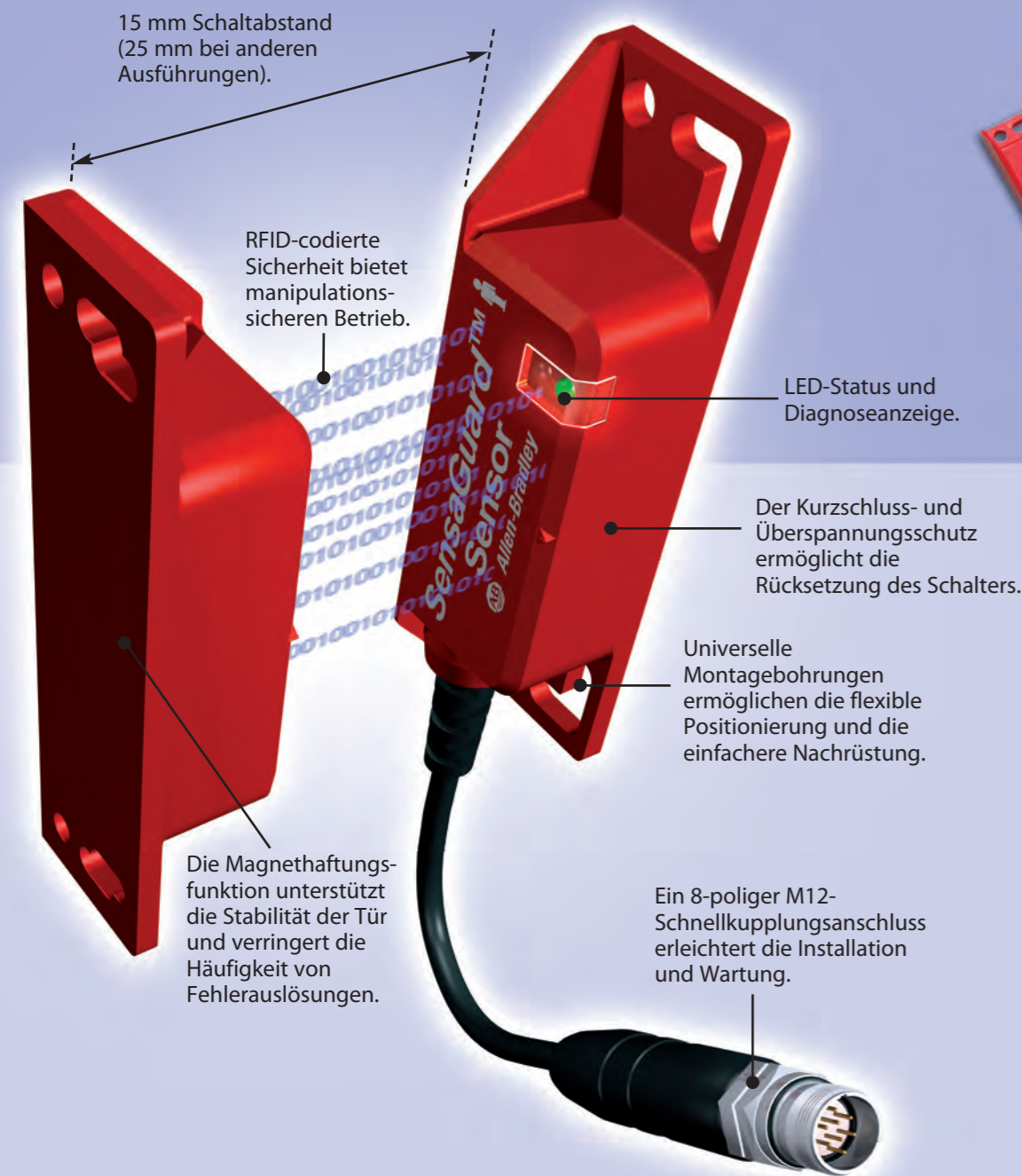


SENSAGUARD – RFID-CODIERTE, BERÜHRUNGSLOSE VERRIEGELUNGSSCHALTER



LEISTUNGSMERKMALE

- Keine dedizierte Steuerung erforderlich für RFID-codierte Sicherheit
- Cat 4/SIL 3-Zulassung bleibt auch dann erhalten, wenn mehrere Einheiten in Reihe geschaltet werden
- Die Schalter können mit anderen Geräten (z. B. Lichtgitter, Not-Aus-Taste und Verriegelungsschalter) in Reihe geschaltet werden
- Erweiterte Diagnosefunktionen für eine komfortablere Fehlerbehebung
- Weit reichender Erfassungsbereich bietet optimalen Betrieb und hohe Toleranz gegenüber fehlerhafter Ausrichtung
- Flexible Montageoptionen – optimal für die Nachrüstung geeignet
- Schaltung aus mehreren Richtungen
- Edelstahlausführungen sind zur Verwendung in rauen Umgebungen geeignet
- Verwendung standardisierter Halterungen für Näherungsschalter
- Hoher Schutzgrad IP69K

WILLKOMMEN ZUR NÄCHSTEN GENERATION BERÜHRUNGSLOSER SICHERHEITSVERRIEGELUNGSSCHALTER

Die SensaGuard-Produktfamilie codierter, berührungsloser Verriegelungsschalter entspricht Cat 4/SIL 3 und ist für den Schutz von Maschinen mit Schiebe-, Schwenk- oder Hebe-Sicherheitsstüren entwickelt. Sie eignet sich besonders gut für Maschinen, bei denen mehrere Zugriffstüren bis Sicherheitskategorie 4/SIL3 überwacht werden müssen. Mit einer Codierung auf Basis neuester RFID-Technologie und induktiver Erfassung bietet SensaGuard eine kostengünstige Lösung, die aufgrund des weit reichenden Erfassungsbereichs und der Toleranz gegenüber fehlerhafter Ausrichtung für eine Vielzahl industrieller Sicherheitsanwendungen geeignet ist.

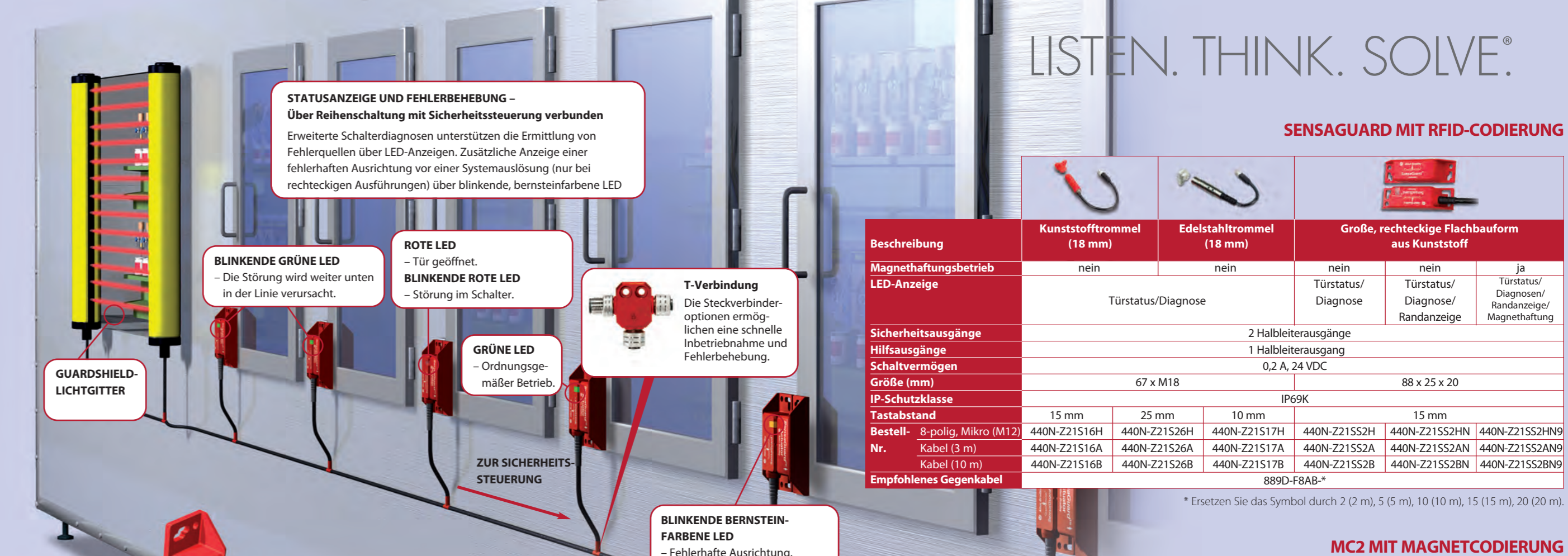
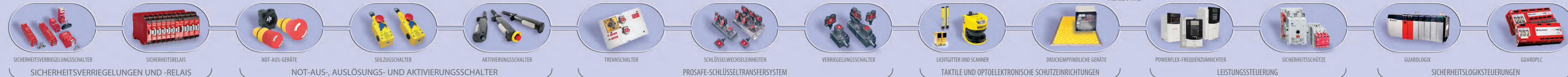
SensaGuard-Schalter benötigen keine dedizierte Sicherheitssteuerung für ihre RFID-Codierungssicherheit und können daher an viele Standardsicherheitssteuerungen angeschlossen werden, wie z. B. Allen-Bradley® Guardmaster-Sicherheitsrelais, SmartGuard™ 600 und

Safety-I/O-Blöcke. Verschiedene Aktuatorgrößen ermöglichen eine große Sensorreichweite – in der Regel zwischen 15 und 25 mm. SensaGuard sind in Gehäusen aus Kunststoff oder Edelstahl erhältlich, weisen den hohen Schutzgrad IP69K auf und besitzen einen elektronischen Kurzschluss- und Überspannungsschutz.

