amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

description:
SBI/SBS: the slide bar can be used with Fortress’ modular amGard range, incorporating an auto head, it can be used on hinged or sliding doors. The slide bar is particularly useful for applications using small radius, hinged doors. The slide bar is available in two variants: Internal Release (as standard) and a Spring Loaded option. Both are constructed from stainless steel castings and feature built-in lock-outs. Ideally designed for machines without a run down cycle, where quick and frequent access to equipment is required. The slide bar operates in conjunction with the AutoStop and AutoLok products.

operation - the slide bar is generally intended to be operated from outside the guarded area. When the machine is in operation the guard is closed and the slide bar is extended so that the tongue is in the Auto Head. To gain access slide the slide bar by pulling the knob away from the Auto Head until it is fully retracted. Padlocks may be fitted to the holes in the end of the slide bar to provide a lock-out facility. To restart the machine pull the knob and slide the bar back so the tongue re-enters the Auto Head.

internal release - the internal release slide bar can also be operated from inside the guarded area but must also only be used within an AutoStop, without additional safety or access key (SKA/AKA) modules. In an emergency, the internal lever can be moved away from the AutoStop as far as it will go. The mechanism prevents the operator from restarting the machine from inside the guard.

spring loaded - the spring loaded slide bar is loaded towards the Autohead. The knob holds the bar in the fully retracted position.
Data Sheet

Technical Specification

<table>
<thead>
<tr>
<th>Housing Materials</th>
<th>Stainless Steel to BS3146</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Operating Force (Spring Loaded)</td>
<td>194Nm</td>
</tr>
<tr>
<td>Maximum Approach Speed</td>
<td>20m/minute</td>
</tr>
</tbody>
</table>

Technical Specification

<table>
<thead>
<tr>
<th>Maximum Frequency of Operation</th>
<th>7,200/hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Temperature</td>
<td>-50°C to +40°C (Mean Over 24 Hours = +35°C)</td>
</tr>
</tbody>
</table>

www.fortressinterlocks.com
Data Sheet

AmLok AS-i

amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

**description:**

amlok AS-i is a heavy duty solenoid controlled, handle operated switch, designed for direct connection onto a ‘AS-i Safety at Work’ installation. Fitted with a standard M12 quick connect fitting, it has a heavy duty handle unit which allows for a high degree of misalignment and can rotate in 90° increments, the handle can also be turned through 360° in 45° increments. It features a key operated auxiliary release (in the event of a power failure) and LED status indicators. The product is suitable for both sliding and hinged door applications and is fitted with a shear pin to protect both machinery and personnel. It has a coded tamper resistant locking mechanism.

**operation** - when the machinery is in operation within the guarded area, the handle is trapped in the AmLok AS-i unit and cannot be removed. The access door to the guarded area is locked closed. A solenoid controlled mechanism prevents the handle from being turned and released. To open the door, the operator must first select stop on the machine control panel. Only when the machine has completed its run down cycle should the AmLok AS-i solenoid be energised, via the AS-i control with auxiliary supply. At this point, the ‘solenoid circuit healthy’ LED will extinguish on the unit indicating that the handle can be released. When the handle is removed, the ‘door circuit healthy’ LED will extinguish indicating that access has been granted.

**Options**

Safety Key Adaptor

Access Key Adaptor

Padlock Adaptor

www.fortressinterlocks.com
**Data Sheet**

**AmLok AS-i**

### Technical Specification

<table>
<thead>
<tr>
<th>Category</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Materials</td>
<td>Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder</td>
</tr>
<tr>
<td></td>
<td>Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red &amp; Black &amp; Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Am Handle</td>
<td>Operating Force 0.5Nm</td>
</tr>
<tr>
<td>Auto Head Retention</td>
<td>10KN</td>
</tr>
<tr>
<td>Forced Locked</td>
<td>Maximum Approach Speed 20m/minute</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000 Switching Cycles</td>
</tr>
<tr>
<td>Maximum frequency of operation</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-5°C to +40°C (Mean Over 24 Hours = +35°C)</td>
</tr>
<tr>
<td>Connector Type</td>
<td>M12 Male</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W</td>
</tr>
<tr>
<td>(Solenoid current at Nominal 24V DC)</td>
<td>(500mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
</tbody>
</table>

**www.fortressinterlocks.com**

---

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
**description:**

**amStop AS-i** is a heavy duty handle operated switch, designed for direct connection onto an ‘AS-i Safety at Work’ installation, it features a head that can rotate in 90° increments. The handle can be turned through 360° in 45° increments allowing for a high degree of misalignment. The AmStop AS-i features LED status indicators and is suitable for both sliding and hinged door applications. It has a coded tamper resistant locking mechanism and is fitted with a shear pin to protect both machinery and personnel. This product is ideally designed for machines without run down cycles and holding door/guard shut. Typical applications would include conveyor lines and packaging lines.

**operation** - when the machinery is in operation the handle is engaged and the power is on. If access is required, the door is simply opened releasing the handle from the unit, giving positively guided, forced disconnection of the safety switch contacts. This information is transmitted via the ‘AS-i Safety at Work’ system to the machines monitor(s). At this point the LED status indicators are extinguished. Although simple to operate AmStop AS-i provides twin protection for operator and machinery.

**options**

- Safety Key Adaptor
- Access Key Adaptor
- Padlock Adaptor
- Cast slide bar spring loaded
- Cast slide bar internal release
- Lockout device
## Technical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Materials</td>
<td>Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder</td>
</tr>
<tr>
<td></td>
<td>Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red &amp; Black &amp; Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Am Handle</td>
<td>Operating Force 0.5Nm</td>
</tr>
<tr>
<td>Auto Head Retention</td>
<td>10KN</td>
</tr>
<tr>
<td>Forced Locked</td>
<td>20m/minute</td>
</tr>
<tr>
<td>Maximum Approach Speed</td>
<td>&gt;1,000,000 Switching Cycles</td>
</tr>
<tr>
<td>Maximum frequency of operation</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-5°C to +40°C</td>
</tr>
<tr>
<td>(Mean Over 24 Hours =</td>
<td>+35°C</td>
</tr>
<tr>
<td>Connector Type</td>
<td>M12 Male</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W</td>
</tr>
<tr>
<td>(Solenoid current at Nominal 24V DC)</td>
<td>(500mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
</tbody>
</table>

## Diagrams

![Diagram 1](image1.png)

![Diagram 2](image2.png)
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

description:
atlok AS-i is a heavy duty solenoid controlled, tongue switch, designed for direct connection onto an ‘AS-i Safety at Work’ installation. Fitted with a standard M12 quick connect fitting. The heavy duty tongue and head can rotate in 90° increments, and allows for a +/- 12 mm misalignment. It features a key operated auxiliary release (in the event of a power failure) and LED status indicators.

Suitable for both sliding and hinged doors, this product is ideally designed for machines with run down cycles where quick and frequent access to equipment is required.

operation - when the machinery is in operation the tongue is trapped in the AtLok AS-i unit with the access door securely closed. An integral solenoid prevents the tongue from being released. To open the guard door an operator must first select stop on the machine control panel. Only when the machine has completed its run down cycle should the solenoid be energised, via the AS-i control with AUX supply. At this point, the ‘solenoid circuit healthy’ LED will extinguish on the unit indicating that the tongue actuator can be released. When the tongue is removed, the ‘door circuit healthy’ LED will be extinguished.

Options
- Safety Key Adaptor
- Padlock Adaptor
- Internal Release
- Lockout Device

www.fortressinterlocks.com
## Data Sheet

### AtLok AS-i

#### Technical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Materials</td>
<td>Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red &amp; Black &amp; Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Am Handle</td>
<td>0.5Nm</td>
</tr>
<tr>
<td>Auto Head Retention</td>
<td>10KN</td>
</tr>
<tr>
<td>Forced Locked</td>
<td></td>
</tr>
<tr>
<td>Minimum door radius</td>
<td>900mm</td>
</tr>
<tr>
<td>Maximum Approach Speed</td>
<td>20m/minute</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000</td>
</tr>
</tbody>
</table>

#### Technical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum frequency of operation</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-5°C to 40°C (Mean Over 24 Hours = +35°C)</td>
</tr>
<tr>
<td>Connector Type</td>
<td>M12 Male</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W</td>
</tr>
<tr>
<td>(Solenoid current at Nominal 24V DC)</td>
<td>(500mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

www.fortressinterlocks.com

---

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

**description:**

atStop AS-i is a heavy duty tongue operated switch, designed for direct connection onto an ‘AS-i Safety at Work’ installation. It features an M12 quick connect fitting with a tongue and head arrangement where the tongue allows for a +/- 12 mm misalignment. The tongue and head unit can rotate in 90° increments. It features LED status indicators and is suitable for both sliding and hinged door applications.

The product is ideally designed for machines without run down cycles, where quick and frequent access to equipment is required. Typical applications include Process Lines and Packaging Lines.

**operation** - when the machinery is in operation the tongue is engaged and the power is on. If access is required, the door is simply opened releasing the tongue from the unit, giving positively guided, forced disconnection of the safety switch contacts. This information is transmitted via the ‘AS-i Safety at Work’ system to the machines monitor(s). At this point the door circuits healthy LED status indicators are extinguished. Although simple to operate, AtStop AS-i provides twin protection for operator and machinery.

**Options**

- Safety Key Adaptor
- Internal Release
- Padlock Adaptor
- Cast slide bar spring loaded
- Cast slide bar internal release
- Lockout Device
## Technical Specification

<table>
<thead>
<tr>
<th>Housing Materials</th>
<th>Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red &amp; Black &amp; Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Am Handle</td>
<td></td>
</tr>
<tr>
<td>Operating Force</td>
<td>0.5Nm</td>
</tr>
<tr>
<td>Auto Head Retention</td>
<td>10KN</td>
</tr>
<tr>
<td>Forced Locked</td>
<td></td>
</tr>
<tr>
<td>Minimum door radius</td>
<td>900mm</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000</td>
</tr>
<tr>
<td>Maximum Approach Speed</td>
<td>20m/minute</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td></td>
</tr>
</tbody>
</table>

## Technical Specification

<table>
<thead>
<tr>
<th>Maximum frequency of operation</th>
<th>7,200/hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-5°C to 40°C (Mean Over 24 Hours = +35°C)</td>
</tr>
<tr>
<td>Connector Type</td>
<td>M12 Male</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W</td>
</tr>
<tr>
<td>(Solenoid current at Nominal 24V DC)</td>
<td>(500mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
</tbody>
</table>

www.fortressinterlocks.com
description:
Stop XP/TX products are heavy duty explosion protection safety gate switches designed to provide versatile solution to controlling access to machinery and process lines operating in potentially explosive environments. Suitable for use in zone 1 and 2 environments found in the chemical and petrochemical paint, pharmaceutical, powders and mining industries.

options:
- UL/CSA Certified Product
  - AtStopXP
  - AmStopXP
- ATEX Certified Product
  - AtStopTX
  - AmStopTX

www.fortressinterlocks.com
## Technical Data

### Stop XP / TX

#### Features & Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification</td>
<td>UL/CSA, ATEX</td>
</tr>
<tr>
<td>Switch</td>
<td>Dual channel force break safety switch</td>
</tr>
<tr>
<td></td>
<td>3N/C 1 N/O</td>
</tr>
<tr>
<td>Misalignment</td>
<td>Am - +/- 3mm</td>
</tr>
<tr>
<td></td>
<td>At - +/- 12mm</td>
</tr>
<tr>
<td>Heads</td>
<td>Am &amp; At 360° at 90° increments</td>
</tr>
<tr>
<td>Door</td>
<td>Suitable for sliding or hinged doors.</td>
</tr>
<tr>
<td>Actuators</td>
<td>Am - Handle</td>
</tr>
<tr>
<td></td>
<td>At - Tongue Actuator</td>
</tr>
<tr>
<td>Sequence</td>
<td>Door open control power isolated</td>
</tr>
<tr>
<td>Safety Key Modules</td>
<td>Available</td>
</tr>
</tbody>
</table>

#### Technical Specification

**Certification:**
- XP - UL (#E61730) CSA
- TX – IP67
- XP- NEMA 1, 3, 4, 6, 7, 9 and 13
- AC15 A300, 240V, 720 VA
- DC13 Q300, 240V, 69 VA
- Stainless Steel, Brass, Aluminium & Zinc Alloy.
- XP – 3/4” – 14 NPT
- TX – M20
- Positive Break (N/C Contacts)
- 3 N/C, 1 N/O
- 5mm
- -12 to 85ú C (10 to 185ú F)

### Diagrams

1. Diagram 1
2. Diagram 2

---

www.fortressinterlocks.com

---

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

description:

adaptors: provide users with the ability to have safe access to applications with the use of a key. Dependant upon your requirements we can supply either a Safety Key Adaptor or an Access Key Adaptor.

safety key adaptor - ensures that the machine / process cannot be restarted without returning the keys, preventing personnel being accidentally locked in a guarded area.

access key adaptor - is ideal for authorised access only, or for a linked access to other machinery, ensuring a specific sequence of operations. It features a safe and easy method of requesting a machine to stop.

