Fortress Interlocks

Data Sheet

Slide Bar: Internal Release or Spring Loaded

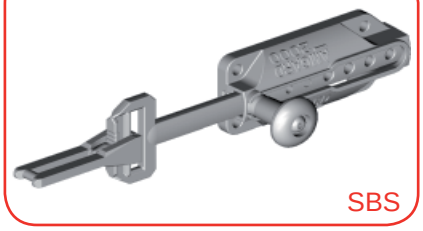
amGard

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.

SBI



SBS

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.

www.fortressinterlocks.com

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Fortress Interlocks

Data Sheet

Slide Bar: Internal Release or Spring Loaded

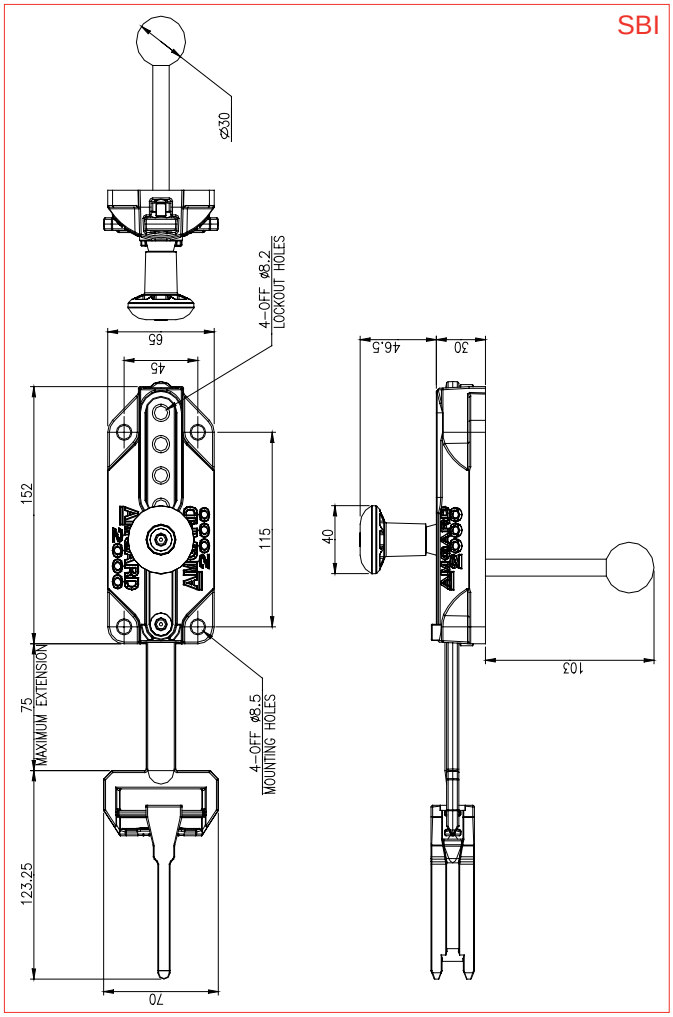
Technical Specification

Housing Materials	Stainless Steel to BS3146
Colour	Stainless Steel
Operating Force (Spring Loaded)	194Nm
Maximum Approach Speed	20m/minute

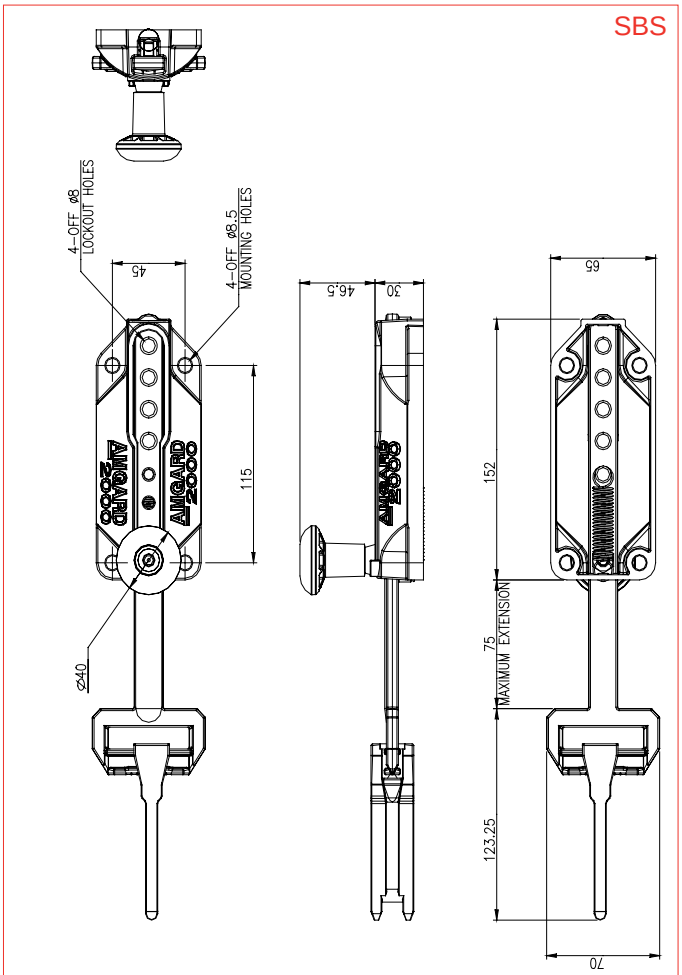
Technical Specification

Maximum Frequency of Operation	7,200/hour
Ambient Temperature	-50°C to +40°C (Mean Over 24 Hours = +35°C)

SBI



SBS



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Fortress Interlocks

Data Sheet AmLok AS-i

amGard

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^{o} increments, the handle can also be turned through 360^{o} in 45^{o} 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

A_DS_E_AMLOKASI_V2.0_DEC05

amGard

Fortress Interlocks

Data Sheet

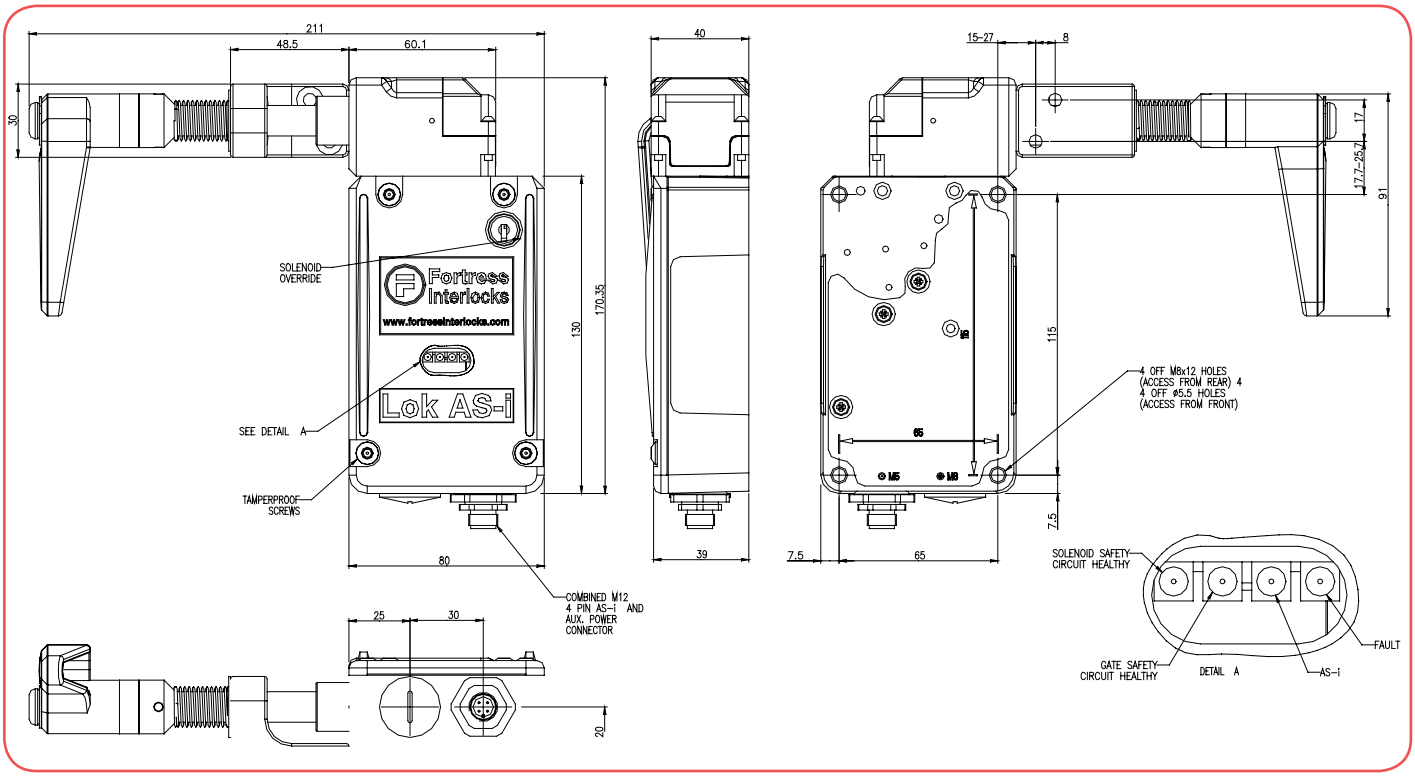
AmLok AS-i

Technical Specification

Housing Materials	Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146
Paint Finish	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red & Black & Stainless Steel
Ingress Protection	IP67 (DIN 400050)
Am Handle Operating Force	0.5Nm
Auto Head Retention Forced Locked	10KN
Maximum Approach Speed	20m/minute
Mechanical Life	>1,000,000 Switching Cycles

Technical Specification

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



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amGard

Fortress Interlocks

Data Sheet AmStop AS-i

amGard

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 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^{o} increments. The handle can be turned through 360^{o} in 45^{o} 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.

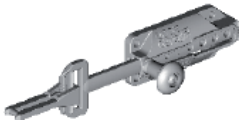
operation - when the machinery is in operation the handle is engaged and the power is on. If access is required, the door is simply opened releasing the handle from the unit, giving positively guided, forced disconnection of the safety switch contacts. This information is transmitted via the 'AS-i Safety 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

www.fortressinterlocks.com

A_DS_E_AMSTOPASI_V2.0_DEC05

amGard

Fortress Interlocks

Data Sheet

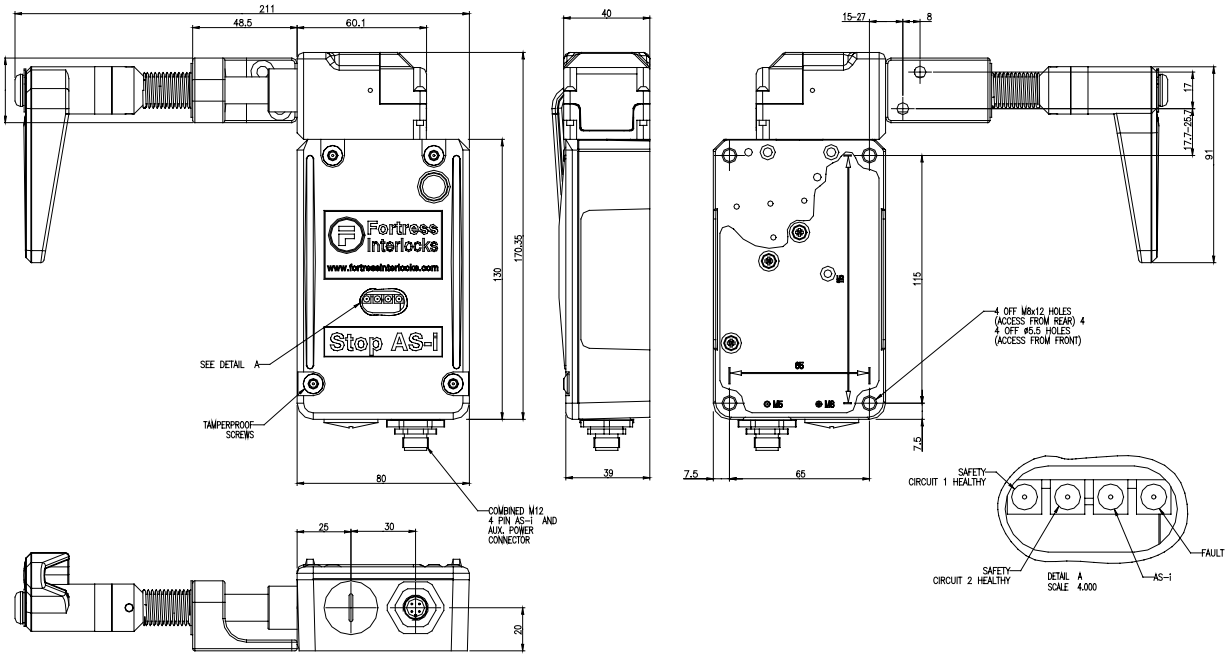
AmStop AS-i

Technical Specification

Housing Materials	Zinc Alloy to BS EN 12844/ Stainless Steel to BS3146
Paint Finish	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red & Black & Stainless Steel
Ingress Protection	IP67 (DIN 400050)
Am Handle Operating Force	0.5Nm
Auto Head Retention Forced Locked	10KN
Maximum Approach Speed	20m/minute
Mechanical Life	>1,000,000 Switching Cycles

Technical Specification

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



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amGard

Fortress Interlocks

Data Sheet AtLok AS-i

amGard

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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^{o} 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 it 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.

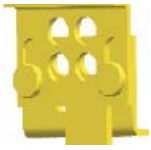
Options

Safety Key Adaptor

Internal Release

Padlock Adaptor

Lockout Device



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A_DS_E_ATLOKASI_V2.1_MAY07

amGard

Fortress Interlocks

Data Sheet

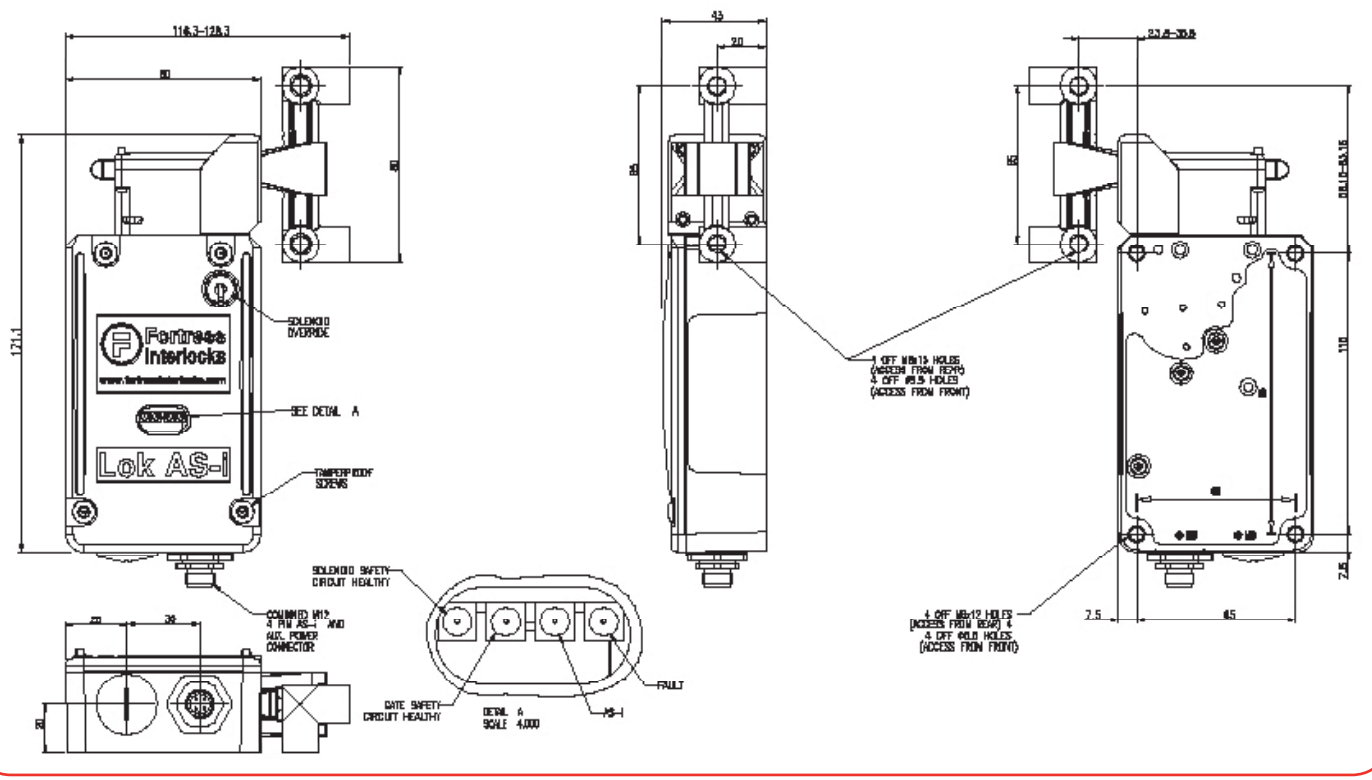
AtLok AS-i

Technical Specification

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

Technical Specification

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



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amGard

Fortress Interlocks

Data Sheet AtStop AS-i

amGard

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^{o} 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.

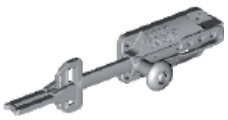
operation - when the machinery is in operation the tongue is engaged and the power is on. If access is required, the door is simply opened releasing the tongue from the unit, giving positively guided, forced disconnection of the safety switch contacts. This information is transmitted via the 'AS-i Safety 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

www.fortressinterlocks.com

A_DS_E_ATSTOPASI_V2.1_MAY07

amGard

Fortress Interlocks

Data Sheet

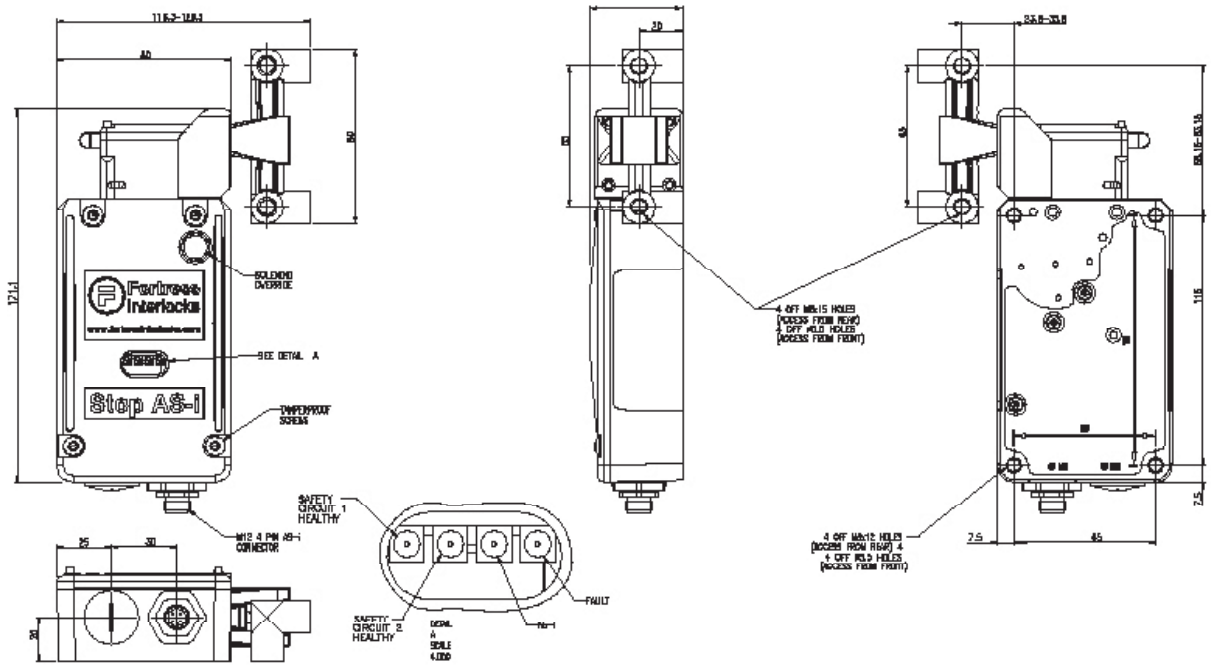
AtStop AS-i

Technical Specification

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

Technical Specification

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



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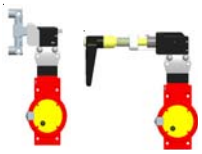
amGard

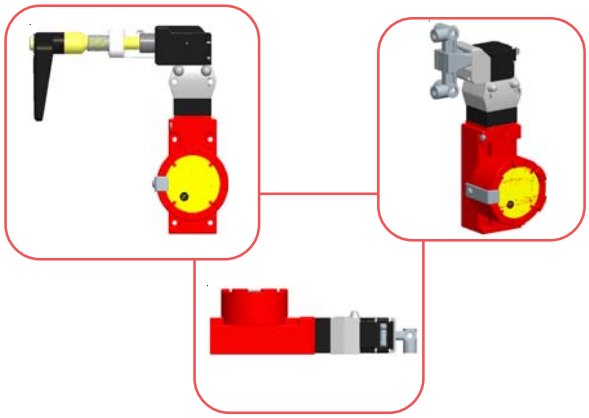
Fortress Interlocks

Data Sheet

Stop XP / TX



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 suitablle for category 4 applications.



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:

part number

UL/CSA Certified Product

AtStopXP

ATEX Certified Product

AtStopTX

part number

UL/CSA Certified Product

AmStopXP

ATEX Certified Product

AmStopTX

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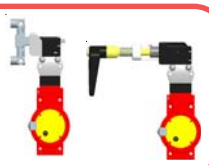
Fortress Interlocks

Technical Data

Stop XP / TX

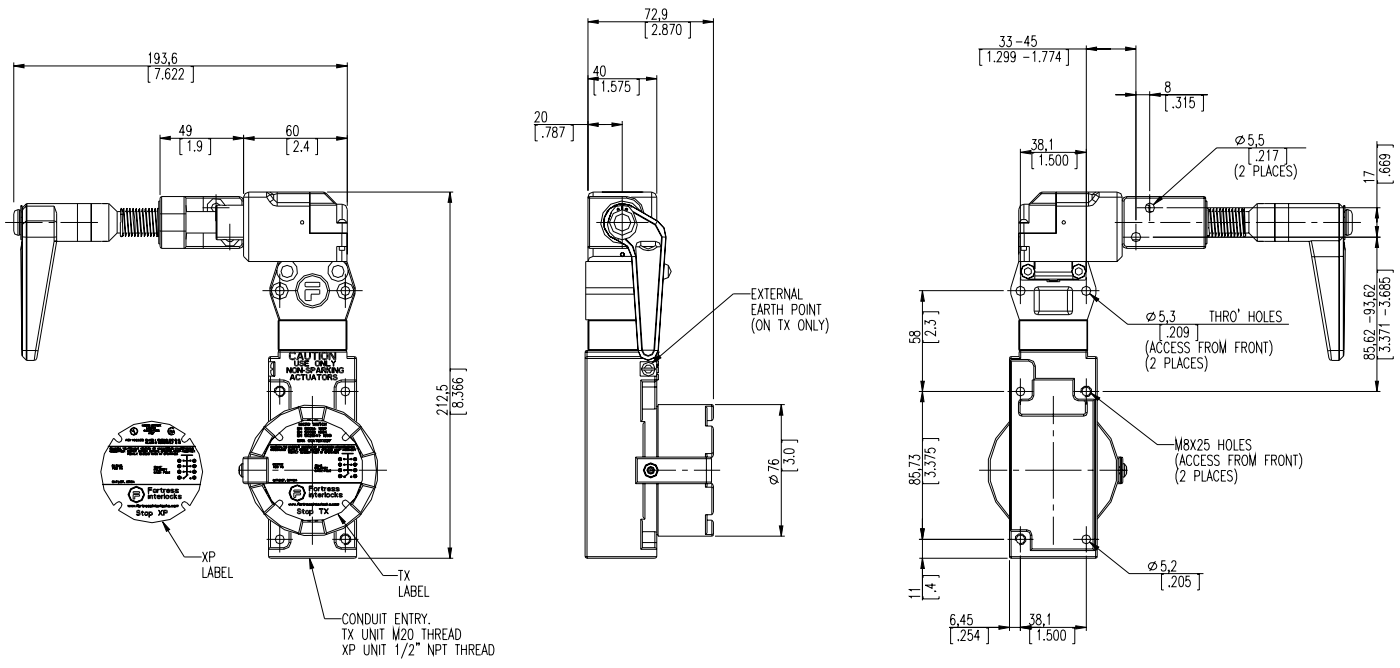


Features & Benefits

Certification	**UL/CSA, ATEX**
Switch	**Dual channel force break safety switch**
	3N/C 1 N/O
Misalignment	**Am - +/- 3mm**
	At - +/- 12mm
Heads	**Am & At 360⁰ at 90⁰ increments**
Door	**Suitable for sliding or hinged doors.**
Actuators	**Am - Handle**
	At - Tongue Actuator
Sequence	**Door open control power isolated**
Safety Key Modules	**Available**

Technical Specification

Certification:	XP - UL (#E61730) CSA (#LR57327) TX - ATEX – En50014:1997, En50018:1994, En50281:1998, SIRA 00ATEX1037
Protection against Dust & Water:	XP- NEMA 1, 3, 4, 6, 7, 9 and 13 TX – IP67
Rated AC Voltage (IEC947-5-1):	AC15 A300, 240V, 720 VA
Rated DC Voltage (IEC947-5-1):	DC13 Q300, 240V, 69 VA
Material:	Stainless Steel, Brass, Aluminium & Zinc Alloy.
Gland Entry:	XP – 3/4" – 14 NPT TX – M20
Safety Switch Type:	Positive Break (N/C Contacts)
Contacts:	3 N/C, 1 N/O
Switch contact gap:	5mm
Operating temperature:	-12 to 85ú C (10 to 185ú F)



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Fortress Interlocks

Data Sheet Key Adaptors

amGard

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

A_DS_E_A/SKA_V2.0_DEC05

amGard

Fortress Interlocks

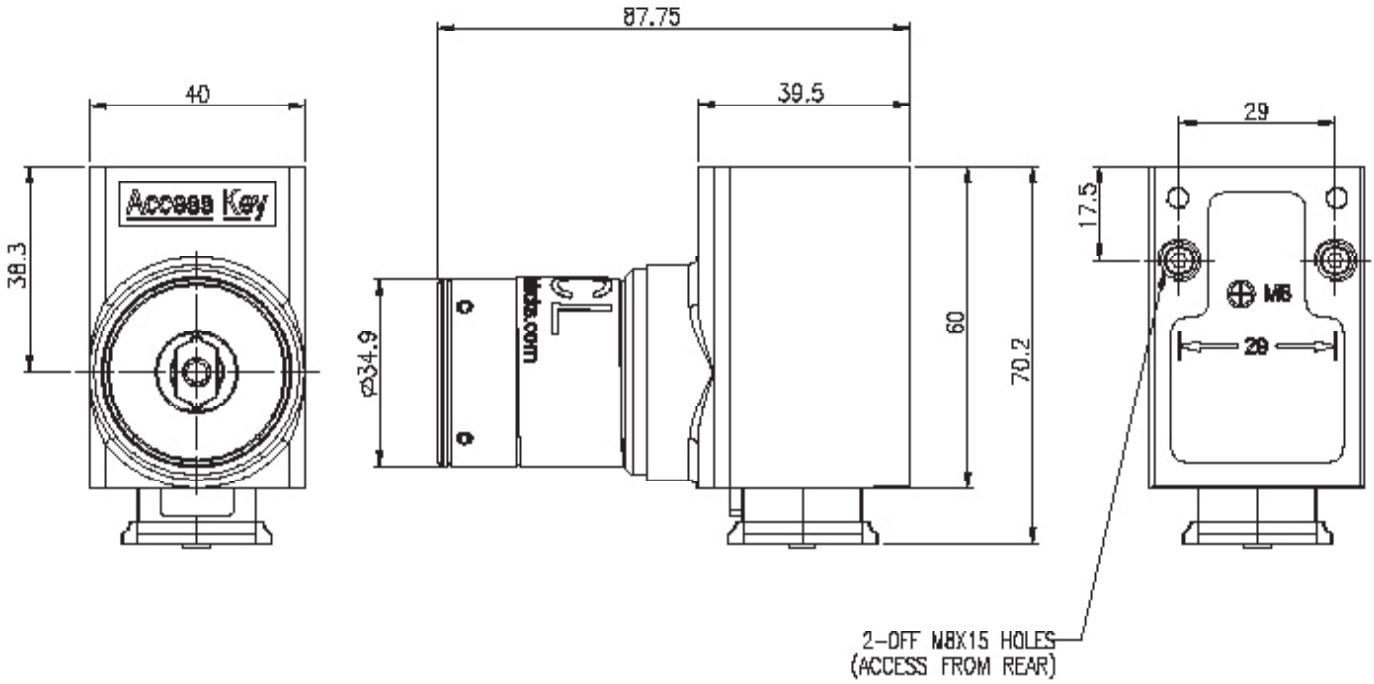
Data Sheet Key Adaptors

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



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Fortress Interlocks

Data Sheet

Internal Release Adaptor

amGard

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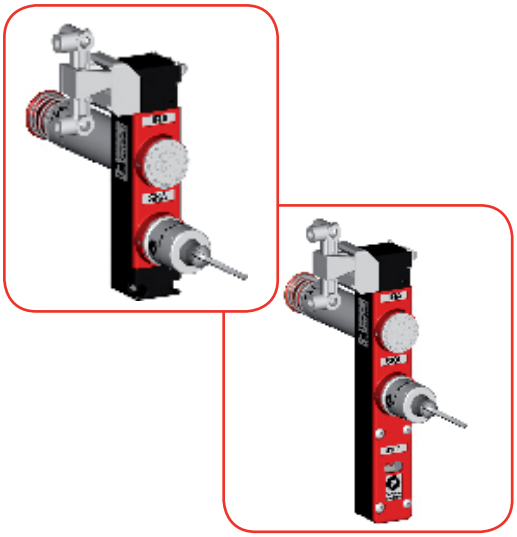
description:

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

Lock portion

CL

ML

Stainless Steel spring loaded dustcover

Colour coding available

www.fortressinterlocks.com

A_DS_E_IRA_V2.2_MAY07

amGard

Fortress Interlocks

Data Sheet

Internal Release Adaptor

Features

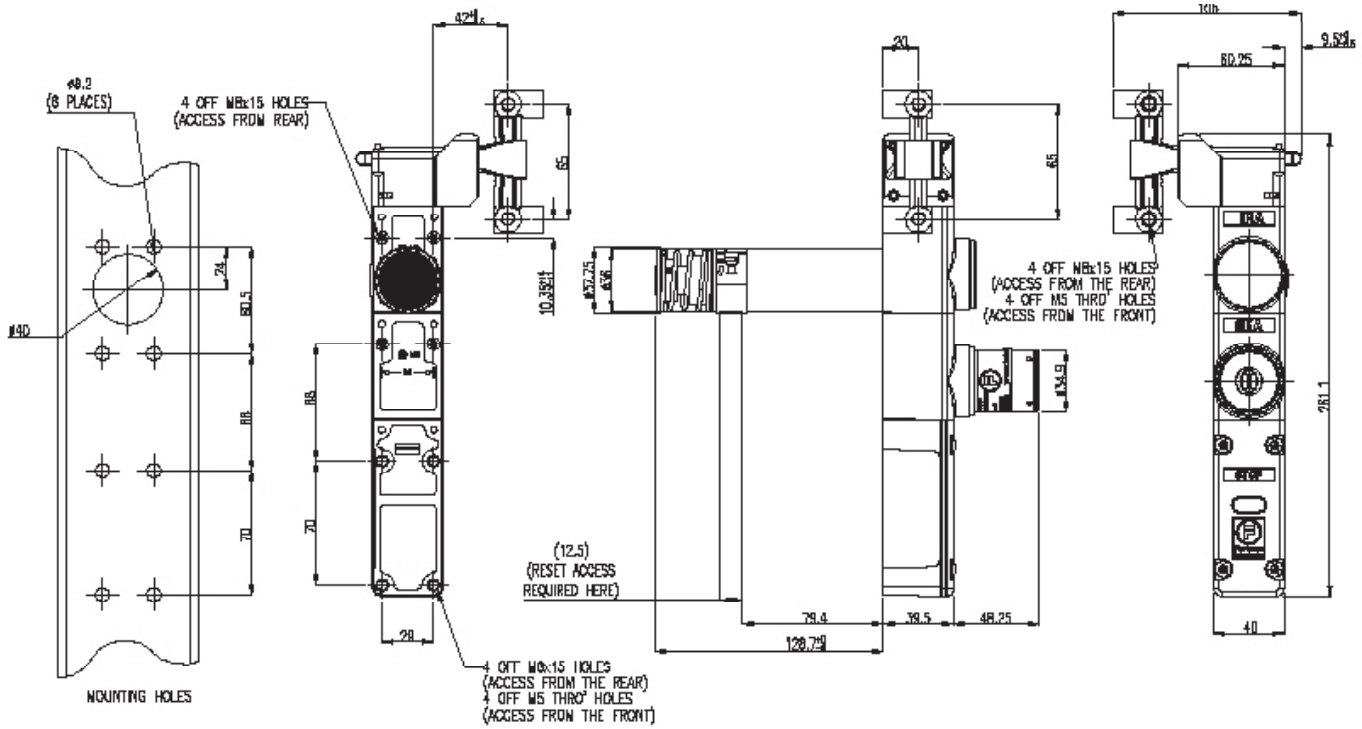
Standard guard thickness 3” maximum

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



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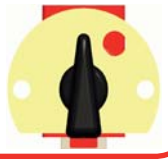
amGard

Fortress Interlocks

Data Sheet

Lock in & Lock Out Adaptor



amGard

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description:

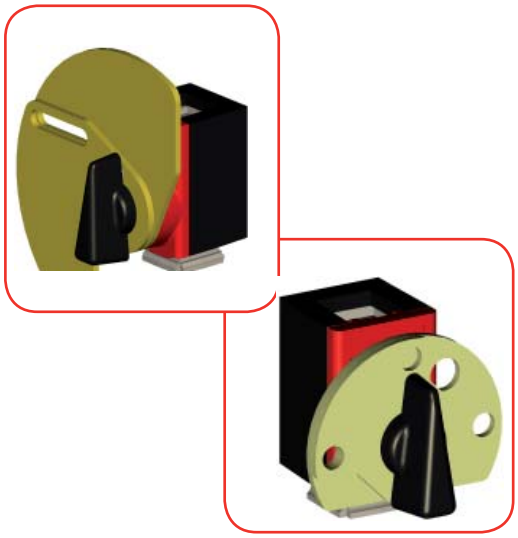
adaptors: fortress padlockable adaptors provide customers with an additional safety feature. Dependent upon your requirements we can supply either a Lock-Out or a Lock-In, Lock-Out Adaptor.

