finger Protection



Hand Protection



The SG2 Type 2 series offers two models, the SG2 basic and the SG2 extended. Available functions include Test/Restart, EDM and Anti-interference. With very fast response times, the SG2 series can be installed right next to a hazardous area improving productivity. The rotating mounting brackets make installation and the alignment of the emitting and receiving units easy, even at long distances and in applications that use mirrors.

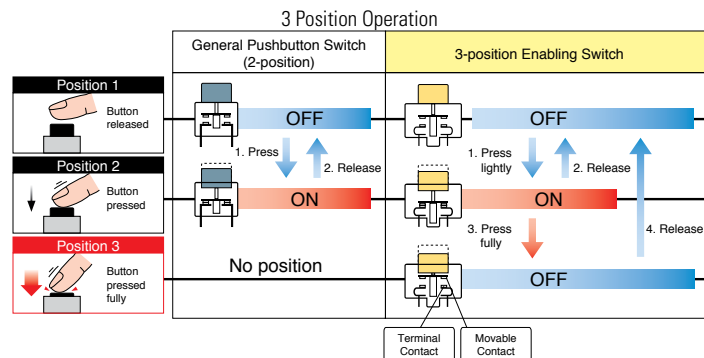
With mounting brackets that rotate, no connection necessary between emitter and receiver, and configuration that can be accomplished without external control units or supplementary cables, the SG4 Type 4 light curtains are one of the best available on the market today. In addition, the light curtains can be aligned using the 7 segment display on either the emitter or receiver.

## ■ Enabling Switches - Ensuring Operator Safety



### Enabling Switch features:

- Ergonomically-designed OFF-ON-OFF 3-position operation
- Employs direct opening action mechanism for ON-OFF operation by pressing tightly
- Contacts will not turn on when released from OFF (position 3) to OFF (position 1)
- IEC/EN 60947-5-8 Compliant



IDEC enabling switches are used in numerous pendants and grip switches around the world. Developed using IDEC's fundamental philosophy to provide high reliability in products, our enabling switches provide optimal safety.

An enabling switch is a 3-position (OFF-ON-OFF) switch to allow machine operation only when the switch is lightly pressed and held in the middle position (position 2). Because it disables machine operation when released

(position 1) or further depressed (position 3) by a panicked operator, the safety of operators is ensured. When operators use pendants to perform teaching, system changeover and maintenance, they must have protection against unpredictable machine operation. Therefore teaching pendants are equipped with 3-position enabling switches.

## E-Stops



[www.IDEC.com/usa/estop](http://www.IDEC.com/usa/estop)

For over 60 years, IDEC has manufactured reliable, high-quality Emergency Stop switches and consistently led the market in new technology and innovation for machine operator safety. By surpassing current international standards, IDEC E-Stops are the safest in the world.

## RF1V Force Guided Relays



[www.IDEC.com/relays](http://www.IDEC.com/relays)

Force guided relays are used in safety circuits to detect failures such as contact welding and damage to the contact spring. The contacts of these relays are "forced" to open and close by a guide connected to the armature. Available in four or six pole models, all relays have 6A rated contacts. RF1V can be mounted directly on a printed circuit board or can use DIN RAIL or PCB mount sockets.

## Product Information

### Safety Products

[www.IDEC.com/safety](http://www.IDEC.com/safety)

## Product Support

### Technical support:

[support@IDEC.com](mailto:support@IDEC.com)

### Find your local IDEC Representative or Distributor:

[www.IDEC.com/usa/locator](http://www.IDEC.com/usa/locator)

### Phone:

800-262-IDEC



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