

Door-Flap Switch



Door-Hinge Switch



Key Interlock Switch



RS2 Safety Interlock Switch



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For Application Assistance in the U.S. and Canada  
call 1-800-426-9184.

# Revision notes

## Volume 8—Sensing Solutions, CA08100010E

Tab 1—Safety Products

Revision date	Section	Change page(s)	Description
09/08/2017	1.2	V8-T1-15	Content edit
09/08/2017	1.2	V8-T1-18	Content edit
09/08/2017	1.2	V8-T1-20	Content edit
09/08/2017	All	All	Revision date changed to September 2017



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## Technical Reference

### LS-Titan



To protect personnel and equipment, often the need arises for a device to provide a signal indicating that a door or a panel has been closed before a machine can be turned on or operations can be restarted.

While a standard limit switch or sensor may be able to do this function, the possibility exists that the unit could be false tripped or false actuated either accidentally or deliberately, thereby posing a danger to the machine operator.

In response to this problem, many switch manufacturers offer safety-rated interlock switches.

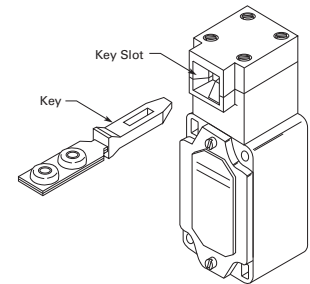
Designed with two parts—the sensor and the actuator, the sensor is typically mounted on the stationary portion of a structure and the actuator is mounted on the movable portion. The sensor is designed to work with the correct actuator (keyed or coded magnet) to reduce tampering and increase safety.

Actuation of the interlock switch occurs only when the corresponding key is inserted into the key slot. The key is usually mounted on a door or machine guard in such a way that when the door or the guard is closed, the key fits into the slot actuating the switch. The special key design makes the safety interlock switch extremely difficult to defeat. When inserted into the slot, the key performs three separate mechanical functions.

In addition to being difficult to override, the safety interlock is also designed to fail to a safe mode. If, by chance, the contacts were to become welded together, removal of the key will physically tear the contacts apart, resulting in a safe condition.

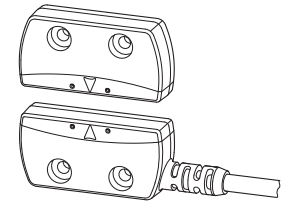
LS-Titan™ key interlock switches by Eaton's Electrical Sector are available in both NEMA® and DIN style interlock switch housings. NEMA style key interlock switches feature durable metal housings, which remove power to the machine when the guard is opened.

### Interlock Switch



DIN style key interlock switches feature a reduced size and economical plastic housings. They remove power to the machine when the guard is opened.

### Non-Contact Interlock Switch



Activation of the non-contact interlock switch occurs only when the corresponding magnetic actuator is within operating range. The actuator is usually mounted on a door or machine guard in such a way that when the door or the guard is closed, the actuator is within operating range and actuates the sensor. The design of the sensor/actuator combination reduces the likelihood of defeating the sensor with a simple magnet.

**Product Overview**

**LS-Titan Safety Products**



**LS-Titan Miniature DIN Safety Interlock Switches**



**LS-Titan Full-Size DIN Safety Interlock Switches**



**LS-Titan Solenoid Safety Interlock Switches**

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**RS Safety Interlock Switches**



**RS2 Interlock Switches**



**RS2R Interlock Switches**



**RS4 Interlock Switches**

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LS-Titan Safety Interlock Switches



### LS-Titan Safety Interlock Switches

#### Product Description

Eaton's LS-Titan safety interlock switches have been specifically designed for monitoring the position of protective guards, such as doors, flaps, hoods and grilles. All switches in this family are safety-rated, include positively opening NC contacts, and cannot be defeated using simple tools, such as pliers, screwdrivers and nails.

The LS-Titan safety interlock family is comprised of three types of safety switches: key interlock, door-flap and door-hinge switches.

Key interlock switches are a two-piece design, made up of the switch and key (actuator). The key portion of the switch is affixed to a movable door, cover or other such guard. The switch itself is mounted to a rigid portion of the machine. When the guard is opened, the key is removed from the switch, thereby positively breaking the NC contacts. This interrupts the control circuit, stopping machine operation.

The door-flap and door-hinge switches are one-piece designs, suitable for when a key cannot be mounted in the application. When an attempt is made to open a protected door hinge or flap during operation, these switches disconnect the power supply to the machine or installation. Both switches feature four-way adjustable heads.

All LS-Titan safety interlock switches are approved to protect personnel and processes.

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#### Features

- Broad family of safety interlock switches in industry-standard enclosure sizes: miniature DIN; full-size DIN; and larger, solenoid key interlocks providing the highest degree of personnel and process protection
- Large selection of actuators (keys), including those for sliding doors, swing doors and doors that do not close precisely
- Miniature DIN models have a five-way adjustable head, while full-size DIN models have four-way adjustable heads
- Fully safety-rated as interlocking devices per EN 1088, with safety function by positive opening contacts per IEC/EN 60947-5-1
- Door-flap and door-hinge safety switches provide a unique solution when actuators (keys) cannot be used
- IP65 degree of protection

#### Standards and Certifications

- UL® Listed, E29184
- CSA® Certified, 12528
- CCC
- RoHS Compliant



- Positive opening NC contacts per EN 60947-5-1



#### Safety Notes

**Do not use as a mechanical stop/shipping brace.**

**Any change to an original Eaton safety position switch is not permitted and automatically leads to the loss of all approvals.**

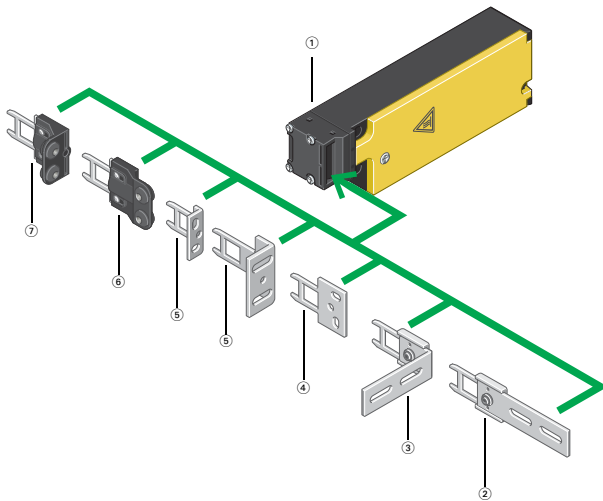
**⚠ Switch must never be used as a mechanical stop.**

For the most current information on this product, visit our Web site: [www.eaton.com](http://www.eaton.com)

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**Product Identification**

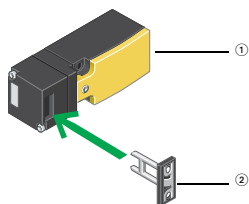
**Solenoid Safety Interlock Switches (LS-...ZBZ)**