Both adaptors provide a unique link to the mGard range and can be stacked or combined with other adaptors.

Options

Other Fortress Adaptor Products

Lock-Out Adaptor
Lock-In Lock-Out Adaptor

www.fortressinterlocks.com
operation:

**safety key adaptor** - when the machine is in operation both the tongue/handle and the safety key are trapped. When configured with an AutoLok or AmLok product the integral solenoid prevents the safety key from being removed until the machine has completed its run down cycle. On the AutoLok or AmLok modules a yellow LED will illuminate when the solenoid has been energised and the key can be removed. When the Safety Key is removed a red LED will illuminate on the interlock indicating that the guard can be opened. The operator can then take the Safety Key into the guarded area preventing inadvertent restart of the machine. The Safety Key cannot be replaced until the guard is closed and the key/tongue is relocated in the interlock.

**access key adaptor** - the guard is locked closed until the Access key is inserted, only then can the guard be opened or the machine requested to stop - avoiding unauthorised personnel from stopping the machine.

---

Key Adaptor

---

www.fortressinterlocks.com
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

description:
IRA: provides an internal release function in Safety and Access Key Adaptor installations when used with the Auto Head. The IRA is also compatible with Fortress STOP, if switching of safety circuits is required. Alternatively it can be used with a FOOT if a purely mechanical installation is desired. The internal release adaptor is used to control access to enclosed areas until a safe condition has been achieved. However if someone gets trapped inside a guarded area the IRA can be operated to allow the release of the door.

operation - should an operator become locked inside the guarded area, the internal release button on rear of the unit can be pressed. This releases the tongue from the head, allowing the operator to leave the guarded area. If a STOP unit is being used, the IRA will also break the safety circuits. Following IRA operation, the unit will need to be reset.

Options
With or Without Stop body for breaking safety circuits
Stainless Steel spring loaded dustcover
Colour coding available
Features

- Standard guard thickness 3" maximum
- Designed for RIA 15.06-1999 installations
- Provides IR function for SKA/AKA applications

Technical Specification

- Head: Die-cast zinc body painted black with stainless steel front end
- Tongue: All stainless steel
- Minimum door radius: 900mm
- Internals: All stainless steel contact components
- Lock Mechanism: CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- Key: All Stainless Steel
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

description:

adaptors: fortress padlockable adaptors provide customers with an additional safety feature. Dependent upon your requirements we can supply either a Lock-Out or a Lock-In, Lock-Out Adaptor.

lock-out adaptor - provides a link with other lockout-tagout safety procedures, providing padlocking only in the OFF position. Up to five padlocks with 7.5mm hasps may be used.

lock-in, lock-out adaptor - provides a link with other lockout-tagout safety procedures, there are two padlock positions for use as a voluntary lockout facility. One padlock with up to 8mm diameter hasp may be used.

Both feature quick and easy access, allowing for enhanced supervisor security. They are robust, heavy duty adaptors suitable for hard-wearing applications.

modular arrangement - available as a modular assembly more than one Safety/Access Key, Lock-Out or Lock-In Lock-Out Adaptor may be fitted to a single interlock in a vertical stack.

Options

Other Fortress Adaptor Products

Access Key Adaptor
Safety Key Adaptor
**amGard** safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry, **amGard** is suitable for category 4 applications.

**description:**

**adaptors:** provide users with the ability to have safe access to applications with the use of a key. Dependant upon your requirements we can supply either a Safety Key Adaptor or an Access Key Adaptor.

**safety key adaptor** - ensures that the machine / process cannot be restarted without returning the keys, preventing personnel being accidentally locked in a guarded area.

**access key adaptor** - is ideal for authorised access only, or for a linked access to other machinery, ensuring a specific sequence of operations. It features a safe and easy method of requesting a machine to stop.

Both adaptors provide a unique link to the **mGard** range and can be stacked or combined with other adaptors.

**Options**

Other Fortress Adaptor Products

- Lock-Out Adaptor
- Lock-In Lock-Out Adaptor

www.fortressinterlocks.com
data sheet  key adaptors

operation:
safety key adaptor - when the machine is in operation both the tongue/handle and the safety key are trapped. When configured with an AutoLok or AmLok product the integral solenoid prevents the safety key from being removed until the machine has completed its run down cycle. On the AutoLok or AmLok modules a yellow LED will illuminate when the solenoid has been energised and the key can be removed. When the Safety Key is removed a red LED will illuminate on the interlock indicating that the guard can be opened. The operator can then take the Safety Key into the guarded area preventing inadvertent restart of the machine. The Safety Key cannot be replaced until the guard is closed and the key/tongue is relocated in the interlock.

access key adaptor - the guard is locked closed until the Access key is inserted, only then can the guard be opened or the machine requested to stop - avoiding unauthorised personnel from stopping the machine.

Key Adaptor

www.fortressinterlocks.com
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

A robust radial disc tumbler lock, the building block of the Fortress range, offering in excess of 200,000 non-masterable combinations. A spring loaded stainless steel dustcover is available as an optional extra.

Combinations are determined by customer defined coding details supplied at the time of ordering, giving full control over the integrity of the interlock system.

A limited number of masterable locks are available to suit certain applications.

**operation** - the key is inserted and turned, turning the spindle projecting from the basic lock. (With mounting bracketry the spindle can operate switchgear etc.). The key is freed in the 12 o’clock position. Standard movement is 90 degrees clockwise and 45 and 65 degrees options are available on request.

**Options**

- Right hand or Left hand
- Optional spindle dimensions
- Colour coding of locks and seals
- MLS - Full stainless steel lock version
- Stainless Steel Dustcover
- CLS - Full stainless steel lock version
- ML - Master series lock version
- Low profile key
- Keys are manufactured in Full stainless steel and are ordered seperately
Data Sheet  Cylinder Lock (CL)

Features

Ease of operation
1,000,000 operations tested
All contact surfaces made of stainless steel
Over 200,000 lock combinations
Suitable for high frequency applications
Heavy Duty
High Integrity
Standard key cannot be mastered
Wide temperature range - 40°C + 150°C
Master series available

Construction

Lock construction:
Zinc alloy with a durable satin-chrome finish to the lock casing. The internal lock components are made from stainless steel. Standard spindle dimensions are 9.5mm (3/8") square x 22mm (7/8") long. Locks are 'handed', with either a left hand or right hand mounting bias.

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**

a robust radial disc tumbler lock, the building block of the Fortress range, offering in excess of 200,000 non-masterable combinations. A spring loaded stainless steel dustcover is available as standard.

Combinations are determined by customer defined coding details supplied at the time of ordering, giving full control over the integrity of the interlock system.

A limited number of masterable locks are available to suit certain applications.

**operation** - the key is inserted and turned, turning the spindle projecting from the basic lock. (With mounting bracketry the spindle can operate switchgear etc.). The key is freed in the 12 o’clock position and 6 o’clock position. Spindle movement is 90° clockwise.

**application** - as part of an interlock system the basic lock directly or indirectly isolates the energy sources. CLS is ideally suited to high frequency applications.

**Options**

- Right hand, Left hand or earless rear case
- Optional spindle dimensions
- Colour coding
- MLS - Full stainless steel lock version of ML
- ML - Master series lock version
- Low Profile key

www.fortressinterlocks.com
Features
Ease of operation
1,000,000 operations tested
Over 200,000 lock combinations
Suitable for high frequency applications
Heavy Duty
High Integrity
Standard key cannot be mastered
Wide temperature range - 40°C + 150°C
Master series available

Construction
Lock construction: Stainless steel with a durable electro-polish finish to lock casing. The internal lock components are made from stainless steel. Standard spindle dimensions are 9.5mm (3/8”) square x 22mm (7/8”) long. Locks are ‘handed’, with either a left hand or right hand mounting bias.

www.fortressinterlocks.com
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

A robust radial disc tumbler lock, the building block of the Fortress range, offering in excess of 200,000 masterable combinations in up to 2,000 sets. A spring loaded stainless steel dustcover is available as an optional extra. Combinations are determined by customer defined coding details supplied at the time of ordering, giving full control over the integrity of the interlock system.

**application** - as part of an interlock system the lock directly or indirectly isolates energy sources

**operation** - the key is inserted and turned, turning the spindle projecting from the basic lock. (With mounting bracketry the spindle can operate switchgear etc.). The key is freed in the 12 o’clock position. Standard movement is 90 degrees clockwise and 45 and 60 degrees options are available on request.

**Options**

- Stainless Steel Dustcover
- Optional spindle dimensions
- MLS - Full stainless steel lock version of ML
- CLS - Full stainless steel lock version
- Right Hand or Left Hand
- Colour Coding of locks and seals
- CL - Cylinder Lock mechanism
- Low Profile key

www.fortressinterlocks.com
Data Sheet

Master Lock (ML)

**Features**
- Ease of operation
- All contact surfaces made of stainless steel
- Over 200,000 lock combinations
- Suitable for high frequency applications
- Heavy Duty
- High Integrity
- Compatible with the CL Lock, mGard and amGard ranges
- Multi-level masterable options available
- Wide temperature range -40°C + 150°C

**Construction**
- Lock construction - Zinc alloy with a durable satin-chrome finish to lock casing. The internal lock components are made from stainless steel. Standard spindle dimensions are 9.5mm (3/8") square x 22mm (7/8") long. Locks are 'handed' with either a left hand or right hand mounting bias

---

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:
a robust radial disc tumbler lock, the building block of the Fortress range, offering in excess of 200,000 masterable combinations in up to 2,000 sets. A spring loaded stainless steel dustcover is a standard feature with the full stainless steel product. Combinations are determined by customer defined coding details supplied at the time of ordering, giving full control over the integrity of the interlock system.

application - as part of an interlock system the lock directly or indirectly isolates energy sources

operation - the key is inserted and turned, turning the spindle projecting from the basic lock. (With mounting bracketry the spindle can operate switchgear etc.). The key is inserted in the 12 o’clock and 6 o’clock positions. Spindle movement is 90°

Options

- Right Hand or Left Hand
- Optional spindle dimensions
- Low Profile key
- Colour Coding of locks and seals
- CL - Cylinder Lock mechanism

www.fortressinterlocks.com
Master Lock (MLS)
Stainless Steel

Features
- Ease of operation
- Over 200,000 lock combinations
- Suitable for high frequency applications
- Heavy Duty
- High Integrity
- Compatible with the CL Lock, mGard and amGard ranges
- Multi-level masterable options available
- Wide temperature range -40°C + 150°C

Construction
- Lock construction: Stainless steel with an electro-polished finish to the lock casing. The internal lock components are made from stainless steel.
- Standard spindle dimensions are 9.5mm (3/8”) square x 22mm (7/8”) long. Locks are either left or right ‘handed’.