Die SensaGuard-Geräte lassen sich mit standardisierten Befestigungselementen und Halterungen für die Näherungsschalter in Standardgrößen montieren. Auf diese Weise erlauben sie eine problemlose Nachrüstung bestehender Anlagen. Die Cat 4/SIL 3-Zulassung bleibt auch dann erhalten, wenn mehrere Einheiten in Reihe geschaltet werden. LED-Anzeigen auf dem Schaltkörper lassen den Status der Sicherheitstüren auf einen Blick erkennen, während die integrierten erweiterten Diagnosefunktionen die Fehlerbehebung vereinfachen. Eine breite Palette weiterer Allen-Bradley Guardmaster-Sicherheits-einrichtungen, wie Lichtgitter, Not-Aus-Tasten und Verriegelungsschalter lassen sich zur Realisierung dynamischer Maschinenschutz-Lösungen ebenfalls problemlos in Serie schalten.

HINWEIS: Bei Verwendung von Sicherheitssensoren ohne Codierung müssen vor der Installation Maßnahmen ergriffen werden, damit gewährleistet ist, dass die Verriegelung nicht durch einfache Mittel überbrückt werden kann.

EIN UMFANGREICHES ANGEBOT AN SICHERHEITSPRODUKTEN FÜR UMFASSENDE SICHERHEITSLÖSUNGEN



SENSAGUARD MIT RFID-CODIERUNG

| Beschreibung | Kunststofftrommel (18 mm) | | Edelstahltrommel (18 mm) | | | | |
|------------------------|----------------------------------|--------------|--|--------------------------------|---|---------------|----------------|
| | | | Große, rechteckige Flachbauform aus Kunststoff | | | | |
| Magnethaftungsbetrieb | nein | nein | nein | nein | ja | | |
| LED-Anzeige | Türstatus/Diagnose | | Türstatus/Diagnose | Türstatus/Diagnose/Randanzeige | Türstatus/Diagnosen/Randanzeige/Magnethaftung | | |
| Sicherheitsausgänge | 2 Halbleiterausgänge | | | | | | |
| Hilfsausgänge | 1 Halbleiterausgang | | | | | | |
| Schaltvermögen | 0,2 A, 24 VDC | | | | | | |
| Größe (mm) | 67 x M18 | | 88 x 25 x 20 | | | | |
| IP-Schutzklasse | IP69K | | | | | | |
| Tastabstand | 15 mm | 25 mm | 10 mm | 15 mm | | | |
| Bestell-Nr. | 8-polig, Mikro (M12) Kabel (3 m) | 440N-Z21S16H | 440N-Z21S26H | 440N-Z21S17H | 440N-Z21SS2H | 440N-Z21SS2HN | 440N-Z21SS2HN9 |
| | Kabel (10 m) | 440N-Z21S16A | 440N-Z21S26A | 440N-Z21S17A | 440N-Z21SS2A | 440N-Z21SS2AN | 440N-Z21SS2AN9 |
| | Kabel (10 m) | 440N-Z21S16B | 440N-Z21S26B | 440N-Z21S17B | 440N-Z21SS2B | 440N-Z21SS2BN | 440N-Z21SS2BN9 |
| Empfohlenes Gegenkabel | 889D-F8AB-* | | | | | | |

* Ersetzen Sie das Symbol durch 2 (2 m), 5 (5 m), 10 (10 m), 15 (15 m), 20 (20 m).

MC2 MIT MAGNETCODIERUNG

| Typ | MC2 | |
|------------------------|------------------------------------|--------------|
| Beschreibung | Kompakte, rechteckige Flachbauform | |
| LED-Anzeigen | Türstatus/Diagnose | |
| Sicherheitsausgänge | 2 Öffner-Halbleiterrelais | |
| Hilfsausgänge | 1 Halbleiterausgang | |
| Schaltvermögen | 0,2 A, 24 VDC | |
| Größe (mm) | 29 x 48 x 16,5 | |
| IP-Schutzklasse | IP69K | |
| Tastabstand | 10 mm | |
| Bestell-Nr. | 8-polig, Mikro (M12) Kabel (3 m) | 440N-Z21W1PH |
| | Kabel (10 m) | 440N-Z21W1PA |
| | Kabel (10 m) | 440N-Z21W1PB |
| Empfohlenes Gegenkabel | 889D-F8AB-* | |

* Ersetzen Sie das Symbol durch 2 (2 m), 5 (5 m), 10 (10 m), 15 (15 m), 20 (20 m).

SICHERHEITSSTEUERUNGSLOGIK

VERWENDEN SIE DIE SICHERHEITSSTEUERUNGSLOGIK IHRER WAHL
Alle Leistungsmerkmale von SensaGuard, einschließlich der RFID-codierten Sicherheit, funktionieren ohne eine dedizierte SensaGuard-Sicherheitssteuerung. Es lassen sich fast alle gewünschten Sicherheitssteuerungen nahtlos in SensaGuard integrieren.

440N-Z SensaGuard™ RF-ID Codierte berührungslose Schalter

Eigenschaften

- Keine dedizierte Steuerung erforderlich
- Gemäß Kat 4/SIL 3, auch bei Reihenschaltung mehrerer Schalter
- Mehrere Betätigergrößen für große Schaltabstände (15...25 mm)
- Schutzart IP69K
- Kurzschluss- und Überspannungsschutz
- LED auf dem Schalter für Türzustand und Fehlersuche
- 2 PNP-Sicherheitsausgänge und 1 PNP-Hilfsausgang

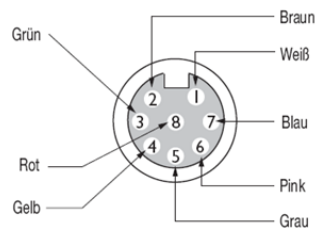


| Beschreibung | Sicherheitsausgänge | Hilfsausgangsschaltung | Schaltabstand | Anschluss | Bestell-Nr. |
|---|----------------------|------------------------|----------------------|----------------------|--------------|
| Kunststoffgehäuse, 18 mm | 2 Halbleiterausgänge | 1 Halbleiterausgang | 15 mm | 8-polig, Mikro (M12) | 440N-Z21S16H |
| | | | | Kabel, 3 m | 440N-Z21S16A |
| 25 mm | | | 8-polig, Mikro (M12) | 440N-Z21S26H | |
| | | | Kabel, 3 m | 440N-Z21S26A | |
| Edelstahlgehäuse, 18 mm | | | 10 mm | 8-polig, Mikro (M12) | 440N-Z21S17H |
| | | | | Kabel, 3 m | 440N-Z21S17A |
| Groß, rechteckig | 18 mm | 8-polig, Mikro (M12) | 440N-Z21SS2HN | | |
| | | Kabel, 3 m | 440N-Z21SS2AN | | |
| Groß, rechteckig/ magnetische Betätigung | | 8-polig, Mikro (M12) | 440N-Z21SS2HN9 | | |
| | | Kabel, 3 m | 440N-Z21SS2AN9 | | |
| Empfohlenes passendes Gegenkabel für 8-polige, Mikro (M12), 5 m | | | | | 889D-F8AB-5 |

Vollständige Produktinformationen finden Sie in der Publikation S116-CA001...

Verdrahtungsplan

| Stift Nr. | Drahtfarbe | Signal |
|-----------|------------|-----------------------|
| 1 | Weiß | Hilfsausgänge |
| 2 | Braun | +24 V |
| 3 | Grün | Abschirmung |
| 4 | Gelb | OSSD 2, +24 V Eingang |
| 5 | Grau | OSSD 1 |
| 6 | Pink | OSSD 2 |
| 7 | Blau | 0 V |
| 8 | Rot | OSSD 1, +24 V Eingang |



| | | | | | | |
|--|---------------------------------------|--|---|---------|-----------|--------------|
| | For use with SensaGuard switches only | | B | Red PVC | Polyamide | 898D-438Y-D8 |
|--|---------------------------------------|--|---|---------|-----------|--------------|

Safety Switches

Non-Contact Switches

SensaGuard™



Description

When it comes to machine safety, Rockwell Automation knows that protection of personnel and equipment is your main concern. At the same time, flexibility and productivity are points that must also be considered as you design your safety system. Optimize all of these with the new Allen-Bradley SensaGuard family of non-contact switches.