**Notes**

- ① **Basic device** (see Page V8-T1-7)  
Spring or magnet-powered interlock  
For increased personnel and process protection  
Tamper-proof  
Multiple coded actuators  
Contacts: 1NO-1NC or 2NC
- ② **Flat flexible actuator** (see Page V8-T1-8)  
For doors that do not close precisely
- ③ **Angled flexible actuator** (see Page V8-T1-8)  
For doors that do not close precisely
- ④ **Flat actuator** (see Page V8-T1-8)  
For sliding doors
- ⑤ **Angled actuator** (see Page V8-T1-8)  
For swing doors
- ⑥ **Flat compensating actuator** (see Page V8-T1-8)  
For increased tolerance compensation in the direction of door closure
- ⑦ **Angled compensating actuator** (see Page V8-T1-8)  
For increased tolerance compensation

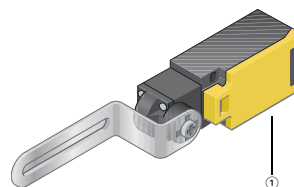
**Miniature DIN Safety Interlock Switch (LS-...ZB)**



**Notes**

- ① **Complete device** (see Page V8-T1-6)  
For personnel protection  
Contacts: 1NC, 1NO-1NO or 2NC  
Five directions of operation possible
- ② **Actuator** (see Page V8-T1-6)  
Included with switch  
Multiple coding protection against tampering

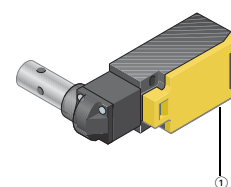
**Door Flap Safety Switch (LSR-...TKG)**



**Note**

- ① **Complete device** (see Page V8-T1-6)  
For personnel protection  
Contacts: 1NO-1NC or 2NC  
For swing doors with fixed connection to the door/hinge pin

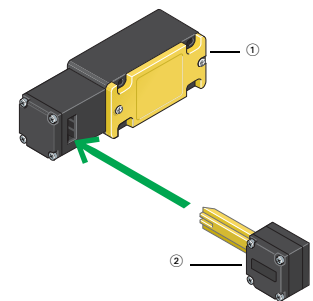
**Door Hinge Safety Switch (LSR-...TS)**



**Note**

- ① **Complete device** (see Page V8-T1-6)  
For personnel protection  
Contacts: 1NO-1NC or 2NC  
For swing doors with fixed connection to the door/hinge pin

**Full-Size DIN Safety Interlock Switch (LS4-...ZB)**



**Notes**

- ① **Complete device** (see Page V8-T1-7)  
Narrow enclosure version  
For personnel protection  
Contacts: 1NO, 1NO-1NC
- ② **Actuator**  
Included with switch, not orderable as a separate item  
Multiple coding  
For horizontal or vertical operation

## Product Selection

### LS-Titan Miniature DIN Safety Interlock Switches

#### Key Interlock Switch

#### Key Interlock Switch—LS-...ZB ①



Contacts	Contact Sequence	Contact Travel	Connection	Catalog Number (Includes Key)
2NC with positive opening		—	Screw terminal	<b>LS-S02-ZB</b>
1NO and 1NC with positive opening		—	Screw terminal	<b>LS-S11-ZB</b>
		Snap action contacts	Screw terminal	<b>LS-S11S-ZB</b>

#### Door-Flap Switch

#### Door-Flap Switch—LSR-...TKG ①



Contacts	Contact Sequence	Contact Travel	Connection	Catalog Number (Includes Key)
2NC with positive opening			Screw terminal	<b>LSR-S02-1-I-TKG</b>
1NO and 1NC with positive opening			Screw terminal	<b>LSR-S11-1-I-TKG</b>

#### Door-Hinge Switch

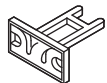
#### Door-Hinge Switch—LSR-...TS ①



Contacts	Contact Sequence	Contact Travel	Connection	Catalog Number (Includes Key)
2NC with positive opening			Screw terminal	<b>LSR-S02-1-I-TS</b>
1NO and 1NC with positive opening			Screw terminal	<b>LSR-S11-1-I-TS</b>

#### Replacement Safety Interlock Key

#### Replacement Safety Interlock Key ①



Description	Catalog Number
Replacement key for miniature DIN key interlock switches (only models LS-...ZB).	<b>LS-XB-ZB</b>

#### Note

① For dimensions, see **Page V8-T1-11**.

**LS-Titan Full-Size DIN Safety Interlock Switches**

**Key Interlock Switch**

**Full-Size DIN—LS4...ZB** ①②



Contacts	Contact Sequence	Contact Travel	Connection	Catalog Number (Includes Key)
1NO and 1NC with positive opening		—	Screw terminal	<b>LS4-S11-1-I-ZB</b>

**LS-Titan Solenoid Safety Interlock Switches**

**Switch Body without Key**

**Switch Body without Key—LS...ZBZ** ①②③





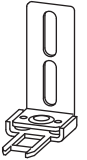
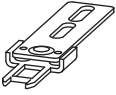
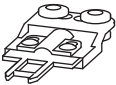
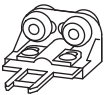
Operation	Operating Voltage	Contacts	Contact Sequence	Catalog Number (Key not Included)
Power to unlock (mechanical bypass present)	24 Vdc	1NO and 1NC with positive opening		<b>LS-S11-24DFT-ZBZ-X</b>
		2NC with positive opening		<b>LS-S02-24DFT-ZBZ-X</b>
	120 Vac (50/60 Hz)	1NO and 1NC with positive opening		<b>LS-S11-120AFT-ZBZ-X</b>
		2NC with positive opening		<b>LS-S02-120AFT-ZBZ-X</b>
Power to lock	24 Vdc	1NO and 1NC with positive opening		<b>LS-S11-24DMT-ZBZ-X</b>
		2NC with positive opening		<b>LS-S02-24DMT-ZBZ-X</b>
	120 Vac (50/60 Hz)	1NO and 1NC with positive opening		<b>LS-S11-120AMT-ZBZ-X</b>
		2NC with positive opening		<b>LS-S02-120AMT-ZBZ-X</b>

**Notes**

- ① For dimensions, see **Page V8-T1-11**.
- ② For mounting instructions, see **Page V8-T1-10**.
- ③ Key ordered separately, see **Page V8-T1-8**.



**LS-Titan Solenoid Safety Interlock Keys****Keys Only—LS...ZBZ** <sup>①②</sup>

	<b>Description</b>	<b>Application</b>	<b>Catalog Number</b>
	LS-XG-ZBZ Flat actuator	For sliding doors	LS-XG-ZBZ
	LS-X...ZBZ Angled actuator, short	For swing doors starting at 250 mm in width	LS-XW-ZBZ
	Angled actuator, long	For swing doors starting at 250 mm in width	LS-XWA-ZBZ
	LS-XF-ZBZ Angled, flexible actuator	For doors that do not close precisely	LS-XF-ZBZ
	LS-XFG-ZBZ Even, flexible coasting actuator	For doors that do not close precisely	LS-XFG-ZBZ
	LS-XNG-ZBZ Flat, compensating actuator	Increased tolerance in closing direction for inaccurately closing doors	LS-XNG-ZBZ
	LS-XNW-ZBZ Angled, compensating actuator	Increased tolerance in closing direction for inaccurately closing doors	LS-XNW-ZBZ

**Notes**

- ① Switch body ordered separately, see **Page V8-T1-7**.  
 ② For mounting instructions, see **Page V8-T1-10**.