---

www.fortressinterlocks.com
**Data Sheet**

**Option Pod**

**amGard** safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry **amGard** is suitable for category 4 applications.

**description:**

**option pod:** provides the following system additions; request to stop/start at the guard, a link with our standard trapped key range, additional visibility of the lock’s current status and an emergency stop at the guard.

**application:**

The option pod can be fitted to:-

**keyswitch:** the Keyswitch consists of a 2NO/2NC contact arrangement which is wired into the machine circuits. Removal of the key selects a machine stop at the end of a run down cycle. When the solenoid had been energised within the AutoLok or AmLok access can be gained. The operator takes the safety key into the hazardous area preventing inadvertent restart of the machinery.

**pushbutton:** the pod can contain either one or two pushbuttons used for example, to select machine stop/start or emergency stop. The pushbutton selected provides signals which interface with the machine control.

**indicator lamp:** the pod can contain either one or two indicator lamps, which may be used to enhance the visibility of the status indicators.

Standard colours are red and yellow

**www.fortressinterlocks.com**
**AmGard** safety gate switch solutions consist of a range of ‘Control interlocks’. The control interlocks are split into gate switches (Stops) and solenoid interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry **amGard** is suitable for category 4 applications.

**description:**

**amlok** - has a heavy duty handle unit where the handle allows for a high degree of misalignment and can rotate in 90° increments. The handle can also be turned through 360° in 45° increments. It features a key operated auxiliary release, in the event of a power failure. Suitable for both sliding and hinged door applications the amLok is fitted with a shear pin to protect both machinery and personnel.

**operation** - when the machinery is in operation the handle is trapped in the AmLok unit. The access door is locked closed. A solenoid controlled mechanism prevents the handle from being released. To open the guard door an operator must first select stop on the machine control panel. Only when the machine has completed its run down cycle will the solenoid be energised. At this point a yellow light on the unit indicates that the tongue actuator can be released. When removed, a red light is illuminates indicating that access has been granted.

**options:**

- Option Pod Lamps
- Option Pod Push Button
- Option Pod Key Switch
- Override Key Switch
- Access Key Adaptor
- Safety Key Adaptor
- Padlock adaptors

www.fortressinterlocks.com
### Technical Data

#### Technical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Materials</td>
<td>Zinc Alloy to BSEN12844, Stainless Steel to BS3146</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red, Black and Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Operating Force</td>
<td>0.5Nm</td>
</tr>
<tr>
<td>Retention Force Locked</td>
<td>2500N</td>
</tr>
<tr>
<td>Speed</td>
<td>20m/minutes</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000 Switching Cycles</td>
</tr>
<tr>
<td>Maximum Frequency of Ops</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-5°C to +40°C (mean over 24 hrs = +35°C)</td>
</tr>
<tr>
<td>Maximum Wire Cross-Section to fit connector</td>
<td>2.50mm²</td>
</tr>
<tr>
<td>Connector Type</td>
<td>Spring Activated Vibration Proof Block</td>
</tr>
<tr>
<td>Switch Conformance</td>
<td>DIN VDE 0660 Part 206 &amp; IEC</td>
</tr>
<tr>
<td>Switching Contact Element</td>
<td>4NC and 2NO</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Switch Control</td>
<td>3A</td>
</tr>
<tr>
<td>Switching Voltage</td>
<td>230V AC Max</td>
</tr>
<tr>
<td>Isolating Distance</td>
<td>2 x 2mm per Switch Element</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Utilization Category</td>
<td>AC 15 or DC 13</td>
</tr>
<tr>
<td>Control Voltage</td>
<td>24V AC/DC, 48V AC/DC, 110V AC, 220 AC or 230 AC</td>
</tr>
<tr>
<td>Insulating Resistance</td>
<td>20M Ohm</td>
</tr>
<tr>
<td>Insulating Voltage</td>
<td>2500V AC</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W (Solenoid current at Nominal 24V DC = 500mA. Quasient current = 350mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
<tr>
<td>Solenoid Voltage</td>
<td>24V AC/DC, 48V AC/DC, 110V AC, 220V AC or 230 AC</td>
</tr>
<tr>
<td>Solenoid Voltage Tolerance</td>
<td>90% to 110% of nominal</td>
</tr>
<tr>
<td>Housing Materials</td>
<td>Zinc Alloy to BSEN12844, Stainless Steel to BS3146</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red, Black and Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Operating Force</td>
<td>0.5Nm</td>
</tr>
<tr>
<td>Retention Force Locked</td>
<td>2500N</td>
</tr>
<tr>
<td>Speed</td>
<td>20m/minutes</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000 Switching Cycles</td>
</tr>
<tr>
<td>Maximum Frequency of Ops</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-5°C to +40°C (mean over 24 hrs = +35°C)</td>
</tr>
<tr>
<td>Maximum Wire Cross-Section to fit connector</td>
<td>2.50mm²</td>
</tr>
<tr>
<td>Connector Type</td>
<td>Spring Activated Vibration Proof Block</td>
</tr>
<tr>
<td>Switch Conformance</td>
<td>DIN VDE 0660 Part 206 &amp; IEC</td>
</tr>
<tr>
<td>Switching Contact Element</td>
<td>4NC and 2NO</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Switch Control</td>
<td>3A</td>
</tr>
<tr>
<td>Switching Voltage</td>
<td>230V AC Max</td>
</tr>
<tr>
<td>Isolating Distance</td>
<td>2 x 2mm per Switch Element</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Utilization Category</td>
<td>AC 15 or DC 13</td>
</tr>
<tr>
<td>Control Voltage</td>
<td>24V AC/DC, 48V AC/DC, 110V AC, 220 AC or 230 AC</td>
</tr>
<tr>
<td>Insulating Resistance</td>
<td>20M Ohm</td>
</tr>
<tr>
<td>Insulating Voltage</td>
<td>2500V AC</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W (Solenoid current at Nominal 24V DC = 500mA. Quasient current = 350mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
<tr>
<td>Solenoid Voltage</td>
<td>24V AC/DC, 48V AC/DC, 110V AC, 220V AC or 230 AC</td>
</tr>
<tr>
<td>Solenoid Voltage Tolerance</td>
<td>90% to 110% of nominal</td>
</tr>
</tbody>
</table>

www.fortressinterlocks.com
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control Interlocks are split into gate switches (Stops) and solenoid Interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

**description:**

amstop - is a heavy duty unit with a head that can rotate in 90° increments and a handle that can be turned through 360° in 45° increments, allowing for a high degree of misalignment. Suitable for both sliding and hinged door applications, the amstop has a coded tamperproof locking mechanism and is fitted with a shear pin to protect both machinery and personnel.

operation - when the machinery is in operation the handle is engaged and the power is on. If access is required, the door is simply opened releasing the handle from the unit, giving positively guided, forced disconnection of the safety switch contacts. At this point a red LED status indicator is illuminated.

**options:**

- Safety key adaptor
- Access key adaptor
- Padlock adaptors
- Lockout Device

www.fortressinterlocks.com
Technical Data

AmStop

### Technical Specification

**Housing Materials**
- Zinc Alloy to BS1004A
- Stainless Steel to BS3146

**Paint Finishes**
- Gloss Polyester Powder Coat on Passivated Base Material

**Colour**
- Red and Stainless Steel

**Ingress Protection**
- IP67

**Operating Force**
- 5Nm

**Retention Force Locked**
- 2500N

**Maximum Approach Speed**
- 20m/minute

**Mechanical Life**
- >1,000,000 Switching Cycles

**Speed**
- 20m/minute

**Mechanical Life**
- 2,000,000 Switching Cycles

**Maximum Frequency of Ops**
- 7,200 per Hour

**Ambient Temperature**
- -5°C to +40°C

**Maximum Wire Cross-Section to fit connector**
- 2.50mm²

**Connector Type**
- Spring Activated Vibration Proof Block

**Switches Conformance**
- DIN VDE 0660 Part 206 & IEC 947-5-1

**Technical Specification**

**Switching Contact Element**
- 2NC and 1NO

**Switching Principal**
- Positive Break

**Switch Control**
- 3A

**Switching Voltage**
- 230V AC Max

**Isolating Distance**
- 2 x 2mm Per Switch Element

**Element Contact Material**
- 90% Silver and 10% Nickel

**Utilization Category**
- AC 15 or DC 13

**Control Voltages**
- 24V AC/DC, 48V AC/DC, 110V AC, 220V AC or 230V AC

**Insulating Resistance**
- 20M Ohm

### Features & Benefits

- Non-Solenoid Controlled
- LED Status indicators for greater control
- Dual channel safety circuitry
- Suitable for category 4 applications

---

www.fortressinterlocks.com
description:
autolok - has a heavy duty tongue and head where the tongue allows a ± 12mm misalignment. The tongue and head unit can rotate in 90° increments. It is a key operated auxiliary release in the event of a power failure. The product is ideally designed for machines without run down cycles where quick and frequent access to equipment is required, via either hinged or sliding doors.

operation - when the machinery is in operation the tongue is trapped in the AutoLok unit with the access door securely closed. An integral solenoid prevents the tongue from being released. To open the guard door an operator must first select stop on the machine control panel. Only when the machine has completed its run down cycle will the solenoid be energised. At this point a yellow light on the unit indicates that the tongue actuator can be released. When removed, a red light is illuminated.

options:
- Option Pod Lamps
- Option Pod Push Button
- Option Pod Key Switch
- Override Key Switch
- AutoLokP
- Safety Key Adaptor
- Padlock adaptors
- Lockout Device

amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control Interlocks are split into gate switches (Stops) and solenoid Interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.
### Technical Specification

<table>
<thead>
<tr>
<th>Housing Materials</th>
<th>Zinc Alloy to BSEN12844, Stainless Steel to BS3146</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint Finish</td>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
</tr>
<tr>
<td>Colour</td>
<td>Red, Black and Stainless Steel</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP67 (DIN 400050)</td>
</tr>
<tr>
<td>Operating Force</td>
<td>0.5N</td>
</tr>
<tr>
<td>Retention Force Locked</td>
<td>2500N</td>
</tr>
<tr>
<td>Maximum Approach Speed</td>
<td>20m/minutes</td>
</tr>
<tr>
<td>Minimum door radius</td>
<td>900mm</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>&gt;1,000,000 Switching Cycles</td>
</tr>
<tr>
<td>Maximum Frequency of Ops</td>
<td>7,200/hour</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-5°C to + 40°C (mean over 24 hrs = +35°C)</td>
</tr>
<tr>
<td>Maximum Wire Cross-Section to fit connector</td>
<td>2.50mm²</td>
</tr>
<tr>
<td>Connector Type</td>
<td>Spring Activated Vibration Proof Block</td>
</tr>
<tr>
<td>Switch Conformance</td>
<td>DIN VDE 0660 Part 206 &amp; IEC</td>
</tr>
<tr>
<td>Switching Contact Element</td>
<td>4NC and 2NO</td>
</tr>
<tr>
<td>Switching Principal</td>
<td>Positive Break</td>
</tr>
<tr>
<td>Switch Control</td>
<td>3A</td>
</tr>
<tr>
<td>Switching Voltage</td>
<td>230V AC Max</td>
</tr>
<tr>
<td>Isolating Distance</td>
<td>2 x 2mm per Switch Element</td>
</tr>
<tr>
<td>Contact Material</td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td>Utilization Category</td>
<td>AC 15 or DC 13</td>
</tr>
<tr>
<td>Control Voltage</td>
<td>24V AC/DC, 48V AC/DC, 110V AC, 220V AC or 230V AC</td>
</tr>
<tr>
<td>Insulating Resistance</td>
<td>20M Ohm</td>
</tr>
<tr>
<td>Insulating Voltage</td>
<td>2M.500V AC</td>
</tr>
<tr>
<td>Solenoid Power Rating</td>
<td>12W (Solenoid current at Nominal 24V DC = 500mA. Quasient current = 350mA)</td>
</tr>
<tr>
<td>Solenoid Rating (Duty Cycle)</td>
<td>100%</td>
</tr>
<tr>
<td>Solenoid Voltage</td>
<td>24V AC, 48V AC/DC, 110V AC, 220V AC or 230V AC</td>
</tr>
<tr>
<td>Solenoid Voltage Tolerance</td>
<td>90% to 110% of nominal</td>
</tr>
</tbody>
</table>

![wiring diagram](https://example.com/wiring_diagram.png)
amGard safety gate switch solutions consist of a range of ‘Control interlocks’. The control Interlocks are split into gate switches (Stops) and solenoid Interlocks (Loks). Combining tamper proof locking mechanisms and dual channel safety circuitry amGard is suitable for category 4 applications.