Featuring the latest generation of RFID technology for coding and Inductive technology for sensing, SensaGuard's large sensing range and tolerance to misalignment is a cost-effective solution that is ideally suited for a wide range of industrial safety applications.

The SensaGuard product line is a Category 4 /SIL 3 rated switch per EN954-1, TÜV functional safety approved to IEC 61508.

Features

- Switches can be connect to a standard safety relay, for example, the MSR126, MSR127, MSR200/300 Family, SmartGuard™ and Safety I/O Blocks
- Multiple actuator sizes for large sensing distance
- IP69K environmental rating
- Short-circuit and over-voltage protection
- LED located on the switch for door status and troubleshooting

Benefits

- No dedicated controller required
- Cat 4/SIL 3 rating maintained even with multiple units connected in series
- Switches can be connected in series with other devices (light curtain, E-stops, key interlock switches)
- Extended diagnostics for easy troubleshooting
- Large sensing distances
- Tolerance to misalignment
- Multiple sensing directions
- Stainless steel version suitable for use in harsh environments
- Use standard proximity brackets

Specifications

| Safety Ratings | | |
|---|--|-----------------|
| Standards | IEC 60947-5-3, IEC 61508, EN 954 | |
| Safety Classification | Cat. 4/SIL3 | |
| Functional Safety Data * | PFH _D : > 1.12 x 10 ⁹ MTTF _D : > 385 years Dual channel interlock may be suitable for performance levels PLe or PLd (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on application characteristics | |
| Note: For up-to-date information, visit http://www.ab.com/Safety/ | | |
| Certifications | CE marked for all applicable directives, cULus (UL 508), and TÜV | |
| Outputs (Guard Door Closed, Actuator in Place) | | |
| Safety Outputs | 2 x PNP, 0.2 A, max.; Status: ON (+24V DC) | |
| Auxiliary Outputs | 1 x PNP, 0.2 A max.; Status: OFF (0V DC) | |
| Operating Characteristics | | |
| Sensing Distance (Assure) | 18 mm Plastic Barrel/18 mm Target | 15 mm (0.59 in) |
| | 18 mm Plastic Barrel/30 mm Target | 25 mm (0.98 in) |
| | 18 mm Stainless Steel Barrel/Standard Target | 10 mm (0.39 in) |
| | Large Rectangular Flat Pack with Standard Target | 15 mm (0.59 in) |
| Misalignment Tolerance, Min | See misalignment curve. | |
| Repeat Accuracy | 10% of Sensing Range | |
| Output Current, Max. | 200 mA (all outputs) | |
| Operating Voltage | 24V DC, +10%/-15% Class 2 SELV power supply | |
| Current Consumption | 50 mA | |
| Frequency of Operating Cycle | 1 Hz | |
| Response Time (Off) | 54 ms | |
| Environmental | | |
| Enclosure Type Rating | NEMA 3, 4X, 12, 13, IP 69K | |
| Operating Temperature—C (F) | -10...+55° (+14...+131°) | |
| Relative Humidity | 5...95% | |
| Shock | IEC68-2-27 30 g, 11 ms | |
| Vibration | IEC 68-2-6 10...55 Hz | |
| Radio Frequency | IEC 61000-4-3, IEC 61000-4-6 | |
| Physical Characteristics | | |
| Housing Material | Valox® DR 48 | |
| Actuator Material | Valox® DR 48 | |
| Color | Red | |

- * Usable for ISO 13849-1:2006 and IEC 62061. Data other than B10d is based on:
- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
 - Mission time/Proof test interval of 30 years

Product Selection

| Type | Actuator Type | Assured Sensing Distance | LED Door Indication/Diagnostic | Margin Indication | Magnetic Hold | Cat. No. | | |
|------------------------------|-----------------------|--------------------------|--------------------------------|-------------------|---------------|----------------|----------------|----------------|
| | | | | | | Cable | | Connector |
| | | | | | | 3 m | 10 m | |
| 18 mm Plastic Barrel | 18 mm Plastic | 15 mm (0.59 in) | Yes | - | - | 440N-Z21S16A | 440N-Z21S16B | 440N-Z21S16H |
| | 30 mm Plastic | 25 mm (0.98 in) | Yes | - | - | 440N-Z21S26A | 440N-Z21S26B | 440N-Z21S26H |
| 18 mm Stainless Steel Barrel | 18 mm Stainless Steel | 10 mm (0.39 in) | Yes | - | - | 440N-Z21S17A | 440N-Z21S17B | 440N-Z21S17H |
| Large Plastic Rectangular | Standard Plastic | 15 mm (0.59 in) | Yes | - | - | 440N-Z21SS2A | 440N-Z21SS2B | 440N-Z21SS2H |
| | | | Yes | Yes | - | 440N-Z21SS2AN | 440N-Z21SS2BN | 440N-Z21SS2HN |
| | | | Yes | Yes | Yes | 440N-Z21SS2AN9 | 440N-Z21SS2BN9 | 440N-Z21SS2HN9 |

Recommended Logic Interfaces

| Description | Safety Outputs | Auxiliary Outputs | Terminals | Reset Type | Power Supply | Cat. Page No. | Cat. No. |
|--------------------------------------|------------------------------|-------------------|-------------------|----------------------------------|---------------------------|---------------|-------------|
| Single-Function Safety Relays | | | | | | | |
| MSR127RP | 3 N.O. | 1 N.C. | Removable (Screw) | Monitored Manual | 24V AC/DC | 5-24 | 440R-N23135 |
| MSR127TP | | | | Auto./Manual | | 5-24 | 440R-N23132 |
| Modular Safety Relays | | | | | | | |
| MSR211P Base 2 N.C. only | 2 N.O. | 1 N.C. | Removable | Auto./Manual or Monitored Manual | 24V DC from the base unit | 5-76 | 440R-H23177 |
| MSR220P Input Module | — | — | Removable | — | 24V DC | 5-78 | 440R-H23178 |
| MSR310P Base | MSR300 Series Output Modules | 3 PNP Solid State | Removable | Auto./Manual Monitored Manual | 24V DC | 5-94 | 440R-W23219 |
| MSR320P Input Module | — | 2 PNP Solid State | Removable | — | 24V DC from the base unit | 5-98 | 440R-W23218 |

Note: For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.
 For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.
 For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.









Connection Systems

| Description | Cat. No. |
|----------------------------|---------------|
| Cordset | 889D-F8AB-* |
| Patchcord | 889D-F8ABDM-* |
| Safety Wired T-Port | 898D-438Y-D8 |
| Safety Wired Shorting Plug | 898D-418U-DM |

* Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
 * Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard lengths.
Note: For additional information, see the Safety Connection System section (page 7-1) of this catalog.