## Technical Data and Specifications

### LS-Titan Safety Interlock Switches

	Units		LS...ZBZ	LS...ZB	LS4...ZB
<b>General</b>					
Standards			IEC/EN 60947	IEC/EN 60947	IEC/EN 60947
Climatic proofing			①	①	①
Ambient temperature	°C		-25... +70	-25... +70	-25... +70
Mounting position			As required	As required	As required
Protection type			IP65	IP65	IP65
Terminal capacities					
Solid	mm <sup>2</sup>		1 x (0.75-2.5)/2 x (0.75-1.5)	1 x (0.75-2.5)/2 x (0.75-1.5)	1 x (0.75-2.5)/2 x (0.75-1.5)
Flexible with ferrule	mm <sup>2</sup>		1 x (0.75-2.5)/2 x (0.75-1.5)	1 x (0.75-2.5)/2 x (0.75-1.5)	1 x (0.75-2.5)/2 x (0.75-1.5)
<b>Contacts/Switching Capacity</b>					
Rated impulse withstand voltage	U <sub>imp</sub>	Vac	4000	6000	6000
Rated insulation voltage	U <sub>i</sub>	V	400	500	500
Overvoltage category/pollution degree			III/3	III/3	III/3
<b>Burden Current</b>					
AC-15					
24V	I <sub>e</sub>	A	6	10	10
230V/240V	I <sub>e</sub>	A	6	6	6
400V/415V	I <sub>e</sub>	A	4	4	4
DC-13					
24V	I <sub>e</sub>	A	3	3	3
110V	I <sub>e</sub>	A	0.8	0.8	0.8
220V	I <sub>e</sub>	A	0.3	0.3	0.3
Supply frequency		Hz	max. 400	max. 400	max. 400
Short-circuit rating to IEC/EN 60947-5-1 Max. fuse		A gG/gL	6	6	6
Repetition accuracy		mm	± 0.02	± 0.02	± 0.02
<b>Mechanical Variables</b>					
Lifespan					
Standard-action contact	Operations	x 10 <sup>6</sup>	1	10	10
Snap-action contact	Operations	x 10 <sup>6</sup>	—	—	—
Mechanical shock resistance (half-sinusoidal shock, 20 ms)					
Standard-action contact		g	10	25	5
Snap-action contact		g	—	—	—
Operating frequency	Operations/h		≤ 800	≤ 1800	≤ 1800
<b>Actuation</b>					
Mechanical					
Actuating force at beginning/end of stroke					
ZB/ZBZ (push in/pull out)		N	25/15	10/5	15/20
Mechanical holding force according to GS-ET-19 (04/2004)					
XG, XW		N	1500	N/A	N/A
XFF, XNG, XWA		N	1300	N/A	N/A
XF		N	750	N/A	N/A
XNW		N	500	N/A	N/A
Electromechanical					
For magnet					
Power consumption					
at 120 Vac		VA	8	N/A	N/A
at 230 Vac		VA	11	N/A	N/A
at 24 Vdc		W	8	N/A	N/A
Pickup and dropout values		x U <sub>s</sub>	0.85-1.1	N/A	N/A
Magnet duty factor		% ED	100	N/A	N/A

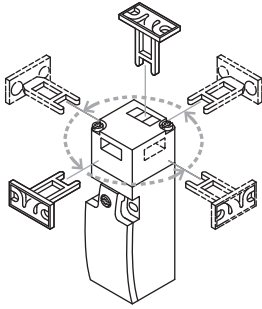
#### Note

① Damp heat, constant, to IEC 60068-2-78; damp heat, cyclical, to IEC 60068-2-30.

#### 1

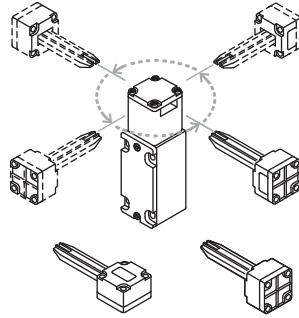
#### Mounting Instructions

##### LS-...ZB, TKG, TS



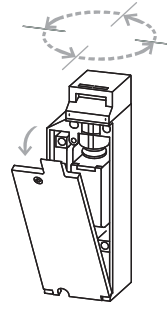
Actuator can be repositioned for horizontal or vertical installation. The operating heads can be rotated manually in 90° steps to suit the specified direction of operation.

##### LS4-...ZB

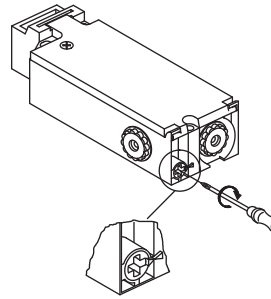


Actuator can be repositioned for horizontal or vertical installation. The operating heads can be rotated manually in 90° steps to suit the specified direction of operation.

##### LS-...ZBZ



The operating head can be rotated manually in 90° steps to suit the specified level of actuation.



