

Non Contact RFID Locking Switch Type: MGL

SPECIAL FEATURES:

Heavy Duty or Medium holding force versions

Available in Stainless Steel 316 (with Stainless Steel Magnet), robust Plastic or Die-Cast Metal

Will operate with most Safety Relays to achieve up to PLe/Cat 4 to ISO13849-1

RFID Master Coded or Unique Coding



DESCRIPTION:

The MGL range of Non Contact RFID Coded switches has been developed in order to provide and maintain a high level of functional safety whilst providing a reliable magnetic door interlock.

Flexibility for holding force is provided by the provision of 2 different switch sizes - Heavy Duty (1100N (F1Max) Stainless Steel, 1500N (F1Max) Plastic and Die Cast) and Medium Duty (600N (F1Max) Stainless Steel, 1000N (F1Max) Plastic and Die Cast) to cover all applications.

Coding is achieved by using magnetic and RFID techniques and both principles need to be satisfied for the switch to operate safely.

The MGL range will connect to the majority of popular standard safety relays to achieve up to PLe/Category 4 to ISO13849-1.

Offered in Stainless Steel 316, high specification robust Plastic or Die-Cast Metal housings the MGL switch can be used in almost any environment including high pressure cleaning following contact with foreign particles.

The Stainless Steel 316 version has been designed with a Stainless Steel magnet and IP69K rating making it suitable for CIP and SIP processes.

RFID CODING OPTIONS:

The RFID coding is offered in two types and can be either coded by series or uniquely coded.

Type 1: Master Code - by series (any actuator will operate any switch) this is used when unique door activation is not required, but the benefit of RFID makes it virtually impossible to be overridden or by-passed by simple means.

Type 2: 32,000,000 Unique Codes - the switch is factory set and used when unique activation is required in areas where there are many interlocked doors and security of individual areas is required.

The MGL combines magnetic sensing and RFID technology to provide non contact operation and high anti-tamper coding. In addition an electromagnet is used to lock machine guards.

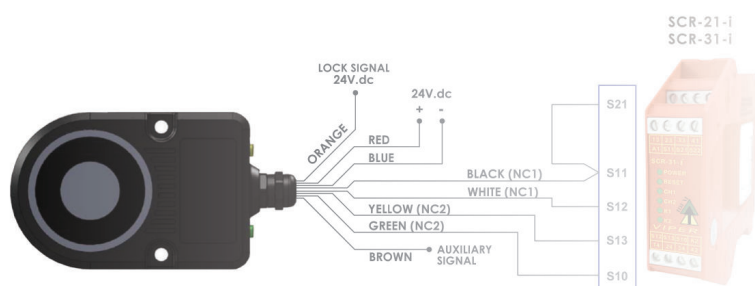
Only when the actuator is in the correct position can the lock be achieved and the safety outputs closed.

The switch provides two safe switching outputs for use with popular safety relays as well as a semi conductor auxiliary signal to indicate the door position.

There are 2 LEDs that offer 5 diagnostic functions to the user.

The switch is "Power to Lock" and therefore consideration must be given in the event of a power failure to machines where a run down time is present before the hazard is removed.

CONNECTION EXAMPLE:



FUNCTIONAL SPECIFICATIONS:

Heavy Duty: 1100N S/Steel, 1500N Plastic and Die Cast
Medium Duty: 600N S/Steel, 1000N Plastic and Die Cast
(All values quoted are F1Max.)

2NC Safety Outputs overload protected

1NO Auxiliary Output for indication of door open

No moving parts - high switch life and provides resistance to Shock and Vibration

Offered in: Stainless Steel 316 (with Stainless Steel Magnet), High Specification and robust Polyester housings, or Die Cast Metal.

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FEATURES:

Heavy Duty or Medium Duty holding forces available (comprising 6 models - 2 Stainless Steel, 2 High Specification Plastic and 2 Die-Cast Metal).

RFID provides a high degree of anti-tamper - virtually impossible to override.

Uniquely coded RFID or Series Coded RFID available - depending upon user's risk assessment for application.