**description:**

**autostop** - has a heavy duty tongue and head where the tongue allows a ± 12mm misalignment. The tongue and head unit can rotate in 90° increments. The product is ideally designed for machines without run down cycles where quick and frequent access to equipment is required, via either hinged or sliding doors.

**operation** - when the machinery is in operation the tongue is engaged and the power is on. If access is required, the door is simply opened releasing the tongue from the unit, giving positively guided, forced disconnection of the safety switch contacts.

**options:**

- Safety key adaptor
- Access key adaptor
- Slide bar
- Lockout Device
- Padlock adaptors

www.fortressinterlocks.com
### Technical Data

#### AutoStop

<table>
<thead>
<tr>
<th>Technical Specification</th>
<th>Technical Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing Materials</strong></td>
<td>2NC and 1NO</td>
</tr>
<tr>
<td>Zinc Alloy to BS1004A</td>
<td>Positive Break</td>
</tr>
<tr>
<td><strong>Paint Finishes</strong></td>
<td>3A</td>
</tr>
<tr>
<td>Stainless Steel to BS3146</td>
<td>230V AC Max</td>
</tr>
<tr>
<td>Gloss Polyester Powder Coat on Passivated Base Material</td>
<td></td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td></td>
</tr>
<tr>
<td>Red and Stainless Steel</td>
<td></td>
</tr>
<tr>
<td><strong>Ingress Protection</strong></td>
<td></td>
</tr>
<tr>
<td>IP67</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Force</strong></td>
<td></td>
</tr>
<tr>
<td>5Nm</td>
<td></td>
</tr>
<tr>
<td><strong>Retention Force Locked</strong></td>
<td></td>
</tr>
<tr>
<td>2500N</td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Approach Speed</strong></td>
<td></td>
</tr>
<tr>
<td>20m/minute</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum door radius</strong></td>
<td></td>
</tr>
<tr>
<td>900mm</td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical Life</strong></td>
<td></td>
</tr>
<tr>
<td>&gt;1,000,000 Switching Cycles</td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Frequency of Ops</strong></td>
<td></td>
</tr>
<tr>
<td>7,200 per Hour</td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td></td>
</tr>
<tr>
<td>-5°C to +40°C</td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Wire Cross-Section to fit connector</strong></td>
<td></td>
</tr>
<tr>
<td>2.50mm²</td>
<td></td>
</tr>
<tr>
<td><strong>Connector Type</strong></td>
<td>Spring Activated Vibration Proof Block</td>
</tr>
<tr>
<td><strong>Switches Conformance</strong></td>
<td>DIN VDE 0660 Part 206 &amp; IEC 947-5-1</td>
</tr>
<tr>
<td><strong>Non-Solenoid Controlled</strong></td>
<td></td>
</tr>
<tr>
<td><strong>LED Status indicators for greater control</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dual channel safety circuitry</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Suitable for category 4 applications</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Features &amp; Benefits</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ISOLATING DISTANCE</strong></td>
<td>2 x 2mm Per Switch Element</td>
</tr>
<tr>
<td><strong>Switching Voltage</strong></td>
<td>90% Silver and 10% Nickel</td>
</tr>
<tr>
<td><strong>Isolating Distance</strong></td>
<td>AC 15 or DC 13</td>
</tr>
<tr>
<td><strong>Element Contact Material</strong></td>
<td>24V AC/DC, 48V AC/DC.</td>
</tr>
<tr>
<td><strong>Utilization Category</strong></td>
<td>110V AC, 220V AC or</td>
</tr>
<tr>
<td><strong>Control Voltages</strong></td>
<td>230V AC</td>
</tr>
<tr>
<td><strong>Insulating Resistance</strong></td>
<td>20M Ohm</td>
</tr>
<tr>
<td><strong>Insulating Voltage</strong></td>
<td>2,500V AC</td>
</tr>
<tr>
<td><strong>Insulating Resistance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Insulating Voltage</strong></td>
<td></td>
</tr>
</tbody>
</table>

www.fortressinterlocks.com

---

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

A key operated rotary switch for use in areas where explosive flammable gases or dust particles may be present and is usually used for electrical isolation. The standard sequence is power on - key trapped. Once the key is turned and removed the power source is isolated and the key can be taken elsewhere.

operation - the switch can only be operated by the key, which is normally held trapped when the switch is in the ON or 3 o’clock position. With the switch in the OFF or 12 o’clock position the key can be removed and then transferred to another interlock unit within the system.

application - part of an interlock system, the unit is used for control or isolation of electrical circuits operating plant or machinery prior to, for example, carrying out maintenance.

options:

- Part / Stainless Steel Basic Lock CL.
- Master series locks: MLS/ML
- Optional ‘Key Free’ position
- Optional switch contact configurations (to special order)
Technical Data

**Construction**

- **Rating:** EExd IIB T4-T6
- **For use in:** cat 2 & 3 (Zone 1 & 2) areas
- **Lock mechanism:** Stainless steel with a durable electro-polish finish to the lock casing
- **Internals:** All Stainless Steel
- **Enclosure:** Cast Iron 2 pack epoxy finish, with 2 x M20 ISO entries at the bottom (2 plugged)
- **Degree of protection:** IP65 (IEC 529)
- **Standard Switching:** 16 380/415V AC 4 Pole On/Off Arrangement or 2/NO, 2N/C
- **Keys:** Stainless Steel

**Features & Benefits**

- Certified to ATEX Directive 94/9/EC
- Direct drive operation - Positively opened contacts
- Available from 6 amps to 63 amps (specials on request)
- Coding can be up to 30 characters
- Over 200,000 non-masterable lock combinations available (specials on request)
- 4NO or 2NO/2NC contacts available (specials on request)
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**

the S is a key operated rotary switch suitable for panel mounting. As part of an interlock system the switch unit directly or indirectly isolates the electrical power to the machinery.

The switch is directly operated by the key, which is trapped in the lock when the power supply is **ON**. Releasing the key turns the power **OFF**.

**options:**

- stainless steel loaded dustcover
  - Part / All Stainless Steel Basic Locks
  - Masterable locks and keys
  - Special Switch contact configurations
  - Colour coded keys and locks

www.fortressinterlocks.com
Technical Data

Construction

Mounting Plate: Zinc Plated Mild Steel

Lock Mechanism: Die-cast zinc body with stainless steel operating mechanism

Key: Stainless Steel

Features & Benefits

Direct drive operation - Positively opens contacts

Available in 20A, 32A, 63A and 150A versions (specials upon request)

Coding can be up to 30 characters

Over 200,000 non-masterable lock combinations available

4NO, 2NO/2NC or 4NO/4NC contacts (other contacts available on request)
Technical Data

TO MOUNT UNIT, DRILL PANEL Ø6.5 IN 2 PLACES, REMOVE FIXING SCREWS AND REFIT THROUGH THE PANEL.

S-CLIN-A03240

TO MOUNT UNIT, DRILL PANEL Ø6.5 IN 2 PLACES, REMOVE SCREWS AND REFIT THROUGH PANEL.

S-CLIN-A06340

www.fortressinterlocks.com
Technical Data

S-CLIN-A15040

Wiring Diagram

20A/32A/63A 4 N/O

1 | 2 | 3 | 4 | 5 | 6 | N | N

150A 4 N/O

L1 | L2 | L3 | T1 | T2 | T3 | N | N

2 N/O 2 N/C

1 | 2 | 3 | 4 | 5 | 1 | 6 | 7 | 8

4 N/O 4 N/C

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

To mount unit, drill panel Ø6.5 in 2 places, remove screws and route through panel.

EARTH POINT

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:
the SE is a key switch in an enclosure suitable for surface mounting.

As part of an interlock system the switch units are used to isolate electrical power to machinery. The switch is operated directly by the key which is trapped in the lock when the power supply is ON. Releasing the key turns the power OFF.

options:
- stainless steel dustcover
- Part / All Stainless Steel Basic Lock
- Colour Coded locks and keys
- Special switch contact configurations
- Masterable locks and keys

www.fortressinterlocks.com
Technical Data SE

Construction

- Mounting Plate: Polycarbonate moulded enclosure
- Lock Mechanism: Die-cast zinc body with stainless steel operating mechanism
- Key: Stainless Steel

Features & Benefits

- Enclosure sealed to IP66
- Direct drive operation - Positively opens contacts
- Available from 20 amps to 150 amps (specials on request)
- Coding can contain up to 30 characters
- Over 200,000 non-masterable lock combinations available
- Available in 4NO, 2NO/2NC or 4NO/4NC contacts (other contacts available on request)

www.fortressinterlocks.com

SWITCH CONFIGURATION: DIM A DIM B DIM C DIM D DIM E DIM F
20A/32A 4 POLE 125 125 100 110 110 4.5
63A 4 POLE 200 200 132 180 180 7.5
150A 4 POLE 300 300 185 280 280 7.5

www.fortressinterlocks.com

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (minimising the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**

A robust heavy duty, solenoid controlled key exchange unit in a modular format. It is suitable for panel mounting as standard and has a 24v dc solenoid with dual channel safety circuitry.

**application** - this unit offers the advantage of exchange and electrical control within one unit and is suitable for application on machines with a run down time. The unit ensures that keys may not be released until the solenoid has been energised. Machines with single access or multiple access points would benefit from the use of this control device.

**operation** - the release keys are trapped within the unit while the machine is in normal operation and may only be freed once the integral solenoid has been energised. This action operates a 2N/C, 1N/O switch arrangement. The 2N/C contacts would normally be part of the safety circuit to the machine. The N/O contact would normally be used as a status switch and be connected to a PLC or indication panel. Energising the solenoid illuminates the green LED, removal of the key operates a second 2N/C, 1N/O switch arrangement. An override lock is provided that may be used in case of solenoid supply failure. Insertion of the override key simply mimics the solenoid function.

**Options**

- Part/all stainless steel basic lock
- 24vdc or 110v ac Solenoid
- Stainless steel dustcover
- Sizes: 4 way (1 Override lock + 4 locks), 6 Way (1 Override lock + 6 locks)
- Quick disconnect terminals
- Master Locks

www.fortressinterlocks.com
Features

- Solenoid available in 24v dc or 110v ac
- Suitable for machines with a run-down cycle
- Extendable units with up to 6 release keys
- 10A switch contacts as standard
- Dual 2N/C, 1N/O contact arrangements available as standard see wiring diagram.