Safety Switches
Non-Contact Switches
 SensaGuard™

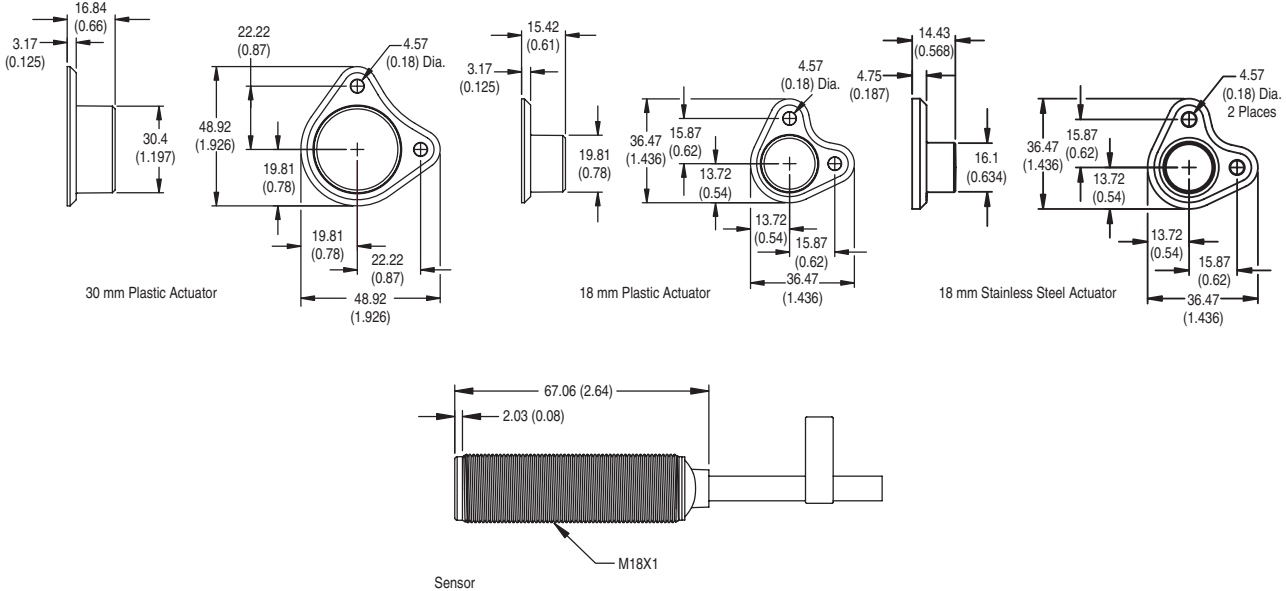
Accessories

| | Description | Cat. No. |
|---|---|-------------|
|  | 18 mm Plastic Actuator | 440N-Z18PT |
|  | 30 mm Plastic Actuator | 440N-Z30PT |
|  | 18 mm Stainless Steel Actuator | 440N-Z18SST |
|  | Large Rectangular Plastic Actuator Standard Model | 440N-ZPREC |
| | Standard Model Margin/Magnetic Hold | 440N-ZPRECM |
|  | Mounting Bracket for Tubular Sensors—Right Angle Style | 871A-BRS18 |
|  | Mounting Bracket for Tubular Sensors—Clamp Style | 871A-BP18 |
|  | Snap Clamp Mounting Bracket | 871A-SCBP18 |
|  | Swivel/Tilt Bracket Allows ±10° Vertical and 360° Rotation Adjustment | 60-2649 |

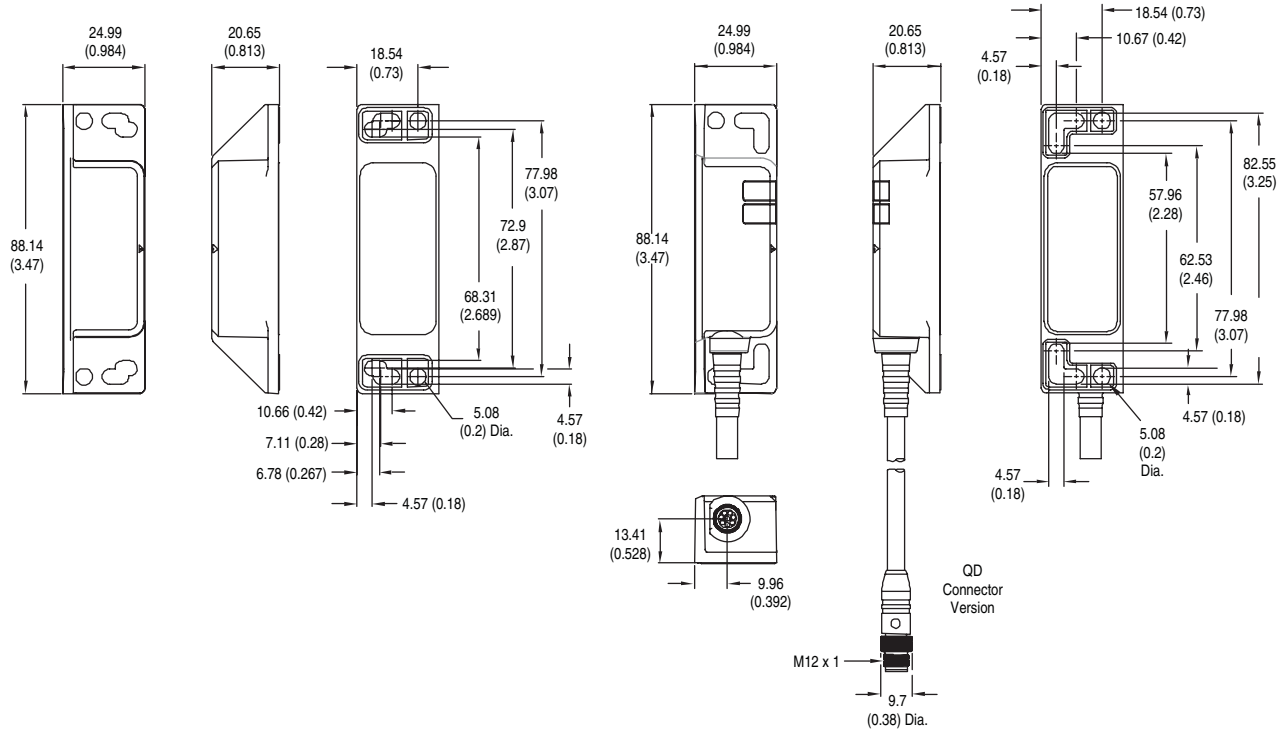
Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.

18 mm Barrel



Large Rectangular Flat Pack



3-Interlock
 Switches

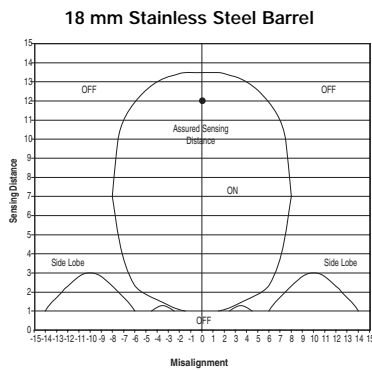
Safety Switches
Non-Contact Switches
 SensaGuard™

Typical Wiring Diagrams

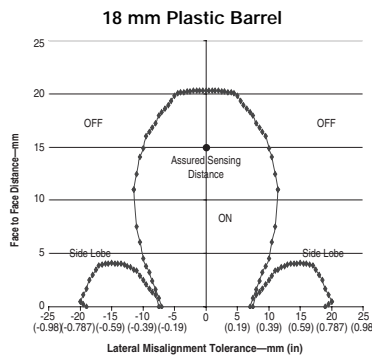
| Description | | Plastic | Stainless Steel |
|---|--------|-----------|-----------------|
| 8-Pin Micro (M12) | | | |
| 8-Pin Cordset 889D-F8AB- or cable version | Grey | Safety A | Safety A |
| | Red | Safety A+ | Safety A+ |
| | Pink | Safety B | Safety B |
| | Yellow | Safety B+ | Safety B+ |
| | White | Aux A | Aux A |
| | Brown | 24V DC + | 24V DC + |
| | Blue | Gnd | Gnd |
| | Green | NA | Shield |

* Replace symbol with 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.

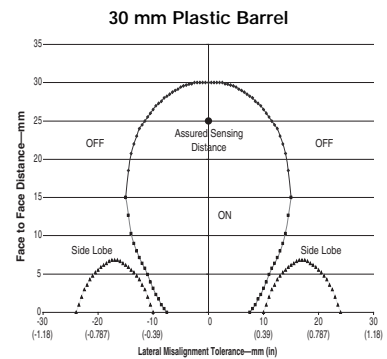
Misalignment Curve



Note: There must be a minimum spacing of 4 mm (0.157 in) if actuator and sensor face approaches laterally. This will prevent false triggering due to the side lobe areas.



Note: There must be a minimum spacing of 4 mm (0.157 in) if actuator and sensor face approaches laterally. This will prevent false triggering due to the side lobe areas.

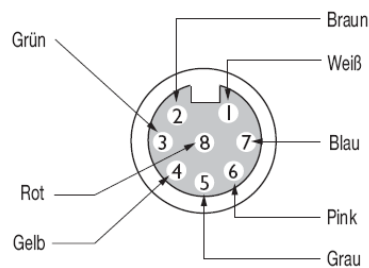


Note: There must be a minimum spacing of 7 mm (0.275 in) if actuator and sensor face approaches laterally. This will prevent false triggering due to the side lobe areas.