The actuator (plastic or stainless steel) has been designed to be flexible and therefore has a degree of tolerance to misalignment.

Able to connect to most popular safety relays to achieve up to PLe and Cat.4 for ISO3849-1.

Connect up to 20 switches in series.

Ability to connect other switches and E-Stops in series.

Stainless Steel 316 model available for food processing applications (IP69K rating).

Unique triggering of solenoid latching mechanism to maintain close control of actuator position.

Choices of 8-core cable or M12 quick connect (QC).

Remanence magnetization holding technique acts as a light magnetic latch after unlocking.



Shown in
Guard Open
position.

Yellow LED
indicates
OPEN.

Shown in
Guard Closed
position.

Green LED
indicates
CLOSED.

LED OPERATION & SWITCH STATUS INDICATION:

The MGL switch uses 2 LEDs to indicate all the different possible switch states.

The LEDs are in a clearly visible location at either side of the cable exit point.

| SWITCH STATUS | GUARD | GREEN LED | YELLOW LED |
|-------------------------------|--------|-----------|------------|
| Locked | Closed | Steady | Off |
| Solenoid Power OFF (Unlocked) | Closed | Flashing | Off |
| Guard Open | Open | Off | Steady |
| Door Forced Open | Open | Off | Flashing |



SPECIFICATIONS:

Standards: ISO14119 EN60947-5-3 EN60204-1 ISO13849-1
EN62061 UL508

Safety Classification and Reliability Data:

Minimum switched current: 10V.dc 1mA
Dielectric Withstand: 250V.ac
Insulation Resistance: 100 Mohms
Switching Distance: Sao 1mm Close
Sar 10mm Open
Switching frequency: 1.0 Hz maximum
Approach speed: 200mm/m to 1000mm/s
Body material: MGL-*P = Plastic
MGL-*M = Die-Cast Metal
MGL-*SS = Stainless Steel 316
Temperature Range: -25C to +40C
Enclosure Protection: IP67
Cable Type: PVC 6 or 8 core 6mm OD
Mounting Bolts: 2 x M5 Tightening torque 1.0 Nm
Mounting Position: Any

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

Safety Integrity Level SIL3
PFH (1/h) 4.77E-10 Corresponds to 4.8% of SIL3
Proof Test Interval T₁ 20a

Characteristic Data according to EN ISO13849-1:

Performance Level e If both channels are used in combination with a SIL3/PLc control device
Category Cat4
MTTFd 1100a
Diagnostic Coverage DC 99% (high)

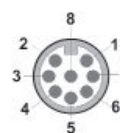
Number of operating days per year: d_{op} = 365d
Number of operating hours per day: h_{op} = 24h

B10d not mechanical parts implemented

| 8-CORE 2M, 5M, 10M CABLE | CONDUCTOR COLOURS | FUNCTION |
|--------------------------|-------------------|----------------------|
| ORANGE | Blue | 0Vdc |
| BROWN | Red | 24Vdc |
| YELLOW | Orange | Lock Applied (24Vdc) |
| GREEN | Black | Safety Output 1 |
| WHITE | White | Safety Output 1 |
| BLACK | Yellow | Safety Output 2 |
| -BLUE | Green | Safety Output 2 |
| +RED | Brown | Auxiliary Signal |



| FEMALE QC LEADS | LENGTH | SALES NUMBER |
|-----------------|------------|--------------|
| M12 8 Way | 5m (15ft) | 140101 |
| M12 8 Way | 10m (30ft) | 140102 |



Pin view from Switch
on flying lead 250mm (10")

| Quick Connect (QC) M12 8 Way Male | Switch Circuit |
|--------------------------------------|----------------------|
| 3 | 0Vdc |
| 2 | 24Vdc |
| 8 | Lock Applied (24Vdc) |
| 7 | Safety Output 1 |
| 1 | Safety Output 1 |
| 4 | Safety Output 2 |
| 6 | Safety Output 2 |
| 5 | Auxiliary Signal |

