

Interlock Switches

Non contact Switches

Ferrogard GS1 & GS2



Description

The Ferrogard range of magnetically actuated safety switches offers Non contact reliability together with tolerance to misalignment. They are designed to be installed so that when a guard door is opened, the action of the magnetic actuator being removed from the switch opens the N.C. safety contacts which are intended for the isolation of control power to a machine primary control element.

The GS1 and GS2 are designed for heavy duty applications. The GS1 is housed in a stainless steel or brass housing. The GS2 offers the same characteristic as the GS1, but in an Ex housing for hazardous locations.

Unlike some magnetic switches the Ferrogards have protected safety contacts to help ensure that they do not fail to danger.

All Ferrogards have internal non-resettable overload protection on the safety contact. They should be protected by an external fuse rated as shown in the specifications table.

See the **Explosion Proof** section on page 16-1 for more information on the EX version of the Ferrogard GS2.

Features

- Non contact actuation
- High tolerance to misalignment
- High switching current (2A AC)
- Metal housings (IP 68)
- Ex version available

Specifications

| | |
|---|--|
| Standards | EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, ANSI B11.19, AS4024.1 |
| Category | Cat. 1 Device per EN954-1 Dual channel interlocks suitable for Cat. 3 or 4 systems |
| Approvals | GS1 and GS2 CE marked for all applicable directives and cULus GS2 Ex EExd IIC T6 Baseefa |
| Operating Distance – Make | GS1 12mm (0.47in) GS2 15mm (0.59in) |
| Operating Distance – Break | GS1 23mm (0.91in) GS2 26mm (1.02in) |
| Closing Time | 3.0ms |
| Dropout Time | 2.1ms |
| Bounce Time | 0.7ms |
| Initial Contact Resistance | 15mW |
| Initial Capacitance, Terminal to Terminal | 0.65pF |
| Initial Insulation Resistance, Terminal to Terminal | 1 x 10 ⁶ Ω |
| Safety Contact Switching Capability | 250V AC 2A max |
| Safety Contact External Fusing | ≤ 1.6A quick blow |
| Min Initial Breakdown Voltage | 600V AC |
| Operating Temperature | -25°C to +125°C (-13° to +257°F) |
| Enclosure Protection | IP68 (NEMA 6P) |
| Cable | GS1 Brass 0.75 mm ² (18AWG) 2 wire Grey PVC Jacket OD 6mm (0.24in) Stainless Steel 0.75 mm ² (18AWG) 2 wire White PVC Jacket OD 7mm (0.28in) GS2 1.34 mm ² (16AWG) 2 wire Braided Polyolefin Jacket OD 8.4mm (0.32in) |
| Case Material | Stainless Steel or Brass |
| Mounting | Any Position M3 mounting security screws included. |
| Weight (not including cable) | GS1 Brass 381g (0.84lbs) GS1 Steel 388g (0.86lbs) Actuator 116g (0.26lbs) |
| Electrical Life | 1 X 10 ⁶ at rated load |
| Mechanical Life | 10 X 10 ⁶ |
| Vibration | 15g, 20 to 1000Hz |
| Shock | 50g |
| Ex Version | See Explosion Proof Section |

Product Selection

| Safety Contact Switching Capability | Safety Contacts | Auxiliary Contacts | Connection | Housing | Type | Catalogue Number |
|-------------------------------------|-----------------|--------------------|------------|-----------------|---------|------------------|
| 250V AC, 2A | 1 N.C. | None | 2m Cable | Brass | GS 1 | 440N-G02048 |
| | | | | Stainless Steel | | 440N-G02049 |
| | | | 3m Cable | Brass | GS 2 Ex | 440N-H02046 |
| | | | | Stainless Steel | | 440N-H02047 |

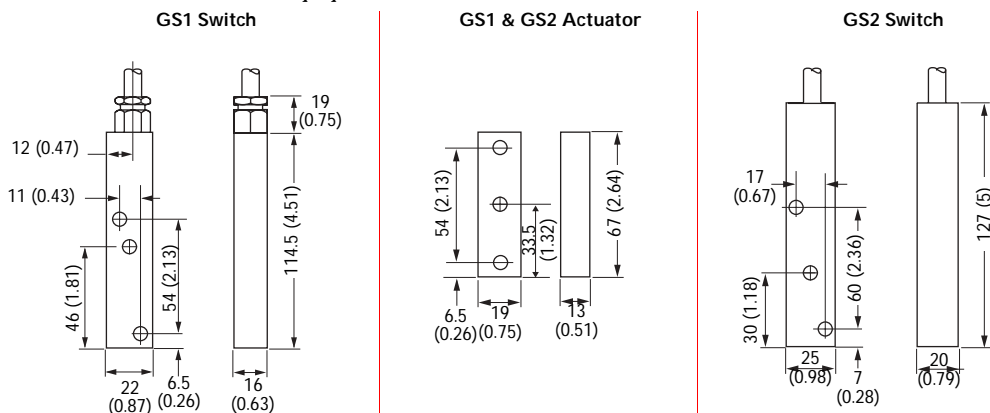
Note: Contacts are described with the guard door closed, that is, actuator in place. Switch is shipped complete with Actuator.