Technical Specification

- Mounting Plate: Mild steel with polyester paint finish
- Switches: All switches are rated at AC12, 10A, 250A and AC15, 4A, 230V, B300, R300. N/C contacts are positive break contacts.
- Solenoid: Zinc plated and passivated mild steel frame. 12 Watt, 24v DC solenoid (0.5 amps). Optional 110V AC Solenoid is 12VA (110 mA)
- Configuration: Panel supplied with override lock only. Gate Access locks must be ordered separately. Number of release keys to be advised at point of order. Standard panels will accept up to 4 gate access locks. A version is available that will take 6 access locks.
- Lock: CL, ML, CLS, MLS. Please refer to separate datasheets.

www.fortressinterlocks.com
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

A key operated rotary switch unit with additional solenoid control, for use where a key/keys need to remain trapped until an electronic signal has been received. The units are used for control or interruption of control or power circuits operating plant or machinery and the solenoid facility allows for integration with other electronic control processes within the system. (e.g., a machine may come to an end of cycle before the power can be isolated). Units can be manufactured to accommodate up to 7 keys trapped in a single solenoid and are available in both panel (BOB) and surface (FOB) mounting forms. Normally supplied for vertical mounting, horizontal mounting units are available on request.

**operation**

The solenoid holds the primary key in the trapped position (normally power ON) and must be energised by receipt of a remote electrical signal before the key can be operated and released. Removal of the key isolates the power or control circuits. In multiple lock units, the primary key is released first, followed by the others in sequence. All keys must be replaced in the correct order before the primary key can be returned and the equipment re-energised.

**options:**

- Stainless steel dustcover
- Part / All Stainless Steel Basic Lock
- Optional key sequences and ‘key free’
- Special switch contact configurations
Technical Data SS

**Construction**

- **Mounting Plate:** Mild with polyester / epoxy finish
- **Lock Mechanism:** Die-cast zinc body with stainless steel operating mechanism
- **Key:** Stainless Steel

**Features & Benefits**

- Front and back of board versions available
- Complete solenoid monitoring contacts as standard
- Solenoids available in 24V, 110V and 230V
- Available in 20A, 32A and 63A versions (specials on request)
- Coding can be up to 3 lines of 7 characters (on key and dustcover)
- 4NO, 2NO/2NC, 6NO or 3NO/3NC contacts available (specials on request)
Data Sheet

mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:
provides a flat mounting surface for back of board panel mounting. Easy conversion from front of board, surface mounting. Uses DM fixing centres.

XM2 with BOB mounting

DM2 with BOB mounting

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**
the DM and DMS (full stainless steel version) are robust, modular access interlocks suitable for use on all types of doors. They are sold as a single or multiple door interlock with up to ten lock modules. As part of an interlock system the locks are used to control access to enclosed areas until a safe condition has been achieved.

**operation (example sequence on DM1)**
the key is inserted into the lock and turned; the actuator is disengaged and the door opened. The key remains trapped until the door is closed and the actuator re-engaged. Other sequences are available.

**options:**
- fixed actuator (F)
- self aligning actuator (S)
- hand operated actuator (H)
- compressible actuator (C)
- lock portion
- CL(S)
- ML(S)
- spring loaded dustcover
- low profile CL key

www.fortressinterlocks.com
Technical Data

DM & DMS

Construction DM
- Body Housing: Die-cast zinc body with pearl bronze finish
- Head: All stainless steel.
- Internals: All stainless steel contact components
- Actuators: All stainless steel
- Lock Mechanism: CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- Key: Stainless Steel

Construction DMS
- Body Housing: All stainless steel
- Head: All stainless steel
- Internals: All stainless steel contact components
- Actuators: All stainless steel
- Lock Mechanism: CLS or MLS lock types are of all stainless steel.
- Key: All Stainless Steel

Features & Benefits
- No product handing issues
- 8 head configurations with +/- 5° of fine adjustment
- Horizontal and vertical mounting
- Tested to over 1,000,000 operations
- Durable plated bodies
- Tamper resistant head mechanism
- Patented sequencing system
- Sequential / Non-sequential key operation
- Extend or trim-down units and use surplus modules elsewhere
- Minimal maintenance

DM Tabulated Drawing
Back of Board Mounting kit shown in operation on a DM1 and illustrated on its own.

1. Provides a flat mounting surface for back of board panel mounting.
2. Easy conversion from the front of board surface mounting.
3. Uses DM fixing centres.

Head Positions

The DM and DMS modules benefit from a revolutionary new patented head design. With 3 actuators to choose from, the head features a choice of 4 head rotation angles and 2 actuator entry points.

Front Side Entry  Left Top Entry  Rear Top Entry  Right Side Entry
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**Description:**

A selection of robust actuators suitable for both hinged and sliding doors.

**Fixed Actuator**

Supplied as standard, this compact actuator is ideal for most guard doors.

**Self Aligning Actuator**

Ideal for small radius hinged doors, it can be bolted through from front, top, or bottom. Horizontal adjustment +/-7.5mm and vertical adjustment +/-3.75mm. With a rotational adjustment of any angle in 360° degrees, it is ideal for guards subject to misalignment through wear.

**Hand Operated Actuator**

Suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/- 6mm and rotational adjustment 360° in 90° increments of actuator/bracket.

**Hand Operated Actuator with Spring Return**

Suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/- 6mm and rotational adjustment 360° in 90° increments of actuator/bracket. The actuator is spring loaded so that when the actuator is released, it automatically moves clear of the access guard.

**Options:**

- Fixed actuator (F)
- Self aligning actuator (S)
- Hand operated actuator (H)
- Compressible actuator (C)
- Hand operated actuator with spring return (A)
Technical Data

fixed actuator (F)

self-aligning actuator (S)

www.fortressinterlocks.com
Technical Data

hand operated actuator (H)

compressible actuator (C)
Technical Data

Actuators

hand operated actuator with spring return (A)
**Data Sheet**

**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

The DMR and DMSR (full stainless steel version) are robust, modular access interlocks complete with rotary switches suitable for use on all types of doors. They are sold as a single or multiple door interlock with up to ten lock modules (up to 5 locks on the DMSR). As part of an interlock system the locks are used to control access to enclosed areas until a safe condition has been achieved.

**operation (example sequence on DMR1)**

The key is inserted into the lock and turned; turning off the switch. The actuator is disengaged and the door opened. The key remains trapped until the door is closed and the actuator re-engaged. Other sequences are available.

**options:**

- Fixed actuator (F)
- Self-aligning actuator (S)
- Hand-operated actuator (H)
- Compressible actuator (C)

**lock portion**

- CL(S)
- ML(S)

**switch options:**

- 20A, 32A, 63A, or 150A switches
- 4NO or 2NO 2NC switch contacts

www.fortressinterlocks.com
Technical Data

DMR & DMSR

Construction DMR
- Body Housing: Die-cast zinc body with pearl bronze finish
- Head: All stainless steel
- Internals: All stainless steel contact components
- Actuators: All stainless steel
- Lock Mechanism: CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- Key: Stainless Steel

Construction DMSR
- Body Housing: All stainless steel
- Head: All stainless steel
- Internals: All stainless steel contact components
- Actuators: All stainless steel
- Lock Mechanism: CLS or MLS lock types are of all stainless steel.
- Key: All Stainless Steel

Features & Benefits
- No product handling issues
- 8 head configurations with +/- 5° of fine adjustment
- Horizontal and vertical mounting
- Locks tested over 1,000,000 operations
- Switches tested to 75,000 operations
- Durable plated bodies (DMR), Stainless Steel bodies (DMSR)
- Tamper resistant head mechanism
- Patented sequencing system with up to 39,000 different sequences in a DMR10
- Easy to configure
- Sequential / Non-sequential key operation
- Extend or reduce units and use surplus modules elsewhere
- Minimal maintenance
- Switch sealed behind panel to IP67

www.fortressinterlocks.com
Head Positions

The DMR and DMSR modules benefit from a revolutionary new patented head design. With 3 actuators to choose from, the head features a choice of 4 head rotation angles and 2 actuator entry points.

Front Side Entry  Left Top Entry  Rear Top Entry  Right Side Entry
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

A selection of robust actuators suitable for both hinged and sliding doors.

**Fixed actuator**
supplied as standard this compact actuator is ideal for most guard doors.

**Self aligning actuator**
ideal for small radius hinged doors it can be bolted through from front, top or bottom. Horizontal adjustment +/-7.5mm and Vertical adjustment +/-3.75mm. With a rotational adjustment of any angle in 360° degrees it is ideal for guards subject to misalignment through wear.

**Hand operated actuator**
suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/-6mm and rotational adjustment 360° in 90° increments of actuator/bracket.

**Hand operated actuator with spring return**
suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/-6mm and rotational adjustment 360° in 90° increments of actuator/bracket. The actuator is spring loaded so that when the actuator is released, it automatically moves clear of the access guard.

options:

- Fixed actuator (F)
- Self aligning actuator (S)
- Hand operated actuator (H)
- Hand operated actuator with spring return (A)
- Compressible actuator (C)
Technical Data

Actuators

hand operated actuator with spring return (A)
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

a ‘key bank’ with a switch available for panel or surface mounting options. It incorporates one or more rotary switches and any combination of trapped or freed keys. Switches are lock operated and a variety of switch conditions and key sequences are possible.

**operation**

this unit can be supplied in two forms; either with a key exchange condition, or with all keys normally captive. In the key exchange condition, secondary keys are normally held captive and are released upon insertion of the control key(s), which operates the switch. Alternatively, where all keys are normally captive, the control key must be released first (operating the switch) before releasing the secondary keys.

**options:**

- **lock portion**
  - CL(S)
  - ML(S)

- stainless steel dustcover

- up to 16 off release keys

- 6A, 16A, 32A, 63A switches available

- stainless steel enclosure/panel available

www.fortressinterlocks.com
Technical Data

Construction

Enclosure: Mild steel with polyester/epoxy finish

Lock Mechanism: Die-cast zinc body with stainless operating mechanism

Key: Stainless Steel

Features & Benefits

Single and double row versions

Front (surface-with an enclosure) and Back of Board (panel-on a plate) mounting available

All access keys free at the same time or sequentially released (upon request)

Any combination of isolation/access keys possible

Over 200,000 non-masterable lock combinations available

Coding can be up to 30 characters
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**
the XM and XMS (full stainless steel version) are modular mechanical key exchange units that are used to exchange one or more keys for a number of other keys. These devices form the link between isolation devices and access locks. Any combination of isolation / access keys are possible.

**operation (example sequence on XM1)**
keys used to gain access are mechanically trapped until other keys from the isolation points are inserted and turned. Only when all isolation keys are inserted can an access key be removed. Removing the access keys mechanically traps the isolation keys in place.

The key exchange unit allows a number of secondary functions, following an initial action e.g. opening several guard doors (at the same time) on a machine once the power supply to the machine has been isolated.

**options:**
- panel mounted (XM only)
- CL(S)
- ML(S)
- spring loaded dustcover

www.fortressinterlocks.com
Technical Data

**XM & XMS**

### Construction

**Construction XM**
- **Body Housing:** Die-cast zinc body with pearl bronze finish
- **Internals:** All stainless steel contact components
- **Lock Mechanism:** CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- **Key:** Stainless Steel

**Construction XMS**
- **Body Housing:** All stainless steel
- **Internals:** All stainless steel
- **Lock Mechanism:** CLS or MLS lock types are of all stainless steel
- **Key:** All Stainless Steel

### Features & Benefits

- No product handing issues
- Horizontal and vertical mounting
- Tested over 1,000,000 operations
- Durable plated bodies (XM)
- Stainless Steel bodies (XMS)
- Patented sequencing system
- Easy to configure
- Sequential / Non-sequential key operation
- Extend or trim-down units and use surplus modules elsewhere
- Minimal maintenance

### XM Tabulated Drawing

All dimensions are nominal and are subject to manufacturing tolerances.
Back of Board Mounting Kit shown in operation on a XM2 and illustrated on its own.