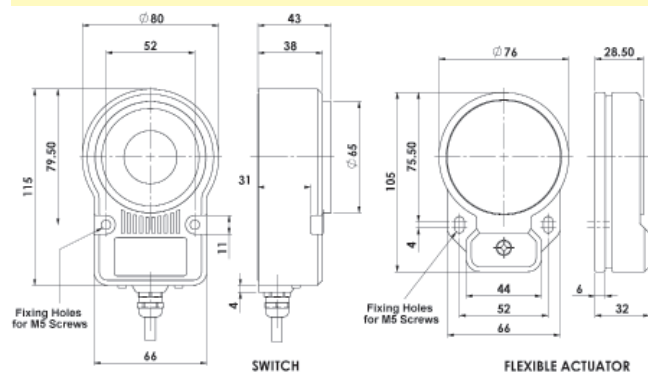
When the product is used deviant from these assumptions (different load, operating frequency, etc.) the values have to be adjusted accordingly.

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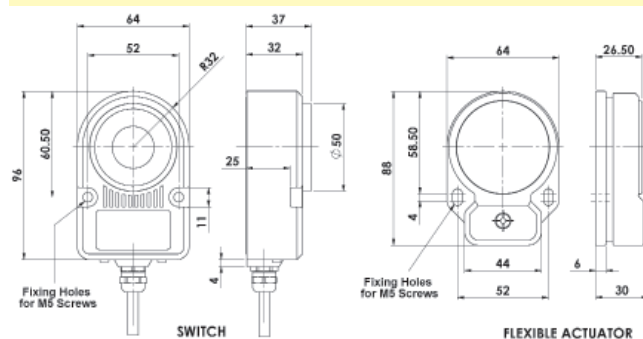
DIMENSIONS:



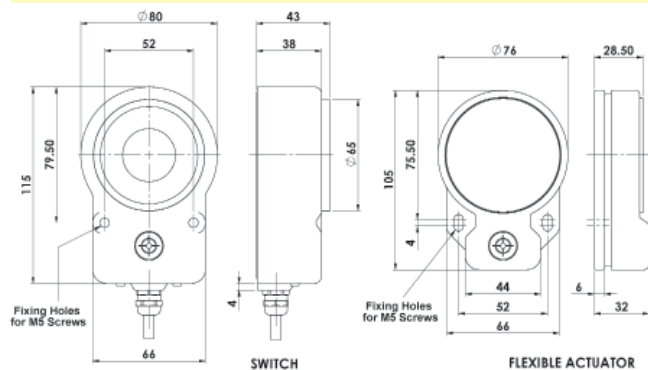
MGL-1P



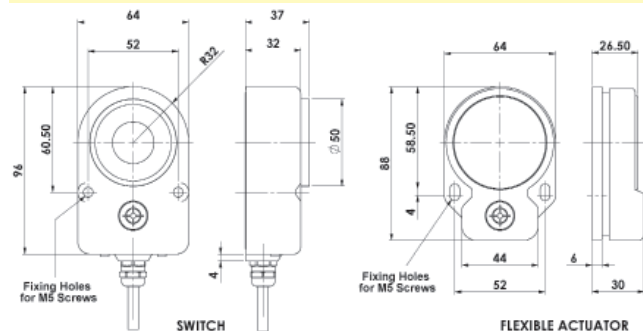
MGL-2P



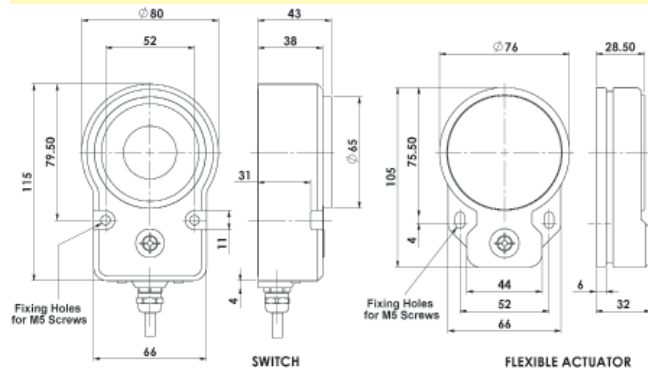
MGL-1SS



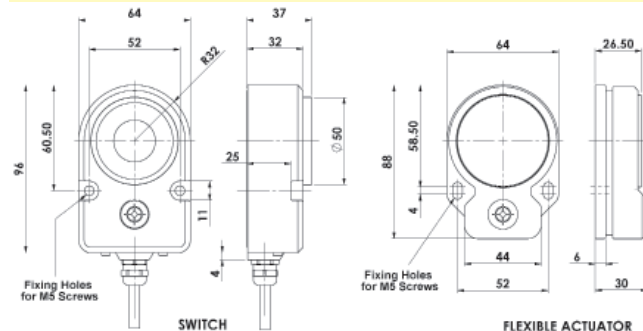
MGL-2SS



MGL-1M



MGL-2M



HOLDING FORCES:

STAINLESS STEEL VERSIONS:



DIE-CAST METAL VERSIONS:



PLASTIC VERSIONS:



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STAINLESS STEEL VERSIONS:

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 462001 | MGL-1SS-U | 5m |
| 462002 | MGL-1SS-U | 10m |
| 462003 | MGL-1SS-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 462004 | MGL-1SS-M | 5m |
| 462005 | MGL-1SS-M | 10m |
| 462006 | MGL-1SS-M | QC-M12 |
| 462102 | Replacement Actuator (Master Code) | |

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 460001 | MGL-2SS-U | 5m |
| 460002 | MGL-2SS-U | 10m |
| 460003 | MGL-2SS-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 460004 | MGL-2SS-M | 5m |
| 460005 | MGL-2SS-M | 10m |
| 460006 | MGL-2SS-M | QC-M12 |
| 460102 | Replacement Actuator (Master Code) | |

DIE-CAST METAL VERSIONS:

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 464001 | MGL-1M-U | 5m |
| 464002 | MGL-1M-U | 10m |
| 464003 | MGL-1M-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 464004 | MGL-1M-M | 5m |
| 464005 | MGL-1M-M | 10m |
| 464006 | MGL-1M-M | QC-M12 |
| 464102 | Replacement Actuator (Master Code) | |

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 465001 | MGL-2M-U | 5m |
| 465002 | MGL-2M-U | 10m |
| 465003 | MGL-2M-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 465004 | MGL-2M-M | 5m |
| 465005 | MGL-2M-M | 10m |
| 465006 | MGL-2M-M | QC-M12 |
| 465102 | Replacement Actuator (Master Code) | |

PLASTIC VERSIONS:

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 463001 | MGL-1P-U | 5m |
| 463002 | MGL-1P-U | 10m |
| 463003 | MGL-1P-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 463004 | MGL-1P-M | 5m |
| 463005 | MGL-1P-M | 10m |
| 463006 | MGL-1P-M | QC-M12 |
| 463102 | Replacement Actuator (Master Code) | |

| SALES NUMBER | UNIQUELY CODED (every switch - unique activation) | CABLE LENGTH |
|------------------------------------|--|--------------|
| 461001 | MGL-2P-U | 5m |
| 461002 | MGL-2P-U | 10m |
| 461003 | MGL-2P-U | QC-M12 |
| Replacement Actuator not available | | |



| SALES NUMBER | MASTER CODED (same code every switch) | CABLE LENGTH |
|--------------|--|--------------|
| 461004 | MGL-2P-M | 5m |
| 461005 | MGL-2P-M | 10m |
| 461006 | MGL-2P-M | QC-M12 |
| 461102 | Replacement Actuator (Master Code) | |

Ordering example: MGL-2P Uniquely Coded with 5m cable:
Order Part Number: 461001

Ordering example: MGL-2SS Master Coded with 5m cable:
Order Part Number: 460004

For all IDEM Switches the NC circuits are closed when the guard is closed and the Actuator present and power is applied to the solenoid.