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

www.fortressinterlocks.com

A_DS_E_LOKIN/OUT_V2.0_DEC05

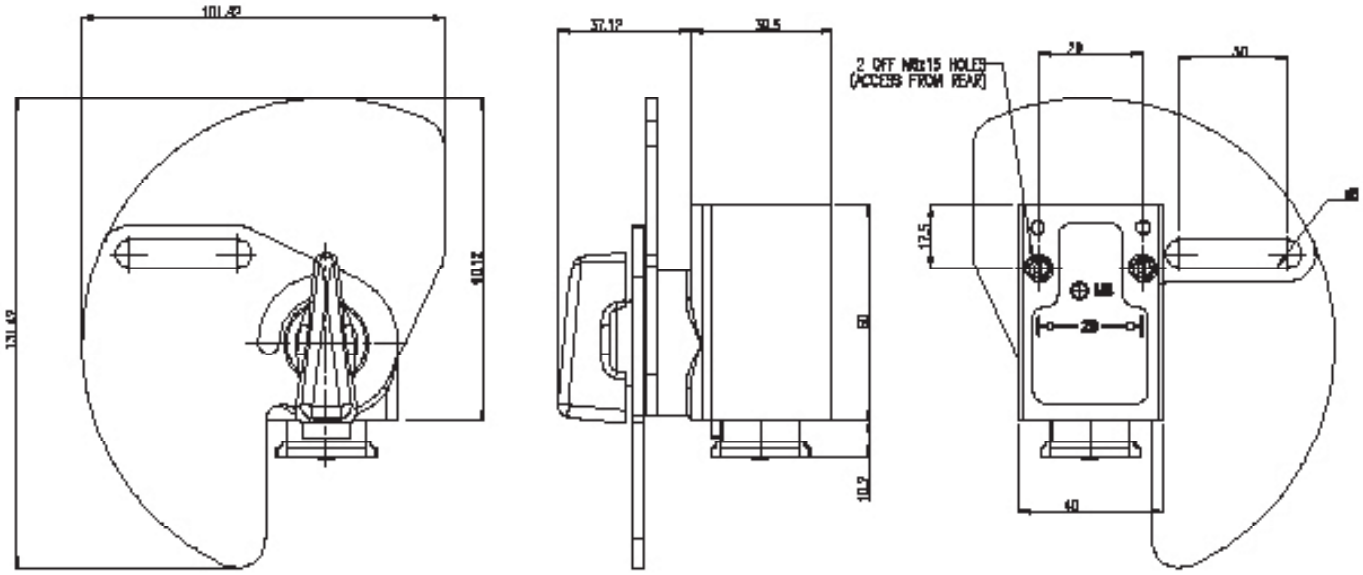
amGard

Fortress Interlocks

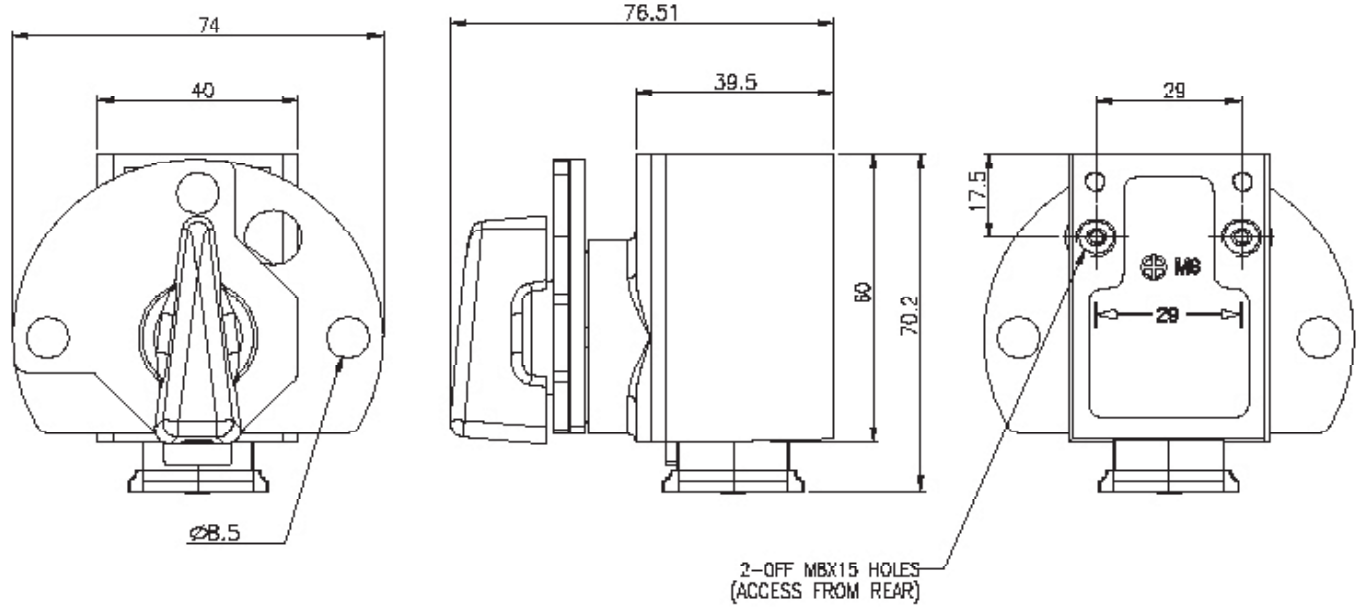
Data Sheet

Lock in & Lock Out Adaptor

Lock-Out Adaptor



Lock-In, Lock-Out Adaptor



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Data Sheet Key Adaptors

amGard

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

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A_DS_E_A/SKA_V2.0_DEC05

amGard

Fortress Interlocks

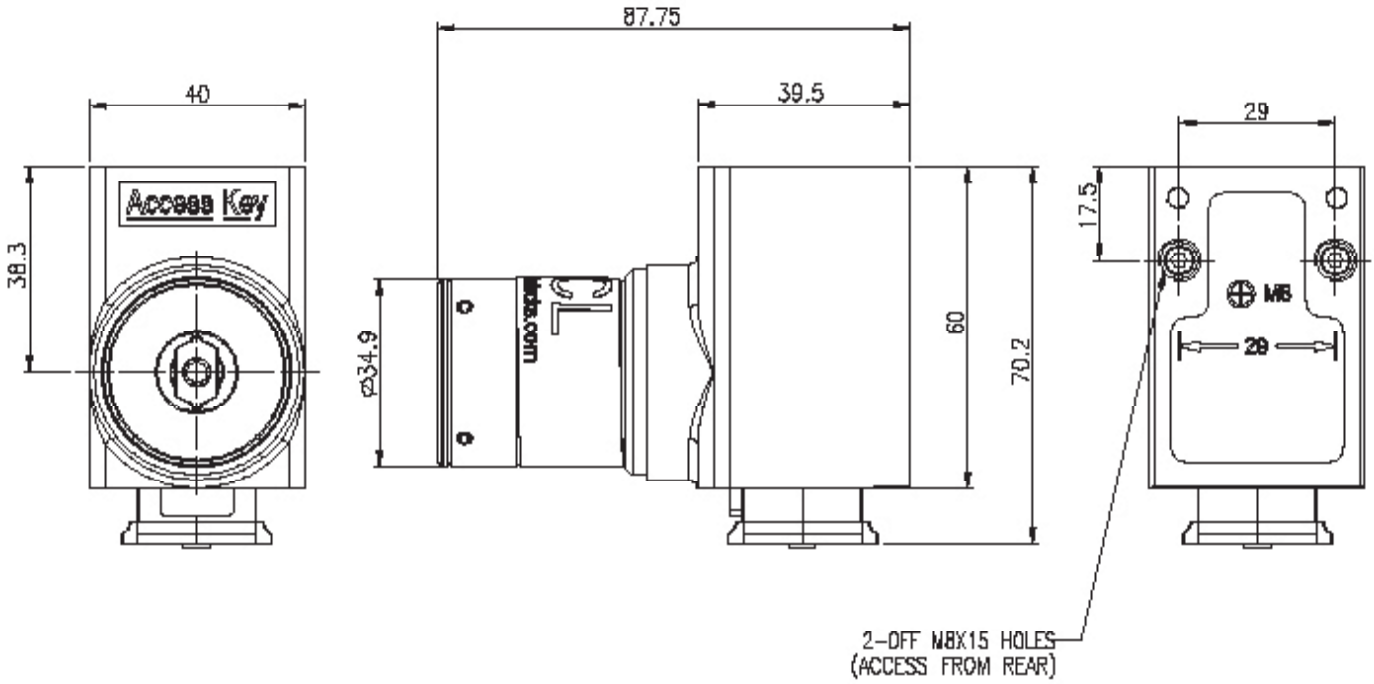
Data Sheet Key Adaptors

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



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Fortress Interlocks

Data Sheet — Cylinder Lock (CL)

mGard

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

www.fortressinterlocks.com

Fortress Interlocks

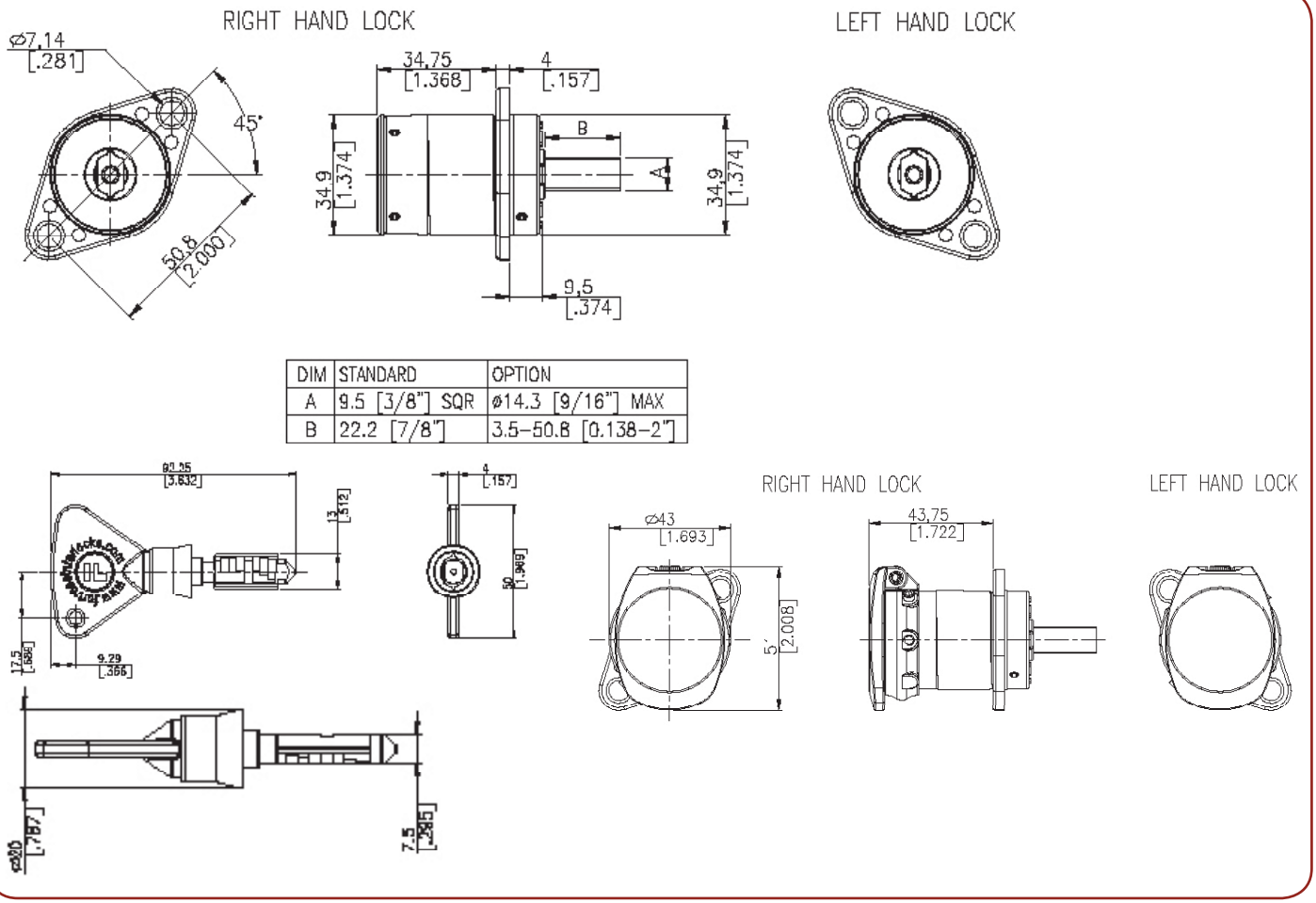
Data Sheet Cylinder Lock (CL)

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.



DIM	STANDARD	OPTION
A	9.5 [3/8"] SQR	ø14.3 [9/16"] MAX
B	22.2 [7/8"]	3.5–50.8 [0.138–2"]

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Fortress Interlocks

Data Sheet Cylinder Lock (CLS)

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:

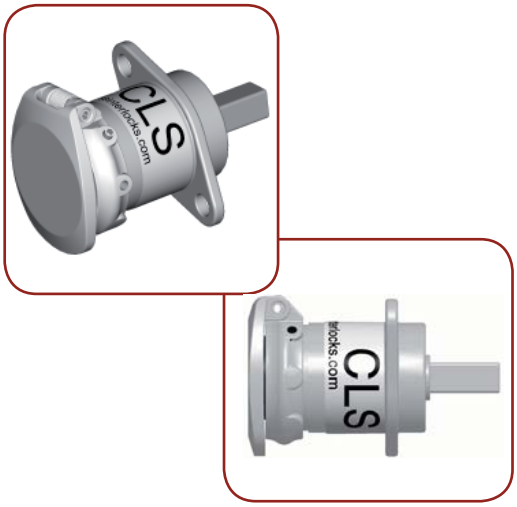
a robust radial disc tumbler lock, the building block of the Fortress range, offering in excess of 200,000 non-masterable combinations. A spring loaded stainless steel dustcover is available as standard.

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^{o} 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

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M_DS_E_CLS_V2.0_DEC05

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Fortress Interlocks

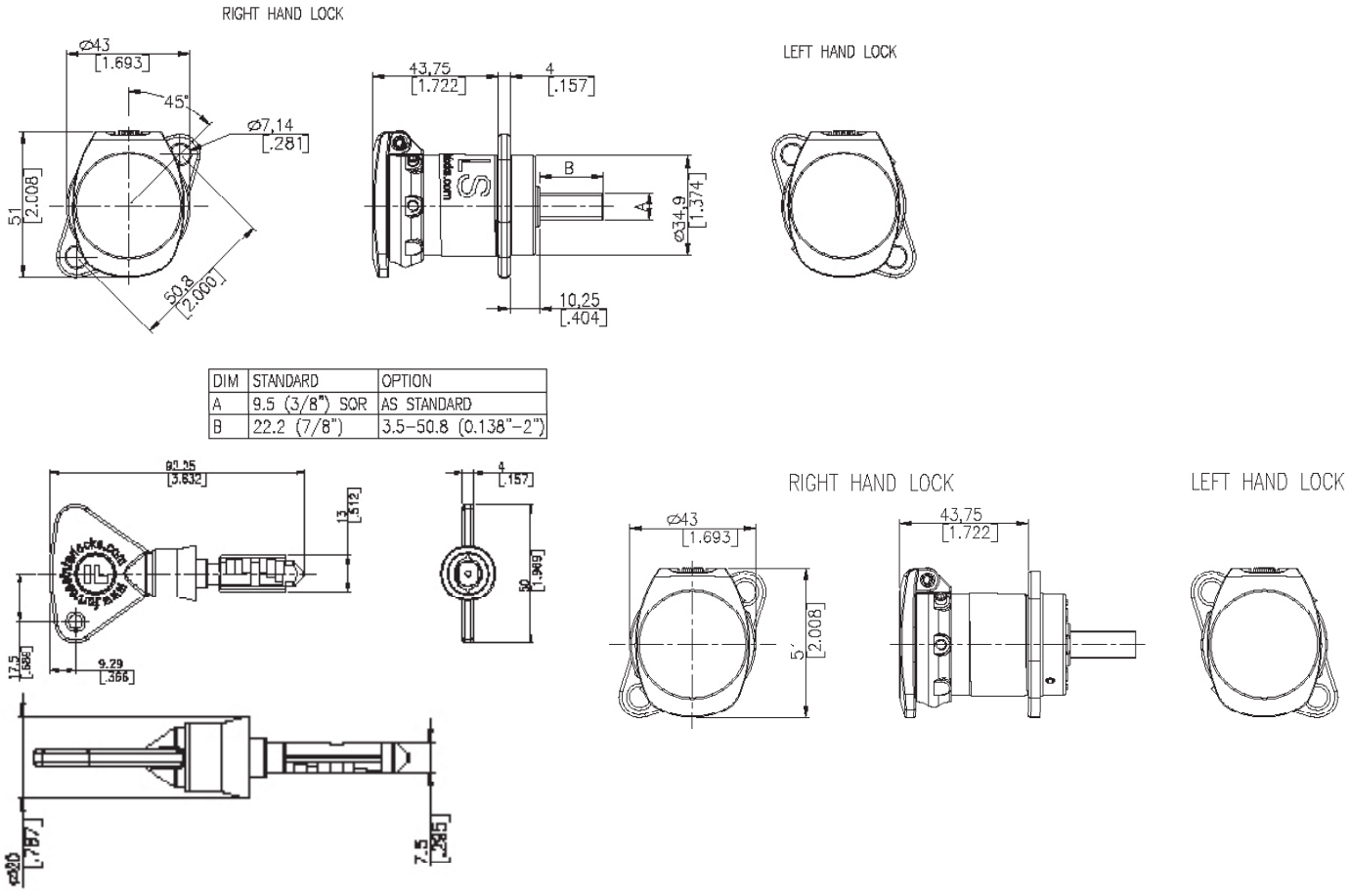
Data Sheet — Cylinder Lock (CLS)

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.



DIM	STANDARD	OPTION
A	9.5 (3/8") SQR	AS STANDARD
B	22.2 (7/8")	3.5–50.8 (0.138"–2")

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Fortress Interlocks

Data Sheet Master Lock (ML)

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

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M_DS_E_ML_V2.0_DEC05

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Fortress Interlocks

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

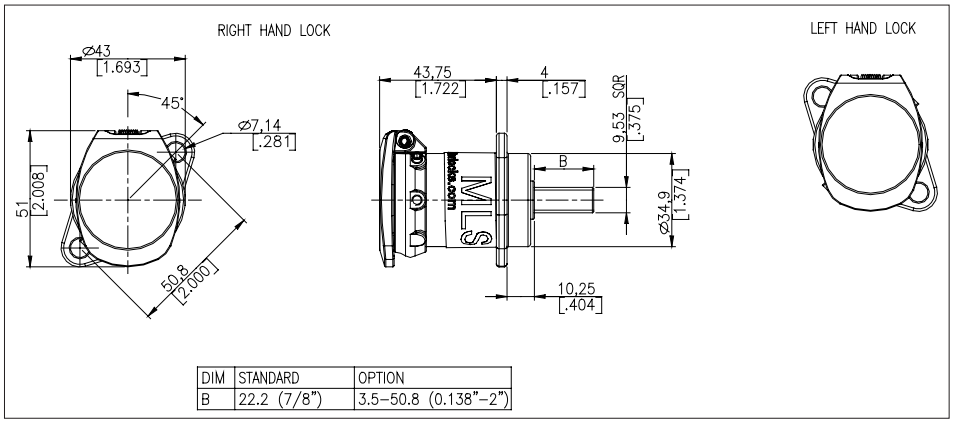
Compatible with the CL Lock, mGard and amGard ranges

Multi-level masterable options available

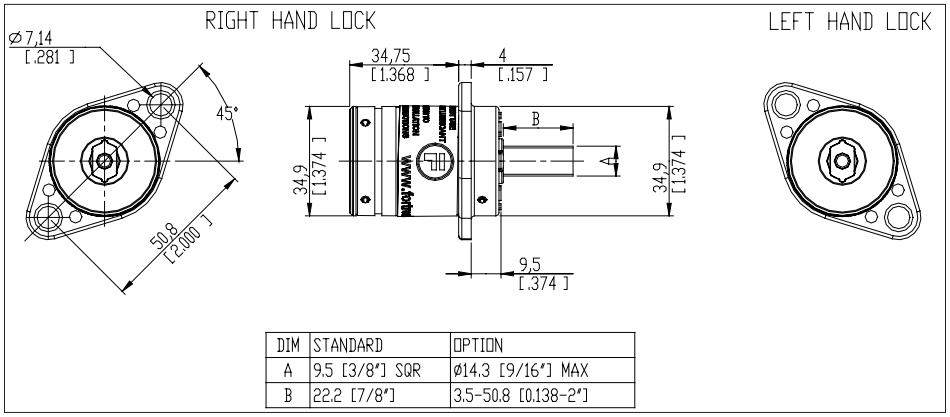
Wide temperature range -40°C + 150°C

Construction

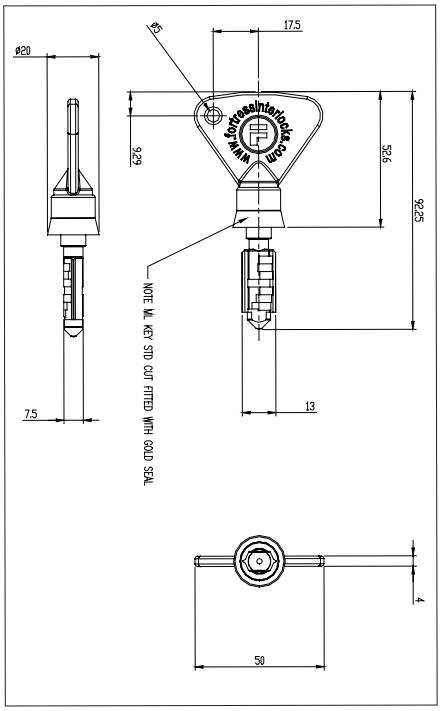
Lock construction - Zinc alloy with a durable satin-chrome finish to lock casing. The internal lock components are made from stainless steel. Standard spindle dimensions are 9.5mm (3/8") square x 22mm (7/8") long. Locks are 'handed' with either a left hand or right hand mounting bias



DIM	STANDARD	OPTION
B	22.2 (7/8")	3.5–50.8 (0.138"–2")



DIM	STANDARD	OPTION
A	9.5 [3/8"] SQR	Ø14.3 [9/16"] MAX
B	22.2 [7/8"]	3.5-50.8 [0.138-2"]



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mGard

Fortress Interlocks

Data Sheet

Master Lock (MLS)
Stainless Steel

mGard

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^{o}

MLIN

Options

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

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Fortress Interlocks

Data Sheet

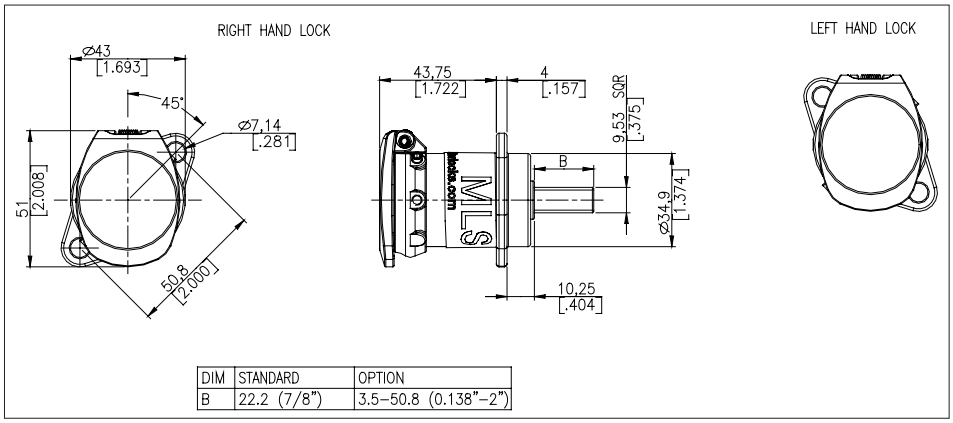
Master Lock (MLS)
Stainless Steel

Features

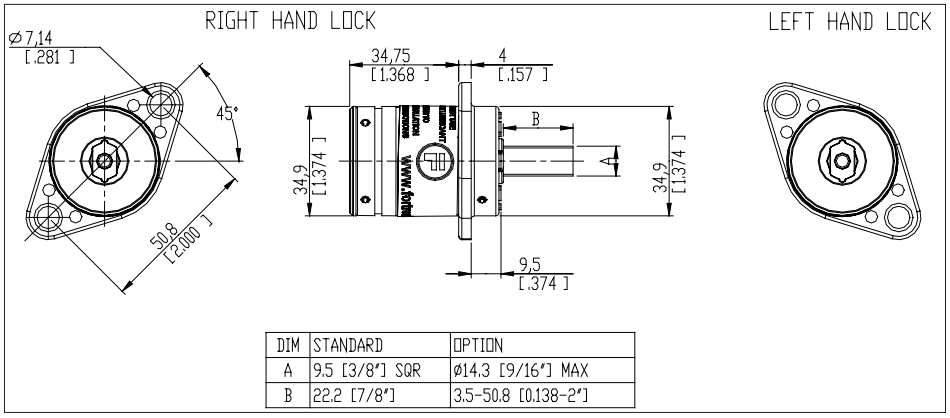
- Ease of operation
- Over 200,000 lock combinations
- Suitable for high frequency applications
- Heavy Duty
- High Integrity
- Compatible with the CL Lock, mGard and amGard ranges
- Multi-level masterable options available
- Wide temperature range -40°C + 150°C

Construction

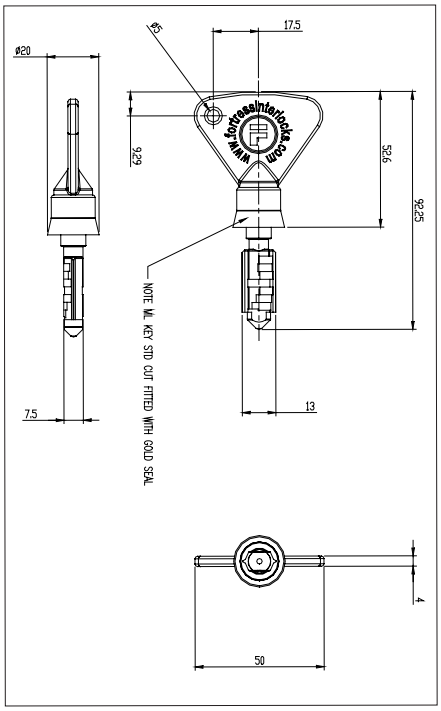
Lock construction - Stainless steel with an electro-polished finish to the lock casing. The internal lock components are made from stainless steel. Standard spindle dimensions are 9.5mm (3/8") square x 22mm (7/8") long. Locks are either left or right 'handed'.



DIM	STANDARD	OPTION
B	22.2 (7/8")	3.5–50.8 (0.138"–2")



DIM	STANDARD	OPTION
A	9.5 [3/8"] SQR	Ø14.3 [9/16"] MAX
B	22.2 [7/8"]	3.5-50.8 [0.138-2"]



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Fortress Interlocks

Data Sheet Option Pod

amGard

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

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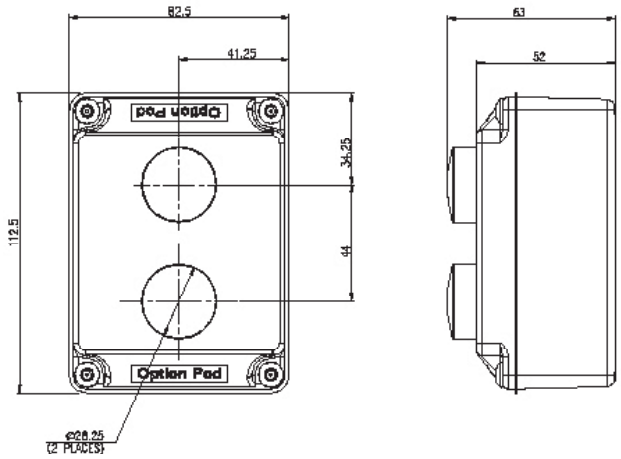
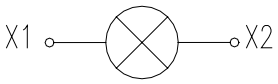
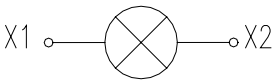
Data Sheet Option Pod

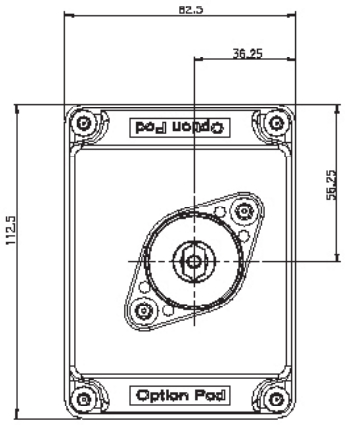
Lamp

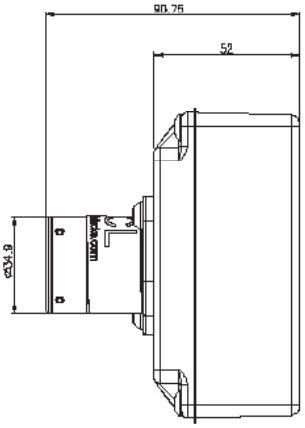


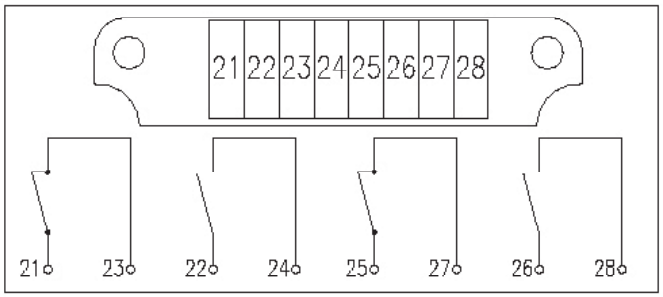




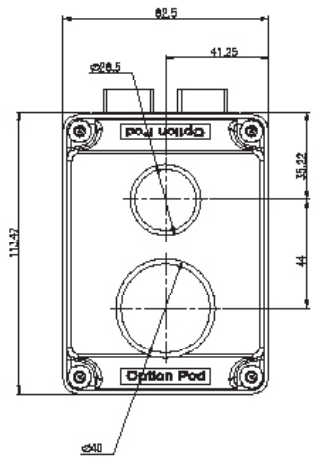
Keyswitch

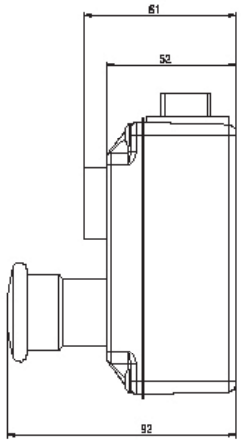


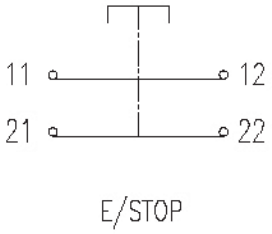


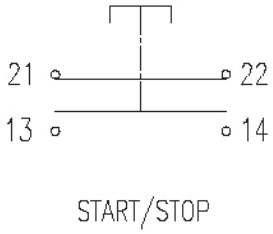


Push Button









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amGard

Fortress Interlocks

Data Sheet

AmLok

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 suitablle 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.

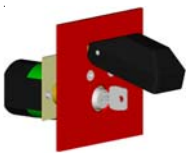
operation - when the machinery is in operation the handle is trapped in the AmLok unit. The access door is locked closed. A solenoid controlled mechanism prevents the handle from being released. To open the guard door an operator must first select stop on the machine control panel. Only when the machine 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

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Fortress Interlocks

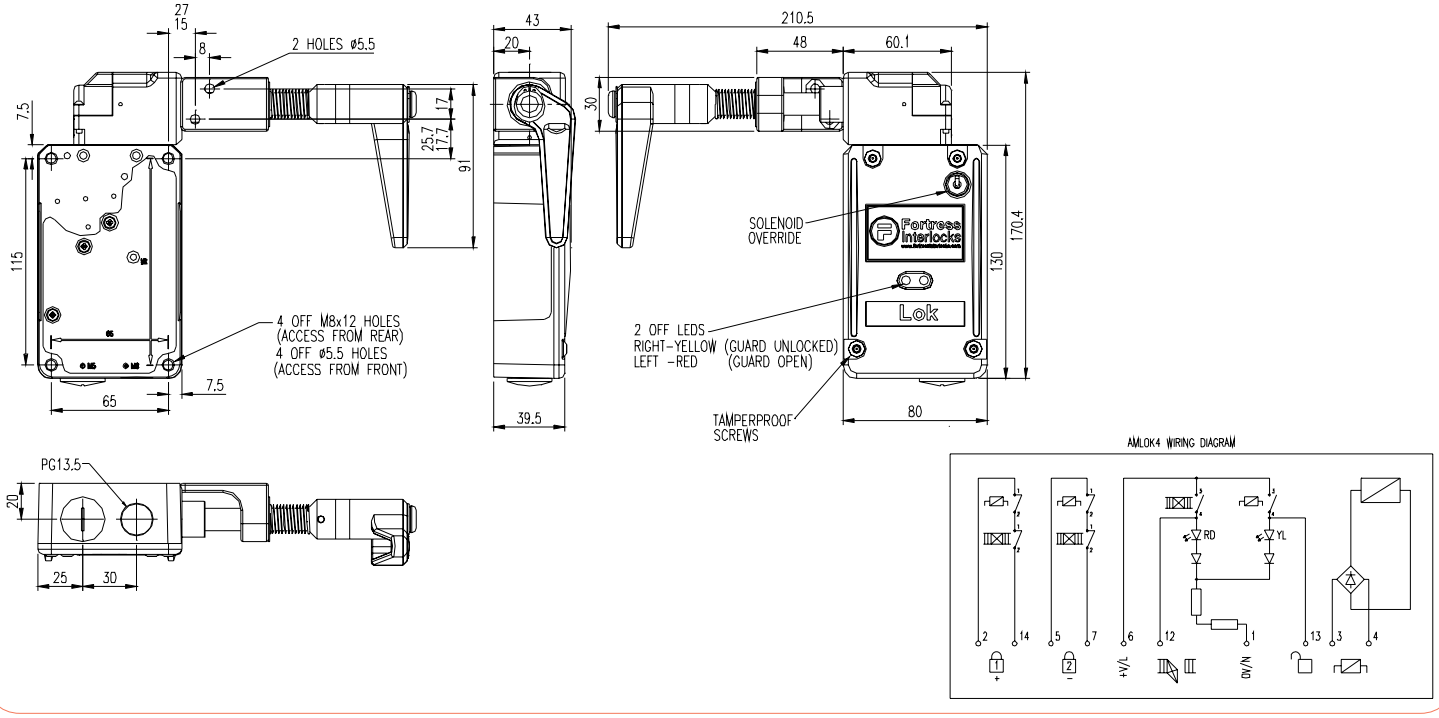
Technical Data AmLok

Technical Specification

Housing Materials	Zinc Alloy to BSEN12844, Stainless Steel to BS3146
Paint Finish	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red, Black and Stainless Steel
Ingress Protection	IP67 (DIN 400050)
Operating Force	0.5Nm
Retention Force Locked	2500N
Maximum Approach Speed	20m/minutes
Mechanical Life	>1,000,000 Switching Cycles
Maximum Frequency of Ops	7,200/hour
Ambient Temperature	-5°C to + 40°C (mean over 24 hrs = +35°C)
Maximum Wire Cross-Section to fit connector	2.50mm²
Connector Type	Spring Activated Vibration Proof Block
Switch Conformance	DIN VDE 0660 Part 206 & IEC

Technical Specification

Switching Contact Element	4NC and 2NO
Switching Principal	Positive Break
Switch Control	3A
Switching Voltage	230V AC Max
Isolating Distance	2 x 2mm per Switch Element
Contact Material	90% Silver and 10% Nickel
Utilization Category	AC 15 or DC 13
Control Voltage	24V AC/DC, 48V AC/DC, 110V AC, 220 AC or 230 AC
Insulating Resistance	20M 0hm
Insulating Voltage	2500V AC
Solenoid Power Rating	12W (Solenoid current at Nominal 24V DC = 500mA. Quasient current = 350mA)
Solenoid Rating (Duty Cycle)	100%
Solenoid Voltage	24V AC/DC, 48V AC/DC, 110V AC, 220V AC or 230 AC
Solenoid Voltage Tolerance	90% to 110% of nominal



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amGard

Fortress Interlocks

Data Sheet AmStop

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 suitablle 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 accesss 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

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amGard

Fortress Interlocks

Technical Data AmStop

Technical Specification

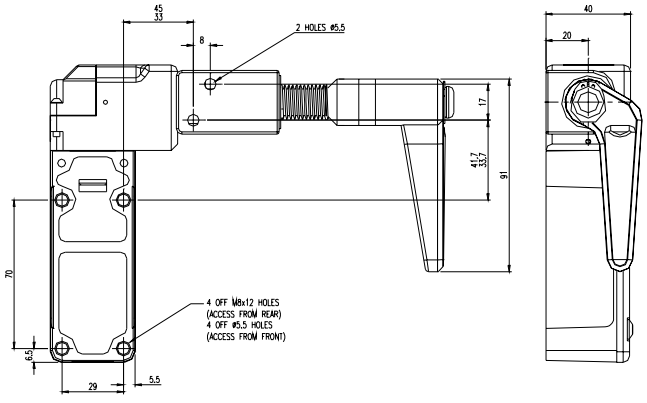
Housing Materials	Zinc Alloy to BS1004A Stainless Steel to BS3146
Paint Finishes	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red and Stainless Steel
Ingress Protection	IP67
Operating Force	5Nm
Retention Force Locked	2500N
Maximum Approach Speed	20m/minute
Mechanical Life	>1,000,000 Switching Cycles
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

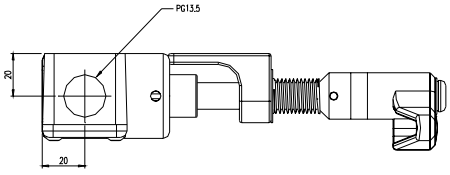
Technical Specification

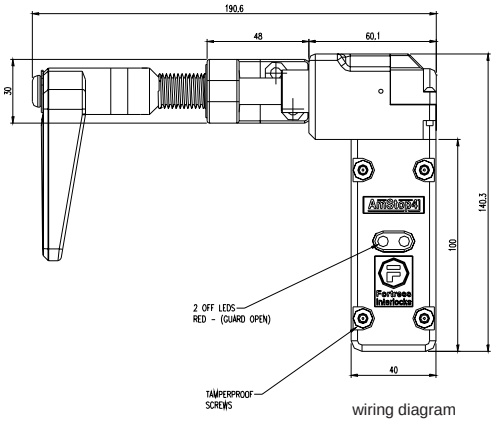
Switching Contact Element	2NC and 1NO
Switching Principal	Positive Break
Switch Control	3A
Switching Voltage	230V AC Max
Isolating Distance	2 x 2mm Per Switch Element
Element Contact Material	90% Silver and 10% Nickel
Utilization Category	AC 15 or DC 13
Control Voltages	24V AC/DC, 48V AC/DC. 110V AC, 220V AC or 230V AC
Insulating Resistance	20M Ohm

Features & Benefits

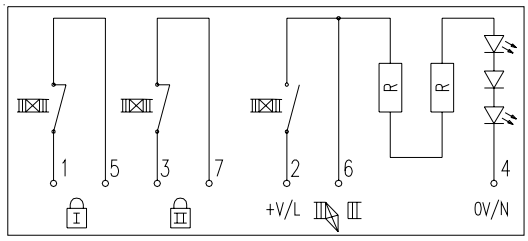
- Non-Solenoid Controlled
- LED Status indicators for greater control
- Dual channel safety circuitry
- Suitable for category 4 applications







wiring diagram



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Fortress Interlocks

Data Sheet AutoLok

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 suitablle for category 4 applications.