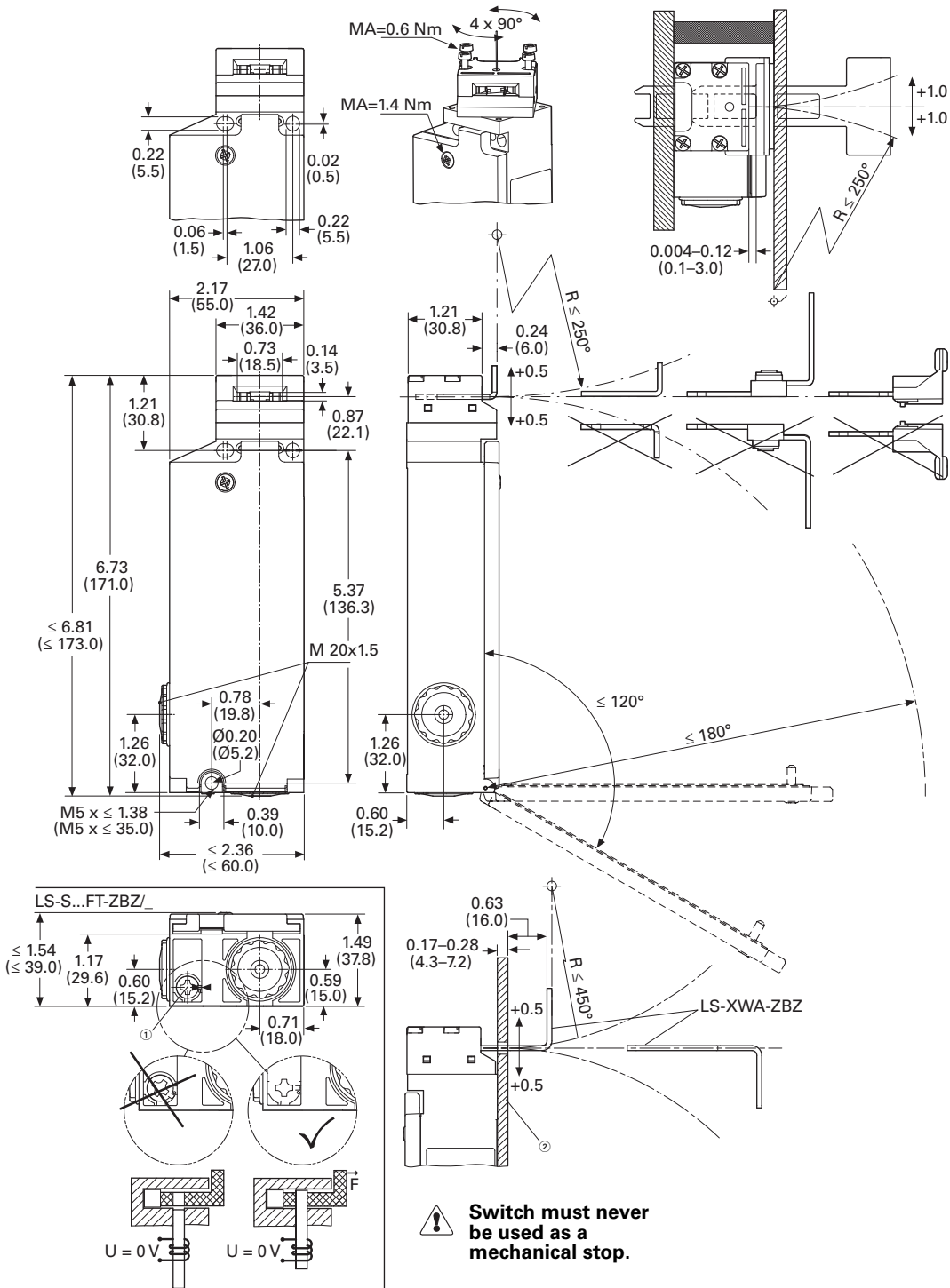
In the event of a loss of voltage, (for example, during commissioning), the spring-powered LS-...-...FT-ZBZ can be released with a screwdriver. **The auxiliary release mechanism must be sealed.**

**Dimensions**

Approximate Dimensions in Inches (mm)

**Safety Position Switches**

**LS...ZB**



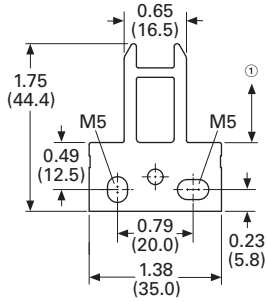
**Notes**

- ① The auxiliary release mechanism must be sealed for proper operation.
- ② Can be used as stop with the corresponding material selection and design.

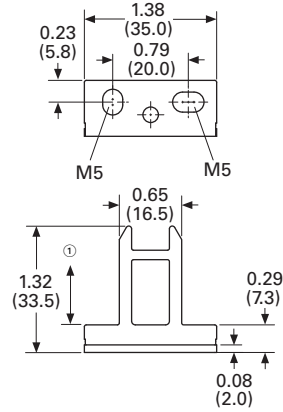
Approximate Dimensions in Inches (mm)

