Electronic Hinge Switch with Auto Test Type: HS-SS-Z and HSM-Z

FEATURES & APPLICATION:

IDEM’s HS-SS-Z and HSM-Z Intelligent Series Hinge Switches have been developed to provide and maintain a high level of functional safety. They will connect to most popular standard Safety Relays to maintain a PLe Safety Level even with switches connected in series. They have easy to understand LED diagnostic functions and provide auxiliary outputs for extra diagnostic signals to PLCs or computers.

The HS-SS-Z and HSM-Z Hinge Switches are designed to be mounted for interlock position sensing of hinged moving guards. They have been designed to be fitted to the hinged axis of machine guard doors and provide a robust hinge function in addition to interlock position sensing.

Enclosures are protected to IP67 / IP69K with a low profile, hygienic design for washdown.

The HS-Z hinge switches must be used in combination with a dual channel safety control device e.g. Safety Relay or Safety Controller. They can provide protection to PLe/Cat.4 to ISO 13849-1, and will maintain PLe with other Idem Z-type switches connected in series due to internal test functions of the switches. In addition, each switch provides input, output and guard state LED’s.

A maximum of 30 switches can be connected in series.

Operation is achieved by the rotating action of an enclosed cam profile and sensing components within the switch.

The hinge switch can be adjusted upon installation to provide guard-open output signal anywhere between 0 to 10 degrees.

All HS-Z switches are factory set to provide the guard open output signal at 3 degrees. Once set during installation the HS-Z is permanently pinned in order to provide a fully tamper-resistant switching point.

SAFETY RELIABILITY:

IDEM’s HS-SS-Z and HSM-Z Hinge Switches employ two microprocessors and they use IDEM’s intelligent system to constantly check all switches. Safety Reliability up to ISO13849-1 PLe.

MAIN USER BENEFITS:

- Connect up to 30 switches in series.
- Able to connect to most popular Safety Relays without the need for special controllers.
- Ability to connect to other switches and Emergency Stops in series.
- Up to 800N axial force.
- Blank hinges are available.
- Mounting brackets available for ease of fixing.

FUNCTIONAL SPECIFICATION:

High Functional Safety to ISO13849-1 - connects to most Safety Relays to maintain PLe.

Safety Outputs short circuit protected.

One Auxiliary circuit for indication of door open.
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For all IDEM switches the normally closed (NC) circuits are closed when the guard is closed and the actuator is present.

**DIMENSIONS:**

**CONNECTION EXAMPLE:**

Multiple switches connected to SCR-31P-i Safety Relay (Viper series)

**SALES NUMBER | SWITCH | CABLE LENGTH | ORIENTATION**

<table>
<thead>
<tr>
<th>HS-SS-Z HINGE SWITCH (Stainless Steel 316)</th>
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<td>352001</td>
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<tr>
<th>HSM-Z HINGE SWITCH (Die Cast Mirror Polished)</th>
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**Standards:**

- ISO 14119
- IEC 60947-5-1
- EN62061
- EN60204-1
- ISO 13849-1
- UL508

**Technical Data:**

- Rated Operating Voltage: 24 Vdc, 24 Vdc
- Power Consumption: 0.7 W
- Outputs Rated Voltage: 24 Vdc
- Outputs Max. Current: 0.2 A
- Outputs Min. Current: 1 mA
- Outputs Type: PNP
- Inputs Rated Voltage: 24 Vdc
- Inputs Rated Current: 2 mA
- Auxiliary Switching Angles: Off 10 Degrees
- Typical Switching Angles: Off 0 – 10 Degrees (Adjustable)
- Response Time Guard Open: 60ms max.
- Response Time Inputs Off: 20ms max.
- Temperature: -25 / 55°C
- Storage Temperature: -25 / 80°C
- Dielectric Withstand: 250V ac
- Insulation Resistance: 100 Mohms
- Enclosure Protection: IP67 / IP69K
- Vibration: IEC 68-2-6 10-55Hz+1Hz

**Characteristics:**

- Excursion: 0.35mm, 1 octave/min
- Conduit Entry: Various (see sales part numbers)
- Mounting Position: Any

**Characteristic Data according to IEC62061 (used as a sub system):**

- Performance Level: e
- Category: 4
- MTTFd: 771a
- Diagnostic Coverage: DC High

**Characteristic Data according to EN ISO13849-1:**

- Safety Integrity Level: SIL3
- PFH (1/h): 1.0 E-09 (Corresponds to 1% of SIL3)
- PFD: 8.7 E-05 (Corresponds to 9% of SIL3)
- Proof Test Interval: T1 20a

**SALES NUMBER | SWITCH | CABLE LENGTH | ORIENTATION**

| 350010 | Blank Hinge Stainless Steel |
| 350020 | Blank Hinge Stainless Steel |
| 353001 | HSM-Z | 5m | Right Handed |
| 353002 | HSM-Z | 10m | Right Handed |
| 353003 | HSM-Z | QC-M12 | Right Handed |
| 353004 | HSM-Z | 5m | Left Handed |
| 353005 | HSM-Z | 10m | Left Handed |
| 353006 | HSM-Z | QC-M12 | Left Handed |
| 350102 | Blank Hinge Die Cast |
| 350025 | Hinge Switch Mounting Brackets |