1. Provides a flat mounting surface for back of board panel mounting.
2. Easy conversion from the front of board surface mounting.
3. Uses DM fixing centres.

Not available for XMS
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

the XMR and XMSR (full stainless steel version) are modular key exchange units. These units are fitted with rotary switch(es) that can be used for power or control isolation. Multiple lock variants are used to exchange one or more keys for a number of other keys. These devices form the link between isolation devices and access locks.

operation

single lock units: removal of the key operates the switch contacts.

multiple lock units: keys used to gain access are mechanically trapped until other keys from the isolation points are inserted and turned. Only when all isolation keys are inserted can an access key be removed. Removing the access keys mechanically traps the isolation keys in place. The isolation keys change the switch contacts.

options:

- panel mounted (P)
- enclosure sealed (E)
- concealed enclosure (C)
- low profile key
- spring loaded dustcover
- colour coding of locks and keys available
- metal enclosures tailored to suit
- 20A, 32A, 63A or 150A switches
- 4NO or 2NO 2NC switch contacts
Technical Data

**Construction XMR**
- **Body Housing**: Die-cast zinc body with pearl bronze finish
- **Internals**: All stainless steel contact components
- **Lock Mechanism**: CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- **Key**: Stainless Steel
- **Enclosure**: Polycarbonate

**Construction XMSR**
- **Body Housing**: All stainless steel
- **Internals**: All stainless steel
- **Lock Mechanism**: CLS or MLS lock types are of all stainless steel.
- **Key**: All Stainless Steel
- **Dustcover**: All Stainless Steel
- **Enclosure**: Polycarbonate

**Features & Benefits**
- Horizontal and vertical mounting
- Locks tested to over 1,000,000 operations
- Switches tested to 75,000 operations
- Durable plated bodies (XMR)
- Stainless Steel bodies (XMSR)
- Patented sequencing system with up to 13,000 different sequences in a XMR10
- Easy to configure
- Sequential / Non-sequential key operation
- Extend or trim-down units and use surplus modules elsewhere
- Minimal maintenance
- Sealed units are rated IP67
- Concealed units and Back of Board units are rated IP50

---

**Tabulated Drawing**

- **PRODUCT**: XMR2, XMR3, XMR4, XMR5, XMR6, XMR7, XMR8, XMR9, XMR10
- **DIM A**: Overall Length
- **DIM B**: No. of Slotted Holes
- **DIM C**: No. of CL Locks

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>DIM A (mm)</th>
<th>DIM B</th>
<th>DIM C</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMR2</td>
<td>134.5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>XMR3</td>
<td>183.45</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>XMR4</td>
<td>250.6</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>XMR5</td>
<td>307.9</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>XMR6</td>
<td>364.9</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>XMR7</td>
<td>472.75</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>XMR8</td>
<td>579.3</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>XMR9</td>
<td>586.3</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>XMR10</td>
<td>583.5</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

---

**XMR** Tabulated Drawing
XMA Module(s) can be added to an existing XMR product for system expansion at any stage. The XMA is a zinc alloy bodied add-on module. The XMSA is a Stainless Steel bodied add-on module.
Tabulated Drawing
Sealed Enclosure

<table>
<thead>
<tr>
<th>No. OF LOCKS</th>
<th>SWITCH CURRENT</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>20 / 32 AMP</td>
<td>125W</td>
<td>125W</td>
<td>100W</td>
<td>110W</td>
<td>110W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>63 A</td>
<td>200W</td>
<td>200W</td>
<td>150W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
<tr>
<td></td>
<td>150 A</td>
<td>200W</td>
<td>200W</td>
<td>165W</td>
<td>180W</td>
<td>180W</td>
<td>44.7</td>
</tr>
</tbody>
</table>
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

The breaker lock is the latest addition to the Fortress ‘CL’ lock range, specifically designed for use with ABB power breakers. A robust radial disc tumbler lock, offering in excess of 200,000 non-masterable combinations. A spring-loaded stainless steel dustcover is available as an optional extra. A limited number of masterable locks are available to suit certain applications.

The lock is designed for use with the entire Sace Emax range.

application - when mounted on front of a circuit breaker, this lock can be used to allow or prevent switching of power, please note that to fit this lock to a circuit breaker requires a fixing kit, available from ABB (part no ‘non std 161’).

operation - the key is inserted and turned, turning the spindle projecting from the basic lock. The key is freed in the 12 o’clock and 6 o’clock position. Spindle movement is 90 degrees clockwise.

Options

- Stainless Steel Dustcover
- ML - Master series lock version
- Standard or special low profile key (pictured)
Data Sheet  

**Breaker Lock ABB**

### Features

**Ease of operation**
- Dual orientation key entry leading to easy operation
- Smooth and effortless rotation
- Standard clockwise operation to provide consistency (Anti-clockwise available upon request).

1,000,000 operations tested

All contact surfaces made of stainless steel

Over 200,000 lock combinations

**Suitable for high frequency applications**

Heavy Duty

High Integrity

Standard key can not be mastered

A low profile key is available designed to fit under covers etc

Wide temperature range -40°C + -50°C

Master series available

---

**Breaker with Low Profile key**

**Breaker with CL Key**

**CL Key**

---

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**

the breaker lock is the latest addition to the Fortress ‘CL’ lock range, specifically designed for use with Merlin Gerin circuit breakers. A robust radial disc tumbler lock, offering in excess of 200,000 non-masterable combinations. A spring-loaded stainless steel dustcover is available as an optional extra. A limited number of masterable locks are available to suit certain applications.

**application** - when mounted on front of a circuit breaker, this lock can be used to allow or prevent switching of power, please note that to fit this lock to a circuit breaker requires a fixing kit, available from Merlin Gerin.

**operation** - the key is inserted and turned, turning the spindle projecting from the basic lock. The key is freed in the 12 o’clock and 6 o’clock position. Spindle movement is 90 degrees clockwise.

**Options**

- Stainless Steel Dustcover
- Standard or special low profile key (pictured)
- ML - Master series lock version
# Data Sheet

## Breaker Lock

**Merlin Gerin**

### Features

**Ease of operation**
- Dual orientation key entry leading to easy operation
- Smooth and effortless rotation
- Standard clockwise operation to provide consistency (Anti-clockwise available upon request).

1,000,000 operations tested

All contact surfaces made of stainless steel

Over 200,000 lock combinations

**Features**

- Suitable for high frequency applications
- Heavy Duty
- High Integrity
- Standard key can not be mastered
- A low profile key is available designed to fit under covers etc
- Wide temperature range -40°C + -50°C
- Master series available

---

**Breaker with Low Profile key**

![Image of Breaker with Low Profile key]

**Breaker with CL Key**

![Image of Breaker with CL Key]

**CL Key**

![Image of CL Key]

**Low Profile Key**

![Image of Low Profile Key]

---

www.fortressinterlocks.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:
the BM is a robust, modular mechanical bolt interlock that is used to interface with power breakers, valves, earth switches etc., where hazards need to be indirectly interlocked (often with the use of levers and cams). This product is also available in full stainless steel.

operation
single module: with the key free the bolt is usually in the extended position. To retract the bolt the key must be inserted and trapped (reverse sequence is available upon request). The operation of the key extends or withdraws the bolt which in turn may be used to interface with the mechanical linkages e.g. levers or cams on proprietary switchgear applications. Mounting kits must be either fabricated to suit or some are available from switchgear

operation
multiple modules: with the primary key free the bolt is usually in the extended position. To retract the bolt the primary key must be inserted, turned and trapped in the primary lock and the secondary key turned and removed from the secondary lock (other sequences available on request). The operation of the key extends or withdraws the bolt which in turn may be used to interface with the mechanical linkages e.g. levers or cams on proprietary switchgear applications.

options:
- lock portion
- Extended / shortened bolt
- Colour Coding on locks and keys
- Optional key/bolt sequences
- Surface or panel mounting option

www.fortressinterlocks.com
Technical Data

BM & BMS

Construction

**Construction BM**
- **Body Housing:** Die-cast zinc body with pearl bronze finish
- **Internals:** All stainless steel contact components
- **Bolt:** All stainless steel
- **Lock Mechanism:** CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- **Key:** Stainless Steel

**Construction BMS**
- **Body Housing:** Full stainless steel
- **Internals:** Full stainless steel
- **Bolt:** All stainless steel
- **Lock Mechanism:** CLS or MLS lock types are of all stainless steel.
- **Key:** Stainless Steel
- **Spring loaded dustcover:** Stainless Steel

Features & Benefits

- No product handing issues
- Horizontal and vertical mounting
- Multiple lock versions eliminate the need for separate key exchange boxes
- 16mm Diameter bolt with 16mm of travel
- Variable bolt length
- Front, top or bottom fixing
- Tested to over 1,000,000 operations
- Durable plated bodies
- Patented sequencing system with up to 39,000 different sequences in a BM10 or BMS10
- Easy to configure
- Extend or trim-down units and use surplus modules elsewhere
- Minimal maintenance
- Back of Board adaptor available with BM modules

BM Tabulated Drawing

www.fortressinterlocks.com
Back of Board Mounting

Kit shown in operation on a BM2 and shown on its own.
1. Provides a flat mounting surface for back of board panel mounting
2. Easy conversion from front of board, surface mounting
3. Uses BM fixing centres

The XMA module can be added to an existing BM product for system expansion at any stage. XMSA module(s) are available for the BMS

Extension Bolt

<table>
<thead>
<tr>
<th>DIA A</th>
<th>DIA B</th>
<th>EXTENSION LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.35</td>
<td>6.35</td>
<td>0</td>
</tr>
<tr>
<td>6.35</td>
<td>6.35</td>
<td>1</td>
</tr>
<tr>
<td>6.35</td>
<td>6.35</td>
<td>2</td>
</tr>
</tbody>
</table>

Other internal bolt projections between 0 and 1½" are available upon request.
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

The BMR is a robust, modular mechanical bolt interlock complete with rotary switch(es) that is used to interface with power breakers, valves, earth switches etc., where hazards need to be indirectly interlocked (often with the use of levers and cams). This product is also available in full stainless steel as the BMSR. The BMR and BMSR can be fitted with 20A, 32A, 63A or 150A switches. The 20A and 32A switches can be fitted behind each module. The 63A and 150A switches must not have any switch fitted behind the immediately adjacent module(s).

**operation single module:** with the key free the bolt is usually in the extended position. To retract the bolt the key must be inserted and trapped (reverse sequence is available upon request). The operation of the key extends or withdraws the bolt which in turn changes the contacts on the switch. The bolt may be used to interface with the mechanical linkages e.g. levers or cams on proprietary switchgear applications. Mounting kits must be either fabricated to suit or some are available from switchgear manufacturers.

**operation multiple modules:** with the primary key free the bolt is usually in the extended position. To retract the bolt the primary key must be inserted, turned and trapped in the primary lock and the secondary key turned and removed from the secondary lock (other sequences available on request). The operation of the key extends or withdraws the bolt which in turn changes the contacts on the switch. The bolt may be used to interface with the mechanical linkages e.g. levers or cams on proprietary switchgear applications.