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

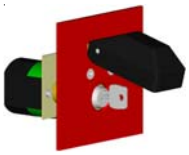
At this point a yellow light on the unit indicates that the tongue actuator can be released. When removed, a red light is illuminated.

options:

Option Pod Lamps

Option Pod Push Button

Option Pod Key Switch



Override Key Switch

AutoLokP

Safety Key Adaptor

Padlock adaptors

Lockout Device

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Fortress Interlocks

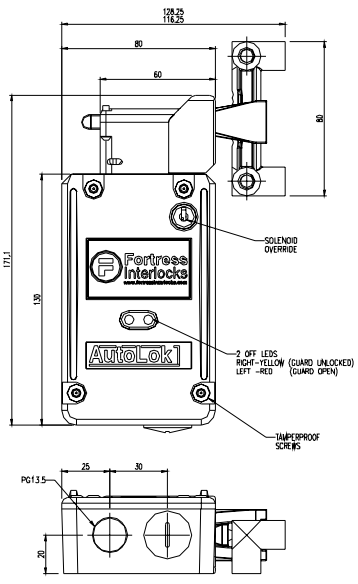
Technical Data AutoLok

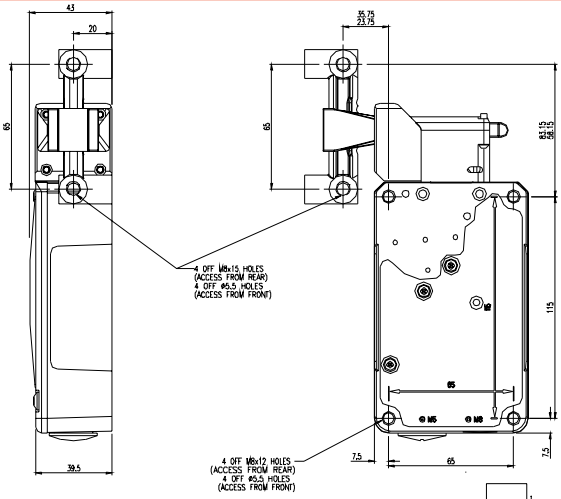
Technical Specification

Housing Materials	Zinc Alloy to BSEN12844, Stainless Steel to BS3146
Paint Finish	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red, Black and Stainless Steel
Ingress Protection	IP67 (DIN 400050)
Operating Force	0.5N
Retention Force Locked	2500N
Maximum Approach Speed	20m/minutes
Minimum door radius	900mm
Mechanical Life	>1,000,000 Switching Cycles
Maximum Frequency of Ops	7,200/hour
Ambient Temperature	-5°C to + 40°C (mean over 24 hrs = +35°C)
Maximum Wire Cross-Section to fit connector	2.50mm^2
Connector Type	Spring Activated Vibration Proof Block
Switch Conformance	DIN VDE 0660 Part 206 & IEC

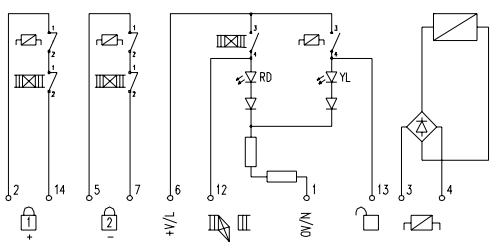
Technical Specification

Switching Contact Element	4NC and 2NO
Switching Principal	Positive Break
Switch Control	3A
Switching Voltage	230V AC Max
Isolating Distance	2 x 2mm per Switch Element
Contact Material	90% Silver and 10% Nickel
Utilization Category	AC 15 or DC 13
Control Voltage	24V AC/DC, 48V AC/DC. 110V AC, 220V AC or 230V AC
Insulating Resistance	20M 0hm
Insulating Voltage	2.500V AC
Solenoid Power Rating	12W (Solenoid current at Nominal 24V DC = 500mA. Quasient current = 350mA)
Solenoid Rating (Duty Cycle)	100%
Solenoid Voltage	24V AC, 48V AC/DC, 110V AC, 220V AC or 230V AC
Solenoid Voltage Tolerance	90% to 110% of nominal





wiring diagram



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Data Sheet AutoStop

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 suitablle for category 4 applications.

description:

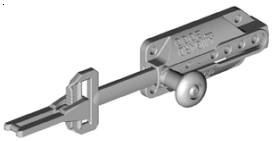
autostop - has a heavy duty tongue and head where the tongue allows a ± 12mm misalignment. The tongue and head unit can rotate in 90° increments. The product is ideally designed for machines without run down cycles where quick and frequent access to equipment is required, via either hinged or sliding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

operation - when the machinery is in operation the tongue is engaged and the power is on. If accesss 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

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amGard

Fortress Interlocks

Technical Data AutoStop

Technical Specification

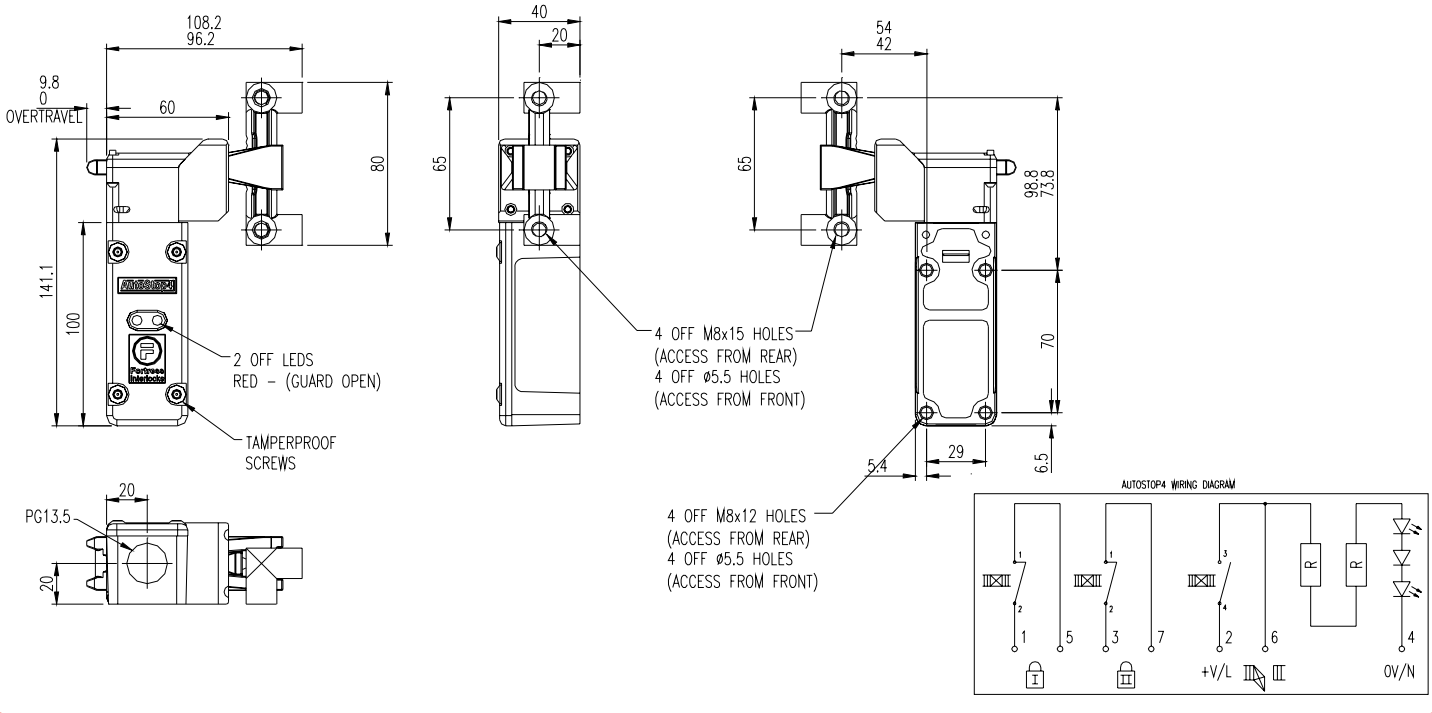
Housing Materials	Zinc Alloy to BS1004A Stainless Steel to BS3146
Paint Finishes	Gloss Polyester Powder Coat on Passivated Base Material
Colour	Red and Stainless Steel
Ingress Protection	IP67
Operating Force	5Nm
Retention Force Locked	2500N
Maximum Approach Speed	20m/minute
Minimum door radius	900mm
Mechanical Life	>1,000,000 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
Insulating Voltage	2,500V AC

Features & Benefits

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



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Fortress Interlocks

Data Sheet

FLP-CLS

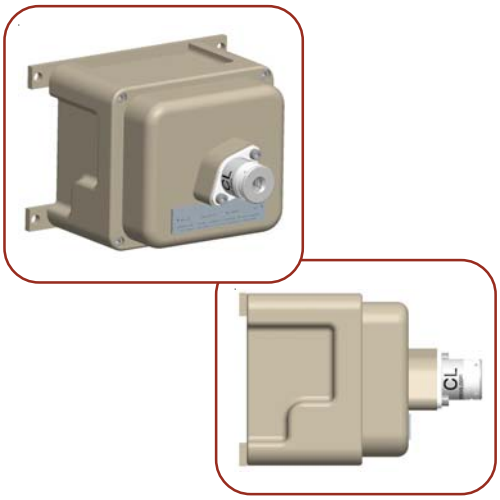
mGard is the ultimate range of robust **mechanical trapped key products**. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

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)

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Fortress Interlocks

Technical Data

FLP-CLS

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

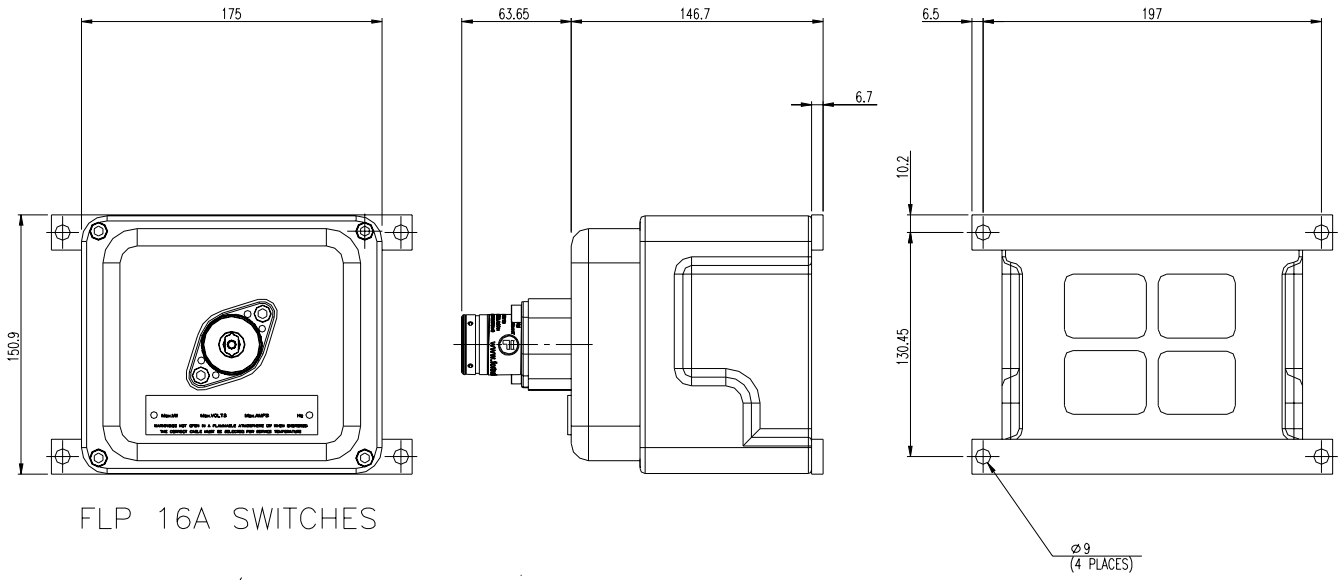
Direct drive operation - Positively opened contacts

Available from 6 amps to 63 amps (specials on request)

Coding can be up to 30 characters

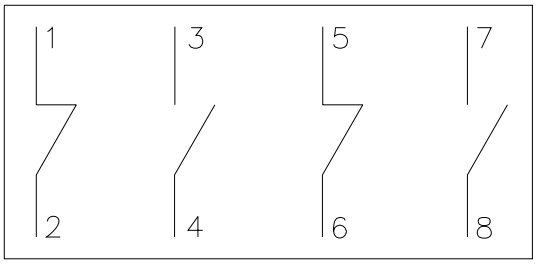
Over 200,000 non-masterable lock combinations available (specials on request)

4NO or 2NO/2NC contacts available (specials on request)

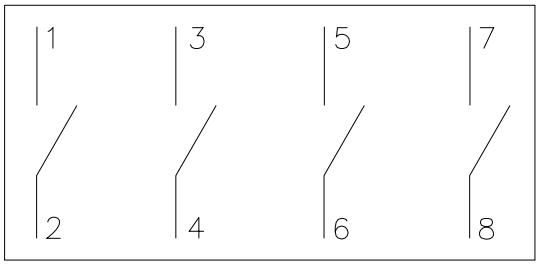


FLP 16A SWITCHES

2NO / 2NC



4NO



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Fortress Interlocks

Data Sheet

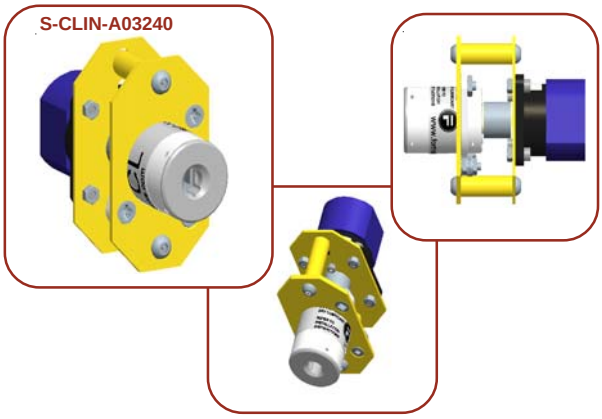
S

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

part number

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Fortress Interlocks

Technical Data

S

Construction

Mounting Plate:	Zinc Plated Mild Steel
Lock Mechanism:	Die-cast zinc body with stainless steel operating mechanism
Key:	Stainless Steel

Features & Benefits

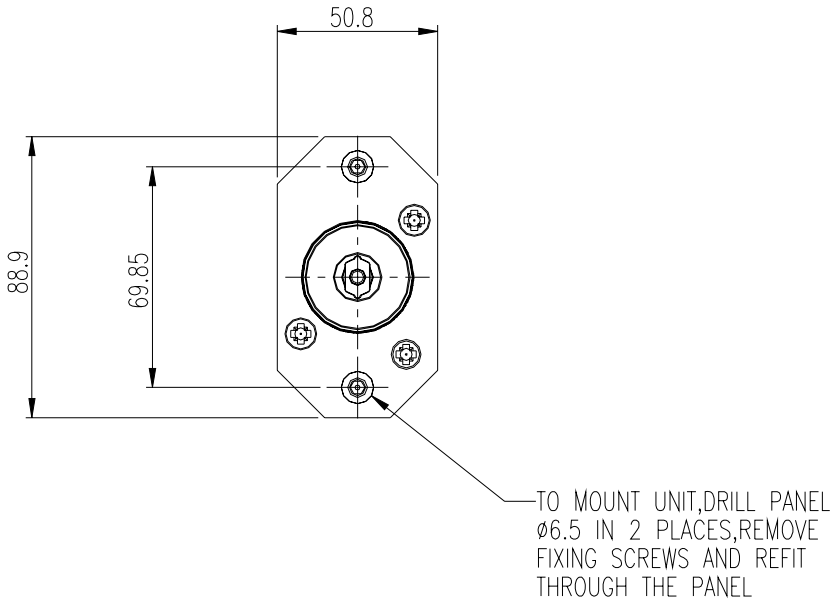
Direct drive operation - Positively opens contacts

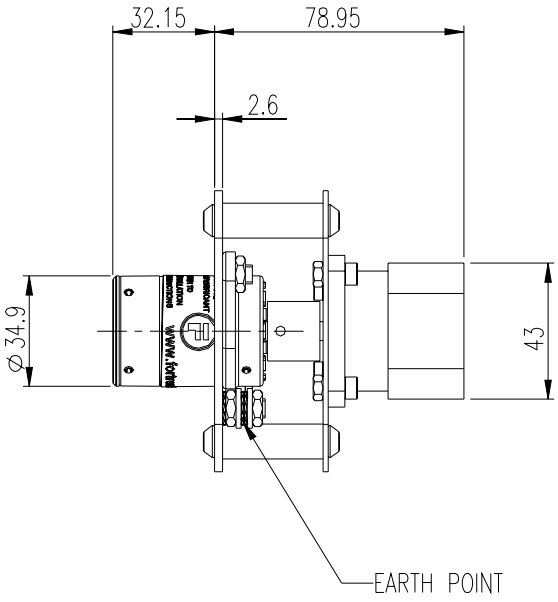
Available in 20A, 32A, 63A and 150A versions
(specials upon request)

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)





S-CLIN-A02040

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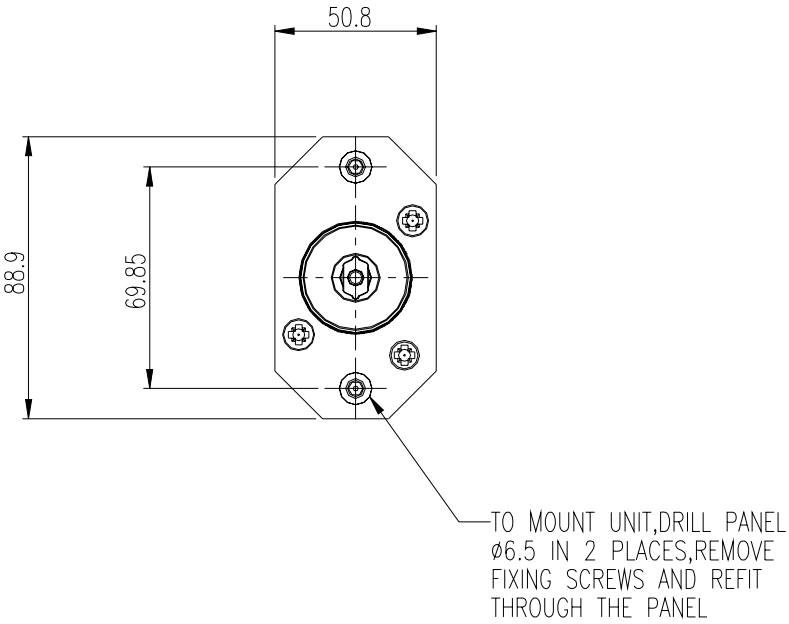
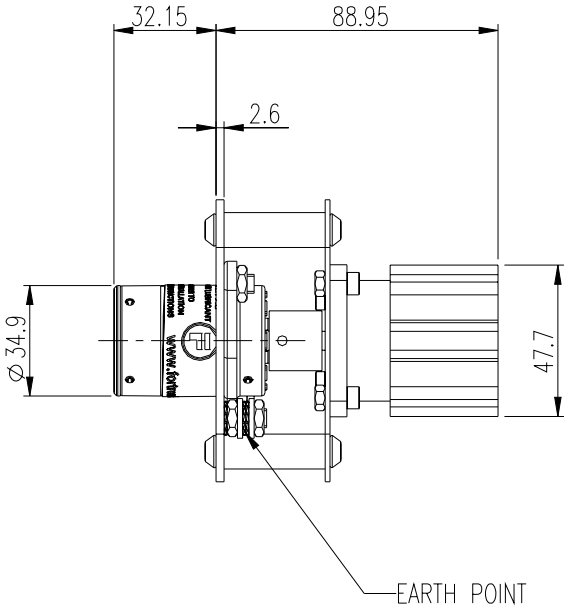
Fortress Interlocks

Technical Data S





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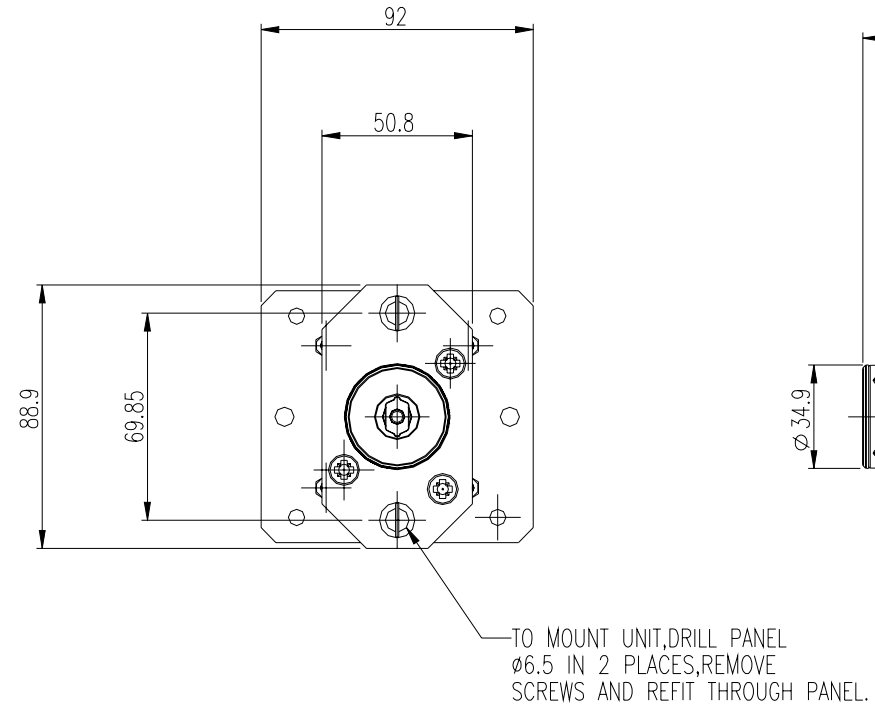

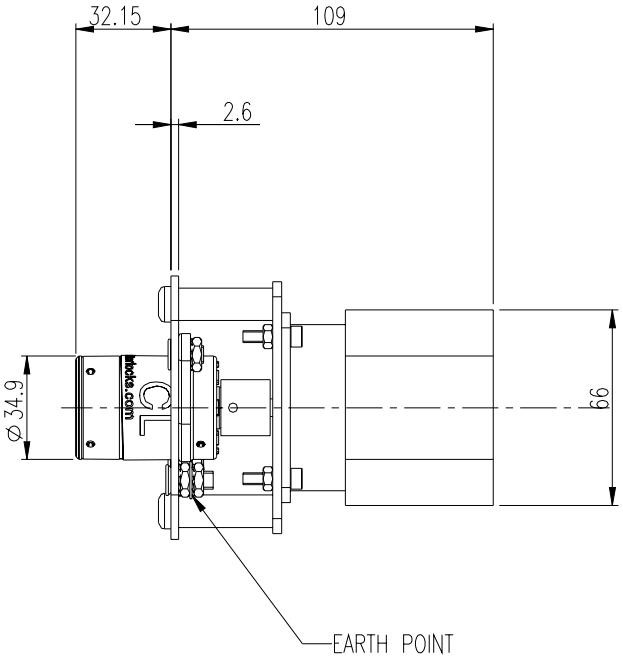

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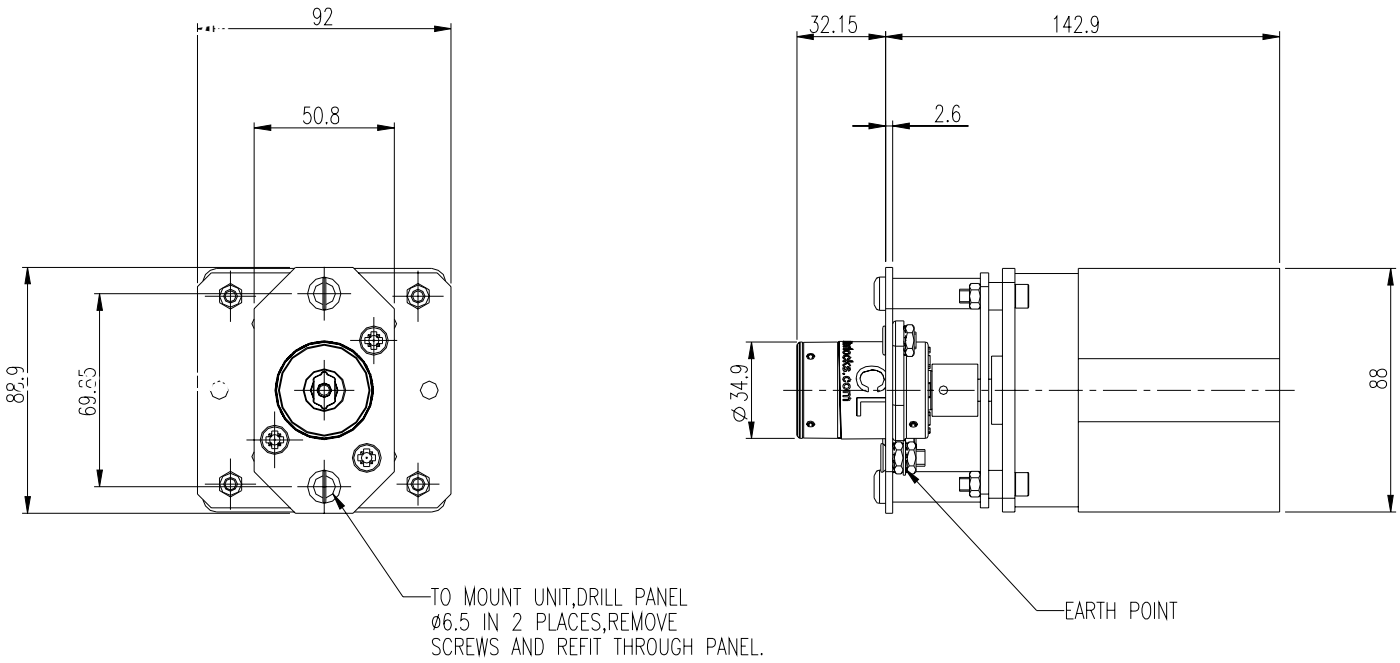
Technical Data

S



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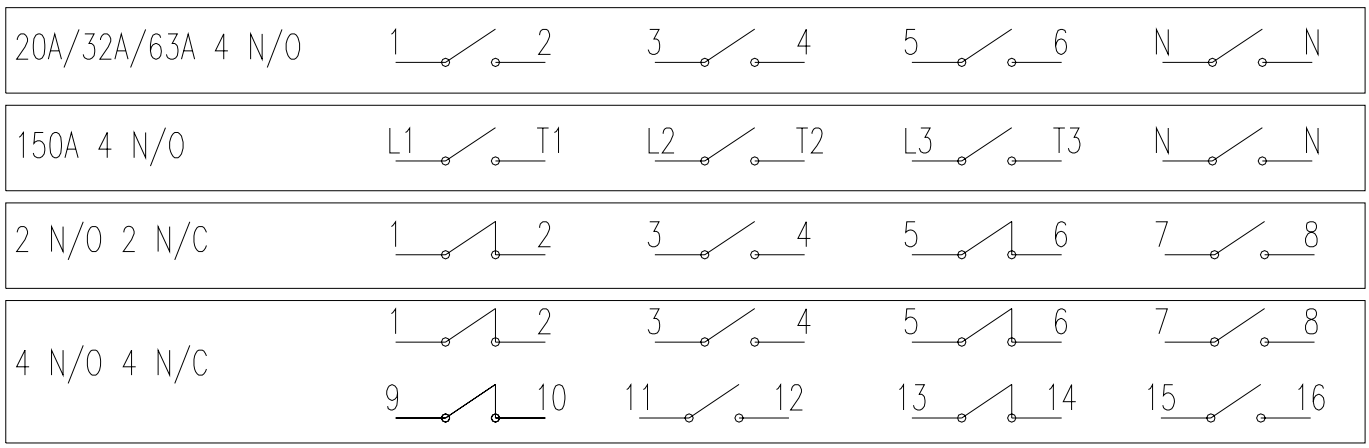

Wiring Diagram

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Fortress Interlocks

Data Sheet

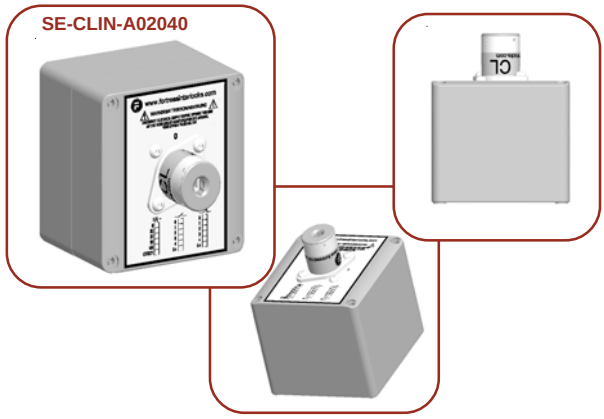
SE

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

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mGard

Fortress Interlocks

Technical Data

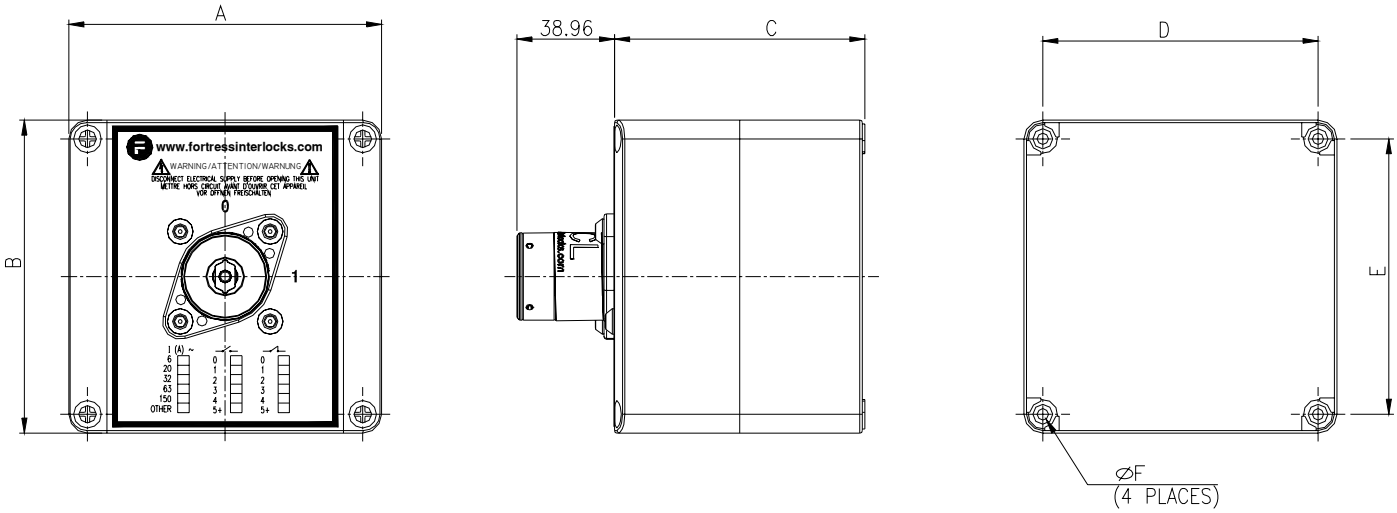
SE

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



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

20A/32A/63A 4 N/O	1 2	3 4	5 6	N N	
150A 4 N/O	L1 T1	L2 T2	L3 T3	N N	
2 N/O 2 N/C	1 2	3 4	5 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	

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Fortress Interlocks

Data Sheet

SLS-CL

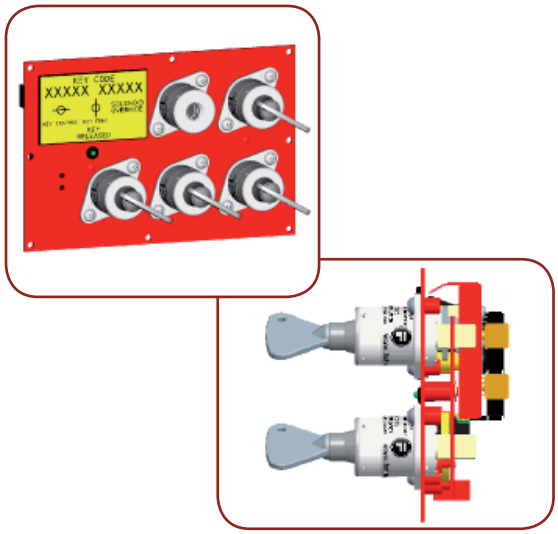
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (minimising the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

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

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Fortress Interlocks

Data Sheet

SLS-CL

Features

Solenoid available in 24v dc or 110v ac

Suitable for machines with a run-down cycle

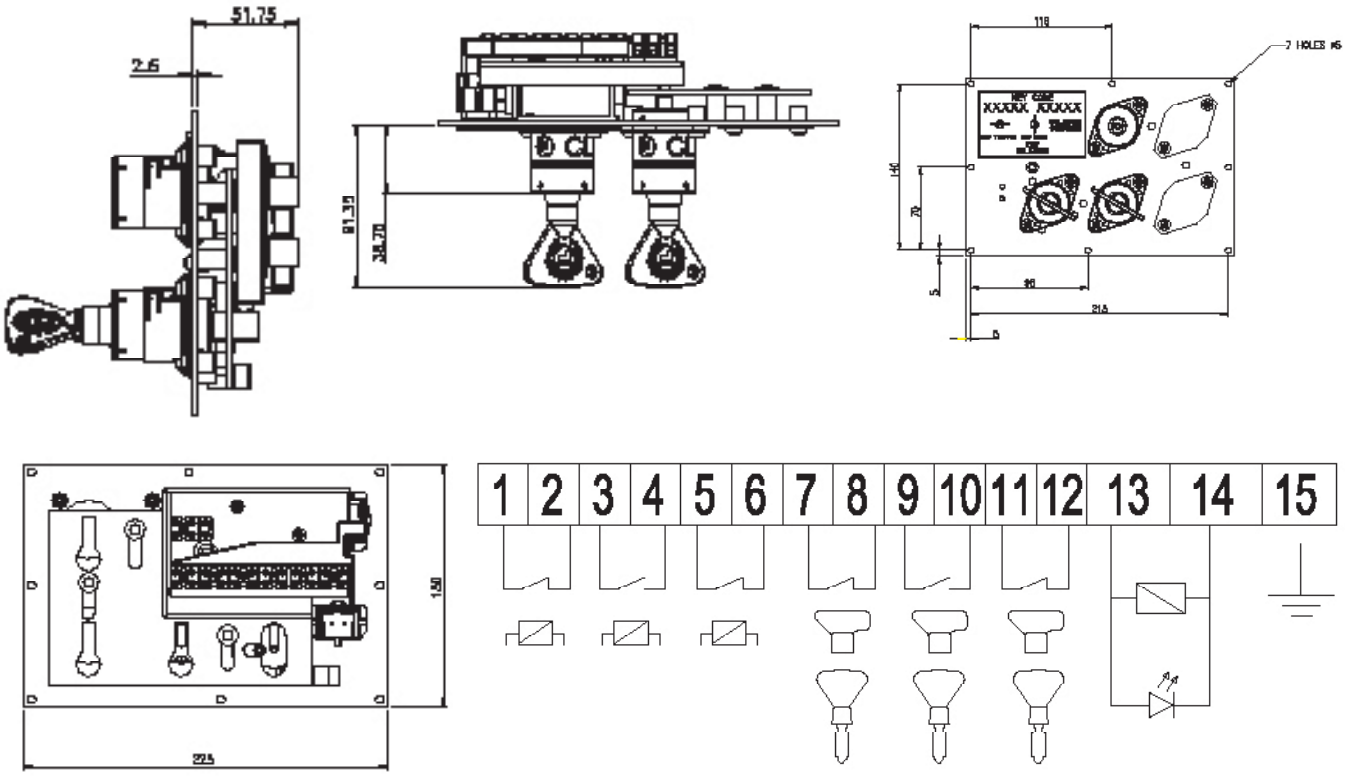
Extendable units with up to 6 release keys

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 Mechanisms:	CL, ML, CLS, MLS. Please refer to seperate datasheets.