#### Actuators

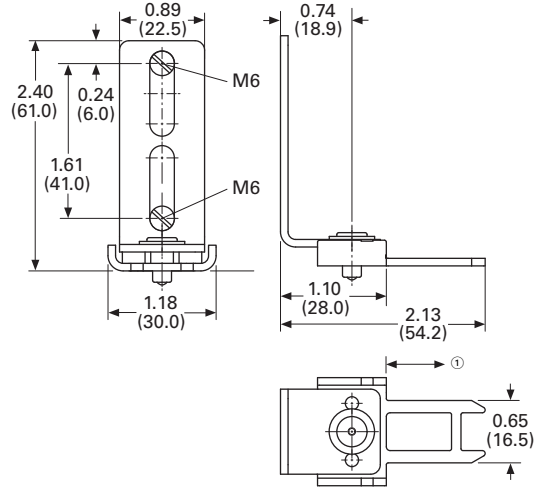
##### LS-XG-ZBZ



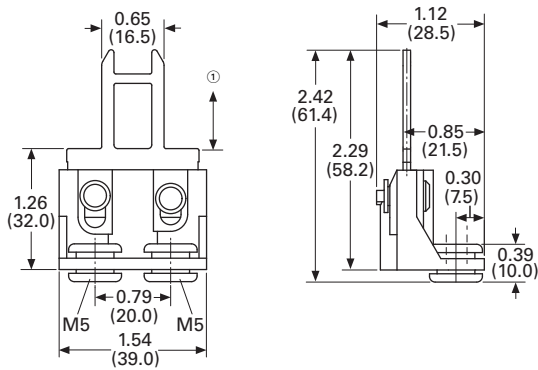
##### LS-XW-ZBZ



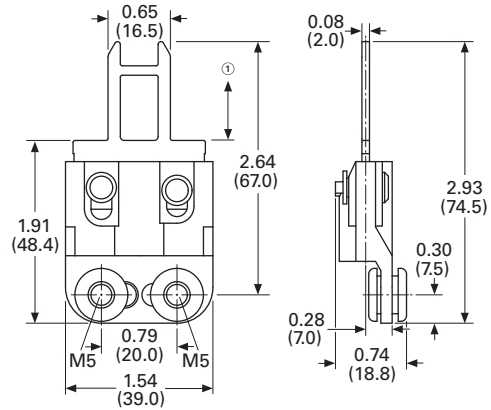
##### LS-XF-ZBZ



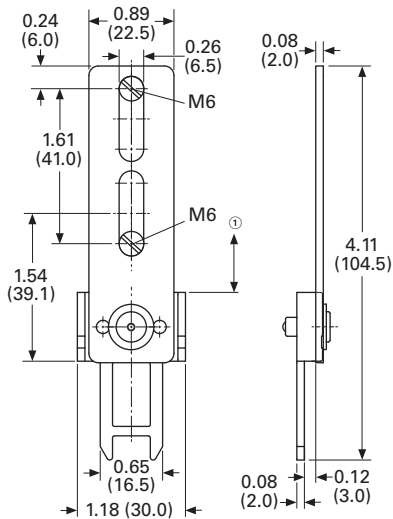
##### LS-XNW-ZBZ<sup>②</sup>



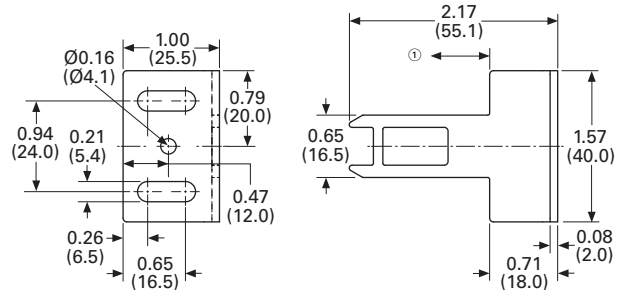
##### LS-XNG-ZBZ<sup>②</sup>



##### LS-XFG-ZBZ



##### LS-XWA-ZBZ<sup>③</sup>



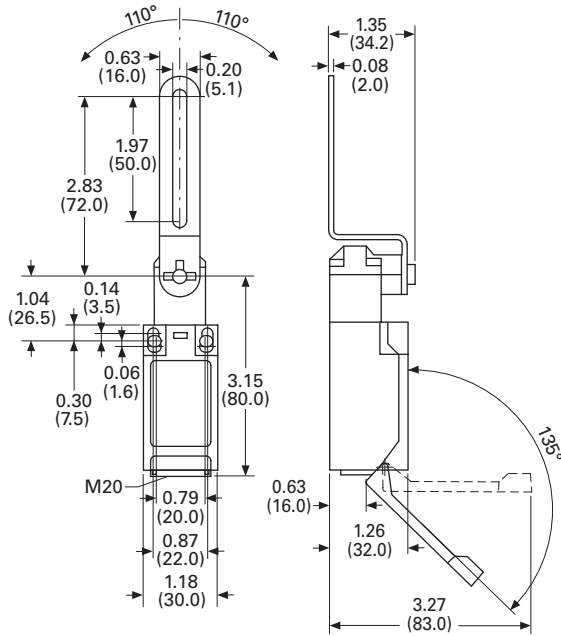
#### Notes

- ① Distance to device head = 0.1–3.0 mm.
- ② Fixing only allowed with M5 fixing screw and washer according to DIN EN ISO 7093.
- ③ Pin with a 4 mm pin after mounting.

Approximate Dimensions in Inches (mm)