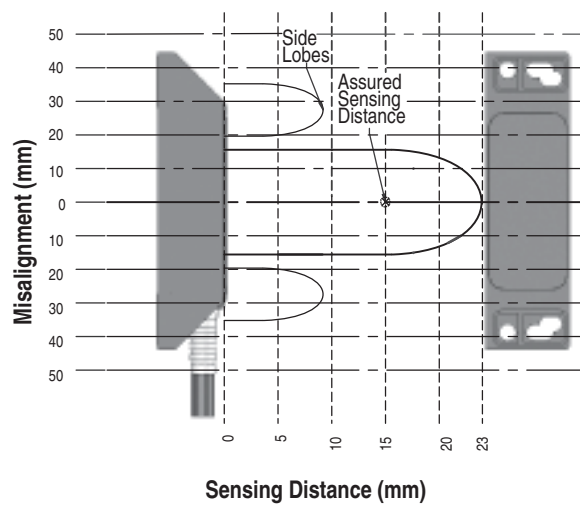
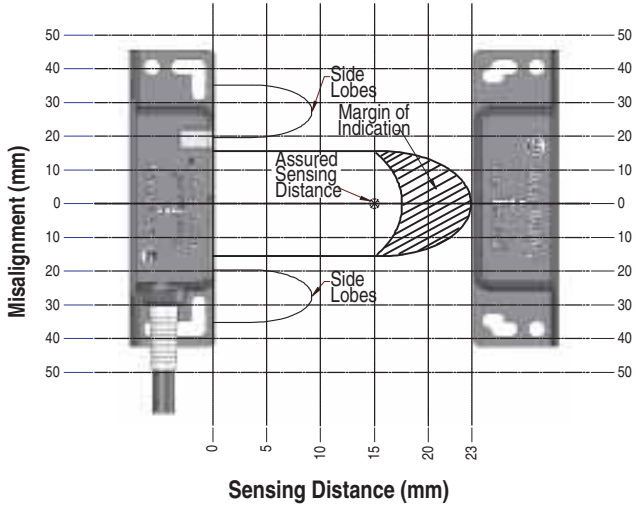
3-Interlock
Switches

Verdrahtungsplan

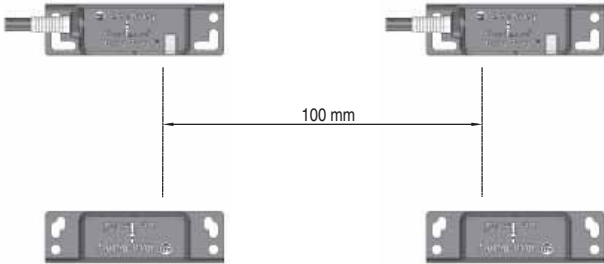
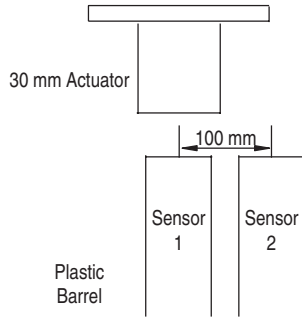
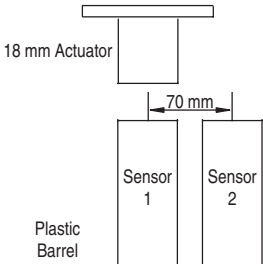
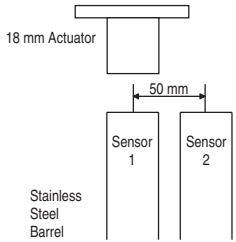
| Stift Nr. | Drahtfarbe | Signal |
|-----------|------------|-----------------------|
| 1 | Weiß | Hilfsausgänge |
| 2 | Braun | +24 V |
| 3 | Grün | Abschirmung |
| 4 | Gelb | OSSD 2, +24 V Eingang |
| 5 | Grau | OSSD 1 |
| 6 | Pink | OSSD 2 |
| 7 | Blau | 0 V |
| 8 | Rot | OSSD 1, +24 V Eingang |



Large Rectangular Flat Pack



Minimum Distance Between Sensors



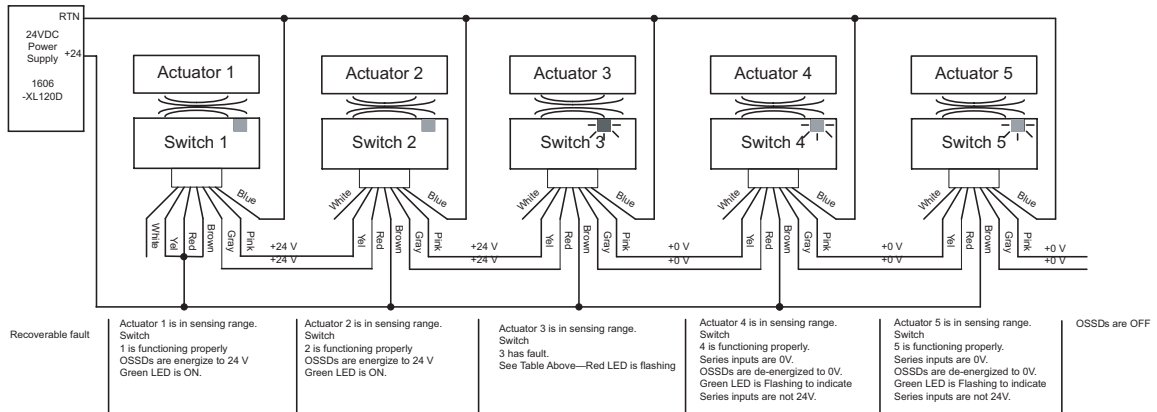
3-Interlock
 Switches

Safety Switches

Non-Contact Switches

SensaGuard™

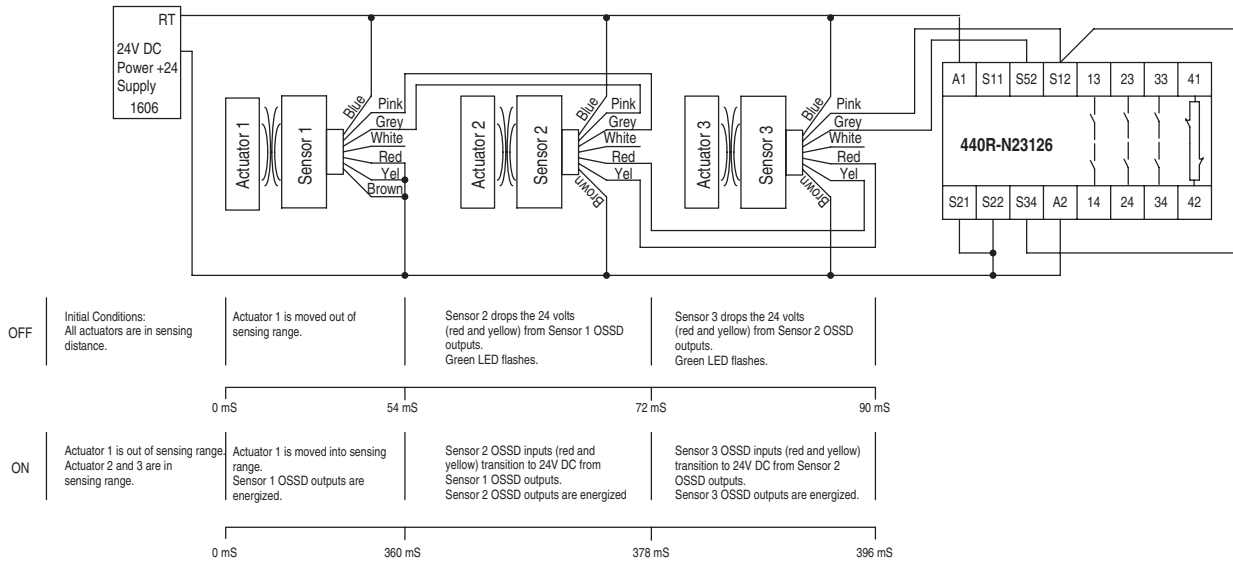
Diagnostic



Unit Indicators (per IEC 60073)

| Device Output LED | State | Status | Troubleshooting |
|-------------------|-------------|---|--|
| | Off | Not Powered | NA |
| | Red | Not Safe, Output Off | NA |
| | Green | Safe, Output On | NA |
| | Green Flash | Power Up Test | Check 24V DC on Safety + Outputs (yellow and red wire) |
| | Red Flash | 1 Hz Flash Recoverable Fault 4 Hz Flash Nonrecoverable Fault | Recoverable Fault: Check Safety Outputs Are Not Shorted to GND, 24V DC or Each Other. Cycle Power. |
| | Amber Flash | Safe, Output On, Sensor Is Reaching Max. Sensing Distance | Re-adjust Distance Between Actuator and Sensor until Output LED Is Green |

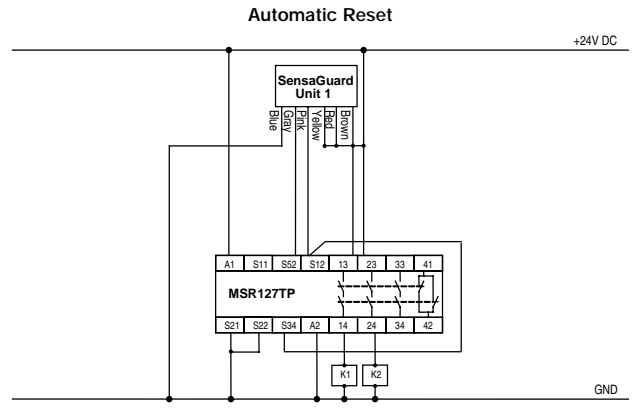
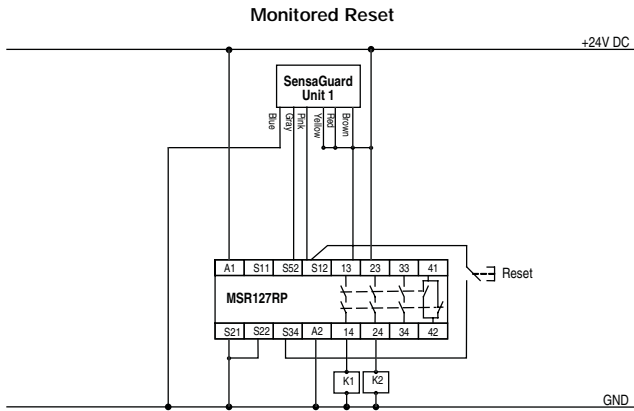
Unit Response Time