**options:**

- **lock portion**
  - CL(S)
  - ML(S)
  - Extended / shortened bolt
  - Colour Coding on locks and keys
  - Stainless steel spring loaded dustcover (BMR only standard on BMSR)
  - Optional key/bolt sequences
  - Back of Board mounting available upon request
Technical Data

BMR & BMSR

Construction

**Construction BMR**
- **Body Housing:** Die-cast zinc body with pearl bronze finish
- **Internals:** All stainless steel contact components
- **Bolt:** All stainless steel
- **Lock Mechanism:** CL or ML lock types are of die-cast zinc body with stainless operating mechanism
- **Key:** Stainless Steel

**Construction BMSR**
- **Body Housing:** Full stainless steel
- **Internals:** Full stainless steel
- **Bolt:** All stainless steel
- **Lock Mechanism:** CLS or MLS lock types are of all stainless steel.
- **Key:** Stainless Steel
- **Spring loaded dustcover:** Stainless Steel

Features & Benefits

- No product handing issues
- Horizontal and vertical mounting
- Multiple lock versions eliminate the need for separate key exchange boxes
- 16mm Diameter bolt with 16mm of travel
- Variable bolt length
- Front, top or bottom fixing
- Lock tested to over 1,000,000 operations
- Switches tested to 75,000 operations
- Durable plated bodies (BMR) Stainless Steel Bodies (BMSR)
- Patented sequencing system with up to 39,000 different sequences in a BMR10.
- Easy to configure
- Sequential or non sequential key operation
- Extend or trim-down units and use surplus modules elsewhere
- Minimal maintenance
- Switches sealed behind panel

BM Tabulated Drawing

www.fortressinterlocks.com
The XMA module can be added to an existing BMR product for system expansion at any stage. XMSA module(s) are available for the BMSR.
**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**
the FSKI 90L and FDKI 90L range of units have been developed for direct key operation of all quarter turn wrench operated valves. Locking units are available to suit all sizes and classes of valve and variations will accommodate ball and butterfly valves etc. Interlock units are designed to be fitted directly to valves in place of the normal handle or wrench. No dismantling or modification of the valve or welding brackets etc, is needed thus preserving manufacturers warranties. Units are manufactured to suit each different valve and can be fitted easily, either in the workshop or with the valve in line and without validating pressure tests.

**operation** - with the interlock unit fitted to the valve and the operating key (or keys) turned to the trapped position, the appropriate key can be removed, locking the valve in that position, releasing the appropriate key only. Units can be supplied with both keys freed in either open or closed positions and units for use with butterfly valves are fitted with a detent mechanism. When a key is removed a stainless steel dustcover seals the unit against ingress of moisture and dust.

**Options**
- Key cabinets are available to store keys used to start a sequence of operation - can be specially coloured and coded ‘Colour Aware’ system
- A variety of handwheels can be fitted to customer requirements

www.fortressinterlocks.com
Data Sheet  Valve Locks:

**FSKI 90L (Single)**

**FDKI 90L (Double)**

### Features
- Can be engineered to fit any valve
- Enforces a safe working practice scheme
- All 316 Stainless Steel
- Easy to use CLS Lock

### Construction

Lock construction:
- Constructed from 316 S31 Stainless Steel for maximum corrosion resistance in harsh offshore environments.
- Valve interlocks may be supplied with a single operating key (FSKI), which allows locking in one position only (either open or closed) or two keys (FDKI) for locking in open and closed position.
**Data Sheet**  
**Valve Locks:** FSKI GG (Single)  
FDKI GG (Double)

**mGard** is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). **mGard** offers an extensive variety of modular interlocking solutions.

**description:**

The FSKI GG and FDKI GG range of units have been developed for interlocking all gearbox operated valves. Locking units are available to suit all sizes and types of gearbox, including those for gate globe and diaphragm valves etc. Interlock units are designed to be fitted directly to gearboxes in place of the normal handwheel if required. No dismantling or modification of the valve gearbox is needed thus preserving manufacturers warranties. Units are manufactured to suit each different valve or gearbox and can be fitted easily, either in the workshop or in the field.

**operation** - with the interlock unit fitted to the valve and the operating key (or keys) turned to the trapped position, the appropriate key can be removed, locking the valve in that position. Where two keys are fitted, the unit is lockable in either position releasing the appropriate key only. Units can be supplied with both keys freed in either open or closed positions. When a key is removed a stainless steel dustcover seals the unit against ingress of moisture and dust.

**Options**

- Key cabinets are available to store keys used to start a sequence of operation - can be specially coloured and coded ‘Colour Aware’ system
- A variety of handwheels can be fitted to customer requirements

www.fortressinterlocks.com
# Data Sheet

## Valve Locks:
- **FSKI GG (Single)**
- **FDKI GG (Double)**

### Features
- Can be engineered to fit any valve
- Enforces a safe working practice scheme
- All 316 Stainless Steel
- Easy to use CLS Lock

### Construction
- **Lock construction:** Constructed from 316 S31 Stainless Steel for maximum corrosion resistance in harsh offshore environments. Valve interlocks may be supplied with a single operating key (FSKI), which allows locking in one position only (either open or closed) or two keys (FDKI) for locking in open and closed position. As an alternative both keys may be freed in either open or closed positions.

---

**GG150**

![Diagram of GG150 Valve Lock](image)

- **#216.7**
- **62.75**
- **135**
- **185.85 - TOP (VARIAB. WITH ANCHOR)**
- **109.85**
- **41**

---

[www.fortressinterlocks.com](http://www.fortressinterlocks.com)

---

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

**description:**

A pneumatic valve, operated and driven directly by a key interlock mechanism. The unit is designed to control pneumatically powered elements of automated equipment such as clamping devices, pick and place units and special purpose machines.

**operation** - under normal operating conditions, the key is trapped in the lock and the valve is in the open position. Turning the key to its free position isolates the incoming air supply and exhausts the output air releasing the key. This key can then be transferred to the next device within the interlock sequence, e.g. to open an access door.

www.fortressinterlocks.com
**Data Sheet**

**base modules:**

**connectors**

**eGard** offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

**description:**

A selection of four base modules including a foot module to terminate purely mechanical configurations and three types of electrical connection module all incorporating quick disconnects.

**connector options:**

- **safety only connector**
  - Basic connection module for connecting safety circuits only.
  - Cannot connect I/O “input/output”, i.e. lamps, pushbuttons.
  - BS

- **safety & control connector**
  - Connects safety circuits and control circuits (I/O “input/output”, i.e. lamps, pushbuttons).
  - BC (8 I/O)
  - BB (2 I/O)

- **AS-i safety & control connector**
  - Standard 4 pin connector to suit AS-interface connectors
  - BA (4 I & 4 O)

- **foot**
  - For terminating purely mechanical configurations
  - BF

[www.fortressinterlocks.com](http://www.fortressinterlocks.com)

**Part Number**

- **C** = This is a Control Module
- **S** = This is a Safety Module
## Technical Specification

### BS Safety Only Connector
- **Housing Material**: PBT
- **Colour**: Light Grey & Dark Grey
- **Ingress Protection**: IP65
- **Ambient Temperature**: -5°C to + 40 °C
- **Connection Type**: 4 - pin Micro Change M12
- **Current**: 200mA (*See note 1)
- **Voltage**: 24V DC

### BC/BB Safety & Control Connector
- **Housing Material**: PBT
- **Colour**: Light Grey & Dark Grey
- **Ingress Protection**: IP65
- **Electrical Life**: 1000000 Operations
- **Ambient Temperature**: -5°C to + 40 °C
- **Connection Type**: 14 - pin Mini Change
- **Current**: 200mA (*See notes 1-3)
- **Voltage**: 24V DC

### BA ASi Control & Safety Connector
- **Housing Material**: PBT
- **Colour**: Light Grey & Dark Grey
- **Ingress Protection**: IP65
- **Electrical Life**: 1000000 Operations
- **Ambient Temperature**: -5°C to + 40 °C
- **Connection Type**: 4 - pin Micro Change M12
- **Current**: 75mA
- **Voltage**: 24V DC

### BF Foot
- **Housing Material**: PBT
- **Colour**: Light Grey & Dark Grey
- **Ingress Protection**: IP65
- **Ambient Temperature**: -5°C to + 40 °C

---

## Head Cap & Actuator Input Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input (1)</th>
<th>Output (0)</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>Safety Only</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>BB</td>
<td>Safety &amp; Control 2 I/O</td>
<td>Max 2 I/O</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>BC</td>
<td>Safety &amp; Control 8 I/O</td>
<td>Safety &amp; Control 8 I/O</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>BA</td>
<td>Safety &amp; Control Asi</td>
<td>Max 4 I &amp; Max 4O</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
</tbody>
</table>

## Notes

1. **Hard wired safety circuit current ratings BC, BB & BS**
   - The maximum current draw through each of the Safety Circuits is 200mA. These circuits are fully independent of each other AND of the Control System (i.e. the +24V DC supply).

2. **eGard** is a sourcing output requiring a sinking PLC input. When you press an eGard pushbutton you get a +24VDC from the output and to illuminate an eGard LED module +24VDC is required as an input into eGard.

3. **BC & BB Current Ratings**
   - The maximum continuous current drawn through the +24V DC supply pin is 200mA. Operation above this for any length of time will cause the internal thermal fuse to open. The fuses used are self resetting thermal fuses and can take a few seconds to reset once the over-current condition has been negated.
   - The +24V DC supply pin has to supply both the internal bus (stack) and any outputs that are active. The power for the modules, lamps and a solenoid are supplied via the internal bus. The internal bus current will obviously depend on the configuration of the eGard stack.
   - The current required by the BC or BB module is a little under 6.5mA. All push button modules (inc selector switches) require 0.2mA from the +24V DC supply. Any lamps draw an additional 2.1mA, from the +24V supply, when illuminated. Finally, the solenoid modules require 50mA when energised.
   - With regards to I/O circuitry, the ON forward drop, when the pin is configured as an Output and it is high, is less than 0.7V at 180mA, up to 70 degrees Celsius.
   - The OFF leakage current, when the pin is configured as an Output and is off is less than 5uA up to 70 degrees Celsius.
   - The input resistance is not purely resistive. On switching transitions the peak input current is +1mA & -2.5mA. The stable 'resistive' figures are 10uA off, - 1.8mA on. Note the negative current the input must sink, is a small current from the input I/O feed resistor.
**Data Sheet**

**core module:**
mechanical interlocking

**eGard** offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

**description:**

A mechanical lock module complete with a robust radial tumbler lock, for use individually or as part of a trapped key system. A safety module ensures that the machine/process cannot be restarted without returning the keys, preventing personnel being accidentally locked in a guarded area. An access module is ideal for authorised access only, or for linked access to other machinery, ensuring a specific sequence of operations. It features a safe and easy method of requesting a machine to stop. Mastered versions are also available (enabling a master key that can open all locks in a system, in the event of a lost key).