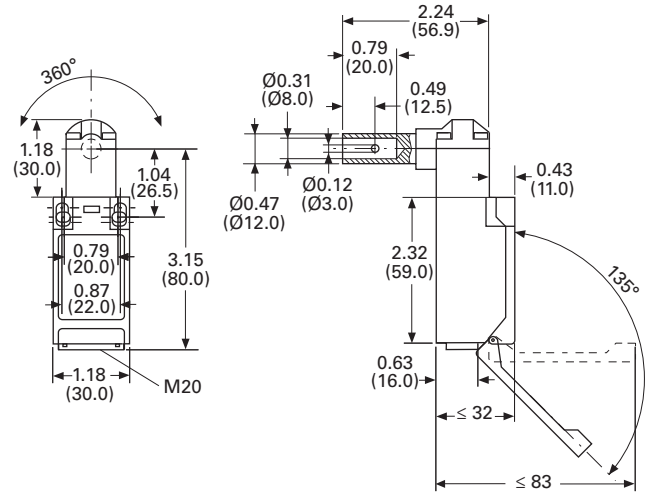
### Safety Door Flap Switch

LSR-.../TKG



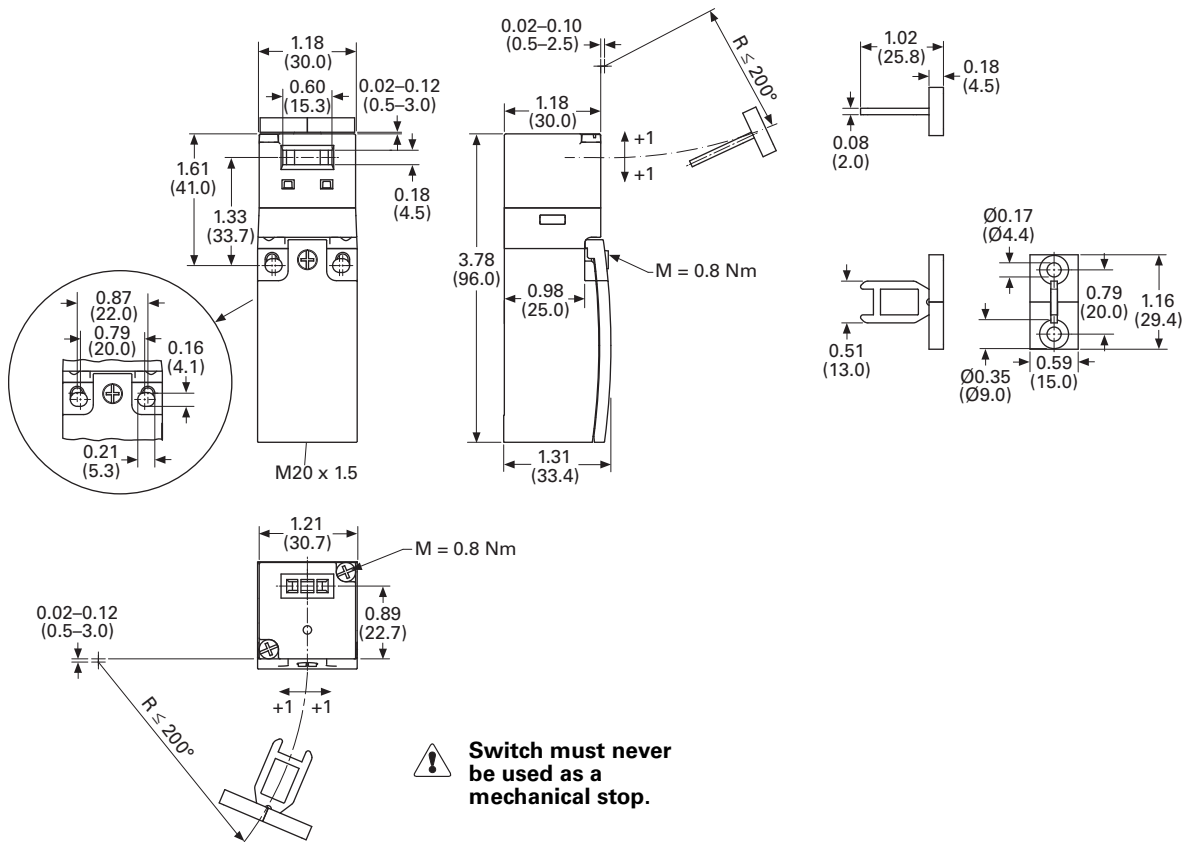
### Safety Hinge Switch

LSR-.../TS



### Safety Position Switches

LS-...-ZB



**⚠ Switch must never be used as a mechanical stop.**

# 1.1

## Safety Products

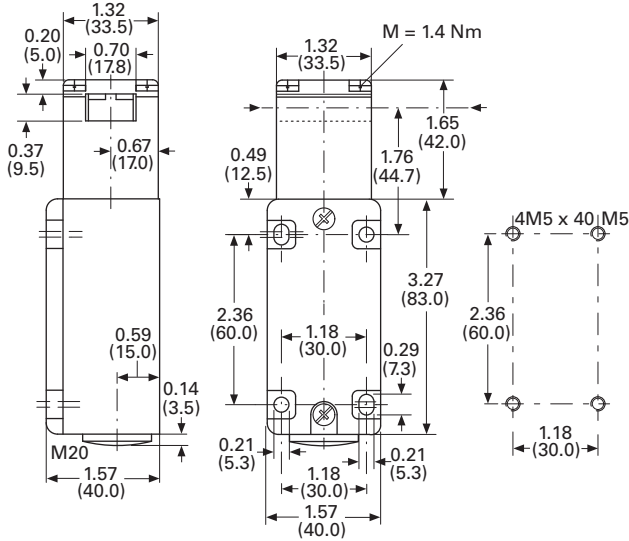
### LS-Titan Safety Interlock Switches

1

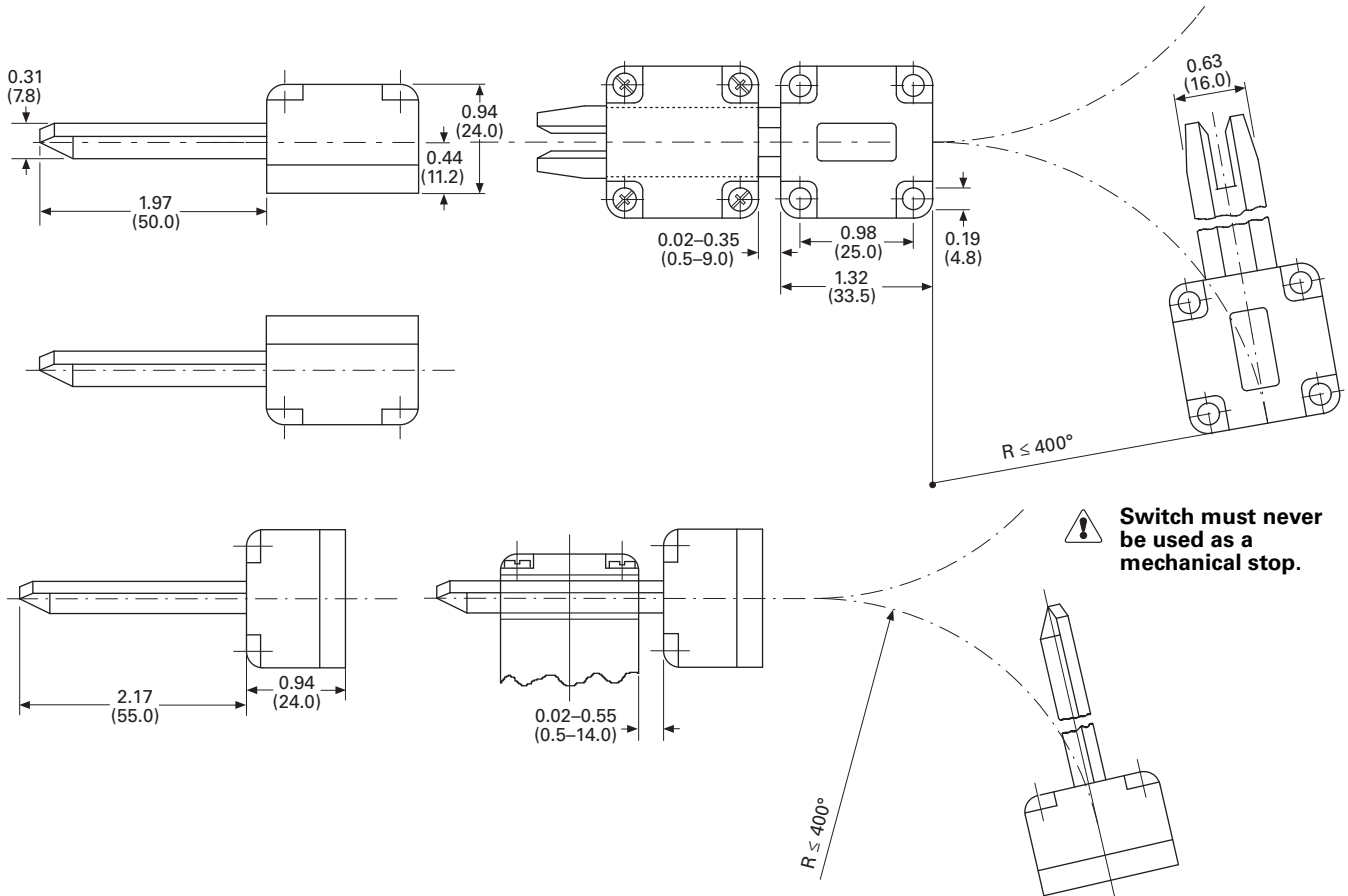
Approximate Dimensions in Inches (mm)

#### Safety Position Switches

##### LS4...ZB



#### Actuator—Included with Switch Above



RS Safety Interlock Switches



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<i>Description</i>	<i>Page</i>
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Product Selection . . . . .	<b>V8-T1-16</b>
Recommended Logic Interfaces . . . . .	<b>V8-T1-19</b>
Accessories . . . . .	<b>V8-T1-19</b>
Technical Data and Specifications . . . . .	<b>V8-T1-20</b>
Mounting Instructions . . . . .	<b>V8-T1-21</b>
Dimensions . . . . .	<b>V8-T1-22</b>

RS Safety Interlock Switches

Product Description

Eaton’s RS safety interlock switches have been specifically designed for monitoring of protective guards, such as doors, flaps and hoods. All switches in this family are safety-rated and use magnetically coded actuators to minimize defeat by simple magnets. With correct installation, the RS family complies with EN ISO 13849, EN 1088, IEC 61508, IEC 62061 and ISO 14119 guidelines. These switches are Type 4 devices in accordance with ISO 14119.

Operation

The RS safety interlock family is comprised of three series: RS2, RS2R and RS4. The assembly comprises a sensor component and a separate magnet actuator component. The sensor is typically mounted to a stationary portion of a structure and the magnet to a movable portion. When the sensor and the actuator are within operating range, the NC contacts will be closed and the NO contacts will be open.