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Fortress Interlocks

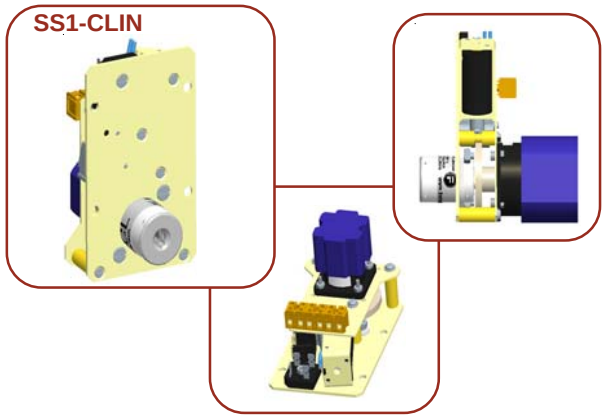
Data Sheet

SS

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

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Fortress Interlocks

Technical Data

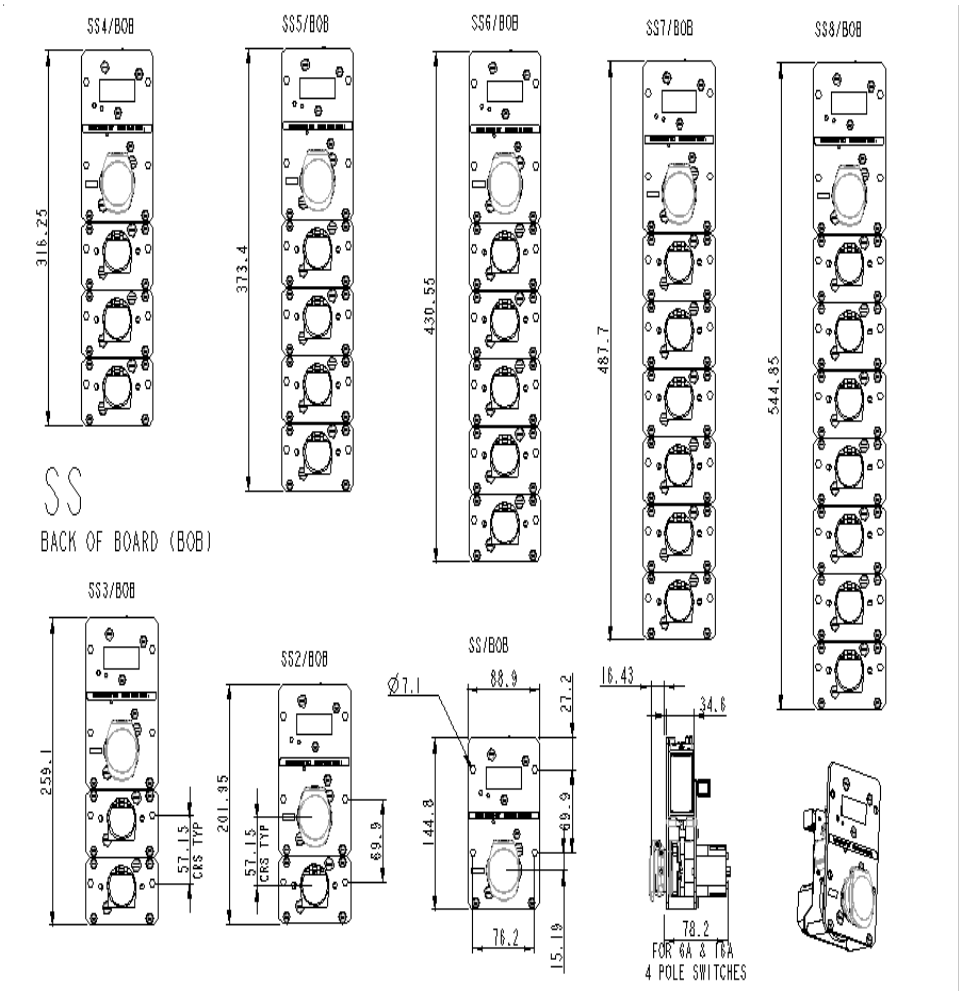
SS

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)



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mGard

Fortress Interlocks

Data Sheet

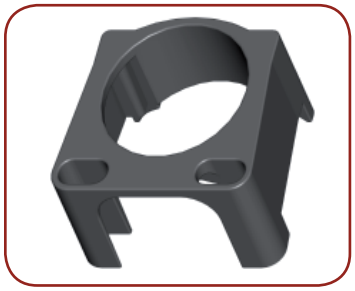
DM and XM

Back of Board Mounting

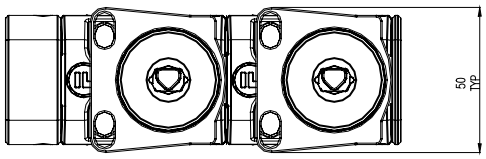
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

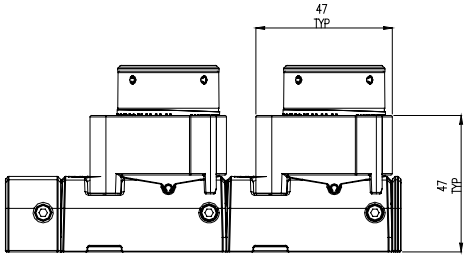
description:

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

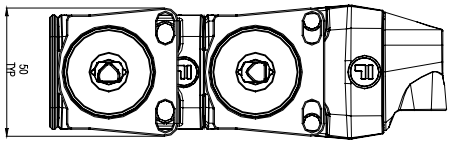


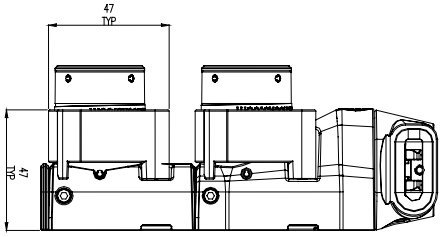
XM2 with BOB mounting





DM2 with BOB mounting





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M_DS_E_BOB_V2.0_DEC05

mGard

Fortress Interlocks

Data Sheet

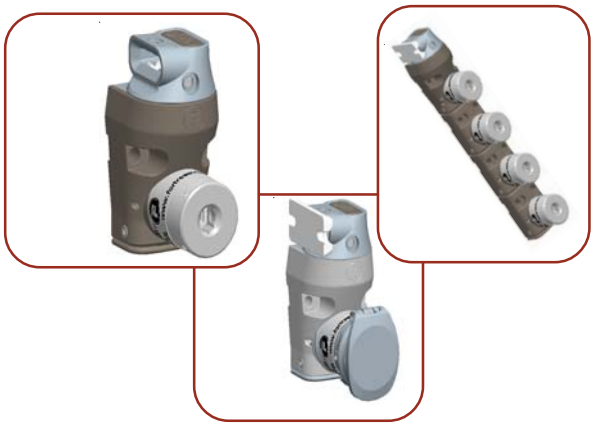
DM & DMS

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.

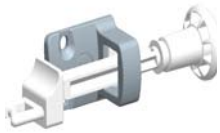
operation (example sequence on DM1)
the key is inserted into the lock and turned; the actuator is disengaged and the door opened. The key remains trapped until the door is closed and the actuator re-engaged. Other sequences are available.



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

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mGard

Fortress Interlocks

Technical Data

DM & DMS

Construction

Construction DM

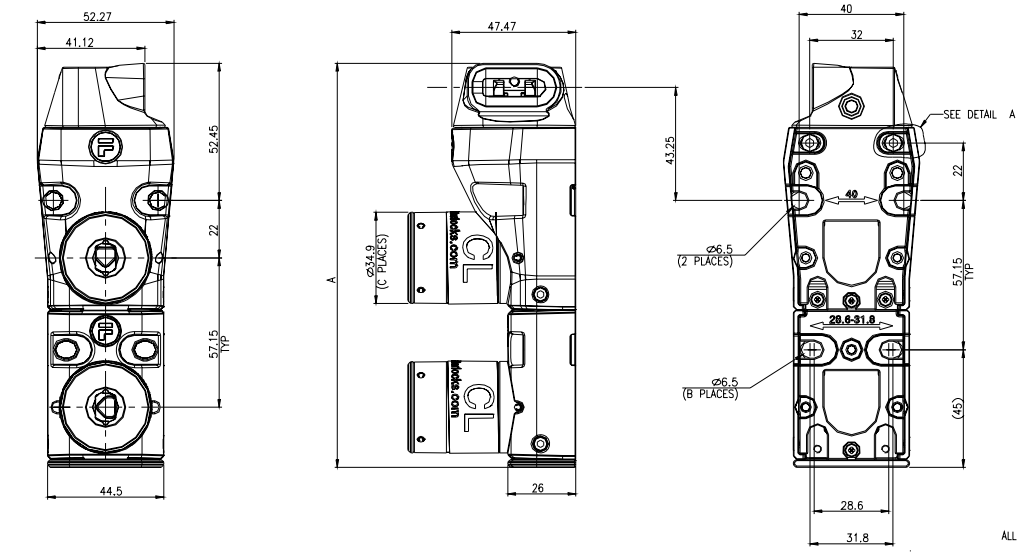
Body Housing:	Die-cast zinc body with pearl bronze finish
Head:	All stainless steel.
Internals:	All stainless steel contact components
Actuators:	All stainless steel
Lock Mechanism:	CL or ML lock types are of die-cast zinc body with stainless operating mechanism
Key:	Stainless Steel

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

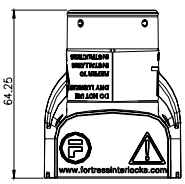
Features & Benefits

- No product handing issues
- 8 head configurations with +/- 5^{o} 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



PRODUCT	A OVERALL LENGTH	B NO OF SLOTTED HOLES	C NO OF CL LOCKS
DM1	97.45	0	1
DM2	154.6	2	2
DM3	211.75	4	3
DM4	268.9	6	4
DM5	326.05	8	5
DM6	383.2	10	6
DM7	440.35	12	7
DM8	497.5	14	8
DM9	554.65	16	9
DM10	611.8	18	10

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES



PRODUCT	A OVERALL LENGTH	B NO OF SLOTTED HOLES	C NO OF CLS LOCKS
DMS1	97.45	0	1
DMS2	154.6	2	2
DMS3	211.75	4	3
DMS4	268.9	6	4
DMS5	326.05	8	5

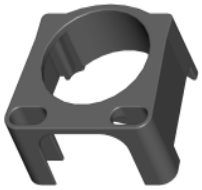
DM Tabulated Drawing

www.fortressinterlocks.com

Fortress Interlocks

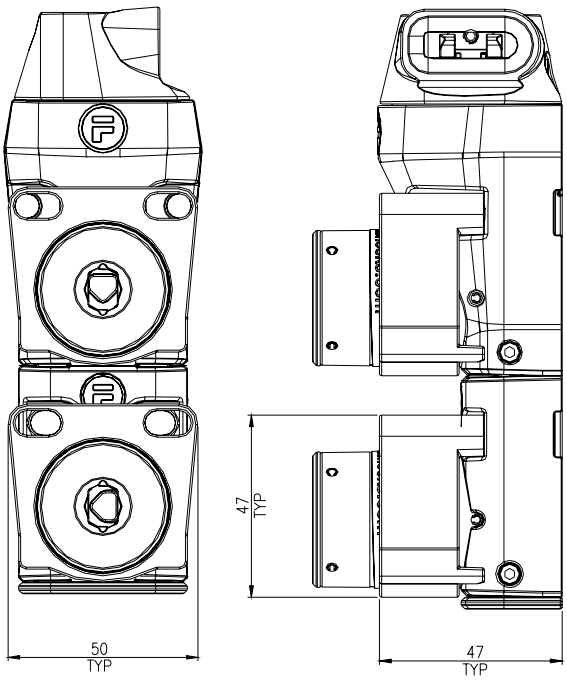
Technical Data

DM & DMS



Back of Boad 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 enrty points.

Front Side Entry

Left Top Entry

Rear Top Entry

Right Side Entry

www.fortressinterlocks.com

mGard

Fortress Interlocks

Data Sheet

Actuators

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:

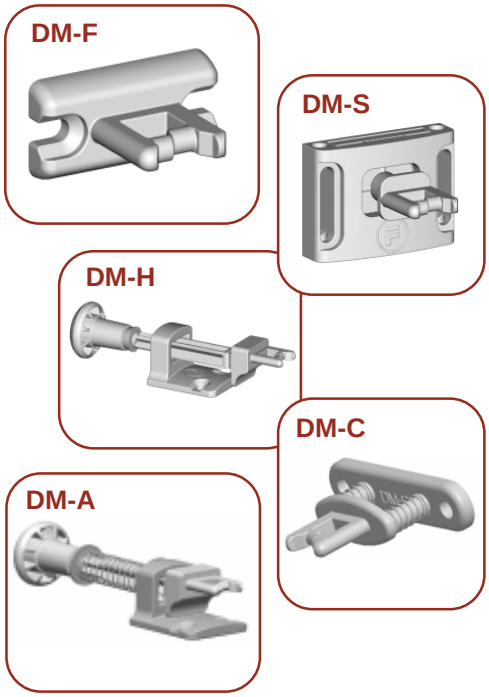
a selection of robust actuators suitable for both hinged and sliding doors.

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

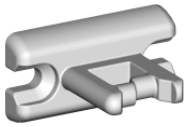
self aligning actuator
ideal for small radius hinged doors it can be bolted through from front, top or bottom. Horizontal adjustment +/-7.5mm and Vertical adjustment +/-3.75mm. With a rotational adjustment of any angle in 360° degrees it is ideal for guards subject to misalignment through wear.

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.

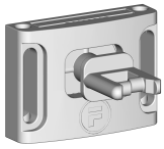
hand operated actuator with spring return
suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/-6mm and rotational adjustment 360° in 90°increments of actuator/bracket. The actuator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



options:

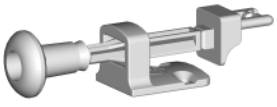


fixed actuator **(F)**

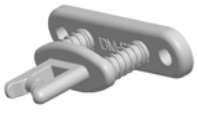


self aligning actuator **(S)**

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



hand operated actuator **(H)**



compressible actuator **(C)**

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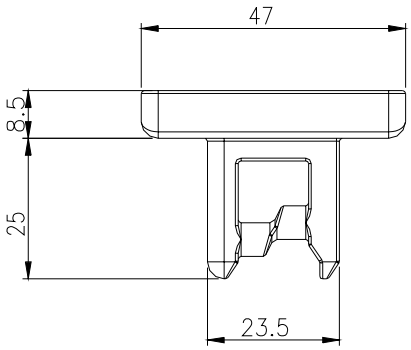
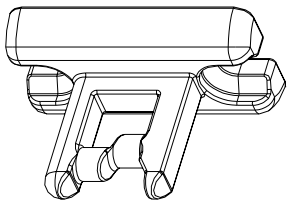
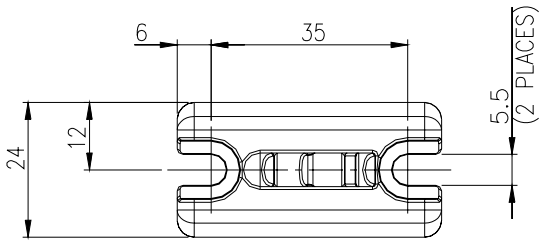
mGard

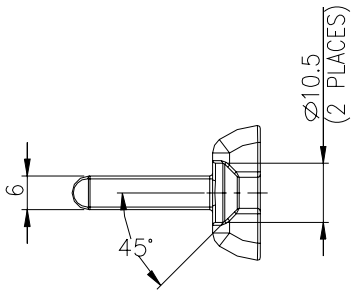
Technical Data

Actuators

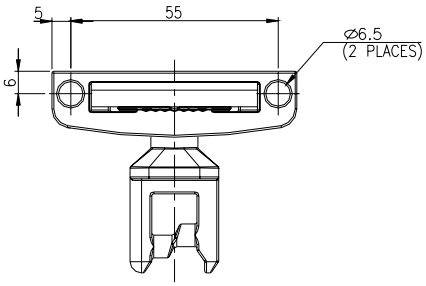


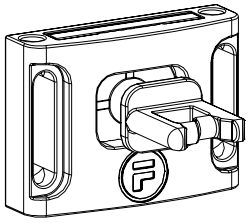


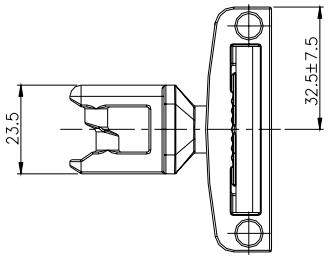


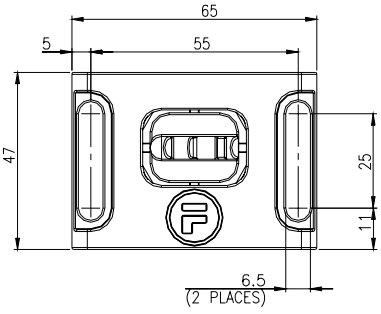


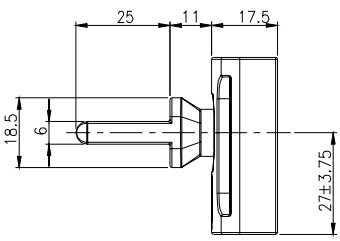
fixed actuator (F)







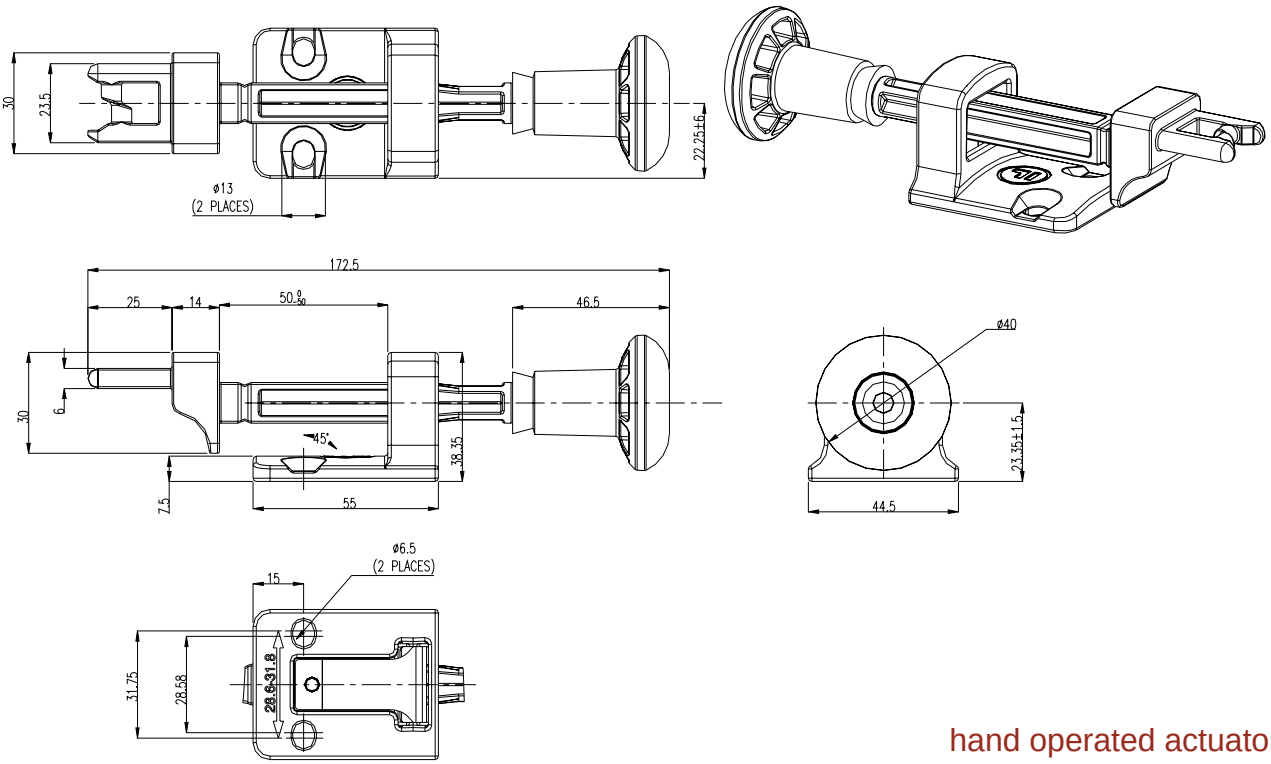




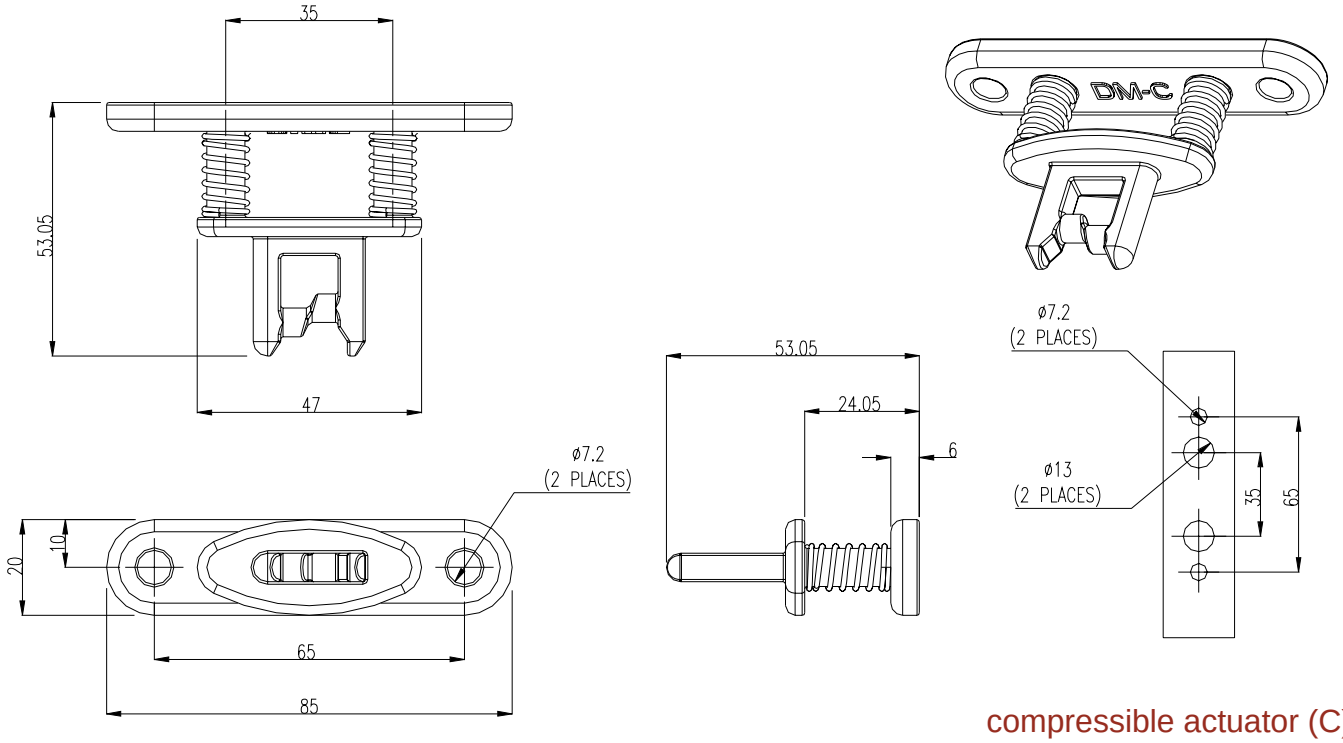
self aligning actuator (S)

Technical Data

Actuators



hand operated actuator (H)



compressible actuator (C)

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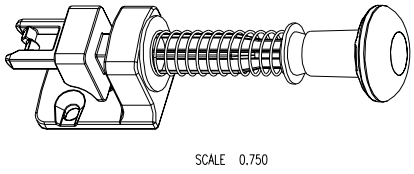
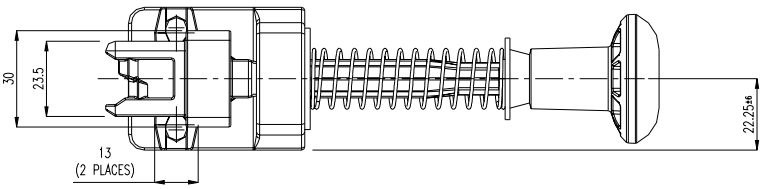
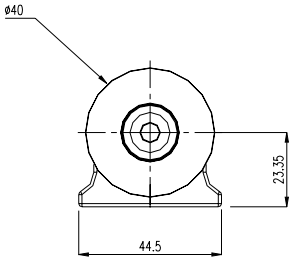
Technical Data

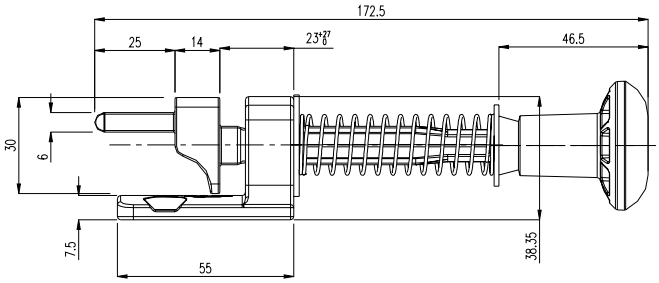
Actuators

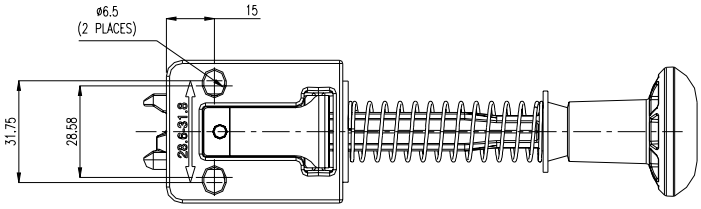


SCALE 0.750









THIS SHEET IS THE SALES DRAWING
SEE SHEET 1 FOR THE ASSEMBLY DRAWING.

hand operated actuator with spring return (A)

www.fortressinterlocks.com

Fortress Interlocks

Data Sheet

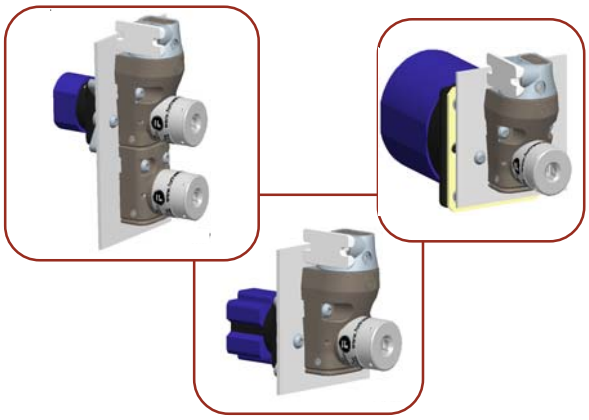
DMR & DMSR

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:

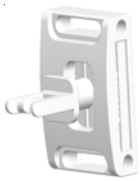
the DMR and DMSR (full stainless steel version) are robust, modular access interlocks complete with rotary switches suitable for use on all types of doors. They are sold as a single or multiple door interlock with up to ten lock modules (up to 5 locks on the DMSR). As part of an interlock system the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



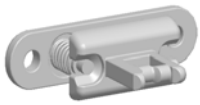
options:

fixed actuator **(F)**



self aligning actuator **(S)**

hand operated actuator **(H)**



compressible actuator **(C)**

lock portion

CL(S)

ML(S)

spring loaded dustcover
(standard with DMSR)

low profile CL key

switch options:

20A, 32A, 63A, or 150A switches

4NO or 2NO 2NC swith contacts

www.fortressinterlocks.com

mGard

Fortress Interlocks

Technical Data

DMR & DMSR

Construction

Construction DMR

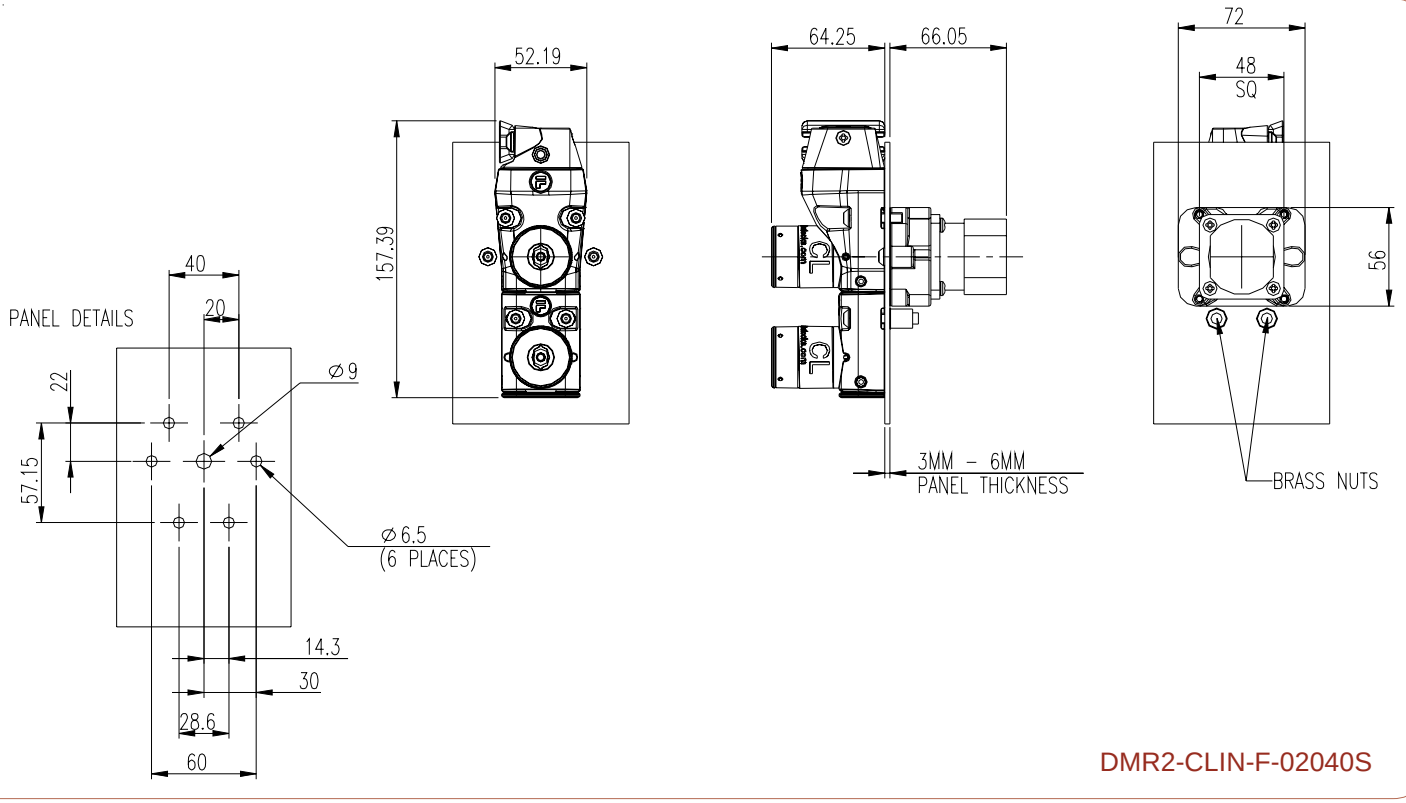
Body Housing:	Die-cast zinc body with pearl bronze finish
Head:	All stainless steel.
Internals:	All stainless steel contact components
Actuators:	All stainless steel
Lock Mechanism:	CL or ML lock types are of die-cast zinc body with stainless operating mechanism
Key:	Stainless Steel

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 handing issues
- 8 head configurations with +/- 5º 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



DMR2-CLIN-F-02040S

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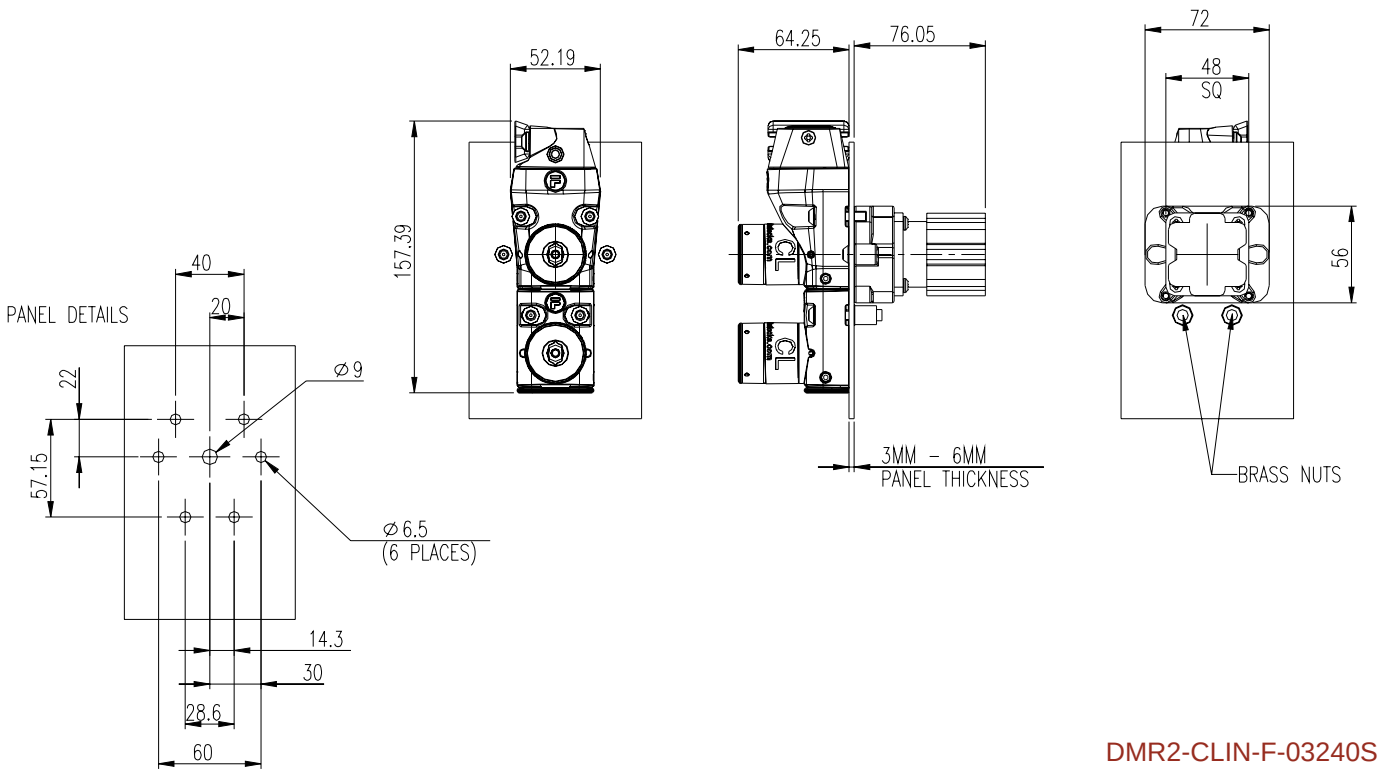
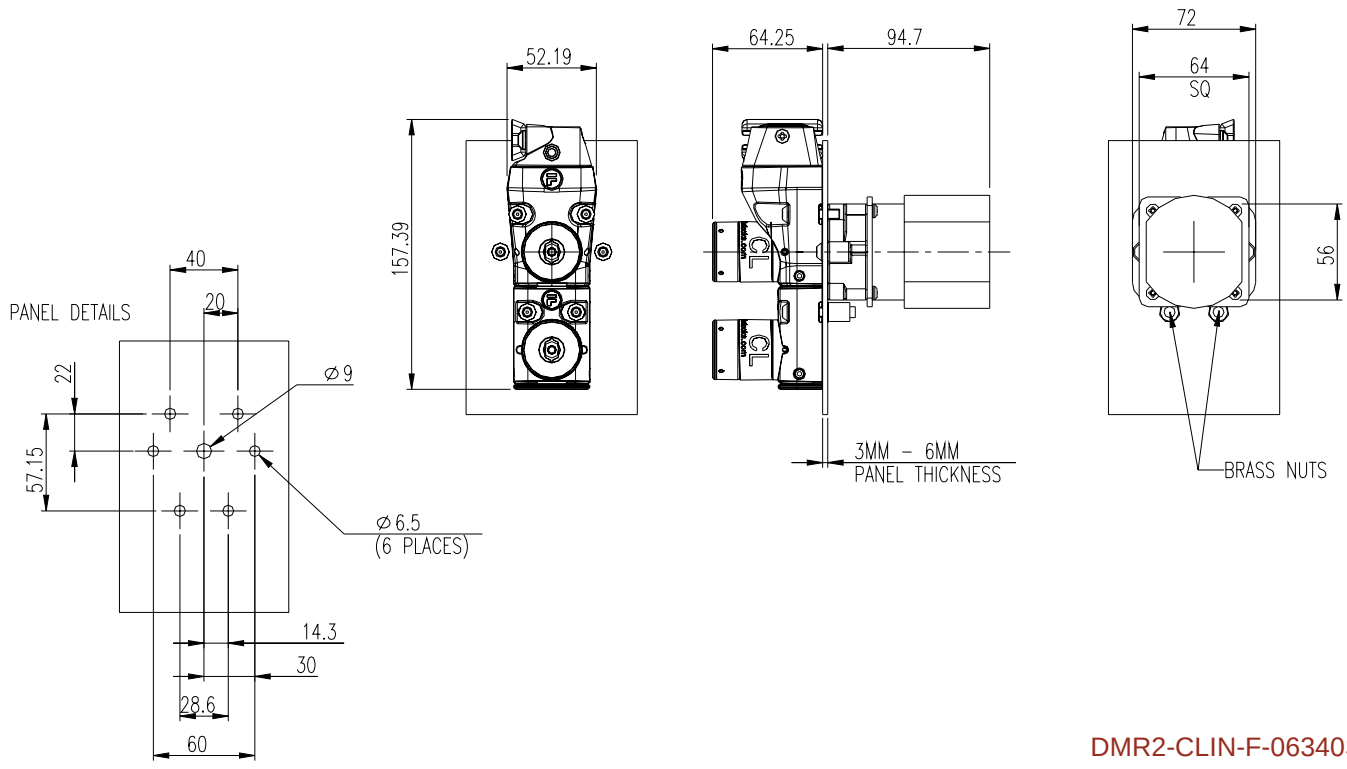
mGard

Technical Data

DMR & DMSR



DMR2-CLIN-F-03240S



DMR2-CLIN-F-06340S

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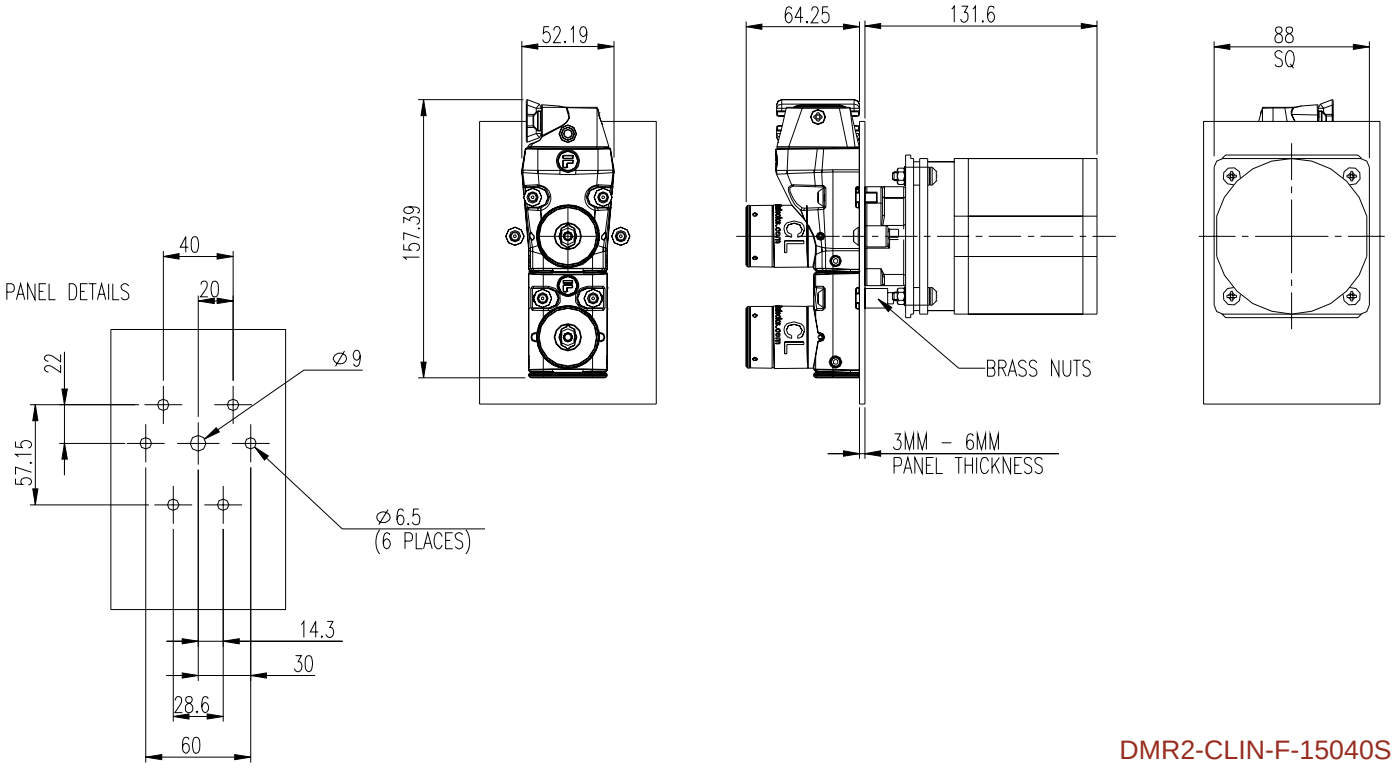
Fortress Interlocks

Technical Data

DMR & DMSR



DMR2-CLIN-F-15040S

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

www.fortressinterlocks.com

mGard

Fortress Interlocks

Data Sheet

Actuators

mGard

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:

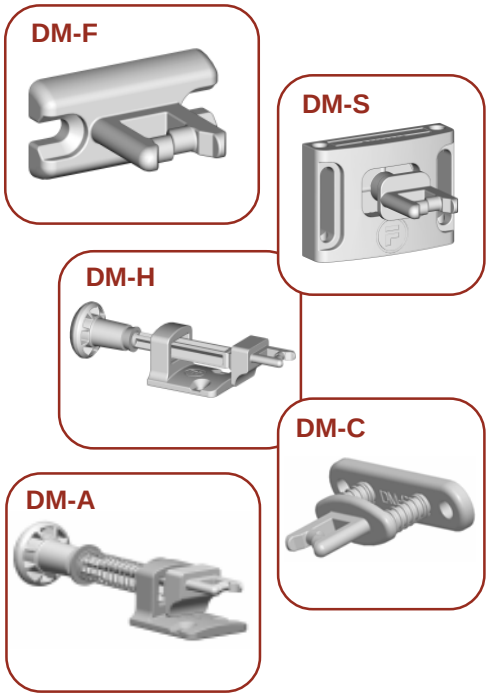
a selection of robust actuators suitable for both hinged and sliding doors.