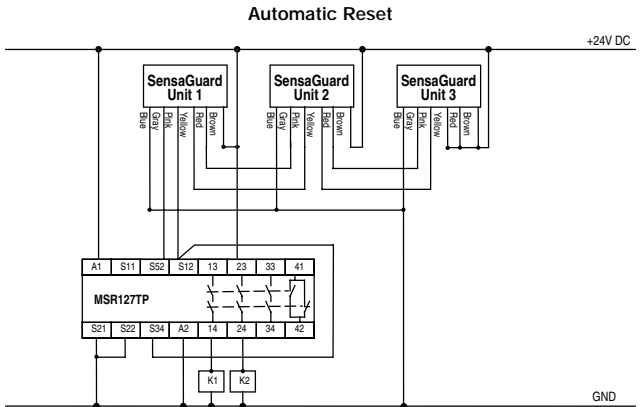
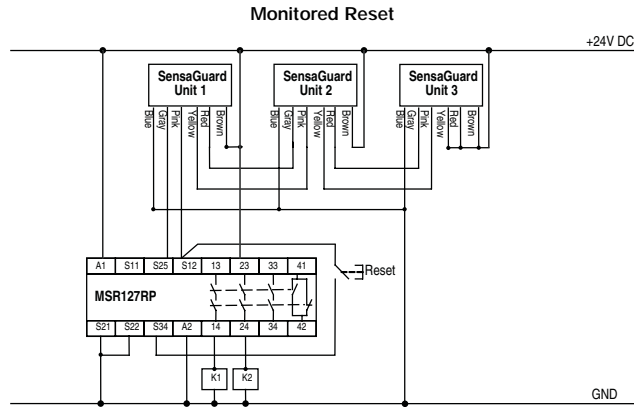
3-Interlock
Switches

Application Wiring Examples

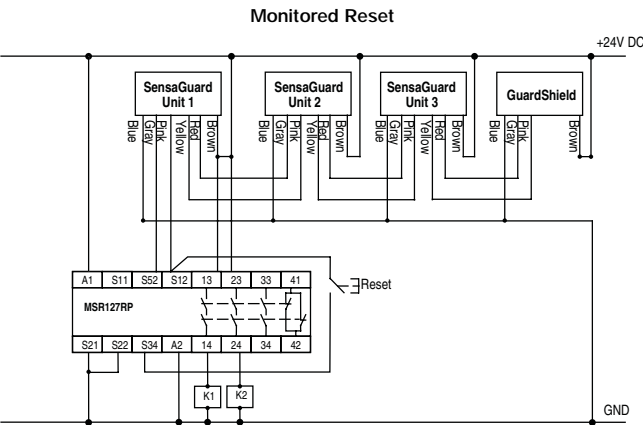
MSR127RP with One Sensor



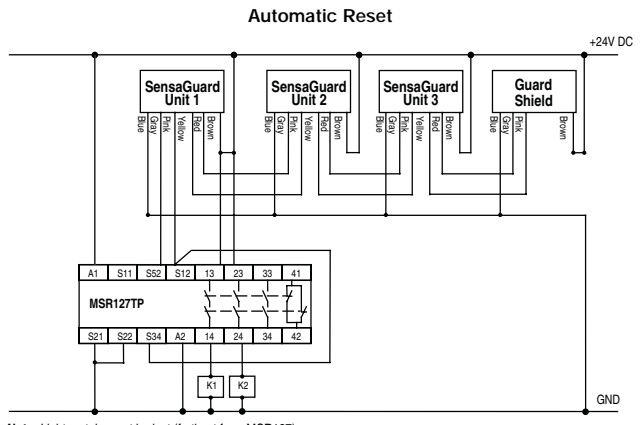
MSR127RP with Three Sensors



MSR127RP with Two Sensors and One Light Curtain



Note: Light curtain must be last (farthest from MSR127).

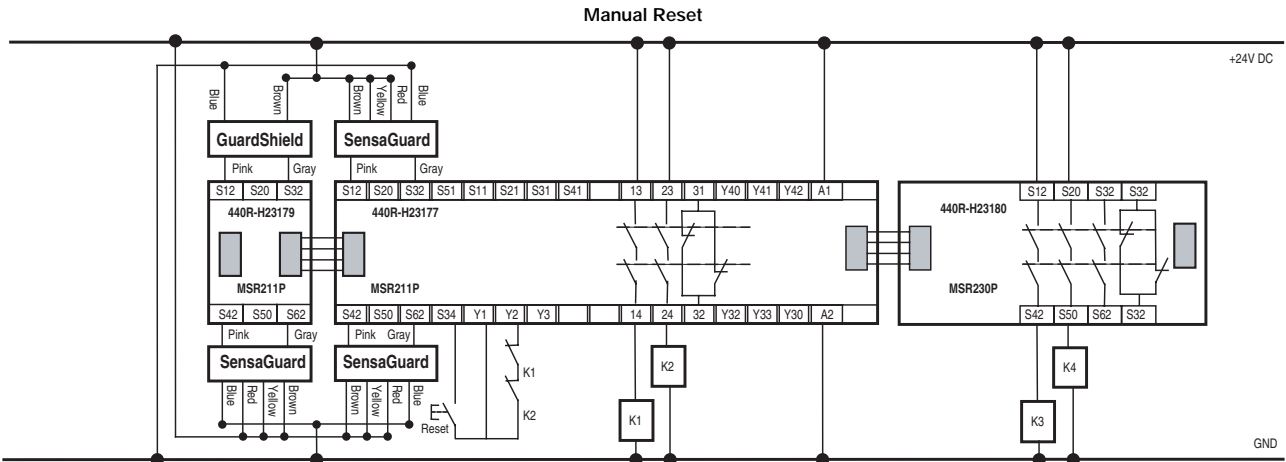


Note: Light curtain must be last (farthest from MSR127).