Features

- Non-contact actuation
- Reversible mounting
- High misalignment tolerance
- Up to SIL 3 and up to PLe ratings
- Type 4 devices in accordance with ISO 14119
- -10 to +55 °C temperature range
- IP67, IP69
- 300 mA at 24 Vdc output switching

Standards and Certifications

- UL Listed, E166051
- UL tested to Canadian safety standards
- TÜV-Rheinland Certified for Functional-Safety as Type 4 devices in accordance with ISO 14119
- CE
- RoHS Compliant



Safety Notes

**Do not use as a mechanical stop/shipping brace.**

**Any change to an original Eaton safety position switch is not permitted and automatically leads to the loss of all approvals.**

**Switch must never be used as a mechanical stop.**

For the most current information on this product, visit our Web site: [www.eaton.com](http://www.eaton.com)

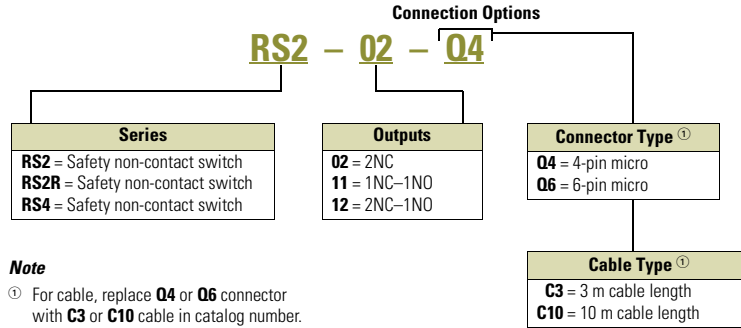
For Customer Service in the U.S. call 1-877-ETN CARE (386-2273), in Canada call 1-800-268-3578. For Application Assistance in the U.S. and Canada call 1-800-426-9184.



#### 1

### Catalog Number Selection



#### RS2 Safety Non-Contact Switch




### Product Selection

#### RS2 Safety Interlock Switches

##### RS2—Standard Models

	Outputs	Description	Catalog Number
<b>RS2 DC Connector Style</b> 	2NC	4-pin micro connector	RS2-02-Q4
	1NC–1NO	4-pin micro connector	RS2-11-Q4
	2NC–1NO	6-pin micro connector, dual key	RS2-12-Q6
<b>RS2 DC Cable Style</b> 	2NC	3 m cable length	RS2-02-C3
	1NC–1NO	3 m cable length	RS2-11-C3
	2NC–1NO	3 m cable length	RS2-12-C3
	2NC	10 m cable length	RS2-02-C10
	1NC–1NO	10 m cable length	RS2-11-C10
	2NC–1NO	10 m cable length	RS2-12-C10

#### RS2R SmartWire-DT Compatible Models

	Outputs	Description	Catalog Number
<b>RS2R SmartWire-DT Compatible</b> 	2NC	150 mm SmartWire-DT connector	RS2R-02-Q4-SWD
	1NC–1NO	150 mm SmartWire-DT connector	RS2R-11-Q4-SWD

**RS2R Safety Interlock Switches**

**RS2R Connector**



**RS2R—Standard Models**

Outputs	Description	Catalog Number
2NC	150 mm 4-pin micro connector	<b>RS2R-02-Q4</b>
1NO-1NC	150 mm 4-pin micro connector	<b>RS2R-11-Q4</b>
1NO-2NC	150 mm 6-pin micro connector, dual key	<b>RS2R-12-Q6</b>
2NC	3 m cable length	<b>RS2R-02-C3</b>
1NO-1NC	3 m cable length	<b>RS2R-11-C3</b>
1NO-2NC	3 m cable length	<b>RS2R-12-C3</b>

**RS2R SmartWire-DT Compatible Models**

**RS2R SmartWire-DT Compatible**



**RS2R—Standard Models, SmartWire-DT Compatible**

Outputs	Description	Catalog Number
2NC	150 mm SmartWire-DT connector	<b>RS2R-02-Q4-SWD</b>
1NC-1NO	150 mm SmartWire-DT connector	<b>RS2R-11-Q4-SWD</b>

**RS4 Safety Interlock Switches**

**RS4 Connector**



**RS4—Standard Models**

Outputs	Description	Catalog Number
2NC	150 mm 4-pin micro connector	<b>RS4-02-Q4</b>
1NO-2NC	150 mm 6-pin micro connector, dual key	<b>RS4-12-Q6</b>

**RS4 SmartWire-DT Compatible Models**

**RS4 SmartWire-DT Compatible**







**RS4—Standard Models, SmartWire-DT Compatible**

Outputs	Description	Catalog Number
2NC	150 mm SmartWire-DT connector	<b>RS4-02-Q4-SWD</b>

#### Connectors

#### Standard Cables <sup>①</sup>

	Current Rating at 600 V	Voltage Style	Number of Pins	Gauge	Length	Pin Configuration/Wire Colors (Face View Female Shown)	PVC Jacket Catalog Number	PUR Jacket Catalog Number	
<b>Micro-Style Straight Female</b> 	<b>Micro-Style, Straight Female</b>								
	—	AC	3-pin, 3-wire	22 AWG	6.0 ft (2 m)	 1-Green 2-Red/Black 3-Red/White	<b>CSAS3F3CY2202</b> <sup>②</sup>	<b>CSAS3F3RY2202</b> <sup>②</sup>	
	—	DC	4-pin, 4-wire	22 AWG	6.0 ft (2 m)	 1-Brown 2-White 3-Blue 4-Black	<b>CSDS4A4CY2202</b> <sup>②</sup>	<b>CSDS4A4RY2202</b> <sup>②</sup>	
—	AC	6-pin, 6-wire	22 AWG	10 ft (3 m)	 1-Brown 2-White 3-Purple 4-Orange 5-Blue 6-Black	<b>CSAS6A6CY2203</b> <sup>③</sup>			

#### Notes

- ① For a full selection of connector cables, see **Tab 10, section 10.1**.
- ② Replace **02** suffix with **05** (5 m), 10 (10 m), 20 (20 m) for standard lengths.
- ③ Replace **03** suffix with **05** (5 m), 10 (10 m) for standard lengths.

**Recommended Logic Interfaces**

**ESR5**



- Use for the highest safety requirements in accordance with EN ISO 13849-1, IEC 62061 and EC 61508
- Suitable for the global market with UL, cUL certifications and TÜV Rheinland functional safety certifications
- Applicable for EN 60204 stop categories 0 or 1
- Plug-in screw terminals for fast and fault-free replacement
- Multi-voltage versions

**ESR5 Safety Relays**

Safety Inputs	Safety Outputs (NO)	Power Supply	Catalog Number
1	4	24 Vac/Vdc	<b>ESR5-NO-41-24VAC-DC</b>
2	2	24 Vac/Vdc	<b>ESR5-NO-21-24VAC-DC</b>
2	3	24 Vac/Vdc	<b>ESR5-NO-31-24VAC-DC</b>
2	3	240 Vac	<b>ESR5-NO-31-230VAC</b>
2	3	24–230 Vac/Vdc	<b>ESR5-NO-31-AC-DC</b>

**easySafety**



- All-in-one—safety and control functions combined in one device
- Simple configuration through prefabricated and tested safety components
- Direct state display and increased machine availability due to fast error diagnosis through integrated display
- Multistep password concept prevents unwanted manipulation

**easySafety**

Safety Inputs	Safety Outputs (NO)	Reset Type	Power Supply	Catalog Number
14	1 (6 A relay), 4 (transistor)		24 Vdc	<b>ES4P-221-DMXD1</b>
14	4 (6 A relay)		24 Vdc	<b>ES4P-221-DRXD1</b>