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

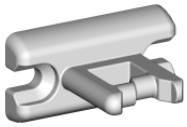
self aligning actuator
ideal for small radius hinged doors it can be bolted through from front, top or bottom. Horizontal adjustment +/-7.5mm and Vertical adjustment +/-3.75mm. With a rotational adjustment of any angle in 360° degrees it is ideal for guards subject to misalignment through wear.

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.

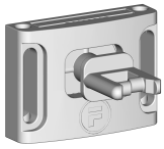
hand operated actuator with spring return
suitable for use where a secondary action is required to open/close the guard. A detent holds the actuator in place when the door is open. It has a vertical adjustment of +/-6mm and rotational adjustment 360° in 90°increments of actuator/bracket. The actuator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



options:

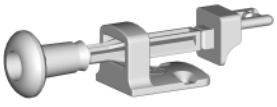


fixed actuator **(F)**

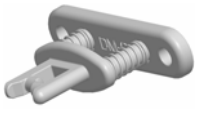


self aligning actuator **(S)**

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



hand operated actuator **(H)**



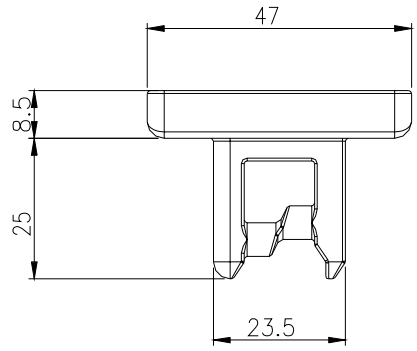
compressible actuator **(C)**

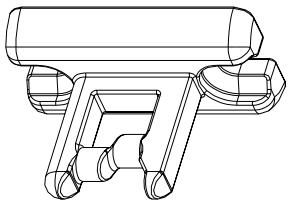
www.fortressinterlocks.com

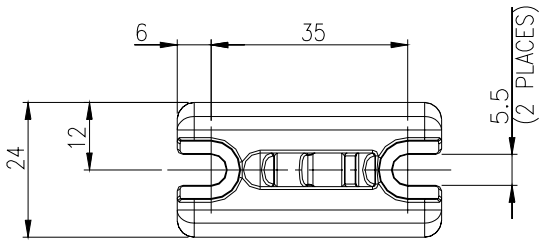
mGard

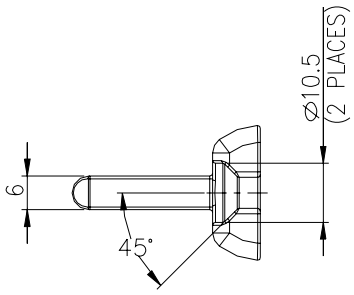
Technical Data

Actuators

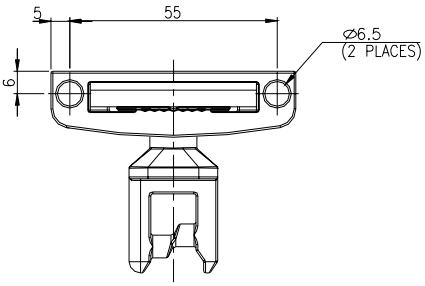


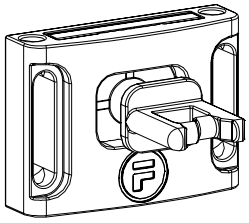


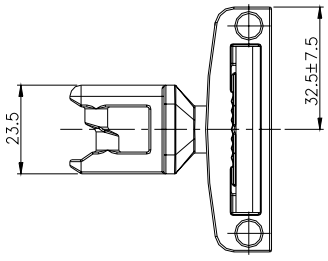


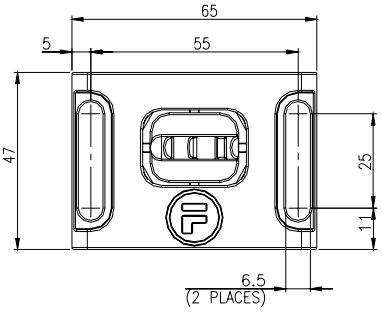


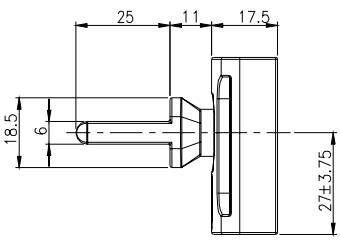
fixed actuator (F)







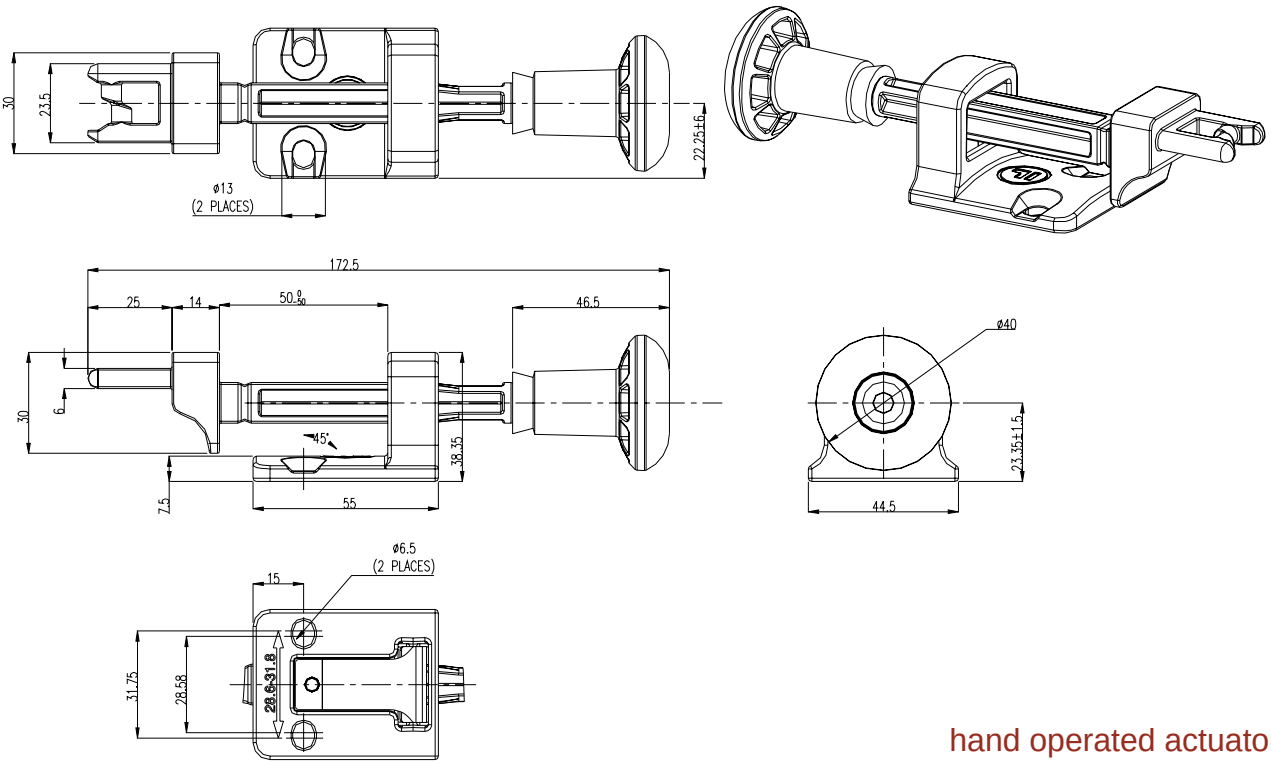




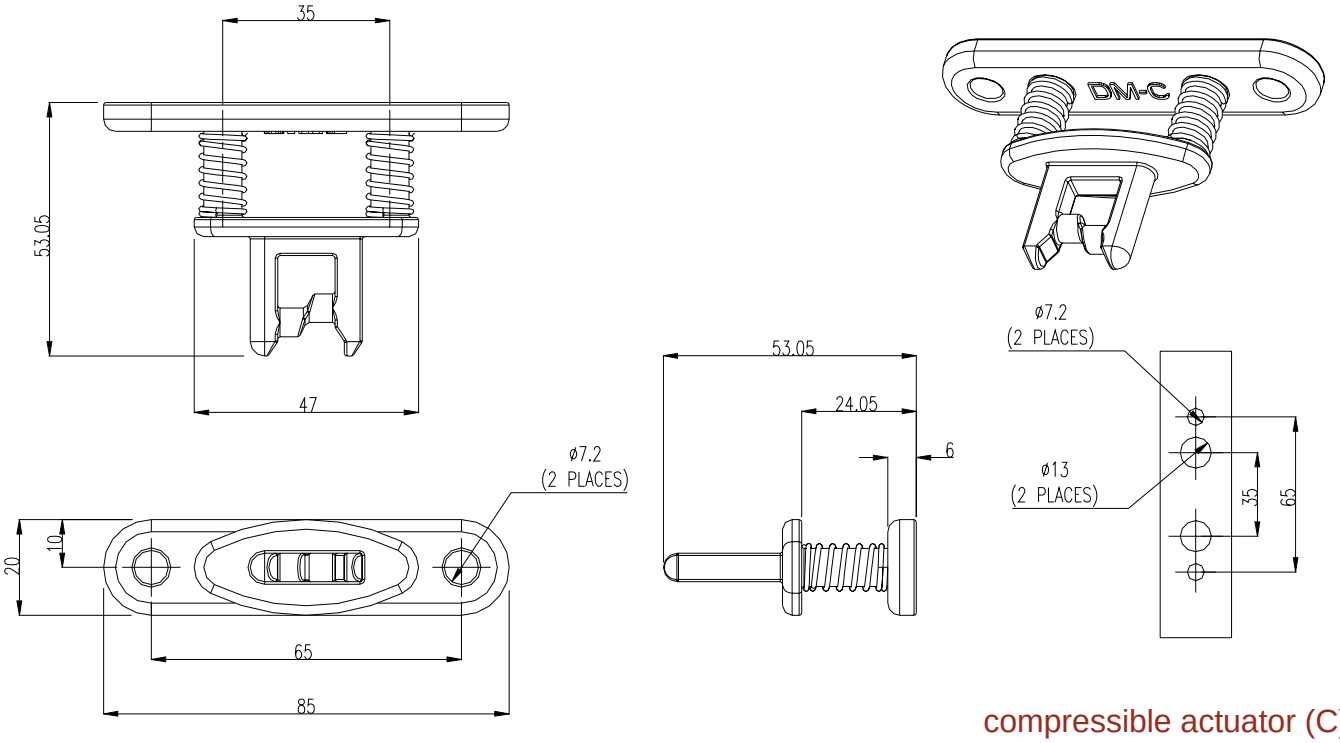
self aligning actuator (S)

Technical Data

Actuators



hand operated actuator (H)



compressible actuator (C)

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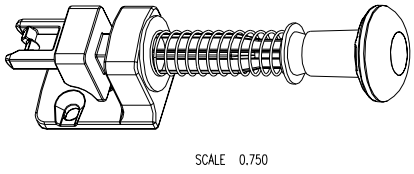
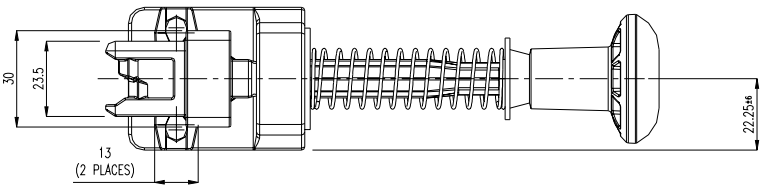
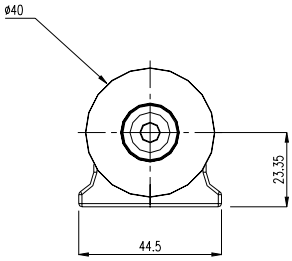
Technical Data

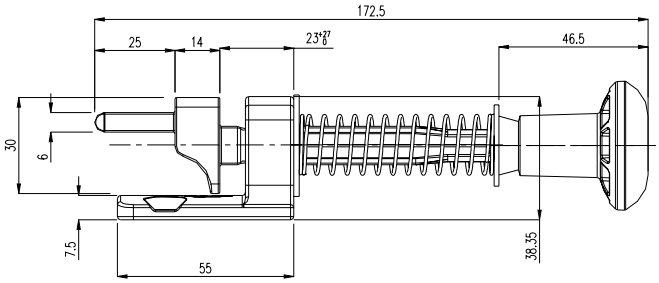
Actuators

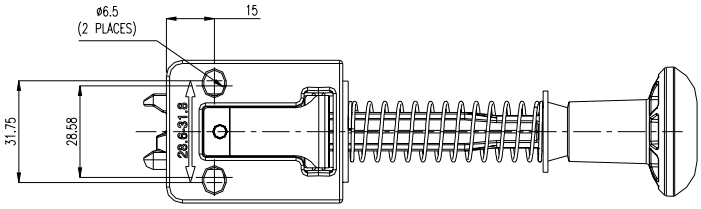


SCALE 0.750









THIS SHEET IS THE SALES DRAWING
SEE SHEET 1 FOR THE ASSEMBLY DRAWING.

hand operated actuator with spring return (A)

www.fortressinterlocks.com

Fortress Interlocks

Data Sheet

ODL

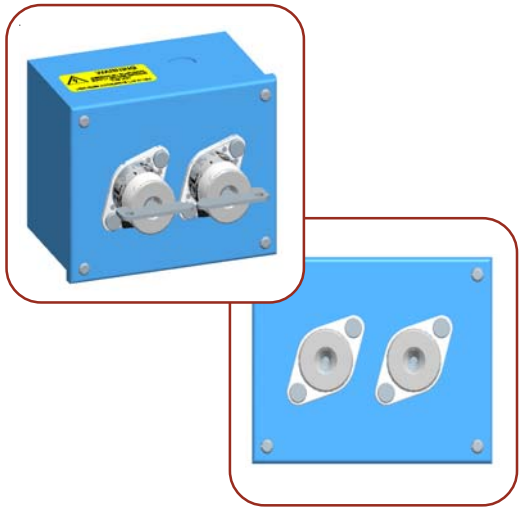
mGard is the ultimate range of robust **mechanical trapped key products**. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

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 16off release keys
- stainless steel enclosure/panel available
- 6A, 16A, 32A, 63A switches available

www.fortressinterlocks.com

Fortress Interlocks

Technical Data

ODL

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

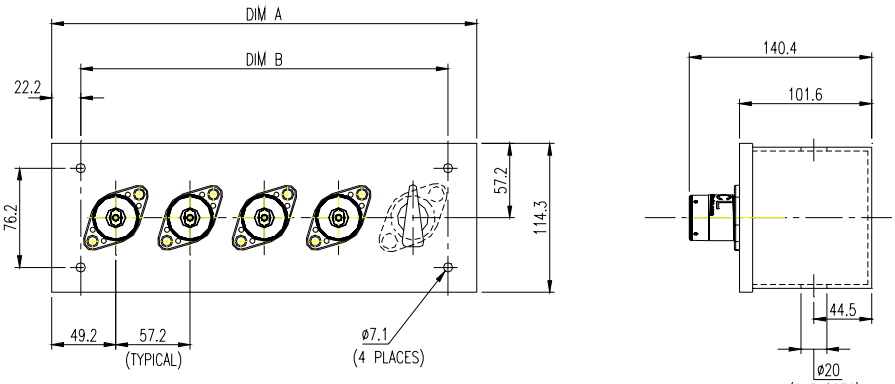
All access keys free at the same time or sequentially released (upon request)

Any combination of isolation/access keys possible

Over 200,000 non-masterable lock combinations available

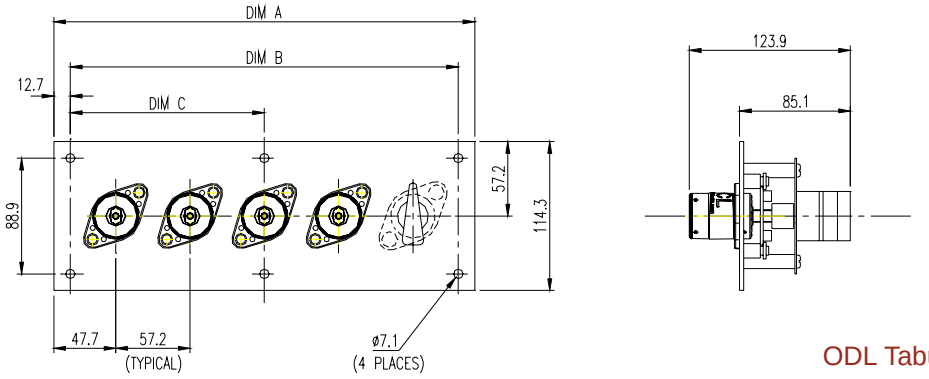
Coding can be up to 30 characters

ODL FRONT OF BOARD



ODL NO. OF SECONDARY LOCKS		FRONT OF BOARD		BACK OF BOARD			
SINGLE ROW	DOUBLE ROW	DIM A	DIM B	DIM A	DIM B	DIM C	NO. OF HOLES
1	–	155.5	111.1	152.4	127.0	–	4
2	4	212.7	168.3	209.6	184.2	92.1	6
3	6	269.9	225.4	266.9	241.3	120.7	6
4	8	327.0	282.6	323.9	298.5	149.2	6
5	10	384.2	339.7	381.0	355.6	118.5	8
6	12	441.3	396.9	438.2	412.8	137.6	8
7	14	498.5	454.0	495.3	469.9	117.5	10
8	16	555.6	511.2	522.5	527.0	131.8	10

ODL BACK OF BOARD



ODL Tabulated Drawing

www.fortressinterlocks.com

Fortress Interlocks

Data Sheet

XM & XMS

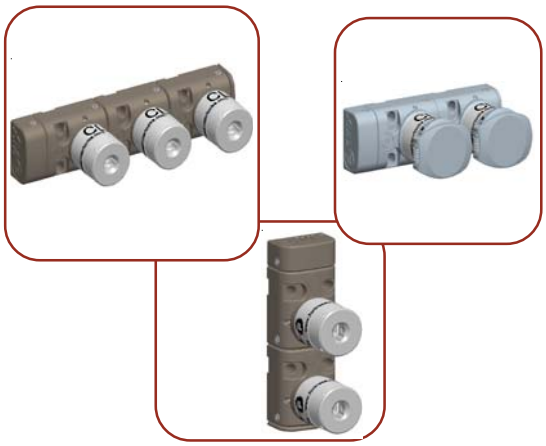
mGard is the ultimate range of robust **mechanical trapped key products**. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

the 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)

lock portion

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

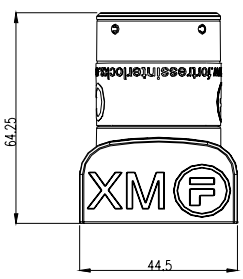
Body Housing:	All stainless steel
Internals:	All stainless steel
Lock Mechanism:	CLS or MLS lock types are of all stainless steel.
Key:	All Stainless Steel
Dustcover:	All Stainless Steel

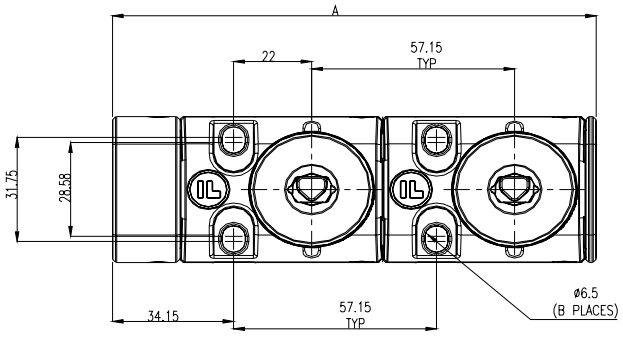
Features & Benefits

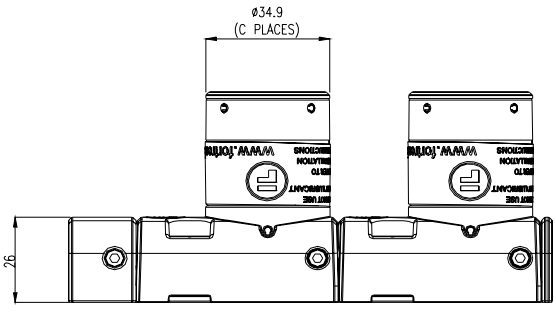
- No product handing issues
- Horizontal and vertical mounting
- Tested over 1,000,000 operations
- Durable plated bodies (XM)
- Stainless Steel bodies (XMS)
- Patented sequencing system
- Easy to configure
- Sequential / Non-sequential key operation
- Extend or trim-down units and use surplus modules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

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
XM2	136.3	4	2
XM3	193.45	6	3
XM4	250.6	8	4
XM5	307.75	10	5
XM6	364.9	12	6
XM7	422.05	14	7
XM8	479.2	16	8
XM9	536.35	18	9
XM10	593.5	20	10

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES







XM Tabulated Drawing

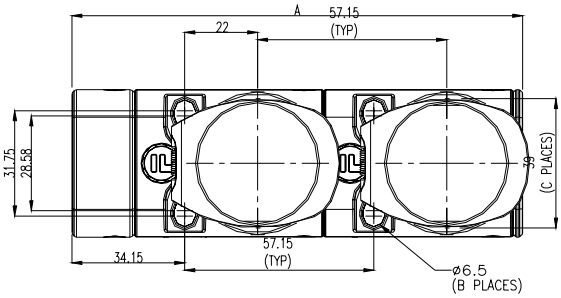
Fortress Interlocks

Technical Data

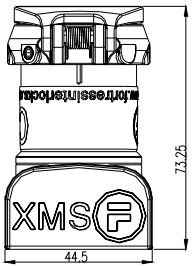
XM & XMS

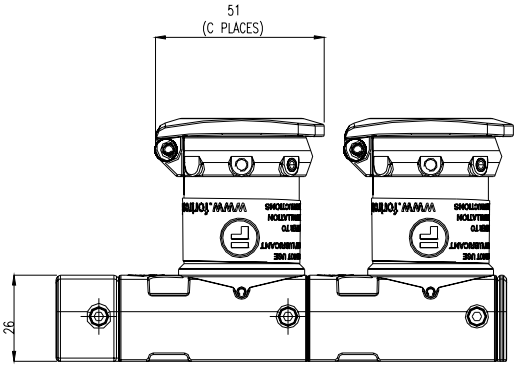
XMS Tabulated Drawing

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CLS LOCKS
XMS2	136.3	4	2
XMS3	193.45	6	3
XMS4	250.6	8	4
XMS5	307.75	10	5

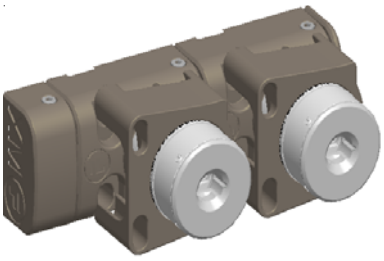


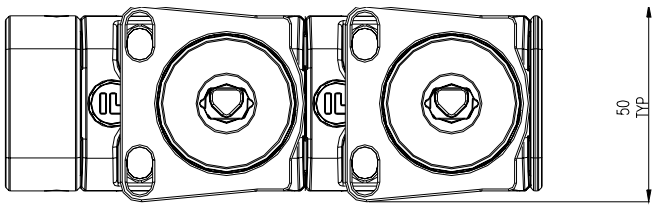
ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES

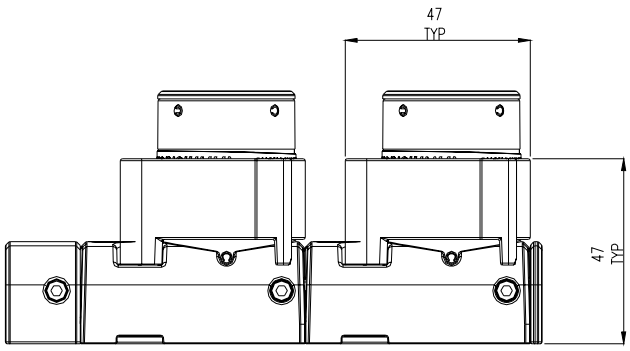




Back of Board Mounting Kit







Back of Boad 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

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Fortress Interlocks

Data Sheet

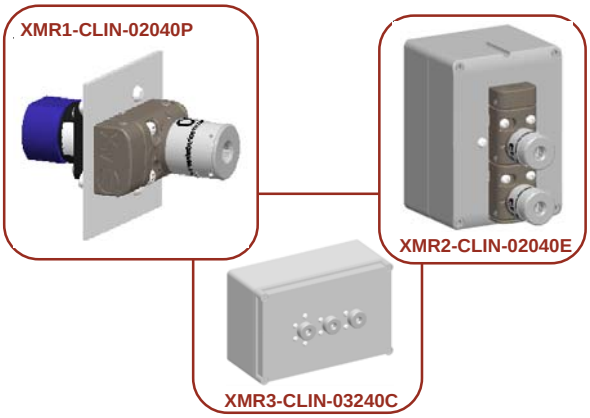
XMR & XMSR

mGard

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**)

lock portion

CL(S) **ML(S)**

spring loaded dustcover

low profile key

- colour coding of locks and keys available
- metal enclosures tailored to suit
- 20A, 32A, 63A or 150A switches
- 4NO or 2NO 2NC switch contacts

www.fortressinterlocks.com

mGard

Fortress Interlocks

Technical Data

XMR & XMSR

Construction

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

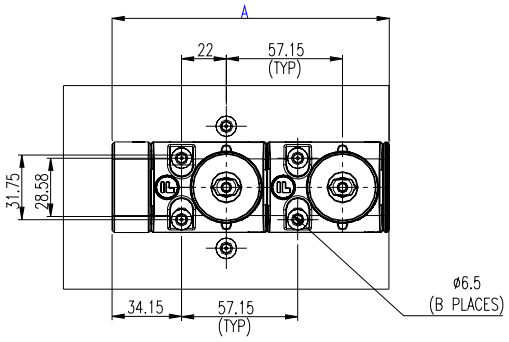
Construction XMSR

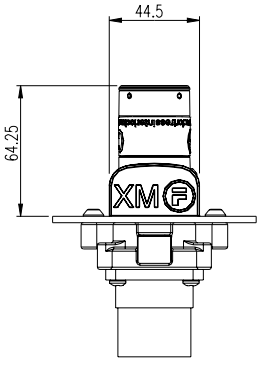
Body Housing:	All stainless steel
Internals:	All stainless steel
Lock Mechanism:	CLS or MLS lock types are of all stainless steel.
Key:	All Stainless Steel
Dustcover:	All Stainless Steel
Enclosure:	Polycarbonate

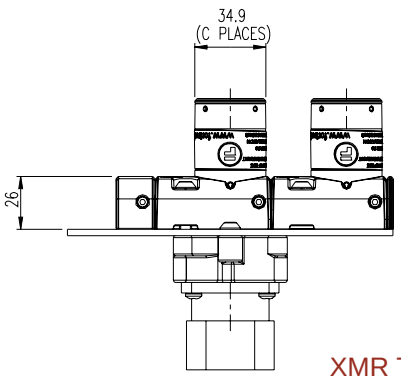
Features & Benefits

- 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

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
XMR2	136.3	4	2
XMR3	193.45	6	3
XMR4	250.6	8	4
XMR5	307.75	10	5
XMR6	364.9	12	6
XMR7	422.05	14	7
XMR8	479.2	16	8
XMR9	536.35	18	9
XMR10	593.5	20	10







XMR Tabulated Drawing

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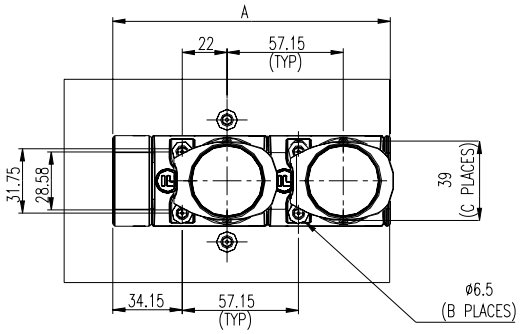
mGard

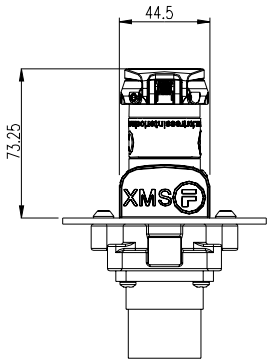
Fortress Interlocks

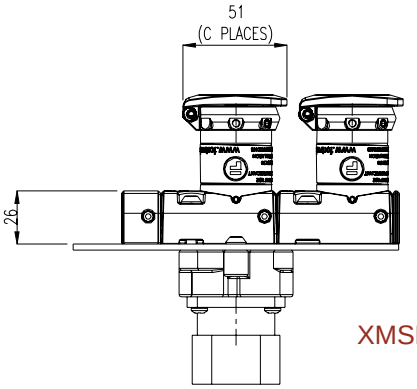
Technical Data

XMR & XMSR

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
XMSR2	136.3	4	2
XMSR3	193.45	6	3
XMSR4	250.6	8	4
XMSR5	307.75	10	5

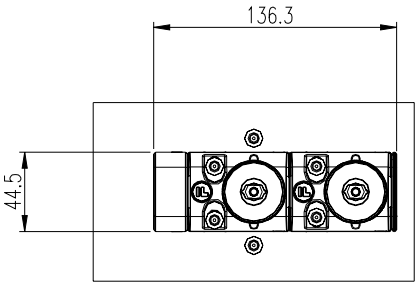


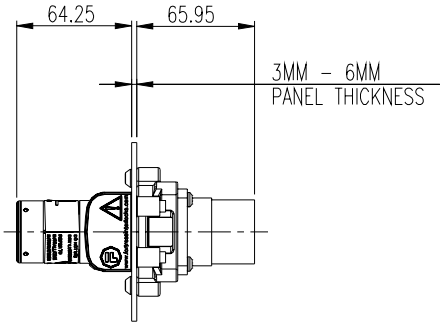


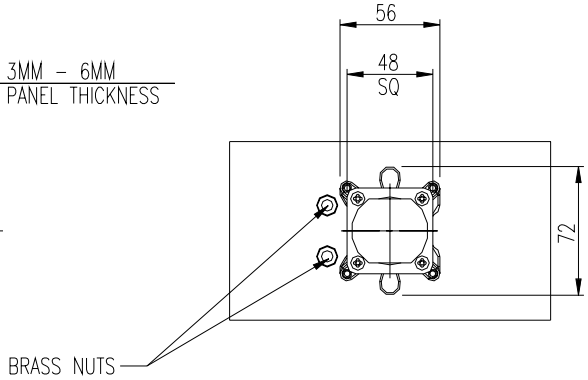


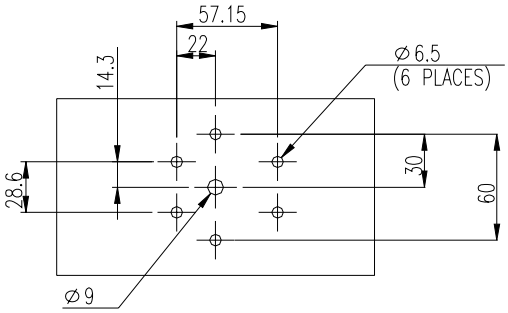
XMSR Tabulated Drawing

Sealed Panel Mounting









XMR2-CLIN-02040P

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mGard

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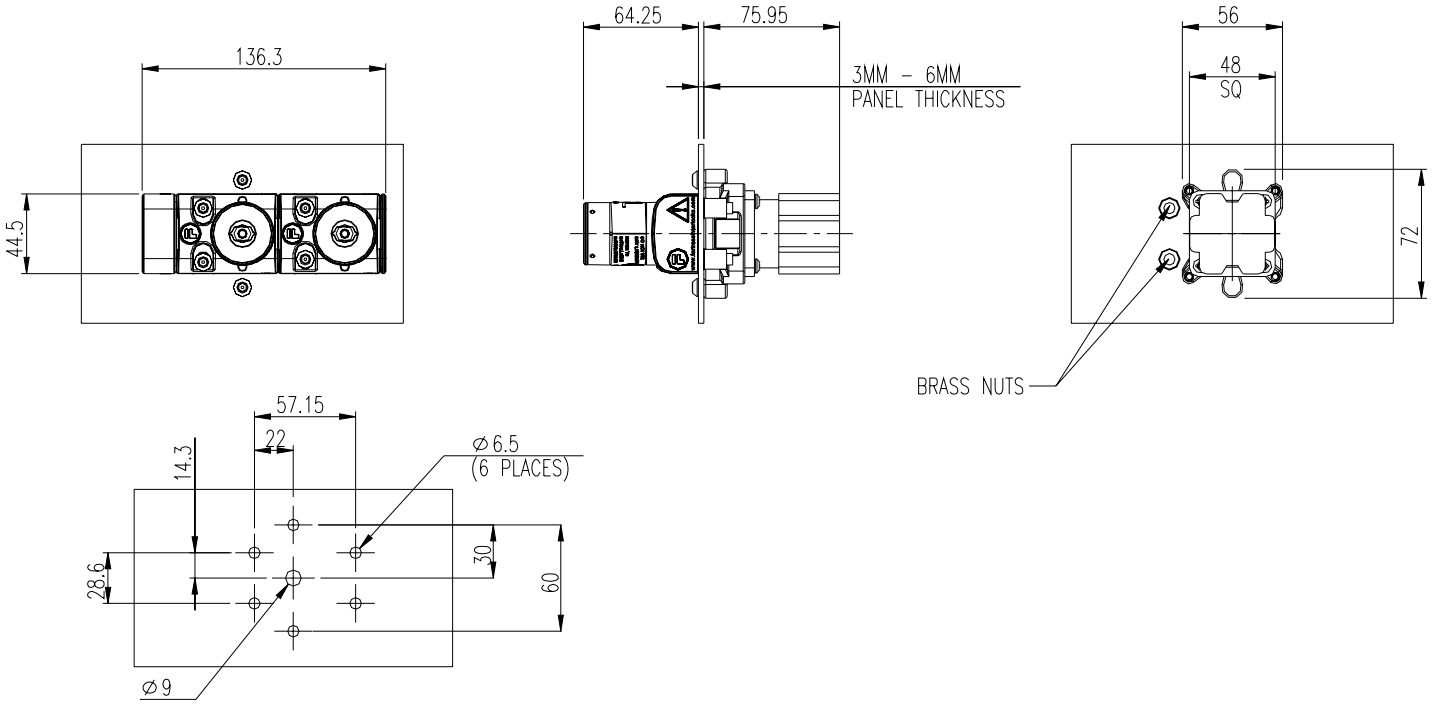
Technical Data