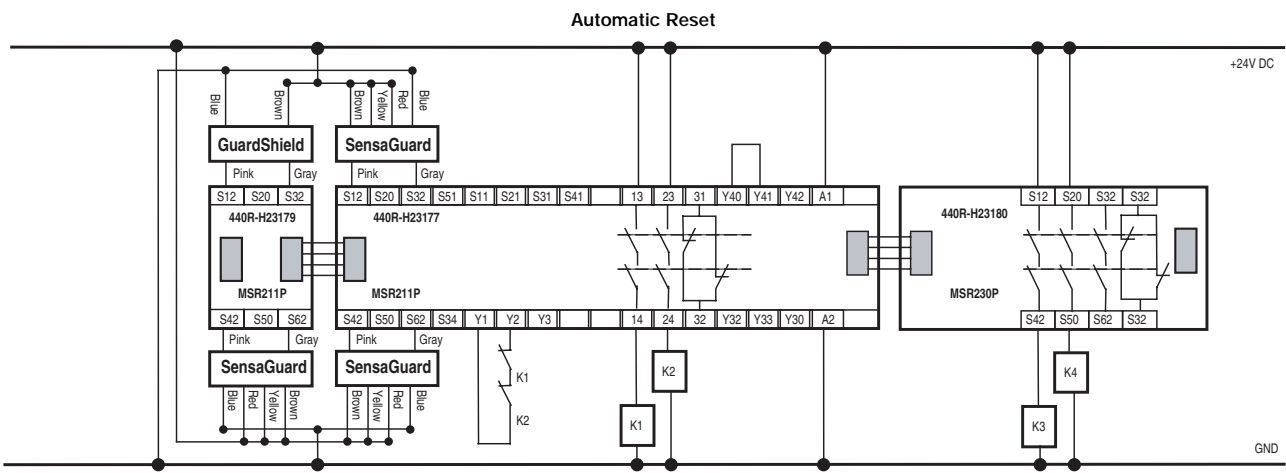
3-Interlock Switches

Safety Switches
Non-Contact Switches
 SensaGuard™

MSR200 Series with Three Sensors and One Light Curtain



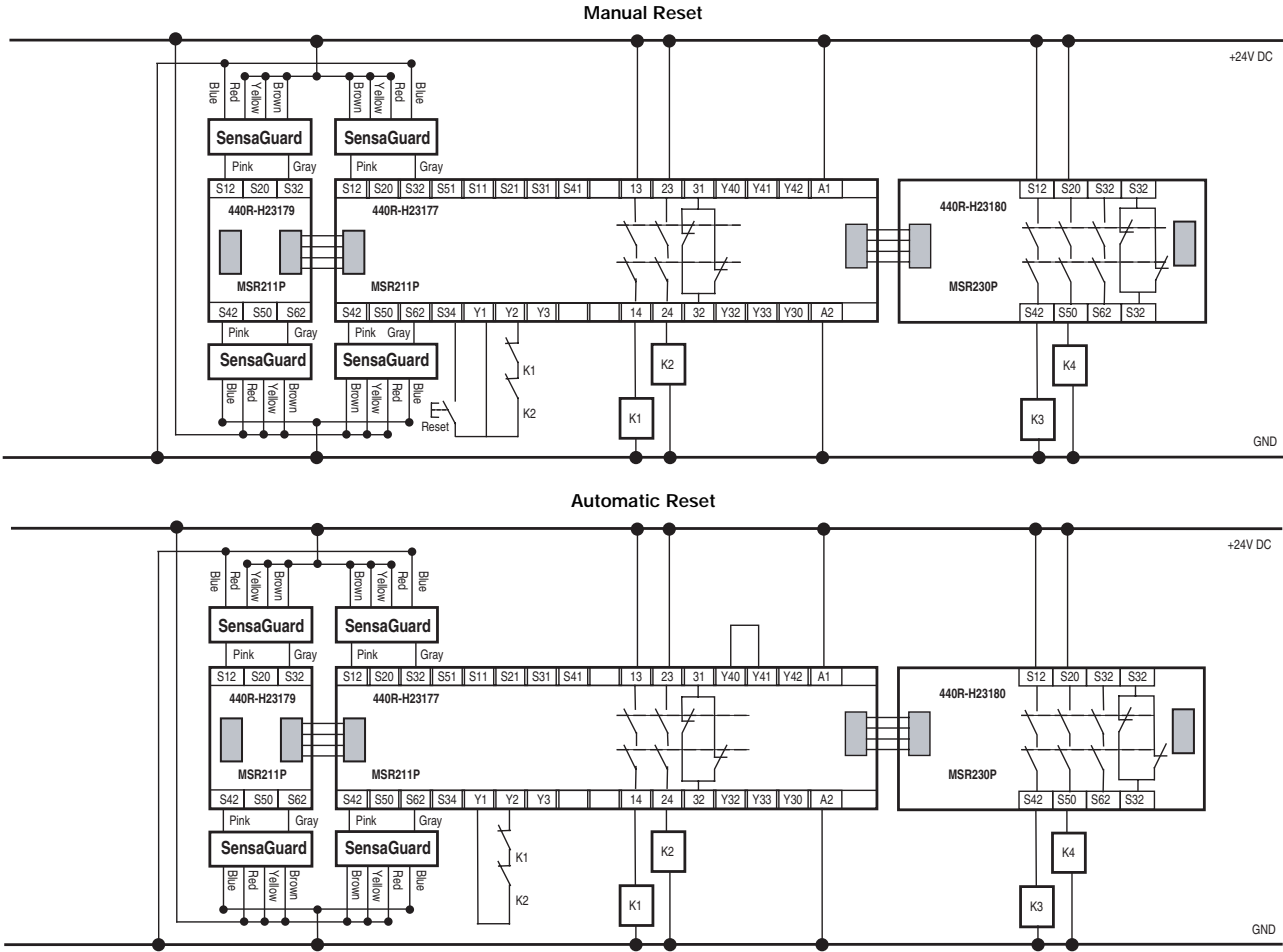
Note: Light curtain can be attached to any input.



Note: Light curtain can be attached to any input

3-Interlock
Switches

MSR200 Series with Four Sensors



3-Interlock
 Switches

Safety Switches

Non-Contact Switches

Magnetically Coded



Description

With the increasing speed and complexity of applications a simple magnetic switch may be insufficient to meet the increased risks, therefore the design incorporates several magnetically sensitive elements which must be triggered in a particular sequence to operate correctly.

The sensor with its molded-in brackets and diminutive size, is extremely versatile and simple to install. For high-risk applications the control unit is used with a single sensor to give a high-integrity system. For other applications, multiple sensors (including mechanical switches) can be connected.

Features

- Non-contact actuation
- Magnetic coded sensing
- High tolerance to misalignment
- Designed for use with specified controllers

Specifications

| | MC1 | MC2 |
|---|--|---|
| Safety Ratings | | |
| Standards | EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC60947-5-1, IEC/EN60947-5-3, ANSI B11.19, AS4024.1 | |
| Safety Classification | Cat. 1 device per EN 954-1 dual channel contacts suitable for Cat. 3 or 4 systems | |
| Functional Safety Data * | B10d: > 2 x 10 ⁶ operations at min. PFH _D : > 3 x 10 ⁷ MTTFd: > 385 years Dual channel interlock may be suitable for performance levels PLE or PLD (according to ISO 13849-1:2006) and for use in SIL2 or SIL3 systems (according to IEC 62061) depending on application characteristics | |
| Certifications | CE marked for all applicable directives, cULus, and TÜV | |
| Outputs (Guard Door Closed, Actuator in Place) | | |
| Safety Outputs | 2 N.C. REEDS | 2 N.C. Solid-State Relays |
| Auxiliary Outputs | — | 1 PNP, 0.2 A max. Status Off (0V DC) |
| Operating Characteristics | | |
| Operating Distance, Make—mm (in) | 8 (0.3) | 10 (0.39) |
| Operating Distance, Break—mm (in) | 15 (0.59) | 25 (0.98) |
| Misalignment Tolerance, Min | See Misalignment Wire | |
| Repeat Accuracy | 10% of Sensing Range | |
| Output Current, Max. | 200 mA | 200 mA |
| Switching Current @ Voltage, Max. | 24V DC @ 200 mA | 24V DC @ 200 mA +10%/-15% |
| Operating Voltage/Power Supply | — | 24V DC, +10%/-15%/50 mA max./Class 2 SELV |
| Frequency of Operating Cycle | 1 Hz | 1 Hz |
| Environmental | | |
| Enclosure Type Rating | IP 67 (NEMA 6P) | IP 69K |
| Operating Temperature—C (F) | -10...+55° (+14...+131°) | |
| Relative Humidity | 5...95% | |
| Shock | IEC 68-2, 27, 30 g, 11 ms | |
| Vibration | IEC 68-2-6, 10...55 Hz | |
| Radio Frequency | IEC 61000-4-3, IEC 61000-4-6 | |
| Physical Characteristics | | |
| Housing Material | Molded ABS | Ultrador |
| Actuator Material | Molded ABS | Ultrador |
| Color | Red | |

- * Usable for ISO 13849-1:2006 and IEC 62061. Data other than B10d is based on:
- Usage rate of 1op/10 mins., 24 hrs/day, 360 days/year, representing 51840 operations per year
 - Mission time/Proof test interval of 38 years

Product Selection

| Type | Operating Voltage/Input Current | Safety Outputs | Auxiliary Outputs | LED Indicator | Connection | Cat. No. |
|------|---------------------------------|---------------------------|--------------------------------------|---------------|---------------------------------|--------------|
| MC1 | — | 2 N.C. REEDS | — | No | 6 in Pigtail, 4-Pin Micro (M12) | 440N-Z2NRS1C |
| | | | | | 3 m Cable | 440N-Z2NRS1A |
| | | | | | 10 m Cable | 440N-Z2NRS1B |
| MC2 | 24V DC, +10%/-15%/50 mA max. | 2 N.C. Solid-State Relays | 1 PNP, 0.2 A max. Status Off (0V DC) | Yes | 6 in Pigtail, 8-Pin Micro (M12) | 440N-Z21W1PH |
| | | | | | 3 m Cable | 440N-Z21W1PA |
| | | | | | 10 m Cable | 440N-Z21W1PB |

Recommended Logic Interfaces

| Description | Safety Outputs | Auxiliary Outputs | Terminals | Reset Type | Power Supply | Cat. Page No. | Cat. No. |
|--|------------------------------|------------------------------|-------------------|----------------------------------|---------------------------|---------------|-------------|
| Single-Function Safety Relays for 2 N.C. Contact Switch | | | | | | | |
| MSR127RP | 3 N.O. | 1 N.C. | Removable (Screw) | Monitored Manual | 24V AC/DC | 5-24 | 440R-N23135 |
| MSR127TP | 3 N.O. | 1 N.C. | Removable (Screw) | Auto./Manual | 24V AC/DC | 5-24 | 440R-N23132 |
| Modular Safety Relays | | | | | | | |
| MSR210P Base 2 N.C. only | 2 N.O. | 1 N.C. and 2 PNP Solid State | Removable | Auto./Manual or Monitored Manual | 24V DC from the base unit | 5-74 | 440R-H23176 |
| MSR220P Input Module | — | — | Removable | — | 24V DC | 5-78 | 440R-H23178 |
| MSR310P Base | MSR300 Series Output Modules | 3 PNP Solid State | Removable | Auto./Manual Monitored Manual | 24V DC | 5-94 | 440R-W23219 |
| MSR320P Input Module | — | 2 PNP Solid State | Removable | — | 24V DC from the base unit | 5-98 | 440R-W23218 |

Note: For additional Safety Relays connectivity, see the Safety Relays section (page 5-8) of this catalog.
For additional Safety I/O and Safety PLC connectivity, see the Programmable Safety System section (page 5-107) of this catalog.
For application and wiring diagrams, see the Safety Applications section (page 10-1) of this catalog.