Accessories

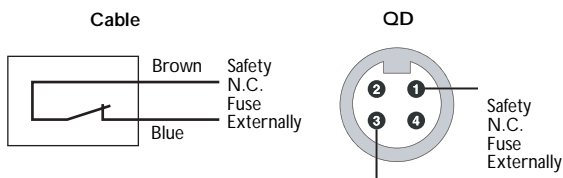
| Description | Used with | Page Number | Catalogue Number |
|-------------------------|-----------------|-------------|------------------|
| Actuator, Alnico | Brass Switch | — | 440N-A02056 |
| Actuator, Epoxy-painted | Stainless Steel | — | 440N-A02057 |

Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



Typical Wiring Diagrams



Note: Unit must be to a grounded to a grounded metal frame or grounded via the field wiring per NEC requirements.

Application Details

See page 3-54 for operating principles and mounting examples.

Interlock Switches

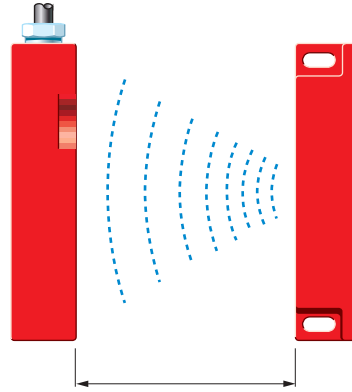
Non contact Switches

Ferrogard Applications

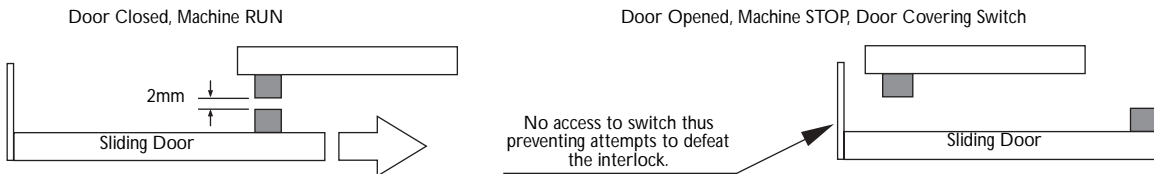
Application Details

Operating Principle

Encapsulated in the Ferrogard is a unique high power industrial reed, capable of switching up to 15A. The reed switch is de-rated by a non resettable overload protection fuse. On presenting the actuator to the switch, the high intensity magnetic field from the actuator causes the contacts to close. On removing the actuator (opening the door), the safety contacts open.

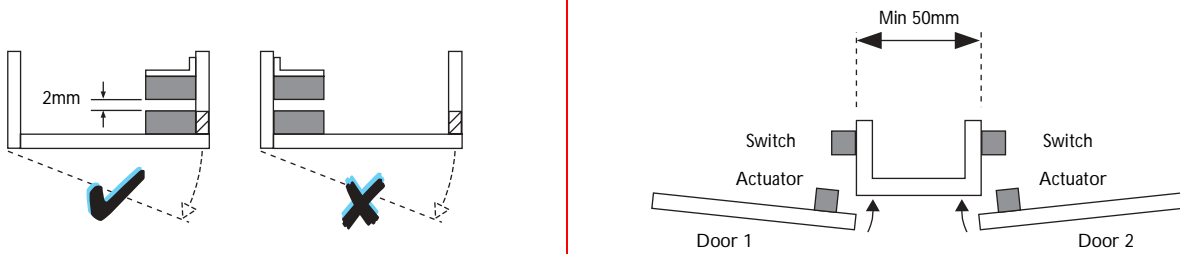


Mounting Example 1



Note: Whenever possible, the units should be mounted so that no access can be obtained to the switch when the guard door is open, thus preventing attempts to defeat the safety system.

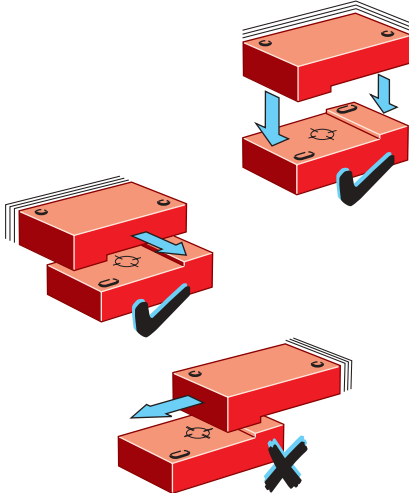
Mounting Example 2



It is advisable, where possible, to mount the switch and actuator on nonferrous materials otherwise it may effect the operating distances. If mounting on ferrous material, use of a 5mm plastic spacer is recommended.

Application Details

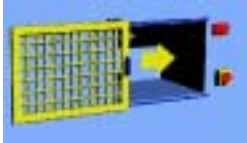
Note: Under the requirements of the Machinery Directive all machinery must undergo risk assessment to determine the necessary level (or category) of the safety related control system or hazard avoidance measures. While the Ferrogard complies with the requirements of EN1088 it may not be suitable for all types of machinery or environments. Where magnetic materials are present or if it is foreseeable that through machine function or use. Ferrogard operation by magnets other than the supplied actuator is possible, then use of an alternative Allen-Bradley Guardmaster switch is recommended. Other Non contact options include: Ferrocode (which utilizes additional coding techniques preventing them from being overridden by simple means). Alternatively additional measures may be taken to prevent the Ferrogard being easily bypassed. Consideration should be given to the recommended installation example given in the instructions and those in EN1088.



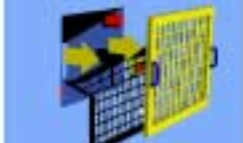
Typical Applications

Note: Removable guards using Non contact switches may require two switches, one at either side of the guard, or the use of a flap to prevent initial lifting of the non-interlocked edge.

Sliding Guard



Removable Guard



Hinged Guard