XMR & XMSR



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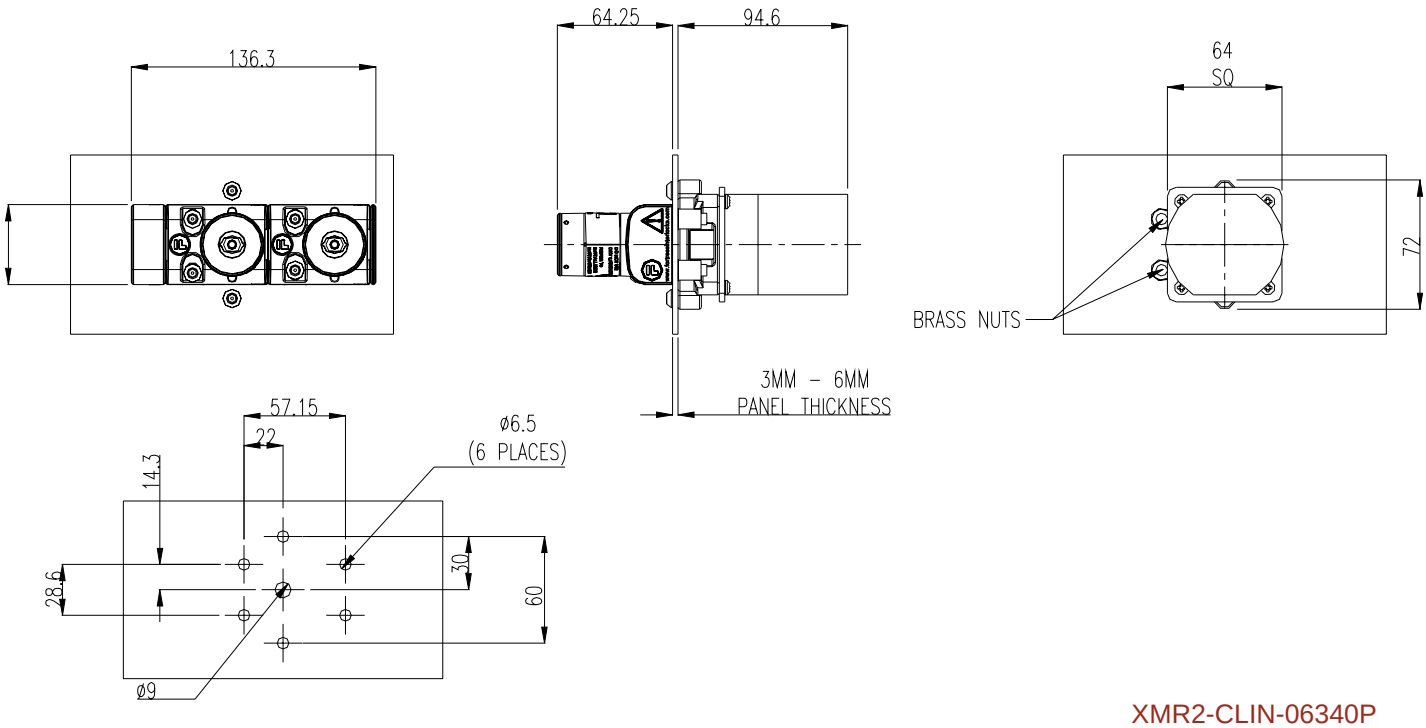

XMR2-CLIN-06340P

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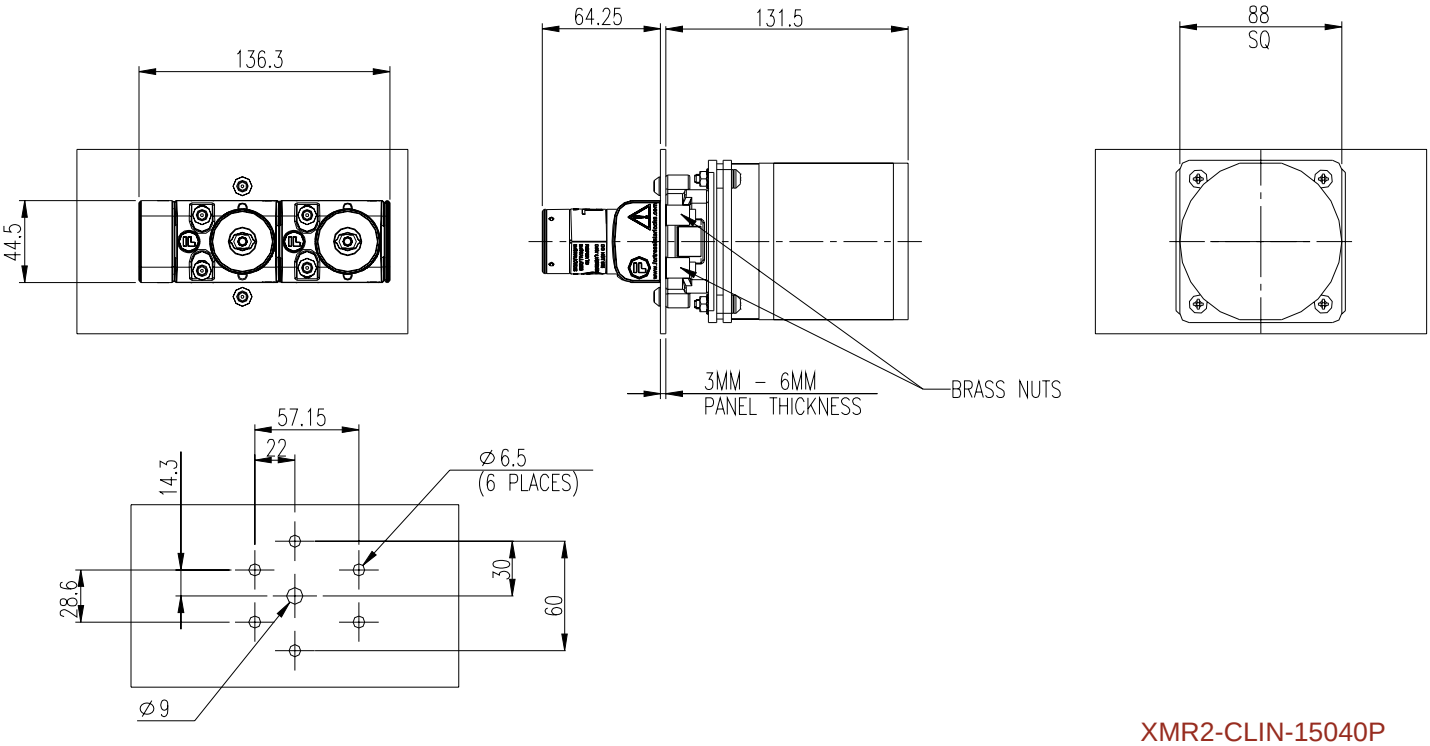
Fortress Interlocks

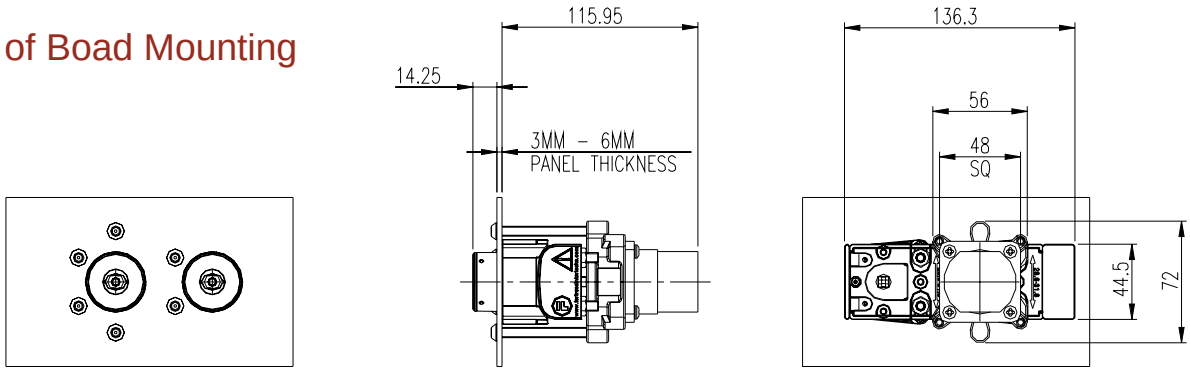
Technical Data

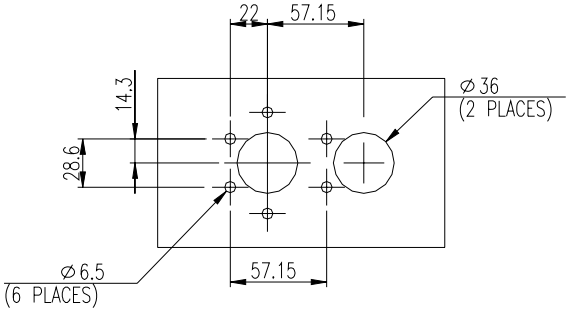
XMR & XMSR



XMR2-CLIN-15040P

Back of Boad Mounting

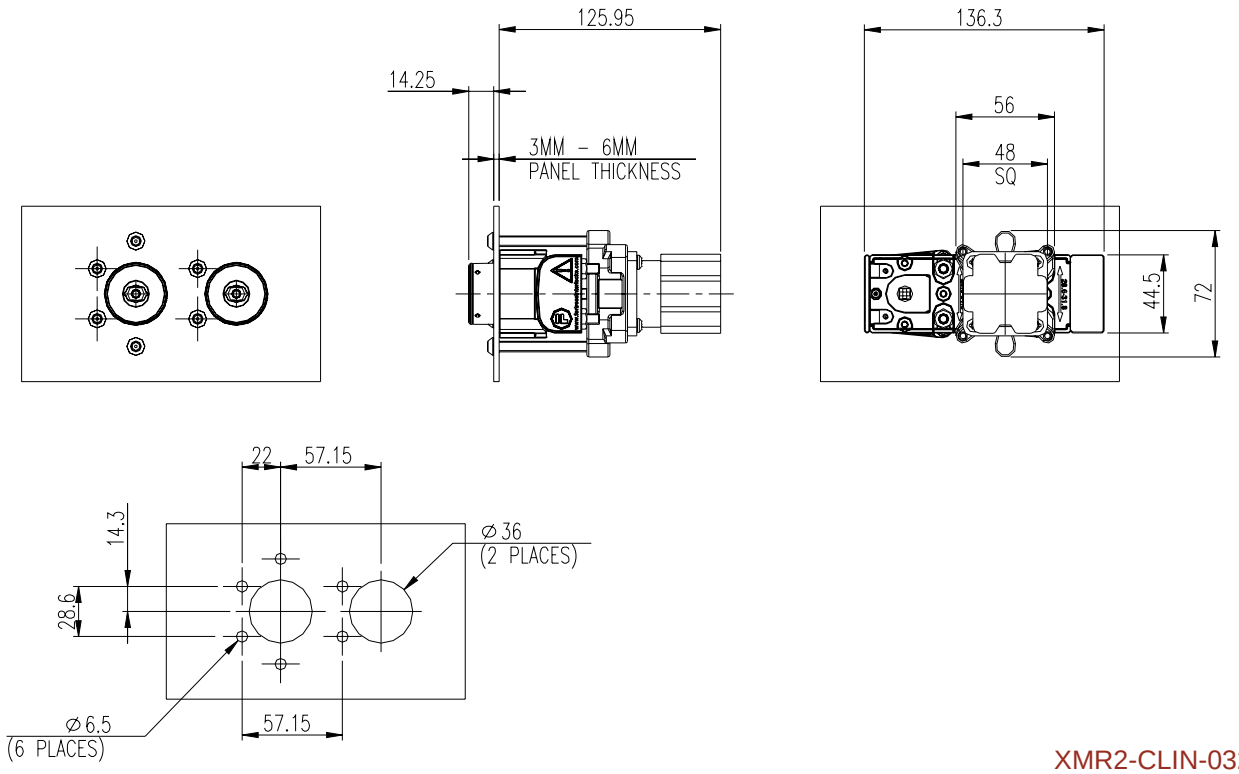




XMR2-CLIN-02040P

mGard

Technical Data XMR & XMSR



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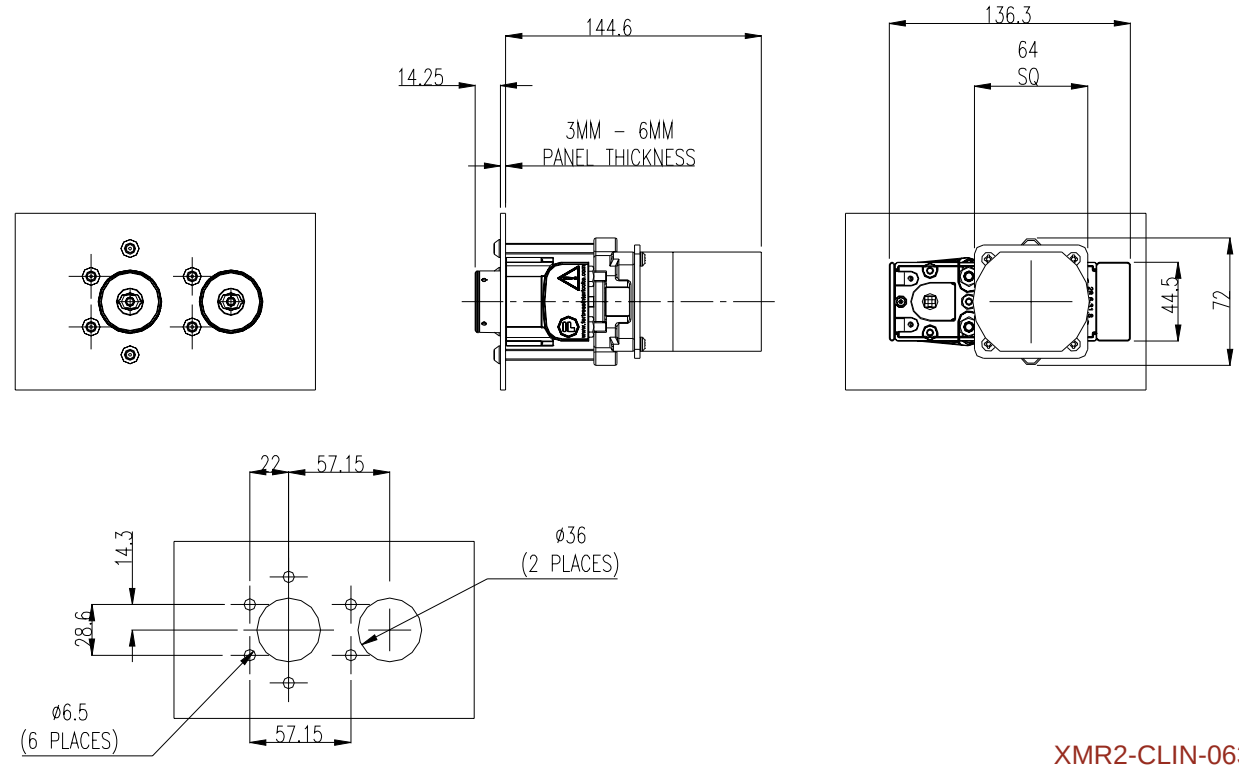
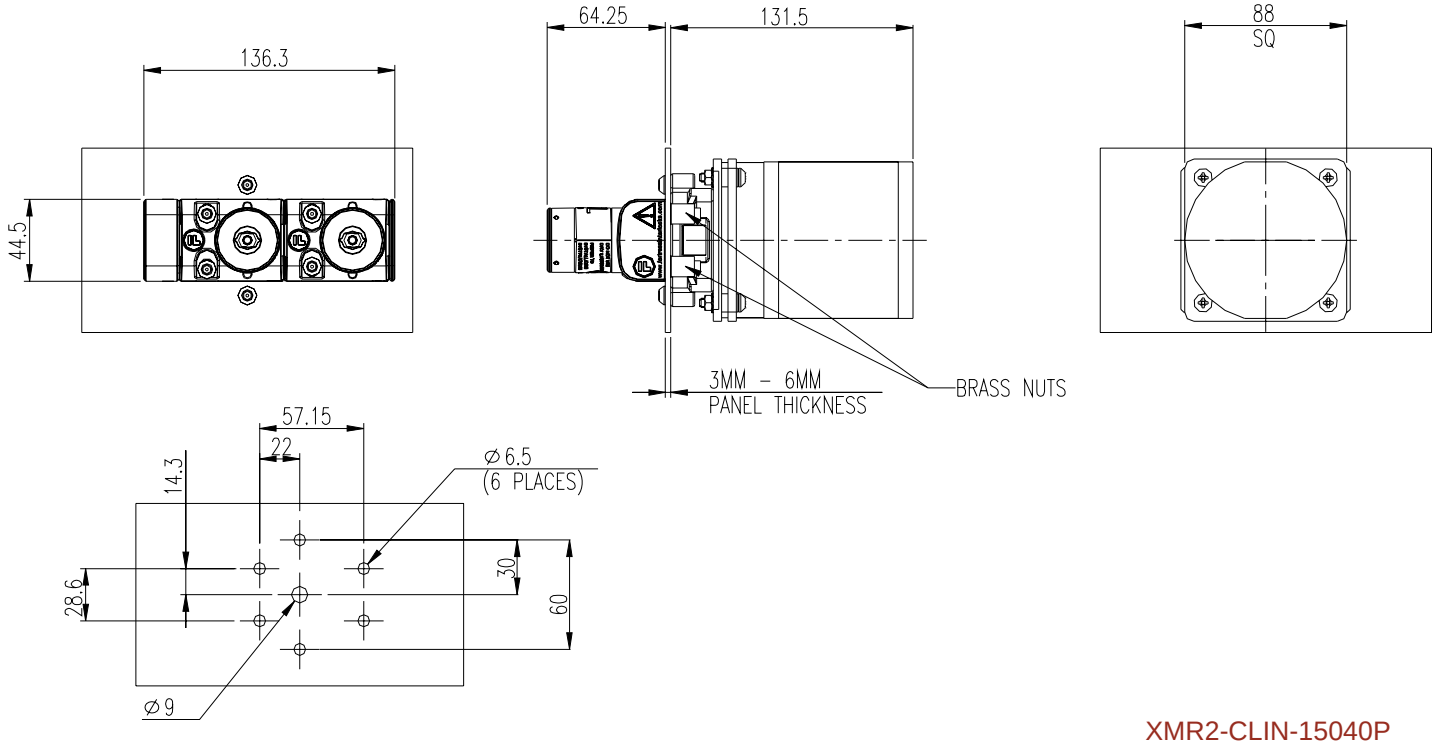


XMR2-CLIN-06340P

Fortress Interlocks

Technical Data

XMR & XMSR



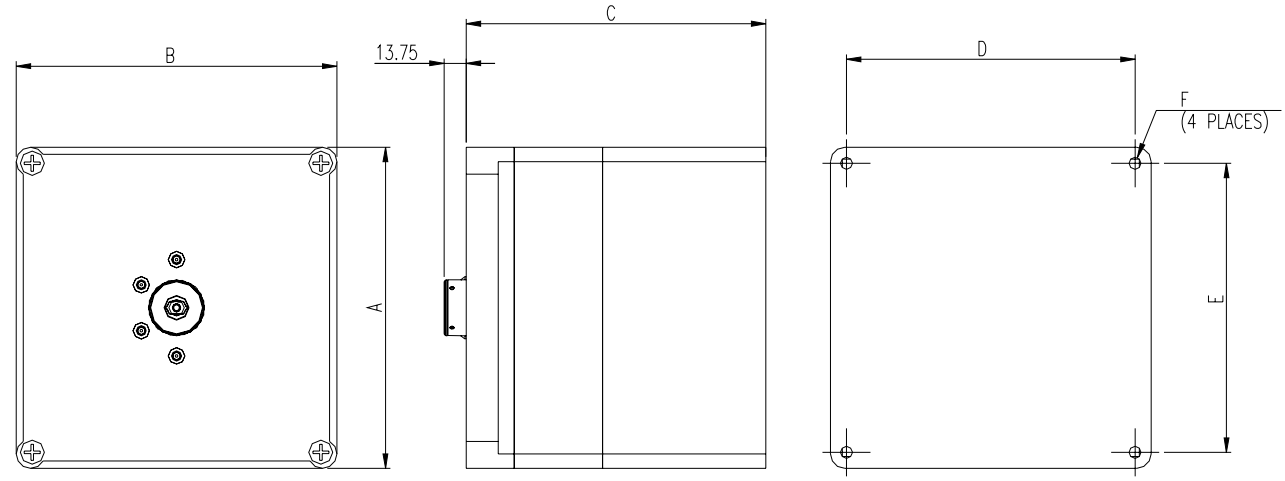
XMR2-CLIN-15040P

XMA

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.

Technical Data XMR & XMSR

Tabulated Drawing
Concealed Enclosure

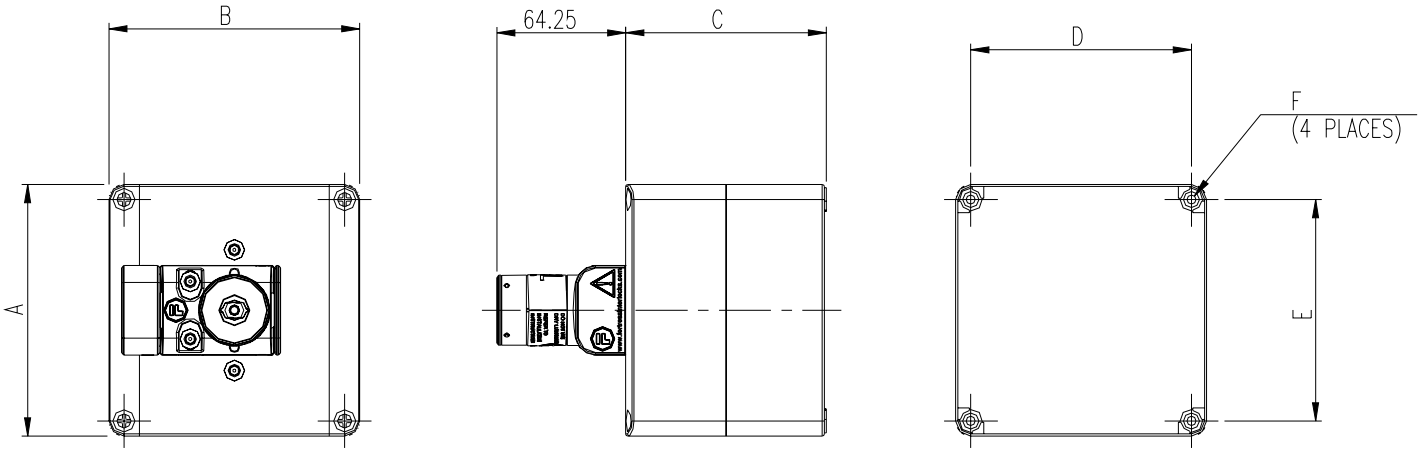


No OF LOCKS	SWITCH CURRENT	A	B	C	D	E	F
1	20A	200	200	130	110	110	ø4.7
1	32A/63A	200	200	185	180	180	ø7.5
1	150A	300	300	240	180	180	ø7.5
2	20A	200	200	130	180	180	ø7.5
2	32A/63A	200	200	185	180	180	ø7.5
2	150A	300	300	240	180	180	ø7.5
3	20A	200	300	130	280	180	ø7.5
3	32A/63A	200	300	185	280	180	ø7.5
3	150A	300	300	240	280	180	ø7.5
4	20A	200	400	130	380	180	ø7.5
4	32A/63A	200	400	185	380	180	ø7.5
4	150A	300	400	240	380	180	ø7.5
5	20A	200	400	130	380	180	ø7.5
5	32A/63A	200	400	185	380	180	ø7.5
5	150A	300	400	240	380	180	ø7.5
6	20A	300	600	130	580	280	ø7.5
6	32A/63A	300	600	185	580	280	ø7.5
6	150A	300	600	240	580	280	ø7.5
7	20A	300	600	130	580	280	ø7.5
7	32A/63A	300	600	185	580	280	ø7.5
7	150A	300	600	240	580	280	ø7.5
8	20A	300	600	130	580	280	ø7.5
8	32A/63A	300	600	185	580	280	ø7.5
8	150A	300	600	240	580	280	ø7.5
9	20A	300	600	130	580	280	ø7.5
9	32A/63A	300	600	185	580	280	ø7.5
9	150A	300	600	240	580	280	ø7.5

Fortress Interlocks

Technical Data XMR & XMSR

Tabulated Drawing
Sealed Enclosure



No OF LOCKS	SWITCH CURRENT	A	B	C	D	E	F
1	20 / 32 AMP	125MM	125MM	100MM	110MM	110MM	ø4.7
1	63 AMP	200MM	200MM	130MM	180MM	180MM	ø4.7
1	150 AMP	200MM	200MM	185MM	180MM	180MM	ø4.7
2	20 / 32 AMP	125MM	175MM	100MM	110MM	160MM	ø4.7
2	63 AMP	200MM	200MM	130MM	180MM	180MM	ø7.5
2	150 AMP	200MM	200MM	185MM	180MM	180MM	ø7.5
3	20 / 32 AMP	200MM	300MM	130MM	280MM	180MM	ø7.5
3	63 AMP	200MM	300MM	130MM	280MM	180MM	ø7.5
3	150 AMP	200MM	300MM	185MM	280MM	180MM	ø7.5
4	20 / 32 AMP	200MM	300MM	130MM	280MM	180MM	ø7.5
4	63 AMP	200MM	400MM	130MM	380MM	180MM	ø7.5
4	150 AMP	200MM	400MM	185MM	380MM	180MM	ø7.5
5	20 / 32 AMP	200MM	400MM	130MM	380MM	180MM	ø7.5
5	63 AMP	200MM	400MM	130MM	380MM	180MM	ø7.5
5	150 AMP	200MM	400MM	185MM	380MM	180MM	ø7.5
6	20 / 32 AMP	200MM	400MM	130MM	380MM	180MM	ø7.5
6	63 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
6	150 AMP	300MM	600MM	185MM	580MM	280MM	ø7.5
7	20 / 32 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
7	63 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
7	150 AMP	300MM	600MM	185MM	580MM	280MM	ø7.5
8	20 / 32 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
8	63 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
8	150 AMP	300MM	600MM	185MM	580MM	280MM	ø7.5
9	20 / 32 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
9	63 AMP	300MM	600MM	130MM	580MM	280MM	ø7.5
9	150 AMP	300MM	600MM	185MM	580MM	280MM	ø7.5

Data Sheet

Breaker Lock ABB

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)

www.fortressinterlocks.com

Fortress Interlocks

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

Features

Suitable for high frequency applications

Heavy Duty

High Integrity

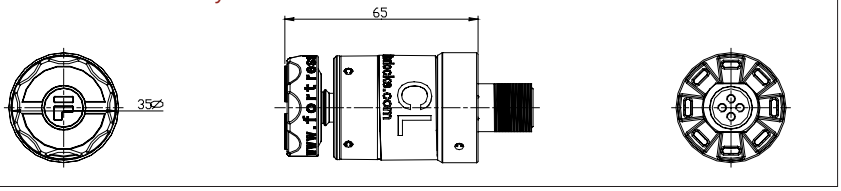
Standard key can not be mastered

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

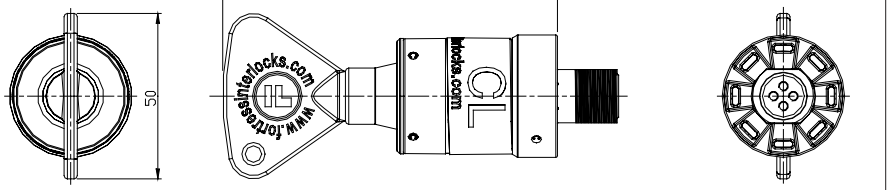
Wide temperature range -40ºC + -50ºC

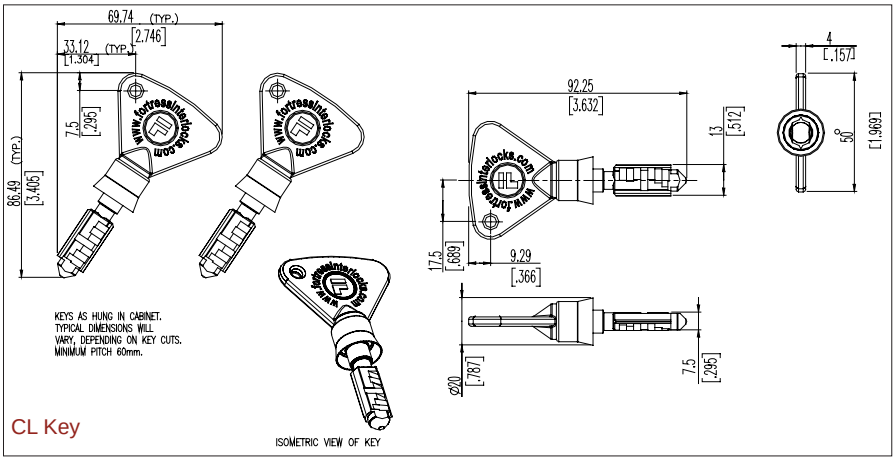
Master series available

Breaker with Low Profile key



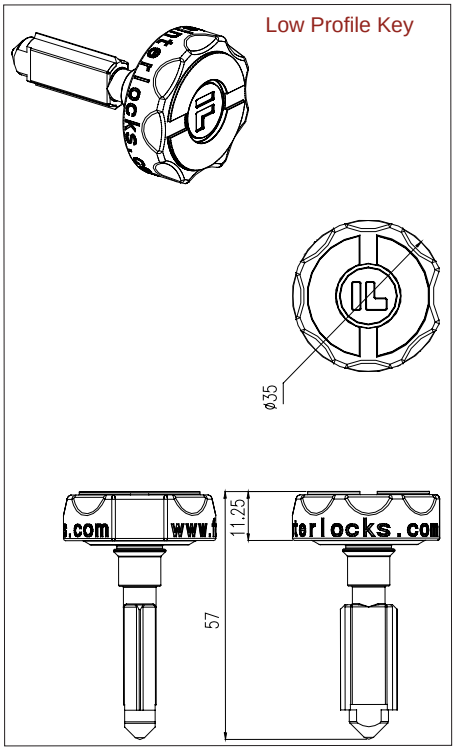
Breaker with CL Key





CL Key

Low Profile Key



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Fortress Interlocks

Data Sheet

Breaker Lock Merlin Gerin

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
- ML - Master series lock version
- Standard or special low profile key (pictured)

www.fortressinterlocks.com

M_DS_E_CLMERLIN_V2.0_DEC05

mGard

Fortress Interlocks

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

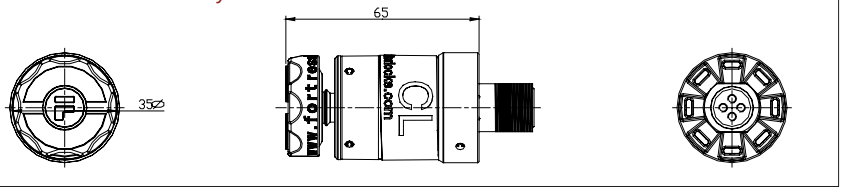
Standard key can not be mastered

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

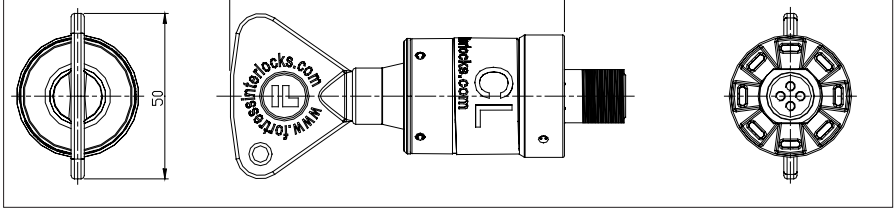
Wide temperature range -40°C + -50°C

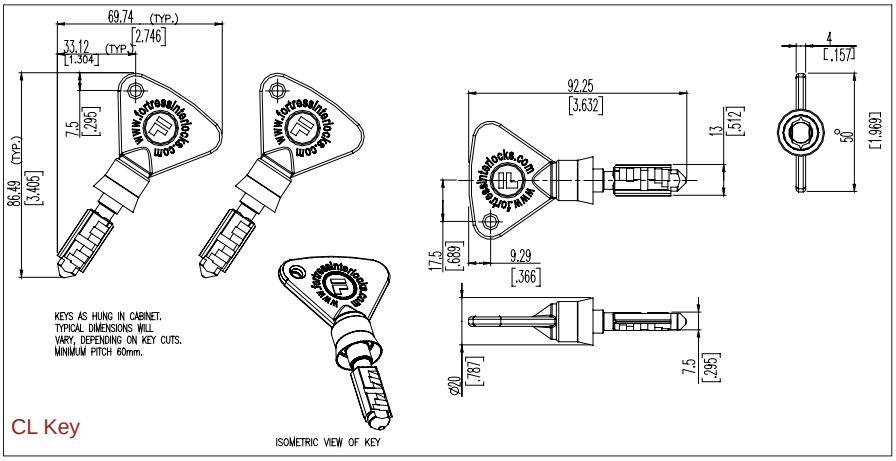
Master series available

Breaker with Low Profile key



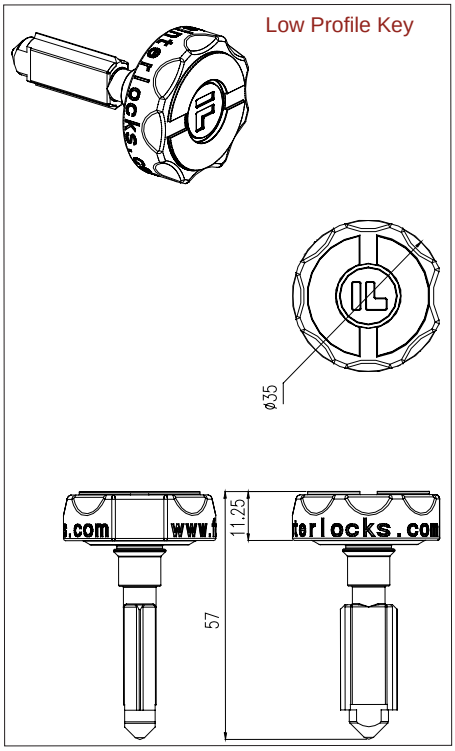
Breaker with CL Key





CL Key

Low Profile Key



www.fortressinterlocks.com

Fortress Interlocks

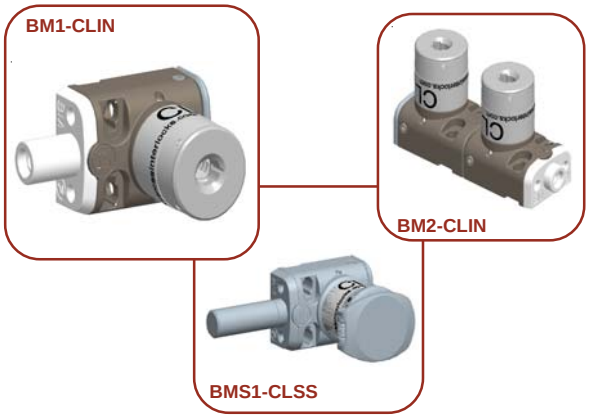
Data Sheet

BM & BMS

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

CL(S) **ML(S)**

stainless steel spring loaded dustcover

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

www.fortressinterlocks.com

Fortress Interlocks

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

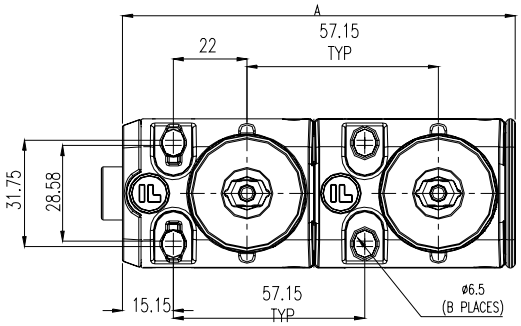
Body Housing:	Full stainless steel
Internals:	Full stainless steel
Bolt:	All stainless steel
Lock Mechanism:	CLS or MLS lock types are of all stainless steel.
Key:	Stainless Steel
Spring loaded dustcover:	Stainless Steel

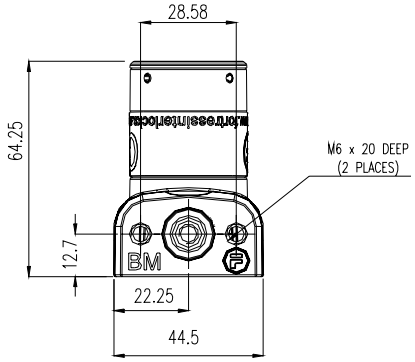
Features & Benefits

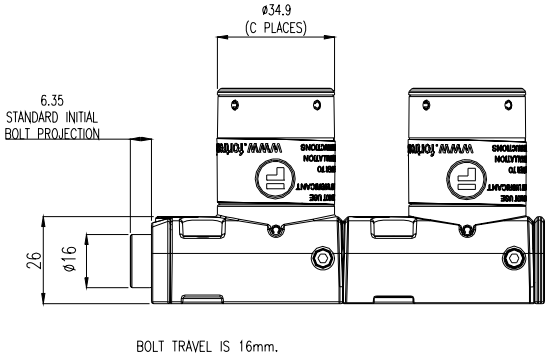
- No product handing issues
- Horizontal and vertical mounting
- Multiple lock versions eliminate the need for separate key exchange boxes
- 16mm Diameter bolt with 16mm of travel
- Variable bolt length
- Front, top or bottom fixing
- Tested to over 1,000,000 operations
- Durable plated bodies
- Patented 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

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
BM1	60.15	2	1
BM2	117.3	4	2
BM3	174.45	6	3
BM4	231.6	8	4
BM5	288.75	10	5
BM6	345.9	12	6
BM7	403.05	14	7
BM8	460.2	16	8
BM9	517.35	18	9
BM10	574.5	20	10

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES







BOLT TRAVEL IS 16mm.