Connection Systems

| Description | Connection to Distribution Box 4-Pin Micro (M12) | 8-Pin Micro (M12) |
|------------------|---|-------------------|
| | 2 N.C. | 2 N.C. & 1 N.O. |
| Cordset | 889D-F4AC-* | 889D-F8AB-* |
| Patchcord | 889D-F4ACDM-* | 889D-F8ABDM-* |
| Distribution Box | 898D-4†LT-DM4 | — |
| Shorting Plug | 898D-41LU-DM | — |
| T-Port | 898D-43LY-D4 | — |

* Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
* Replace symbol with 1 (1 m), 2 (2 m), 3 (3 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
† Replace symbol with 4 or 8 for number of ports.

Note: For additional information, see the Safety Connection System section (page 7-1) of this catalog.

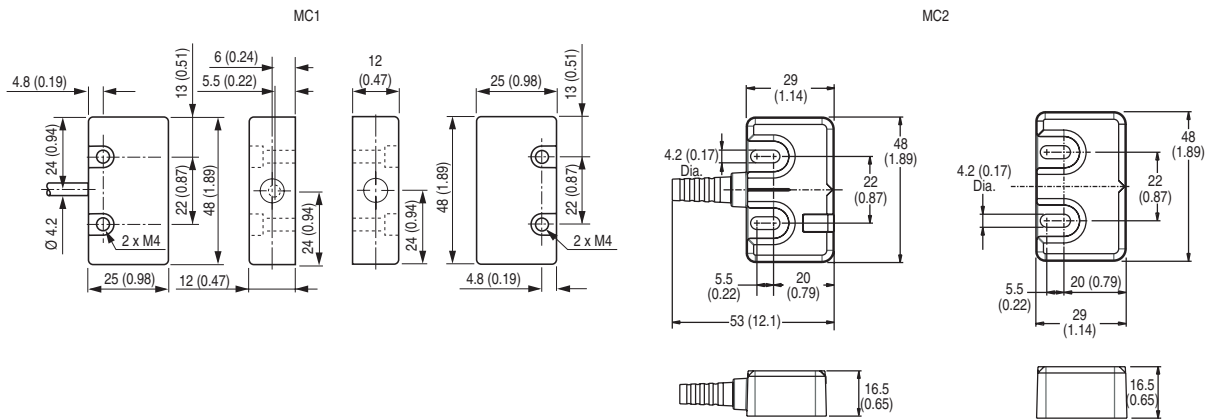
Accessories

| Description | Cat. No. |
|--------------------|-------------|
| MC1 Spare Actuator | 440N-A17233 |
| MC2 Spare Actuator | 440N-A32114 |

Safety Switches
Non-Contact Switches
 Magnetically Coded

Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



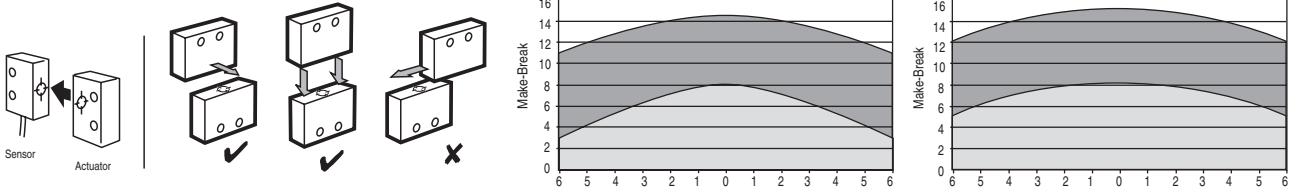
Typical Wiring Diagrams

| Description | | MC1 | MC2 |
|--|--------|----------|-----------------|
| | | 2 N.C. | 2 N.C. + 1 N.O. |
| 4-Pin Micro (M12) | | | — |
| 8-Pin Micro (M12) | — | | |
| Cordset 889D-F4AC-* or Cable Version | Brown | Safety A | — |
| | Blue | Safety B | — |
| | White | — | — |
| | Black | — | — |
| 8-Pin Cordset 889D-F8AB-* or Cable Version | Grey | — | Safety A |
| | Red | — | Safety A |
| | Pink | — | Safety B |
| | Yellow | — | Safety B |
| | White | — | Aux |
| | Brown | — | 24V DC + |
| | Blue | — | Gnd |
| Green | — | NA | |

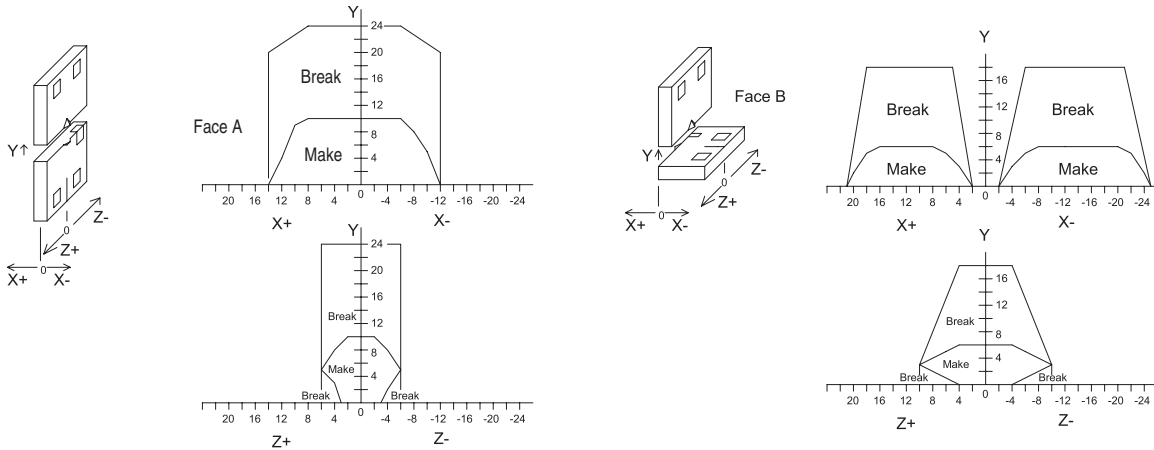
* Replace symbol with 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.

Sensing & Misalignment Curve

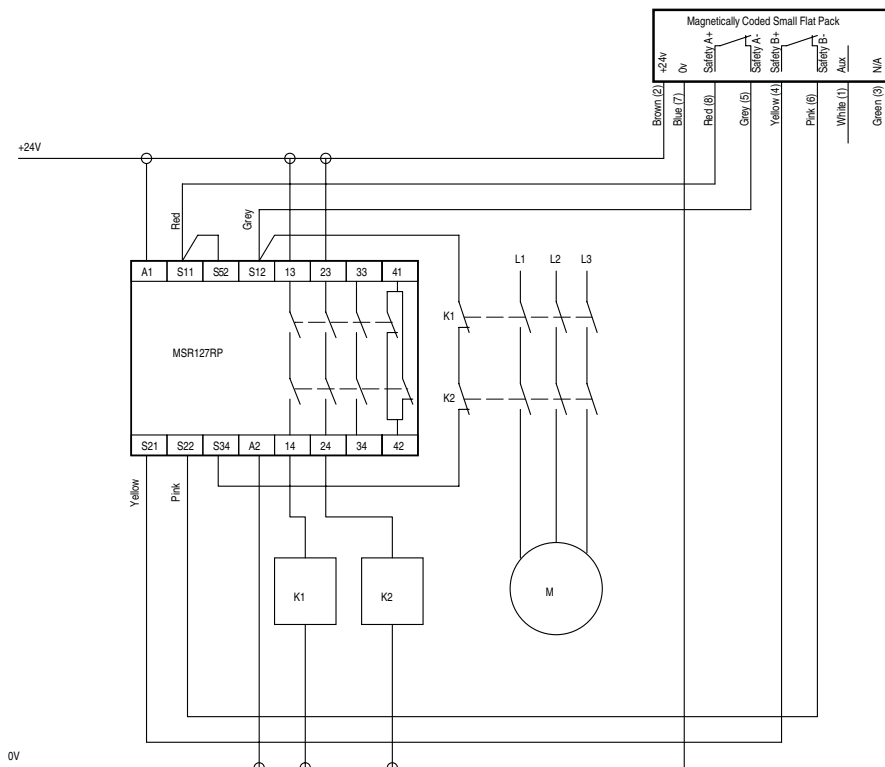
MC1



MC2



MC2 Application Wiring Example



3-Interlock
 Switches