**Cordset**

**4-Pin Connectors**

Description	Catalog Number
2 m cable	<b>CSDS4A4CY2202</b>
5 m cable	<b>CSDS4A4CY2205</b>
10 m cable	<b>CSDS4A4CY2210</b>
20 m cable	<b>CSDS4A4CY2220</b>

**6-Pin Connectors**

Description	Catalog Number
3 m cable	<b>CSAS6A6CY2203</b>
5 m cable	<b>CSAS6A6CY2205</b>

**Accessories**

**RS Safety Interlock Switches**

Description	Catalog Number
RS2 spare actuator	<b>RS2-A</b>

## Technical Data and Specifications

### RS Safety Interlock Switches

Description	RS2/RS2R/RS4 Specification
Safety classification	Up to SIL 3, IEC 61508, Type 4 per ISO 14119
Outputs	NO and NC circuit combinations
Sensing range	On: 8 mm / Off: 19 mm
Enclosure rating	IP67, IP69
Output switching	300 mA at 24 Vdc
Operating voltage	24 Vdc
Temperature range	-10 to +55 °C (14 to 131 °F)
Shock	30 G, 11 ms, 1/2 sine wave
Vibration	1 mm, 0–2000 Hz
Radio frequency immunity	IEC 61000-4-3
Repeat accuracy	10%
Housing material	Polyamide
Actuator material	Polyamide
Color	Black/yellow
Connection types	Cable and micro connector (4-pin or 6-pin)
Wire size	22 AWG
B10d	15,000,000
Contact response time	3 ms
Maintenance schedule	≤6 months

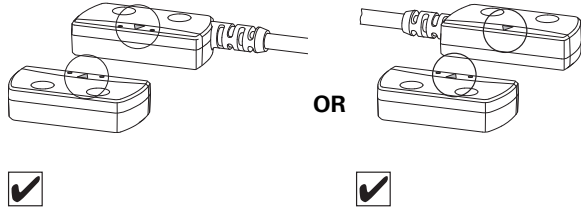
### Wire Colors—RS2, RS2R and RS4 Models

Description	2NC	2NC-1NO (SAF3 NO)	1NC-1NO (SAF2 NO)
4-pin micro		—	
6-pin micro (dual key)	—		—
SmartWire-DT		—	
Cordset (4-pin)			
Cordset (6-pin)			

**Mounting Instructions**

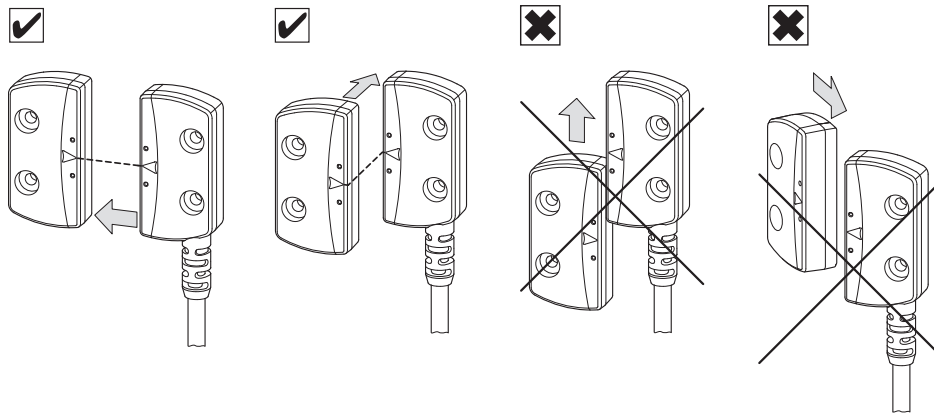
**Reversible**

The RS family has reversible mounting to adjust to field wiring needs.



**Alignment**

Direction of approach is perpendicular to the plane of the sensing face.



# 1.2

## Safety Products

### RS Safety Interlock Switches

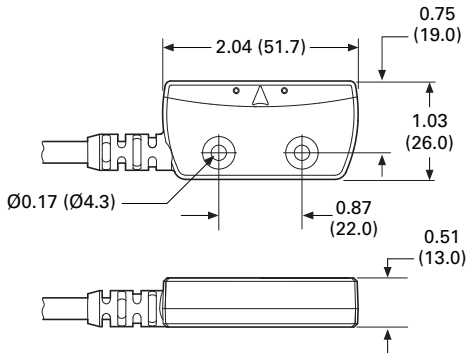
#### 1

#### Dimensions

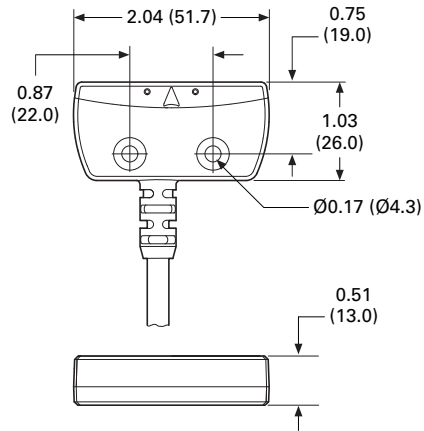
Approximate Dimensions in Inches (mm)

#### RS Safety Interlock Switches

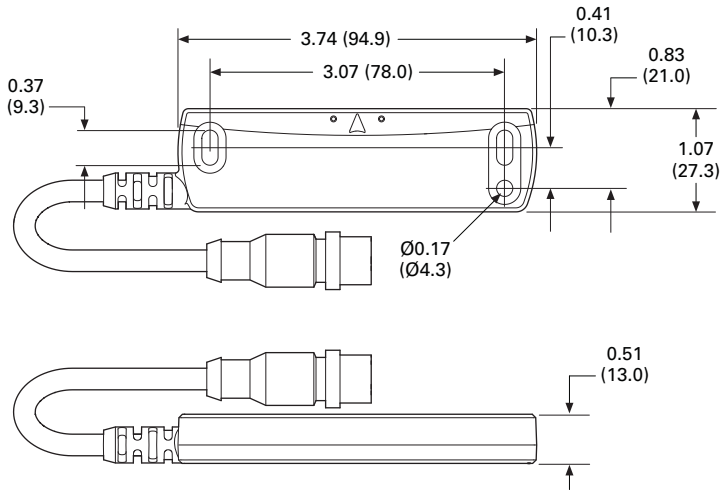
##### RS2



##### RS2R



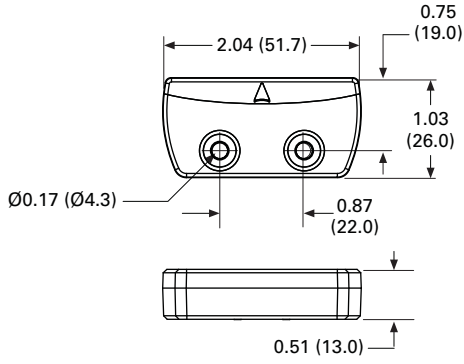
##### RS4



Approximate Dimensions in Inches (mm)

**RS Safety Interlock Actuators**

**RS2A**



**RS4A**