BM Tabulated Drawing

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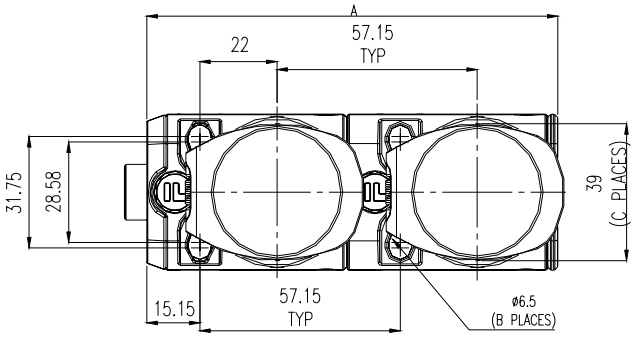
Fortress Interlocks

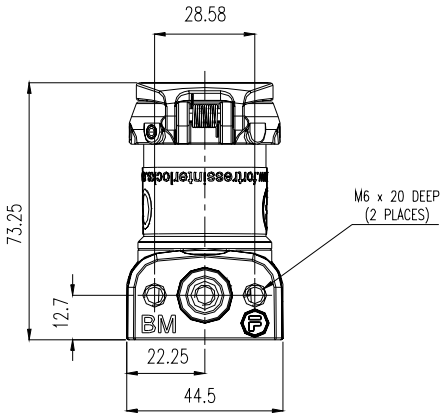
Technical Data

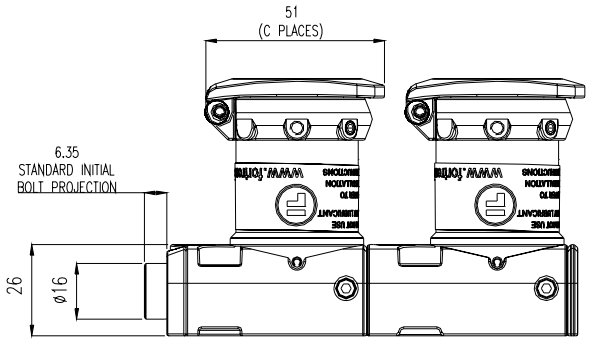
BM & BMS

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CLS LOCKS
BMS1	60.15	2	1
BMS2	117.3	4	2
BMS3	174.45	6	3
BMS4	231.6	8	4
BMS5	288.75	10	5

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES







BOLT TRAVEL IS 16mm.

BMS Tabulated Drawing

Back of Board Mounting

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

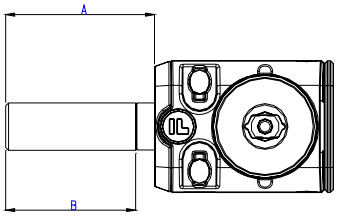
Add-On Module(s)

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

DIM A INITIAL PROJECTION	DIM B EXTENSION LENGTH
0	SHORTENED BOLT
6.35	NO EXTENSION
50	43.65
150	143.65

OTHER INITIAL BOLT PROJECTIONS BETWEEN 0 AND 150 ARE AVAILABLE UPON REQUEST



www.fortressinterlocks.com

Fortress Interlocks

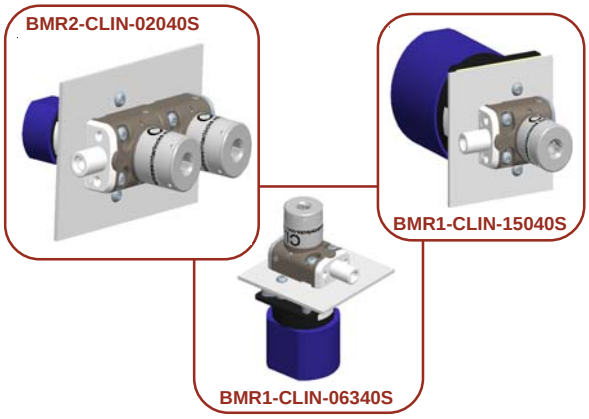
Data Sheet

BMR & 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 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:

part number

lock portion

CL(S) **ML(S)**

stainless steel spring loaded dustcover
(BMR only standard on BMSR)

- Extended / shortened bolt
- Colour Coding on locks and keys
- Optional key/bolt sequences
- Back of Board mounting available upon request

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mGard

Fortress Interlocks

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

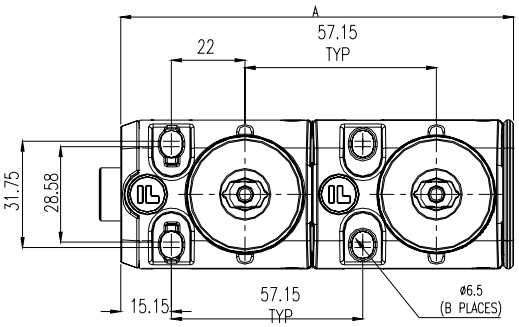
Body Housing:	Full stainless steel
Internals:	Full stainless steel
Bolt:	All stainless steel
Lock Mechanism:	CLS or MLS lock types are of all stainless steel.
Key:	Stainless Steel
Spring loaded dustcover:	Stainless Steel

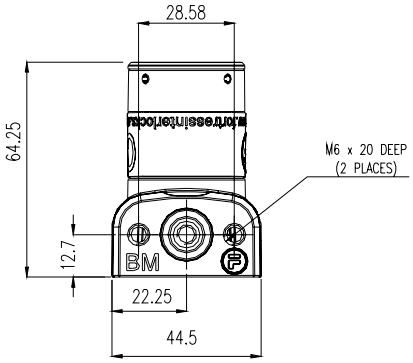
Features & Benefits

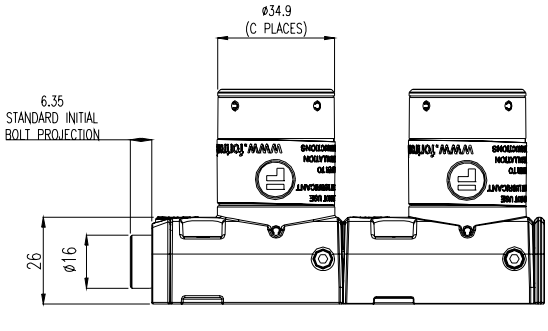
- No product handing issues
- Horizontal and vertical mounting
- Multiple lock versions eliminate the need for separate key exchange boxes
- 16mm Diameter bolt with 16mm of travel
- Variable bolt length
- Front, top or bottom fixing
- Lock tested to over 1,000,000 operations
- Switches tested to 75,000 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

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CL LOCKS
BM1	60.15	2	1
BM2	117.3	4	2
BM3	174.45	6	3
BM4	231.6	8	4
BM5	288.75	10	5
BM6	345.9	12	6
BM7	403.05	14	7
BM8	460.2	16	8
BM9	517.35	18	9
BM10	574.5	20	10

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES







BOLT TRAVEL IS 16mm.

BM Tabulated Drawing

www.fortressinterlocks.com

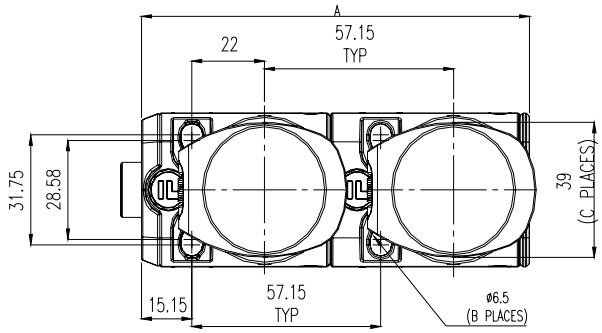
Fortress Interlocks

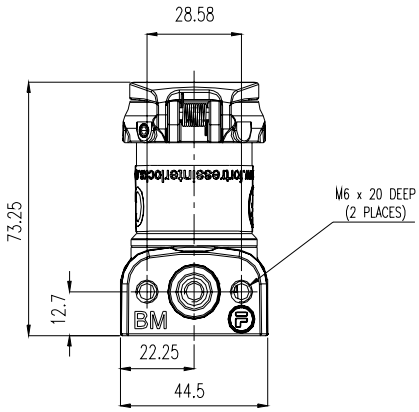
Technical Data

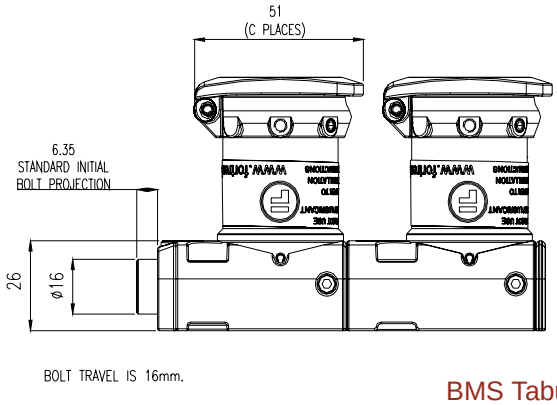
BMR & BMSR

PRODUCT	DIM A OVERALL LENGTH	DIM B NO OF SLOTTED HOLES	DIM C NO OF CLS LOCKS
BMS1	60.15	2	1
BMS2	117.3	4	2
BMS3	174.45	6	3
BMS4	231.6	8	4
BMS5	288.75	10	5

ALL DIMENSIONS ARE NOMINAL AND ARE SUBJECT TO MANUFACTURING TOLERANCES

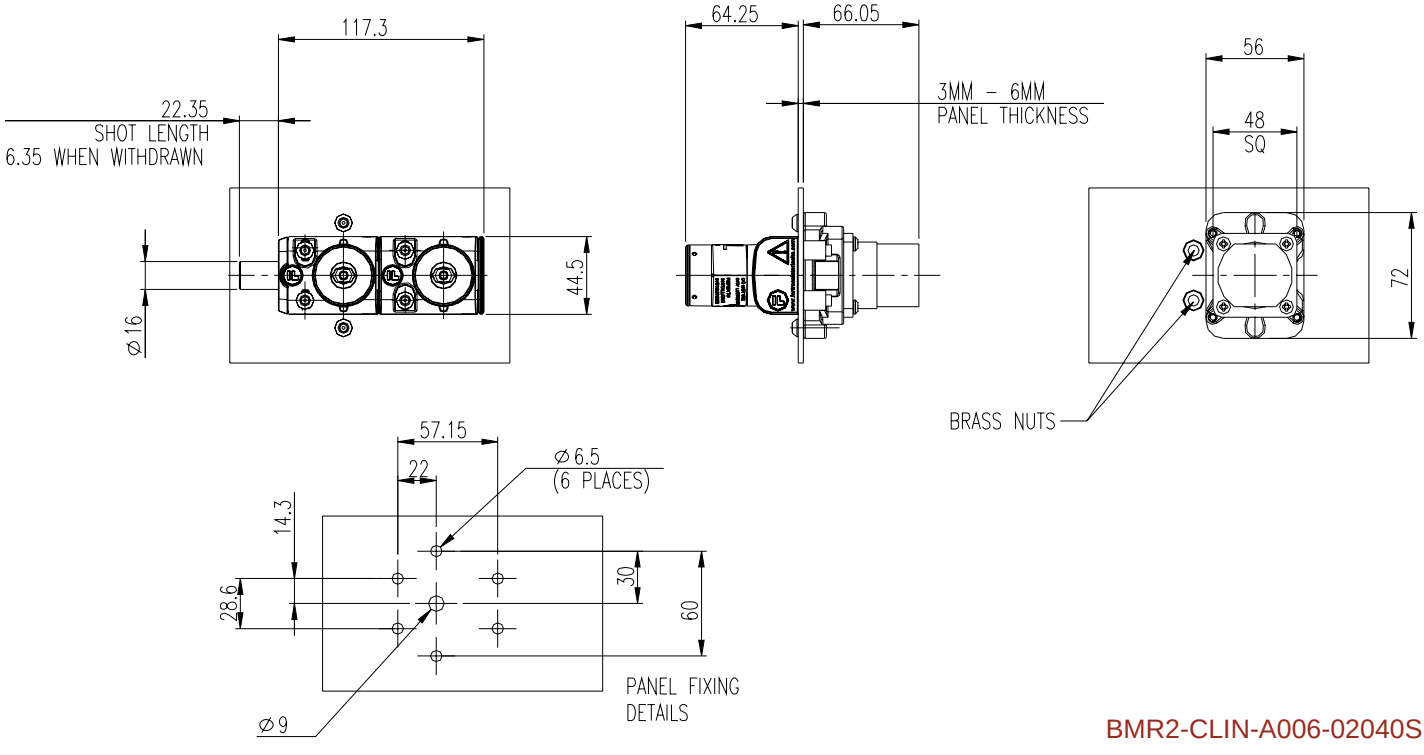






BOLT TRAVEL IS 16mm.

BMS Tabulated Drawing



BMR2-CLIN-A006-02040S

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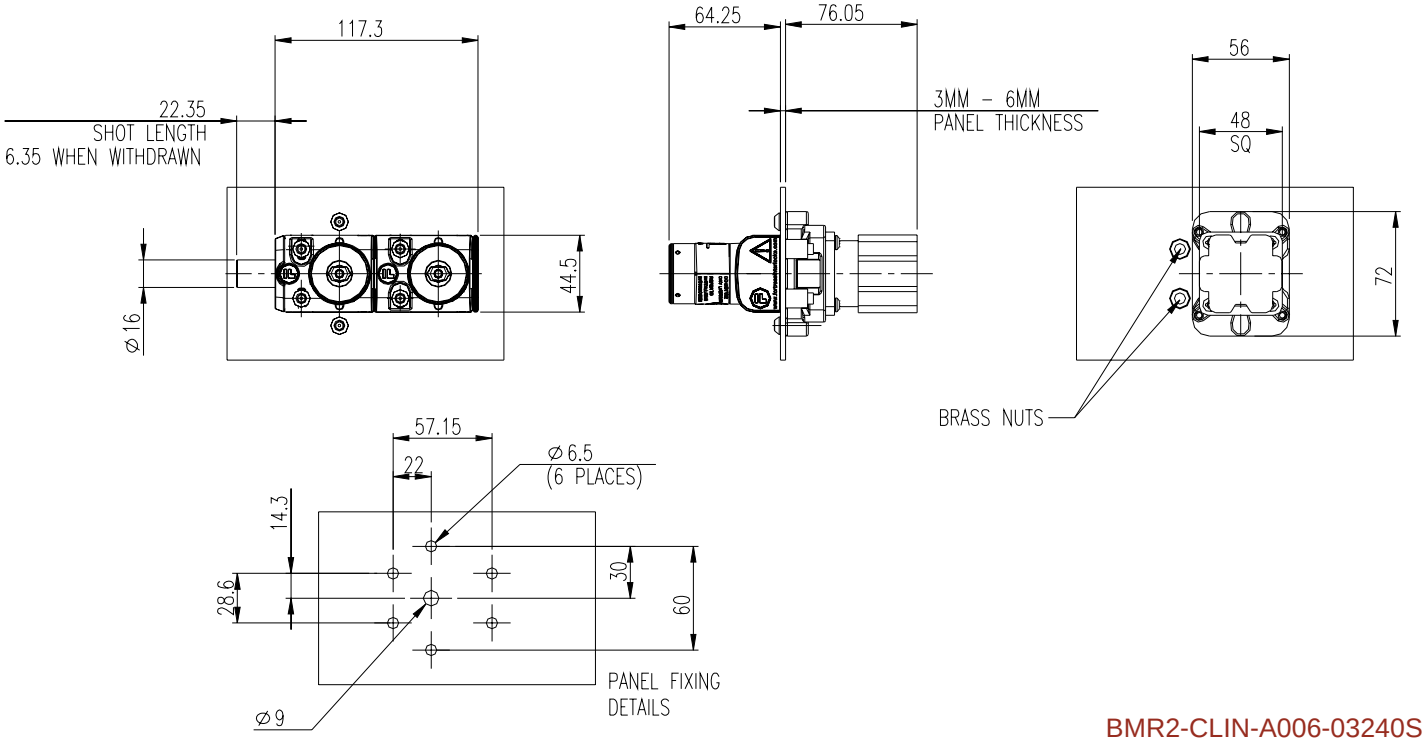
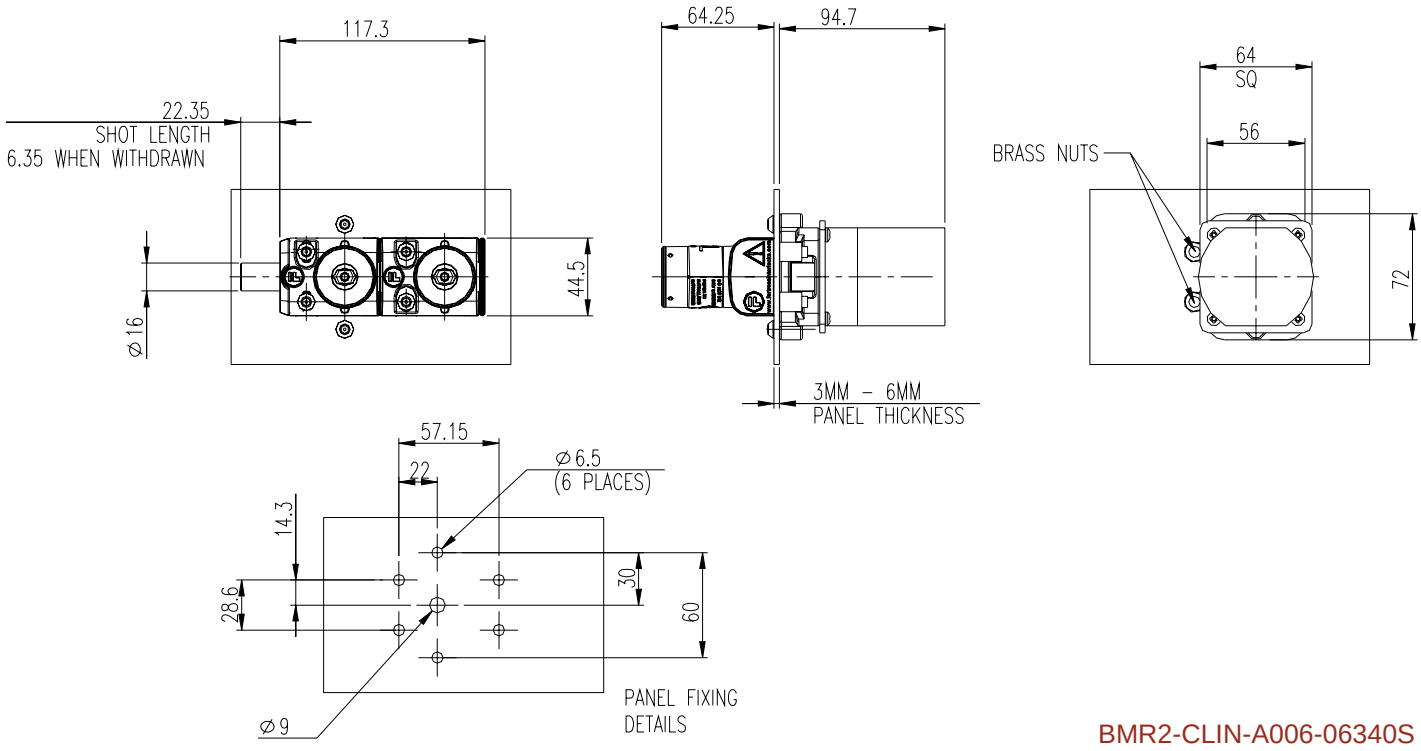
Fortress Interlocks

Technical Data

BMR & BMSR



BMR2-CLIN-A006-03240S



BMR2-CLIN-A006-06340S

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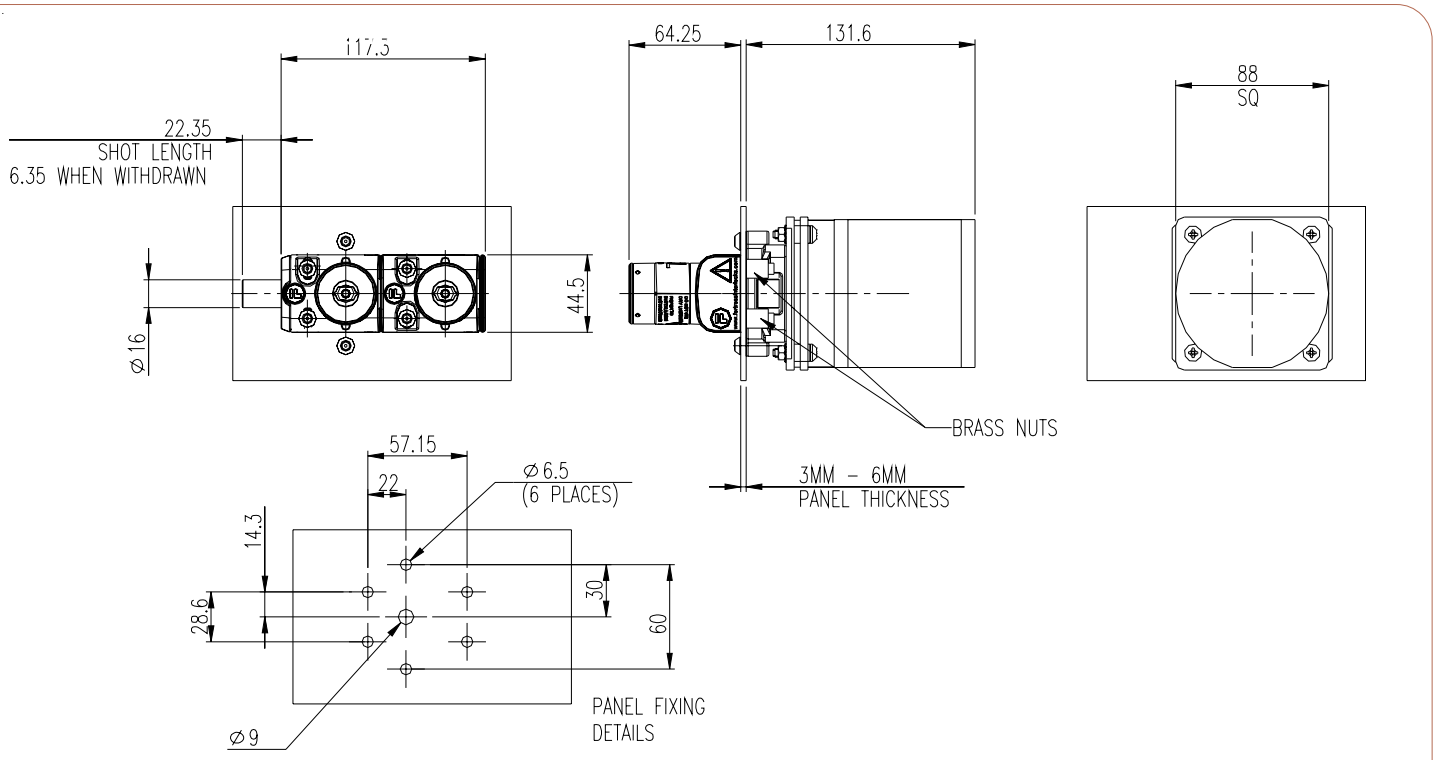
mGard

Technical Data

BMR & BMSR

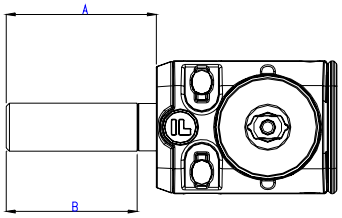


BMR2-CLIN-A006-15040S

Add-On Module(s)

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

Extension Bolt



DIM A INITIAL PROJECTION	DIM B EXTENSION LENGTH
0	SHORTENED BOLT
6.35	NO EXTENSION
50	43.65
150	143.65

OTHER INITIAL BOLT PROJECTIONS BETWEEN 0 AND 150 ARE AVAILABLE UPON REQUEST

Fortress Interlocks

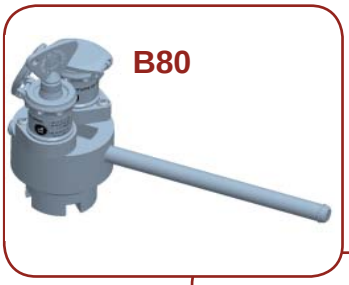
Data Sheet Valve Locks: FSKI 90L (Single) FDKI 90L (Double)

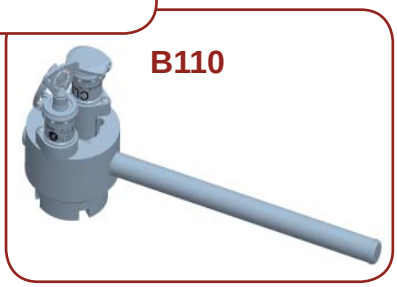
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

description:

the FSKI 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

M_DS_E_FS(D)KI90L_V2.0_DEC05

Fortress Interlocks

Data Sheet Valve Locks: FSKI 90L (Single) FDKI 90L (Double)

Features

Can be engineered to fit any valve

Enforces a safe working practice scheme

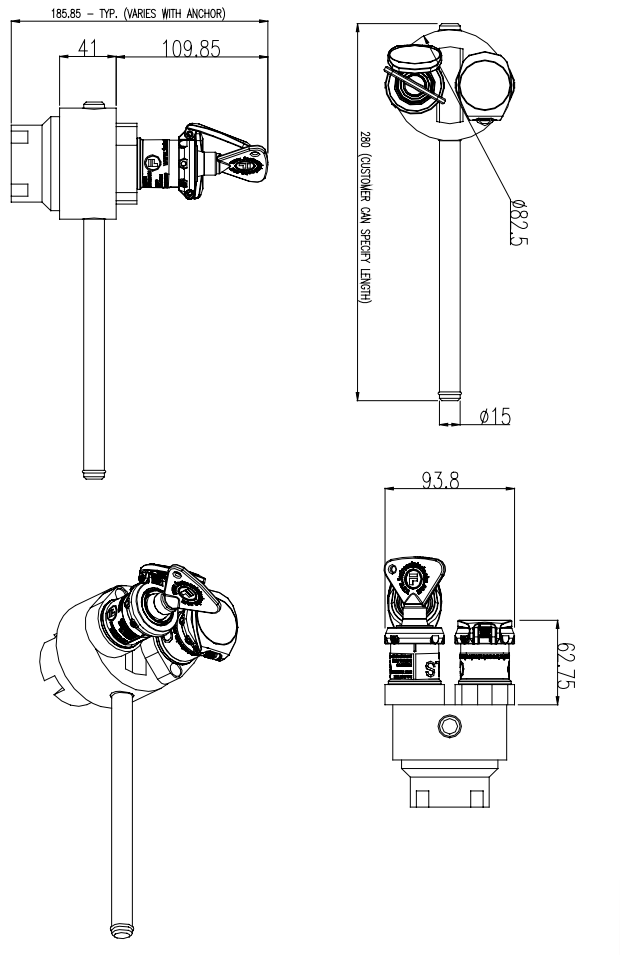
All 316 Stainless Steel

Easy to use CLS Lock

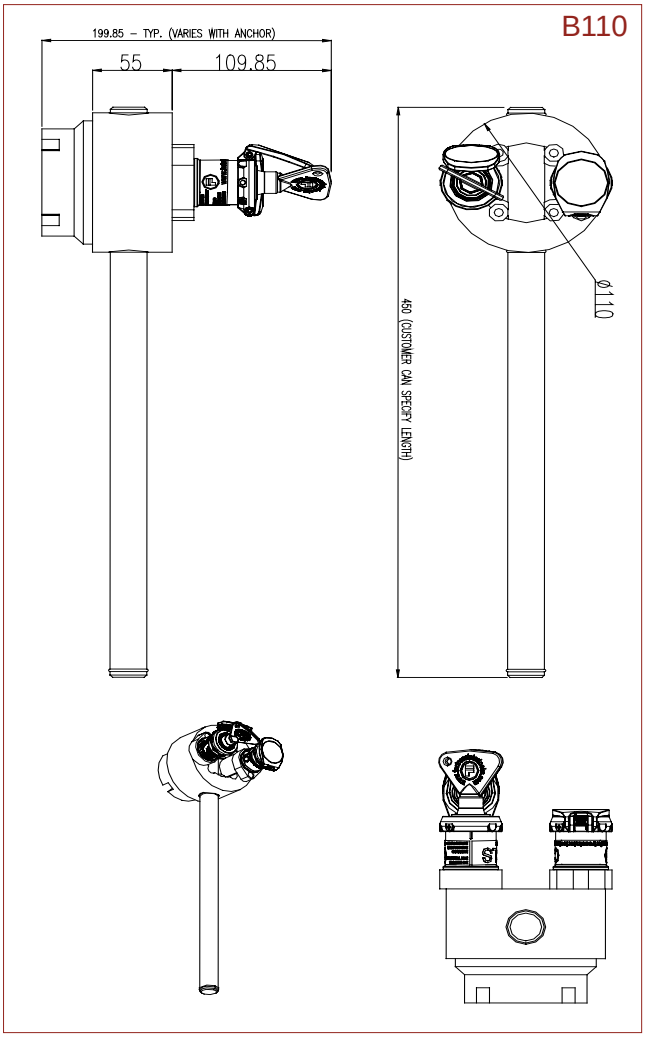
Construction

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.

B80



B110



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mGard

Fortress Interlocks

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.

GG110

GG150

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

Fortress Interlocks

Data Sheet Valve Locks: FSKI GG (Single) FDKI GG (Double)

Features

Can be engineered to fit any valve

Enforces a safe working practice scheme

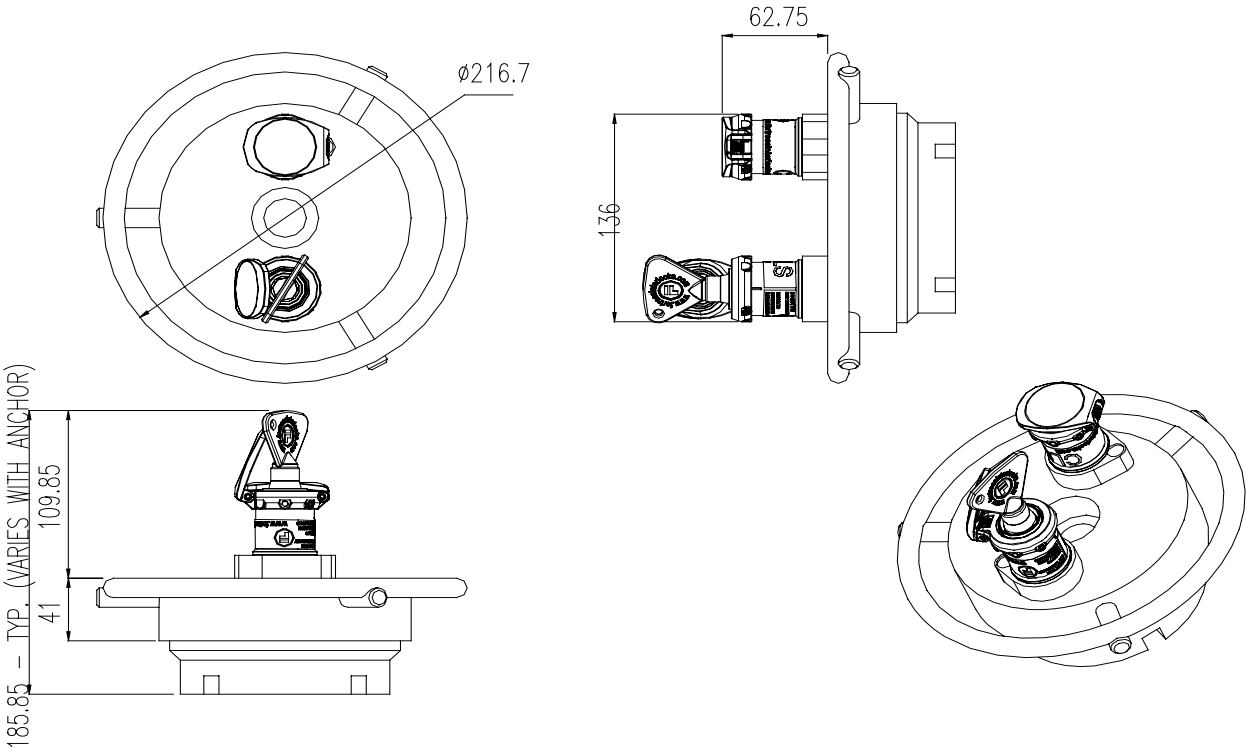
All 316 Stainless Steel

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



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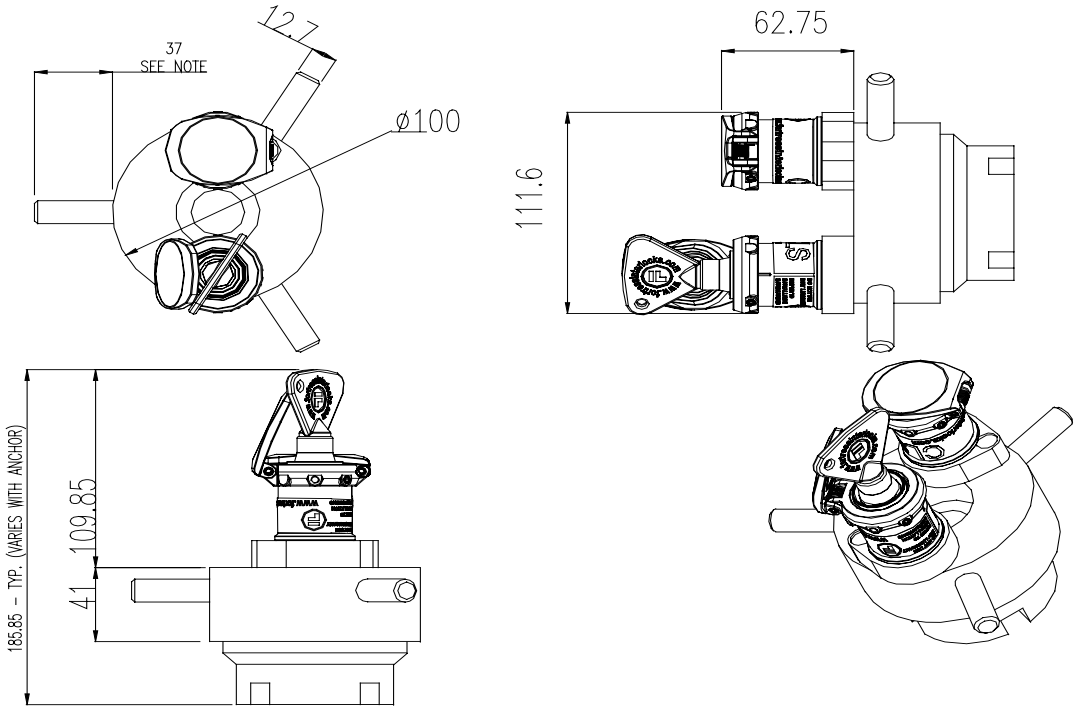
mGard

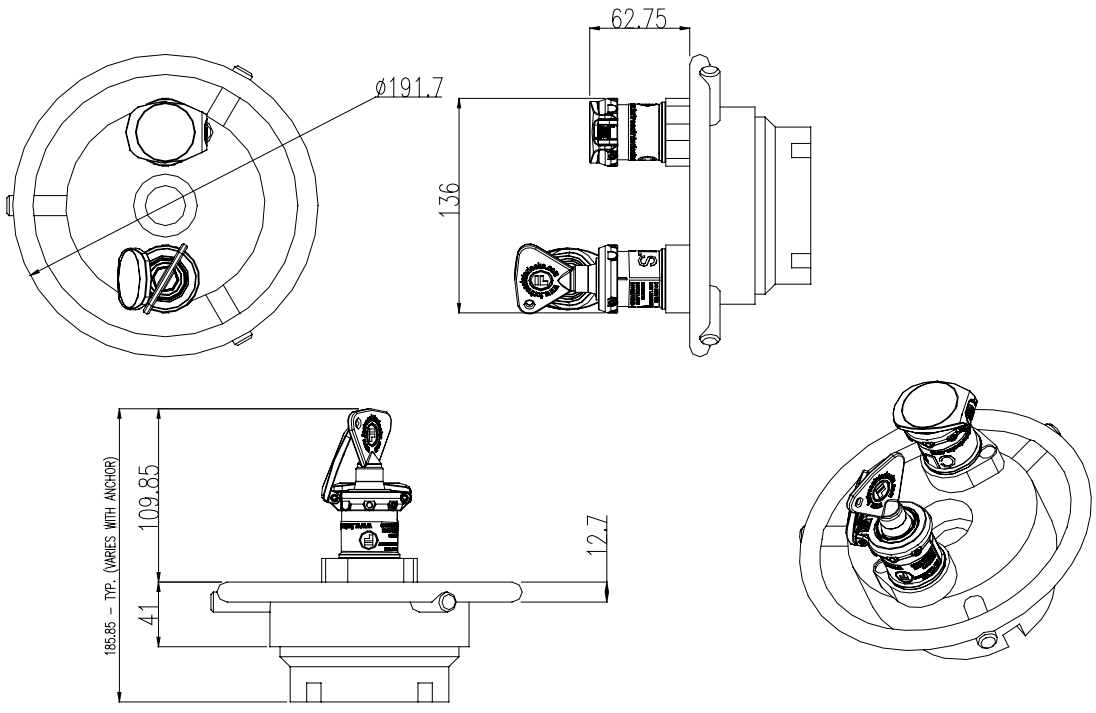
Fortress Interlocks

Data Sheet Valve Locks: FSKI GG (Single) FDKI GG (Double)

GG100



GG125



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mGard

Data Sheet

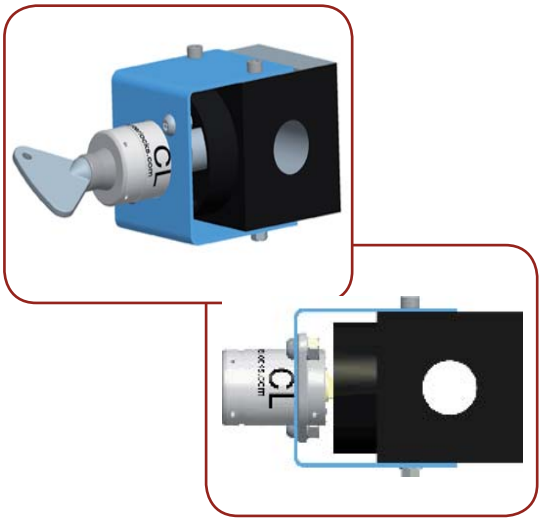
Pneumatic Valve Unit: PVU

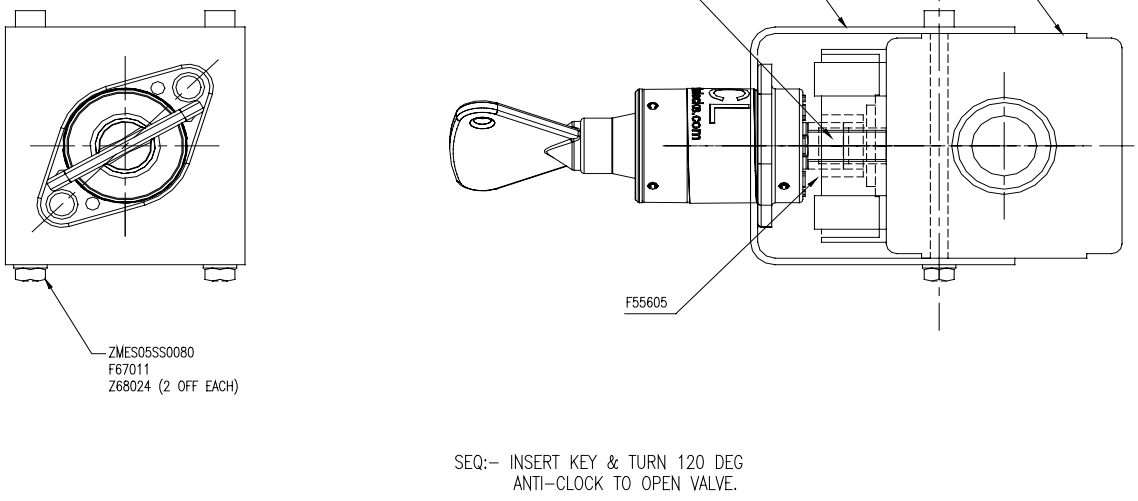
mGard is the ultimate range of robust mechanical trapped key products. Trapped key technology offers purely mechanical access locks (removing the need for expensive wiring). mGard offers an extensive variety of modular interlocking solutions.