**mechanical interlocking options:**

- **Access module**
  - no key no dustcover
  - AB Bi Directional (Standard)
  - AU Uni Directional
  - QB Bi Directional std (master)
  - QU Uni Directional

- **Safety module**
  - with key no dustcover
  - SB Bi Directional (Standard)
  - SU Uni Directional
  - GB Bi Directional std (master)
  - GU Uni Directional

- **Safety module**
  - no key no dustcover
  - SN Bi Directional
  - SP Uni Directional
  - GN Bi Directional
  - GP Uni Directional

**Keys and dustcovers**

- **KS standard**
- **KM master**

www.fortressinterlocks.com
**Technical Data**

core module: mechanical interlocking

**technical specification**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Material</td>
<td>PBT</td>
</tr>
<tr>
<td>Colour</td>
<td>Light Grey &amp; Dark Grey</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Operating Force</td>
<td>&lt; 1Nm</td>
</tr>
<tr>
<td>Retention Forced Locked</td>
<td>1000 N</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>1000000 Operations</td>
</tr>
<tr>
<td>Maximum Frequency of Operations</td>
<td>1 per second</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-5°C to +40 °C</td>
</tr>
</tbody>
</table>

**Mechanical Interlocking Module Input Outputs**

<table>
<thead>
<tr>
<th>Module (1)</th>
<th>Input (0)</th>
<th>Output</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Lock</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Mechanical Drawing**

**Screw Drawing**

www.fortressinterlocks.com

Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice.
Data Sheet
core module: electrical interlocking

eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

description:
safety switch module has two normally closed contacts that operate on eGard’s two hard wired safety circuits.
electrical locking / unlocking solenoid modules are for controlling access, by electrically locking doors or trapping keys. These modules are used in applications with machine run-down (machine requires time to stop moving from when the control power is removed) or where the machines cycle shouldn’t be interrupted (robot). It has one normally open monitoring contact that operates on eGard’s internal control network.
runner bar status module has one normally open contact that operates on eGard’s internal control network. It can be used as a monitoring contact to show the status of eGard (e.g. door open, key released etc…)

electrical interlocking options:
safety switch

electrical locking (solenoid)

SS
EU Power to unlock

runner bar status

RB
EL Power to lock

www.fortressinterlocks.com

C = This is a Control Module
S = This is a Safety Module
Technical Data

core module: electrical interlocking

technical specification

<table>
<thead>
<tr>
<th>Housing Material</th>
<th>PBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Light Grey &amp; Dark Grey</td>
</tr>
<tr>
<td>Ingress Protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Retention Force Locked</td>
<td>1000 N</td>
</tr>
<tr>
<td>Mechanical Life</td>
<td>100000 Operations</td>
</tr>
<tr>
<td>Electrical Life</td>
<td>1000000 Operations</td>
</tr>
<tr>
<td>Maximum Frequency of Operations</td>
<td>1 per second</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-5°C to +40 °C</td>
</tr>
<tr>
<td>Switching Contact Element- SS</td>
<td>2NC on Safety Circuits</td>
</tr>
<tr>
<td></td>
<td>- EL/EU 1NO on Control Network</td>
</tr>
<tr>
<td></td>
<td>- RB 1NO on Control Network</td>
</tr>
<tr>
<td>Switching Current</td>
<td>Refer to base module spec</td>
</tr>
<tr>
<td>Switching Voltage</td>
<td>Refer to base module spec</td>
</tr>
</tbody>
</table>

Electrical Interlocking Module Input Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input (1)</th>
<th>Output (0)</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Safety Switch</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>EL/EU</td>
<td>Power to unlock</td>
<td>1</td>
<td>1</td>
<td>Input assigned first</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Power to lock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB</td>
<td>Runner Bar Status</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

Safety Switch Drawing

Screw Drawing

www.fortressinterlocks.com
**core module:**
emergency stop / start / restart

**eGard** offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

**description:**
- **emergency stop** - emergency stop module, standard twist to release and dual safety contacts. Also available with a monitoring contact.
- **start restart** - module has blue pushbutton operating on safety circuits to provide momentary change of state to wire directly into safety relay reset circuit.

**emergency stop options:**
- twist release e-stop
  - **ES**
- e-stop with monitoring
  - **EM**
- start / restart for safety relay re-set
  - **SR**

**www.fortressinterlocks.com**

= This is a Control Module  = This is a Safety Module
Technical Data

emergent stop / start / restart

technical specification

e-stop monitored & e-stop non monitored
- Housing Material: PBT
- Colour: Yellow & Dark Grey
- Ingress Protection: IP65
- Mechanical Life: 300000 Operations
- Electrical Life: 300000 Operations
- Maximum Frequency of Operations: 1 per second
- Ambient Temperature: -5°C to +40°C
- Switches Conformance: IEC 60947-5-1
- Switching Contact Element:
  - E-stop monitored: 2 NC & 1 NO
  - E-stop non monitored: 2 NC
- Switching Principle: Positive Break
- Switching Voltage: Refer to base module spec
- Isolating Distance: 2mm per switch element
- Contact Material: 90% Silver and 10% Nickel

start restart
- Housing Material: PBT
- Colour: Light Grey & Dark Grey
- Ingress Protection: IP65
- Mechanical Life: 1000000 Operations
- Electrical Life: 1000000 Operations
- Maximum Frequency of Operations: 1 per second
- Ambient Temperature: -5°C to +40°C
- Switches Conformance: IEC 60947-5-1
- Switching Contact Element:
  - E-stop monitored: 1 NO / 1 NC
  - E-stop non monitored: 2 NO
- Switching Principle: Positive Break
- Switching Voltage: Refer to base module spec
- Isolating Distance: 2mm per switch element
- Contact Material: 90% Silver and 10% Nickel

Emergency Stop & Start / Restart Module Input Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input (1)</th>
<th>Output (0)</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES</td>
<td>E-Stop</td>
<td>0</td>
<td>0</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EM</td>
<td>Monitored E-Stop</td>
<td>0</td>
<td>1</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>SR</td>
<td>Start / Restart</td>
<td>0</td>
<td>0</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

start / restart Drawing

Screw Drawing

www.fortressinterlocks.com

Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice.
Data Sheet

core module: lamps

eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

description:
lamp module for status indication can be configured to indicate machine or eGard status (i.e. guard open or machine run).

lamp options:
red pilot lamp concentric rings
- LR

green pilot lamp concentric rings
- LG

clear pilot lamp concentric rings
- LC

www.fortressinterlocks.com

This is a Control Module
**Technical Data**

*core module: lamps*

**Technical Specification**

- **Housing Material**: PBT
- **Colour**: Light Grey & Dark Grey
- **Ingress Protection**: IP65
- **Maximum Frequency of Operations**: 1000 per hr
- **Ambient Temperature**: -5°C to +40 °C
- **Switching Current**: Refer to base module spec
- **Switching Voltage**: Refer to base module spec

**Lamp Module Input Outputs**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input (1)</th>
<th>Output (0)</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR, LG, LC</td>
<td>Lamps</td>
<td>1</td>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

---

**Screw Drawing**

- 30 MIN

---

www.fortressinterlocks.com

_Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice._
eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

description:
flat push button module for machine control.

push buttons options:

- **Flat**: PG, PB, PR, PW
- **Flat Illuminated**: P1, P2, P3, P4
- **40 mm Mushroom - Non Latching**: MB, MR, MG
- **40 mm Mushroom - Latching**: M1, M2

www.fortressinterlocks.com

© = This is a Control Module
**Technical Data**

**core module:** push buttons

<table>
<thead>
<tr>
<th>Technical Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Material</td>
</tr>
<tr>
<td>Colour</td>
</tr>
<tr>
<td>Ingress Protection (complete configuration)</td>
</tr>
<tr>
<td>Mechanical Life</td>
</tr>
<tr>
<td>Electrical Life</td>
</tr>
<tr>
<td>Maximum Frequency of Operations</td>
</tr>
<tr>
<td>Ambient Temperature</td>
</tr>
<tr>
<td>Switches Conformance</td>
</tr>
<tr>
<td>Switching Contact Element</td>
</tr>
<tr>
<td>Switching Current</td>
</tr>
<tr>
<td>Switching Voltage</td>
</tr>
<tr>
<td>Contact Material</td>
</tr>
</tbody>
</table>

### Push Button Module Input Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module Input</th>
<th>Output</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG, PB, PP, PW</td>
<td>Flat Push Buttons</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>P1-P4</td>
<td>Illuminated Push Buttons</td>
<td>1</td>
<td>1</td>
<td>Input (LED) assigned first for P1-P4</td>
</tr>
<tr>
<td>M1-M2, MB, MR, MG</td>
<td>Mushrooms</td>
<td>0</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

www.fortressinterlocks.com
eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

**description:**
selector switch module for machine control. Available in black, red or green in 2 position or 3 position, either latching or non latching (i.e. stays in switched position or spring returns).

2 position spring return to anticlockwise (no output)
3 position spring return to central position (no output)

**selector switch options:**

2 position latching / non latching

- 2A Latching
- 2B Latching
- 2C Latching

- 2D Non latching
- 2E Non latching
- 2F Non latching

3 position latching / non latching

- 3A Latching
- 3B Latching
- 3C Latching

- 3D Non latching
- 3E Non latching
- 3F Non latching

[www.fortressinterlocks.com](http://www.fortressinterlocks.com)

© 2002-2010—Fortress Interlocks, Inc. All rights reserved. www.fortressinterlocks.com

(Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com)
Technical Data

core module: selector switches

Selector Switch Module Input Outputs

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input (1)</th>
<th>Output (0)</th>
<th>Order of pin assignment from base to head</th>
<th>Module operates on safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A - 2F</td>
<td>2 Position Selector Switch</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>3A - 3F</td>
<td>3 Position Selector Switch</td>
<td>0</td>
<td>2</td>
<td>Clockwise output assigned first</td>
<td>0</td>
</tr>
</tbody>
</table>

Technical Specification

- Housing Material: PBT
- Colour: Light Grey & Dark Grey
- Ingress Protection: IP65
- Mechanical Life: 300000 Operations
- Electrical Life: 300000 Operations
- Maximum Frequency of Operations: 1000 per hr
- Ambient Temperature: -5°C to +40 °C
- Switches Conformance: IEC 60947-5-1
- Switching Contact Element: 2 NO
- Switching Current: Refer to base module spec
- Switching Voltage: Refer to base module spec
- Contact Material: 90% Silver and 10% Nickel

Selector Switch Drawing

Screw Drawing

www.fortressinterlocks.com

Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice.
**eGard** offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

**Description:**

- **Head** - rotatable through 360 degrees for ease of operation. With top and side entry.

- **Cap** - used for all none doorlock configurations.

- **Actuator** - a selection of robust tongue actuators, all eliminating the need for brackets

**Head Options:**

- Head only: HM
- Cap: HC
- Head with fixed actuator: HF

**Actuator Options:**

- Slam / hinged door actuator: AH
- Sliding door actuator: AS
- Fixed actuator: AF

www.fortressinterlocks.com
**Technical Data**

**head modules:**

**head / cap / actuators**

---

### Head

- **Housing Material:** PBT
- **Colour:** Light Grey & Dark Grey
- **Ingress Protection:** IP65
- **Operating Force:** 5 to 10 N
- **Retention Force Locked:** 1000 N
- **Mechanical Life:** 1000000 Operations
- **Maximum Frequency:** 1 per second
- **Ambient Temperature:** -5°C to +40°C
- **min hinged door (radius):** 150mm (AH)

### Cap

- **Housing Material:** PBT
- **Colour:** Light Grey & Dark Grey
- **Ingress Protection:** IP65
- **Ambient Temperature:** -5°C to +40°C

---

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Module</th>
<th>Input</th>
<th>Output</th>
<th>Order of pin assignment from base to head</th>
<th>safety circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF</td>
<td>Head &amp; Fixed Actuator</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>HM</td>
<td>Head</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>HC</td>
<td>Cap</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

*For further information on eGard configuration rules please click here*

---

**www.fortressinterlocks.com**

Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice.
Technical Data head modules: head / cap / actuators

HC Drawing

AF Drawing

www.fortressinterlocks.com

Fortress Interlocks Ltd reserves the right to alter product specification and introduce improvements without prior notice.

Courtesy of Steven Engineering, Inc. ● 230 Ryan Way, South San Francisco, CA 94080-6370 ● General Inquiries: (800) 670-4183 ● www.stevenengineering.com