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 releaseing the key. This key can then be transferred to the next device within the interlock sequence, e.g. to open an access door.





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M_DS_E_PVU_V2.0_JAN06

Fortress Interlocks

Data Sheet

base modules:
connectors

eGard
Total Access & Control

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:

part number

safety only connector
basic connection module for connecting safety circuits only. Cannot connect I/O “input/output”. i.e. lamps, pushbuttons).

BS

S

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)

S C

part number

AS-i safety & control connector
Standard 4 pin connector to suit AS-interface connectors

BA (4 I & 4 O)

S C

foot
For terminating purely mechanical configurations

BF

www.fortressinterlocks.com

C = This is a **Control** Module S = This is a **Safety** Module

eGard

Fortress Interlocks

Data Sheet

base modules:
connectors

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

Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
BS	Safety Only	0	0	-	✓
BB	Safety & Control 2 I/O	Max 2 I/O		-	✓
BC	Safety & Control 8 I/O	Safety & Control 8 I/O		-	✓
BA	Safety & Control Asi	Max 4 I & Max 4O		-	✓

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 degress 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.

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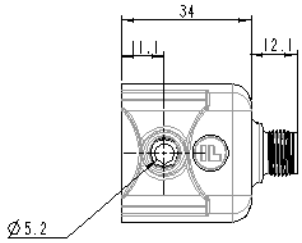
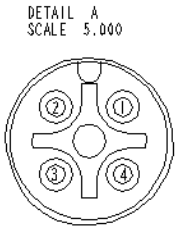
eGard

Fortress Interlocks

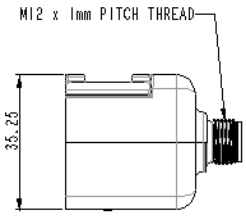
Technical Data base modules: connectors

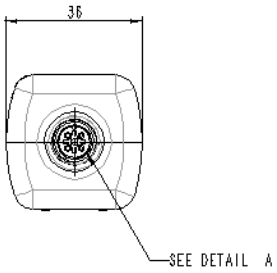
BS Drawing

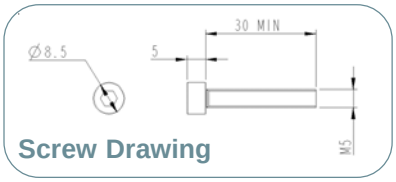




PIN	DESCRIPTION
1	SAFETY CIRCUIT 1
2	SAFETY CIRCUIT 2
3	SAFETY CIRCUIT 1
4	SAFETY CIRCUIT 2

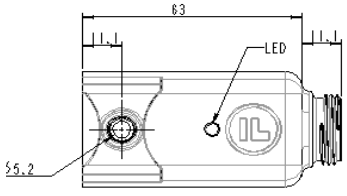




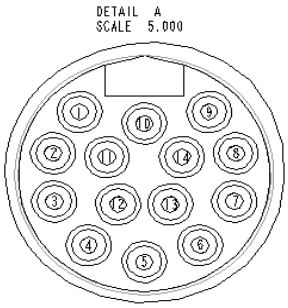


Screw Drawing

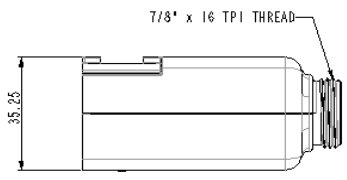
BB/BC Drawing

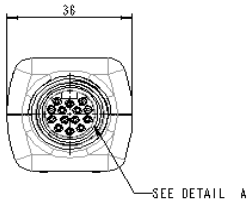


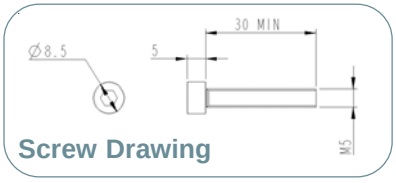
LED STATUS	MEANING
OFF	POWER FAILURE / FAULT
FLASHING AT 0.5 Hz	WORKING CORRECTLY
ON CONTINUOUSLY	FAULT



	BC	BB
PIN	DESCRIPTION	DESCRIPTION
1	I/O 3	N/A
2	I/O 2	N/A
3	I/O 1	I/O 1
4	+24V	+24V
5	SAFETY CIRCUIT 2	SAFETY CIRCUIT 2
6	0V	0V
7	I/O 6	N/A
8	I/O 5	N/A
9	I/O 4	N/A
10	SAFETY CIRCUIT 1	SAFETY CIRCUIT 1
11	I/O 0	I/O 0
12	SAFETY CIRCUIT 2	SAFETY CIRCUIT 2
13	SAFETY CIRCUIT 1	SAFETY CIRCUIT 1
14	I/O 7	N/A







Screw Drawing

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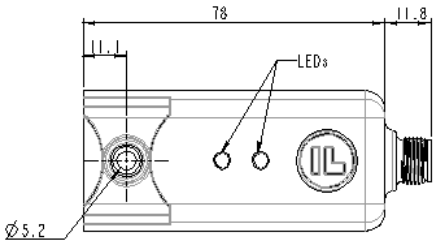
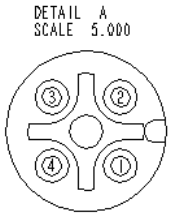
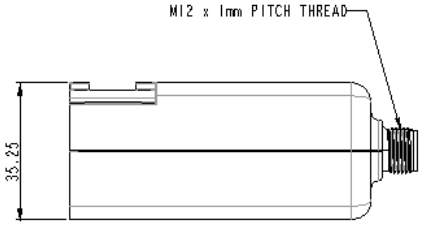
Technical Data base modules: connectors

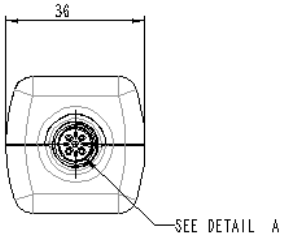
BA Drawing

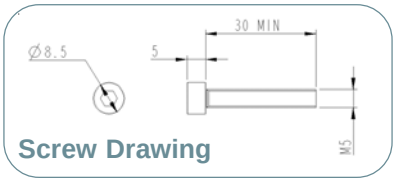




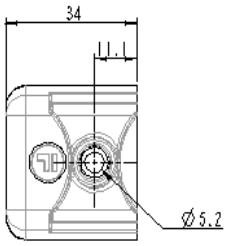
PIN	DESCRIPTION
1	ASi +
2	
3	ASi -
4	

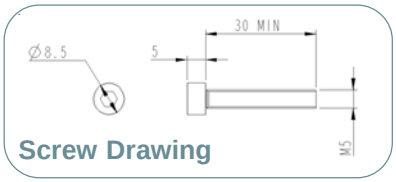


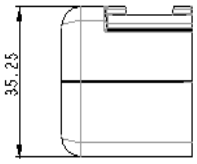


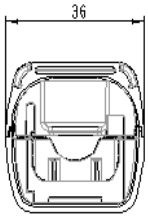


BF Drawing









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Fortress Interlocks

Data Sheet

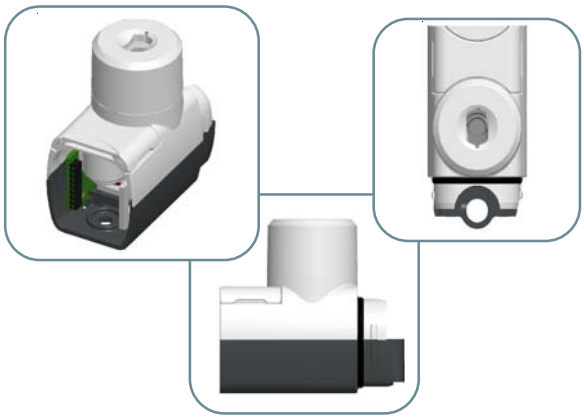
core module:
mechanical interlocking

eGard Total Access & Control

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:

part number

access module no key no dustcover

AB Bi Directional (Standard)
AU Uni Directional
QB Bi Directional std (master)
QU Uni Directional

part number

safety module with key no dustcover

SB Bi Directional (Standard)
SU Uni Directional
GB Bi Directional std (master)
GU Uni Directional

part number

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

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eGard

Fortress Interlocks

Technical Data

core module:
mechanical interlocking

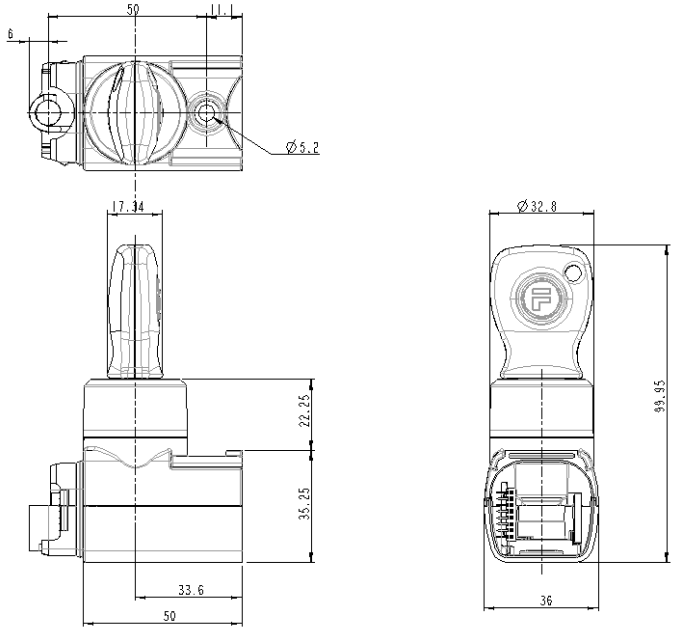
technical specification

Housing Material	**PBT**
Colour	**Light Grey & Dark Grey**
Ingress Protection	**IP65**
Operating Force	**< 1Nm**
Retention Forced Locked	**1000 N**
Mechanical Life	**1000000 Operations**
Maximum Frequency of Operations	**1 per second**
Ambient Temperature	**-5°C to + 40 °C**

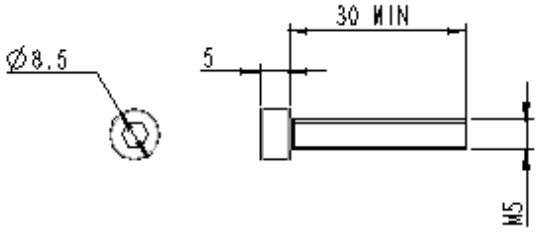
Mechanical Interlocking Module Input Outputs

Module (1)	Input (0)	Output	Order of pin assignment from base to head	Module operates on safety circuits
Mechanical Lock	0	0	-	0

Mechanical Drawing



Screw Drawing



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Fortress Interlocks

Data Sheet

core module:
electrical interlocking

eGard Total Access & Control

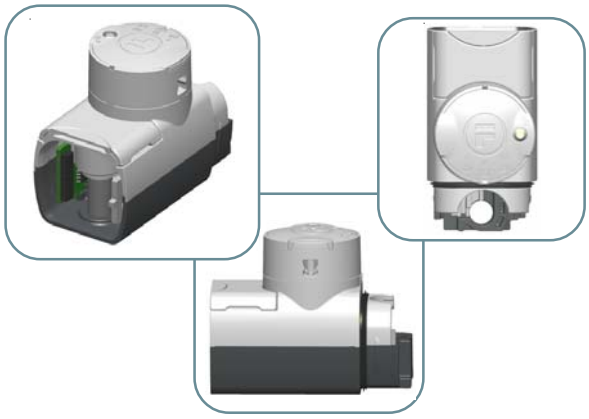
eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

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:

part number

safety switch

SS

part number

runner bar status

RB

electrical locking (solenoid)

EU Power to unlock

EL Power to lock

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C = This is a **Control** Module S = This is a **Safety** Module

eGard

Fortress Interlocks

Technical Data

core module:
electrical interlocking

technical specification

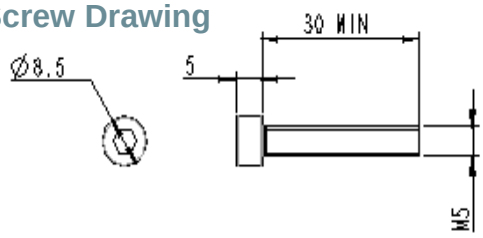
Housing Material	PBT
Colour	Light Grey & Dark Grey
Ingress Protection	IP65
Retention Force Locked	1000 N
Mechanical Life	1000000 Operations
Electrical Life	1000000 Operations
Maximum Frequency of Operations	1 per second
Ambient Temperature	-5°C to + 40 °C
Switching Contact Element- SS	2NC on Safety Circuits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

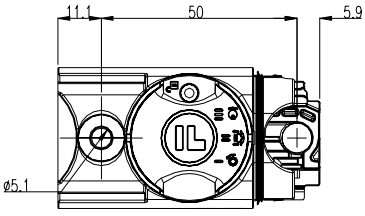
Electrical Interlocking Module Input Outputs

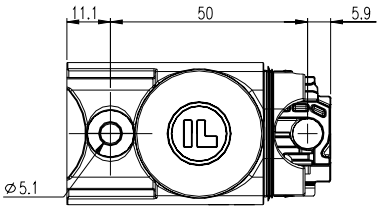
Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
SS	Safety Switch	0	0	-	✓
EU/EL	Power to unlock Power to lock	1	1	Input assigned first	0
RB	Runner Bar Status	0	1	-	0

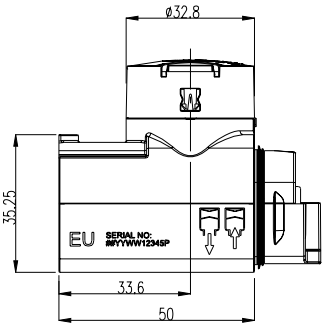
Safety Switch Drawing

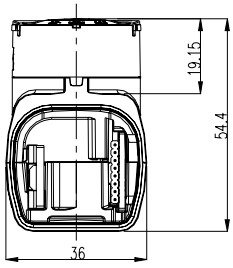
Screw Drawing

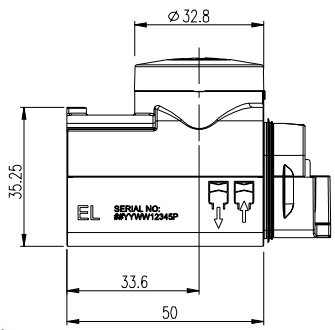


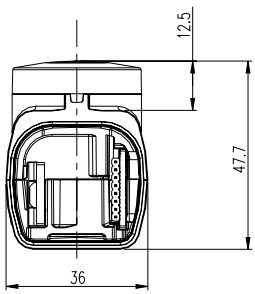












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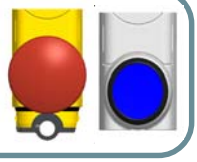
Fortress Interlocks

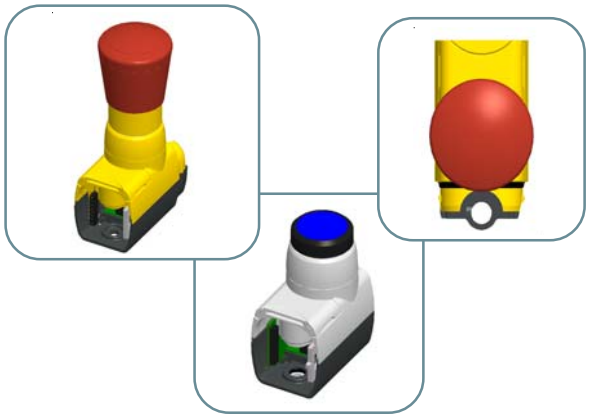
Data Sheet

core module:
emergency stop / start / restart



eGard Total Access & Control

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 momentory change of state to wire directly into safety relay reset circuit.

emergency stop options:

part number

twist release e-stop

ES

e-stop with monitoring

EM

part number

start / restart for safety relay re-set

SR

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C = This is a **Control** Module S = This is a **Safety** Module

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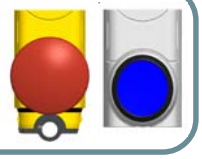
Technical Data core module:

emergency 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 Current	Refer to base module spec
Switching Voltage	Refer to base module spec
Isolating Distance	2mm per switch element
Contact Material	90% Silver and 10% Nickel

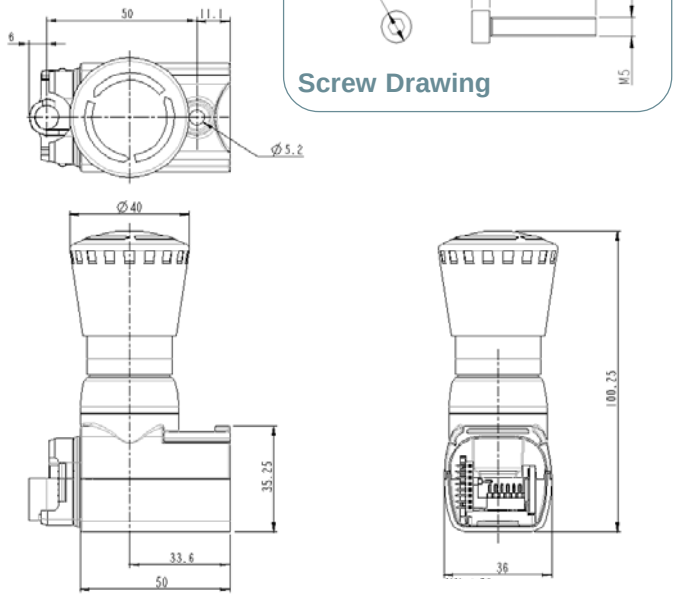
start restart

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	1 NO / 1 NC
Switching Principle	Positive Break
Switching Current	Refer to base module spec
Switching Voltage	Refer to base module spec
Isolating Distance	2mm per switch element
Contact Material	90% Silver and 10% Nickel

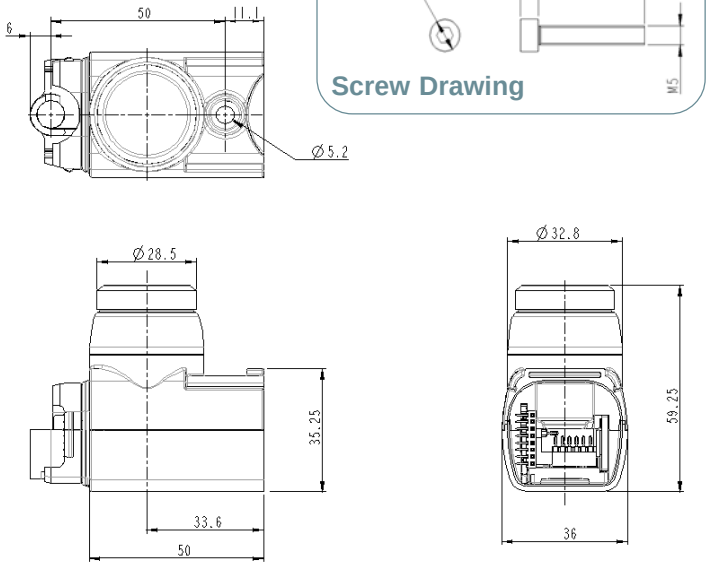
Emergency Stop & Start /Restart Module Input Outputs

Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
ES	E-Stop	0	0	-	✔
EM	Monitored E-Stop	0	1	-	✔
SR	Start / Restart	0	0	-	✔

e-stop Drawing



start / restart Drawing



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Fortress Interlocks

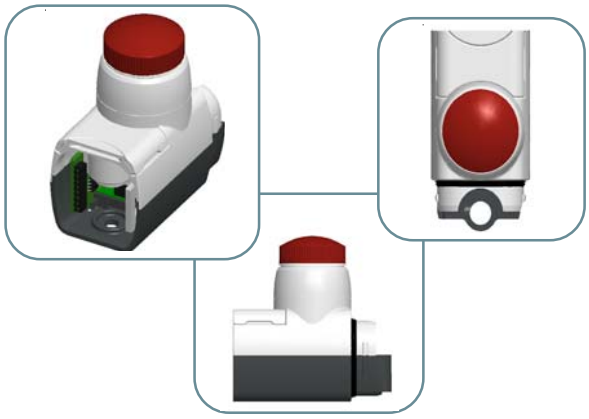
Data Sheet

core module:
lamps

eGard Total Access & Control

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:

part number

red pilot lamp concentric rings

LR

green pilot lamp concentric rings

LG

clear pilot lamp concentric rings

LC

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C = This is a **Control** Module

eGard

Fortress Interlocks

Technical Data

core module:
lamps

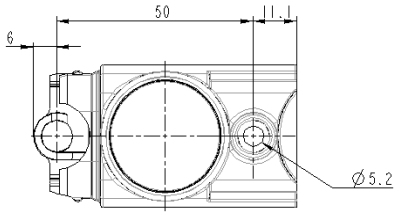
technical specification

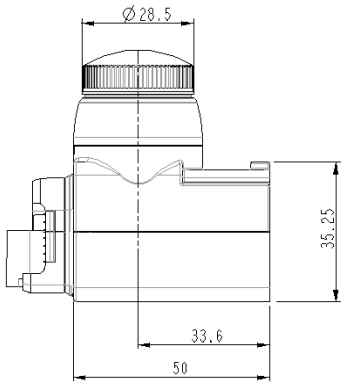
Housing Material	**PBT**
Colour	**Light Grey & Dark Grey**
Ingress Protection	**IP65**
Maximum Frequency of Operations	**1000 per hr**
Ambient Temperature	**-5°C to + 40 °C**
Switching Current	**Refer to base module spec**
Switching Voltage	**Refer to base module spec**

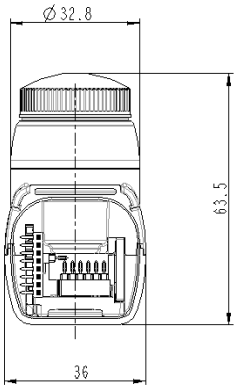
Lamp Module Input Outputs

Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
LR, LG, LC	Lamps	1	0	-	0

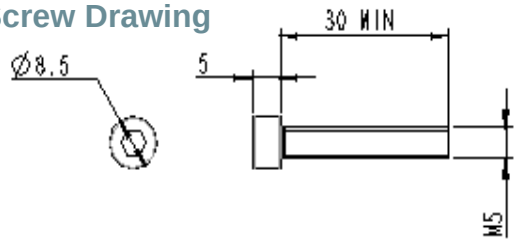
Lamp Drawing







Screw Drawing



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Fortress Interlocks

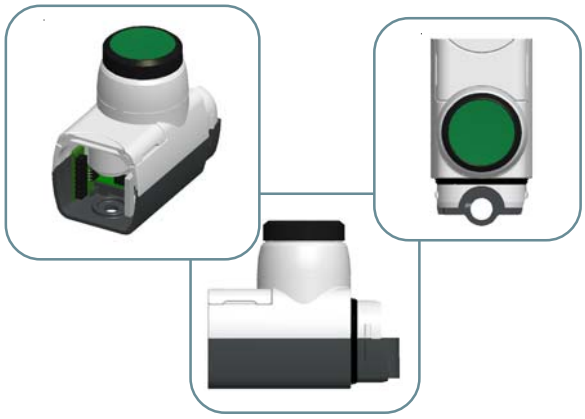
Data Sheet

core module:
push buttons

eGard Total Access & Control

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:

part number

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

part number

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© = This is a **Control** Module

eGard

Fortress Interlocks

Technical Data

core module: push buttons

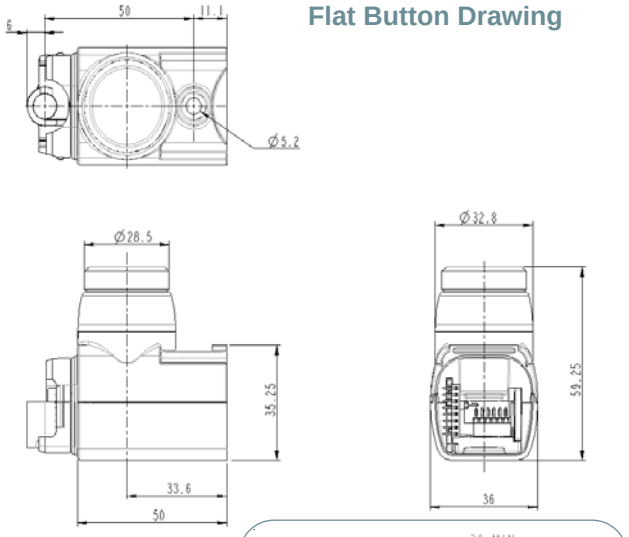
technical specification

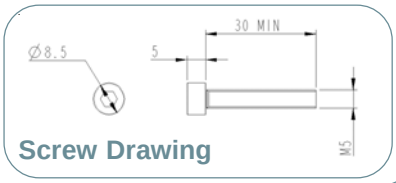
Housing Material	PBT
Colour	Light Grey & Dark Grey
Ingress Protection (complete configuration)	IP65
Mechanical Life	1000000 Operations
Electrical Life	1000000 Operations
Maximum Frequency of Operations	1000 per hr
Ambient Temperature	-5°C to + 40 °C
Switches Conformance	IEC 60947-5-1
Switching Contact Element	1 NO
Switching Current	Refer to base module spec
Switching Voltage	Refer to base module spec
Contact Material	90% Silver and 10% Nickel

Push Button Module Input Outputs

Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
PG,PB,PR,PW	Flat Push Buttons	0	1	-	0
P1-P4	Illuminated Push Buttons	1	1	Input (LED) assigned first for P1-P4	0
M1-M2, MB,MR, MG	Mushrooms	0	1	-	0

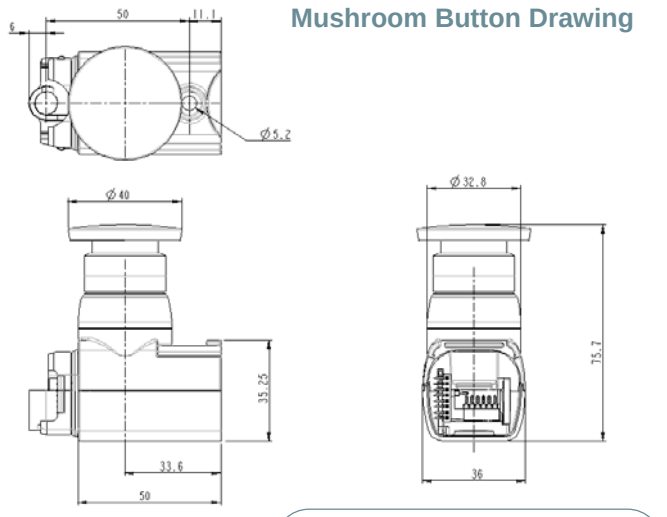
Flat Button Drawing

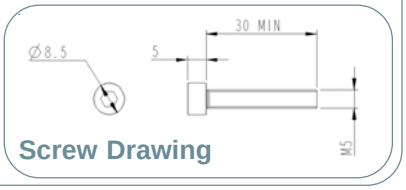




Screw Drawing

Mushroom Button Drawing





Screw Drawing

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Fortress Interlocks

Data Sheet

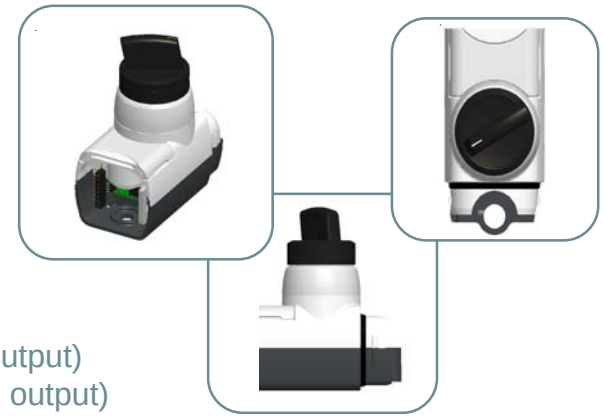
core module:
selector switches

eGard Total Access & Control

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
2D Non latching

2B Latching
2E Non latching

2C Latching
2F Non latching

3 position latching / non latching

3A Latching
3D Non latching

3B Latching
3E Non latching

3C Latching
3F Non latching

part number

part number

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= This is a **Control** Module

eGard

Fortress Interlocks

Technical Data

core module:
selector switches

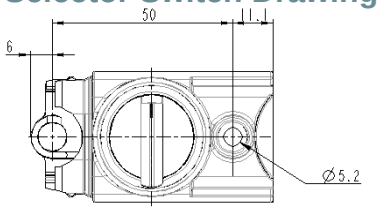
technical specification

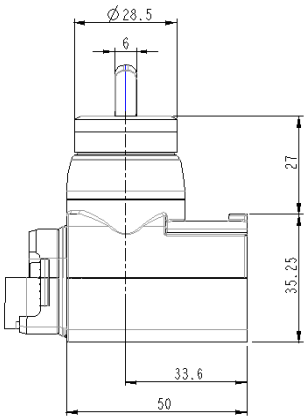
Housing Material	PBT
Colour	Light Grey & Dark Grey
Ingress Protection	IP65
Mechanical Life	300000 Operations
Electrical Life	300000 Operations
Maximum Frequency of Operations	1000 per hr
Ambient Temperature	-5°C to + 40 °C
Switches Conformance	IEC 60947-5-1
Switching Contact Element	2 NO
Switching Current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

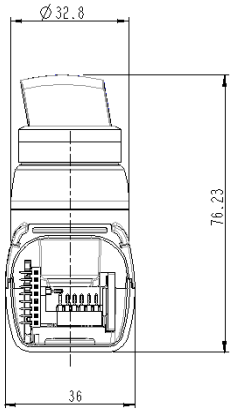
Selector Switch Module Input Outputs

Part Number	Module	Input (1)	Output (0)	Order of pin assignment from base to head	Module operates on safety circuits
2A - 2F	2 Position Selector Switch	0	1	-	0
3A - 3F	3 Position Selector Switch	0	2	Clockwise output assigned first	0

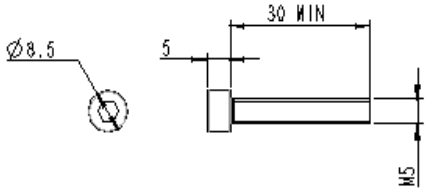
Selector Switch Drawing







Screw Drawing



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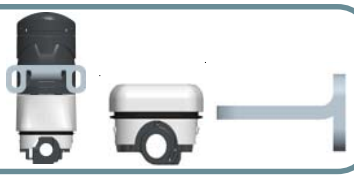
Data Sheet

head & actuators:

head / cap / actuators



eGard Total Access & Control

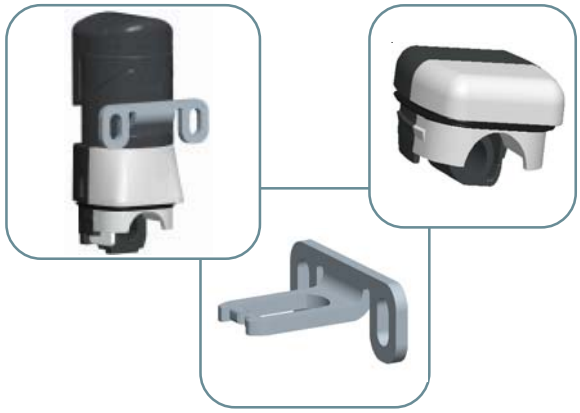
eGard offers “Total access & control”. The innovative modular design allows configurations of purely safety gate switches, purely trapped key interlocks, purely machine control stations or any combinations of all three.

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:

	part number	
head only	HM	
cap	HC	
head with fixed actuator	HF	

actuator options:

	part number	
slam / hinged door actuator	AH	
sliding door actuator	AS	
fixed actuator	AF	

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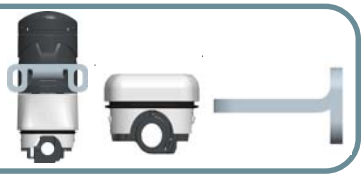
Technical Data head modules:

head / cap / actuators



technical specification

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 Operations	1 per second
Ambient Temperature	-5ºC to +40ºC
min hinged door (radius)	150mm (AH)

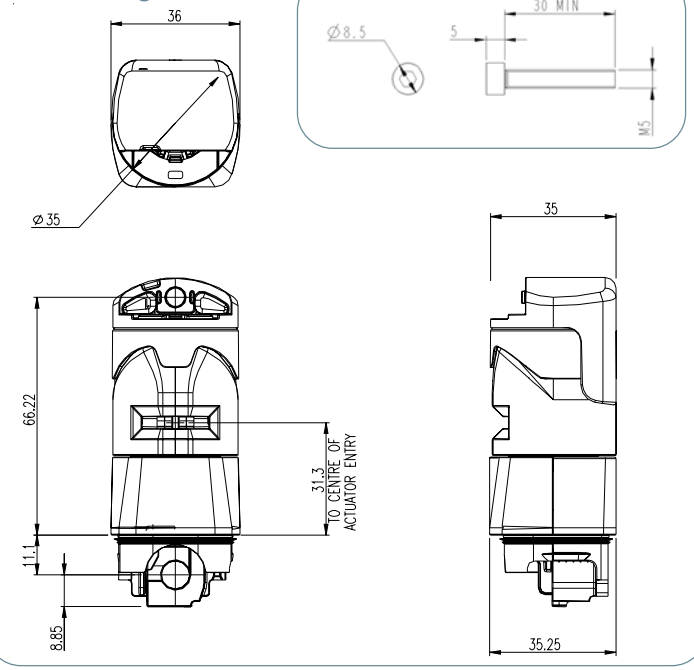
Cap	
Housing Material	PBT
Colour	Light Grey & Dark Grey
Ingress Protection	IP65
Ambient Temperature	-5ºC to +40ºC

Head Cap & Actuator Input Outputs

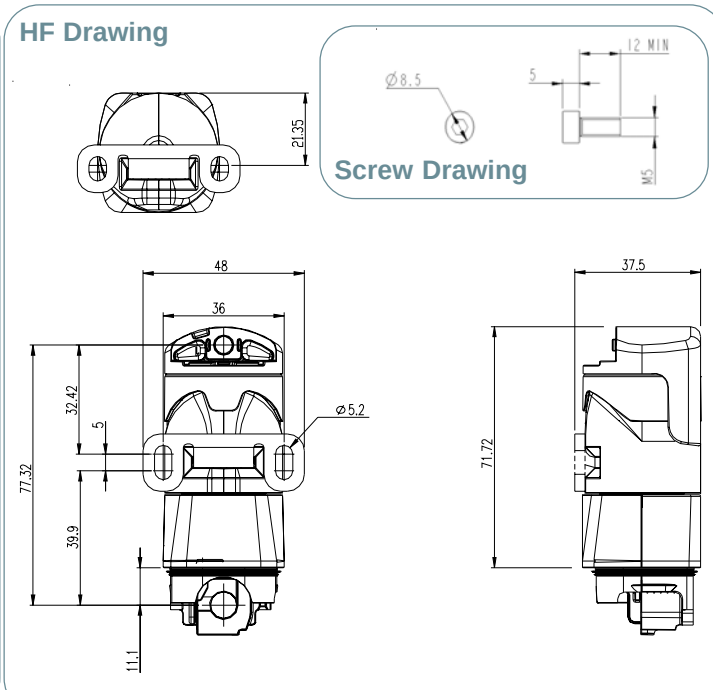
Part Number	Module	Input	Output	Order of pin assignment from base to head	safety circuits
HF	Head & Fixed Actuator	0	0	-	0
HM	Head	0	0	-	0
HC	Cap	0	0	-	0

*For further information on eGard configuration rules please click here

HM Drawing



HF Drawing



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

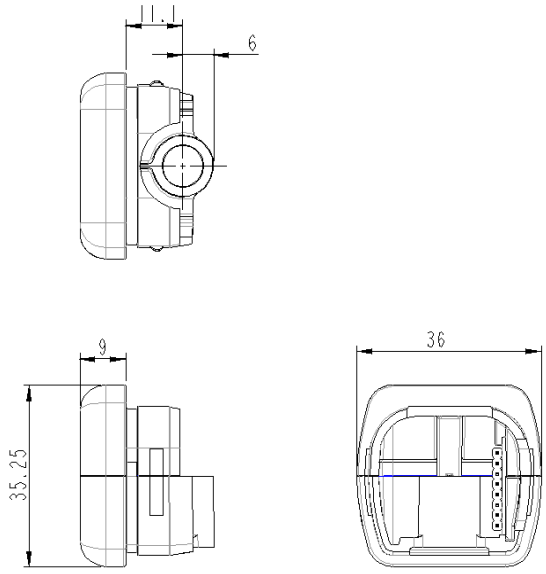
eGard

Fortress Interlocks

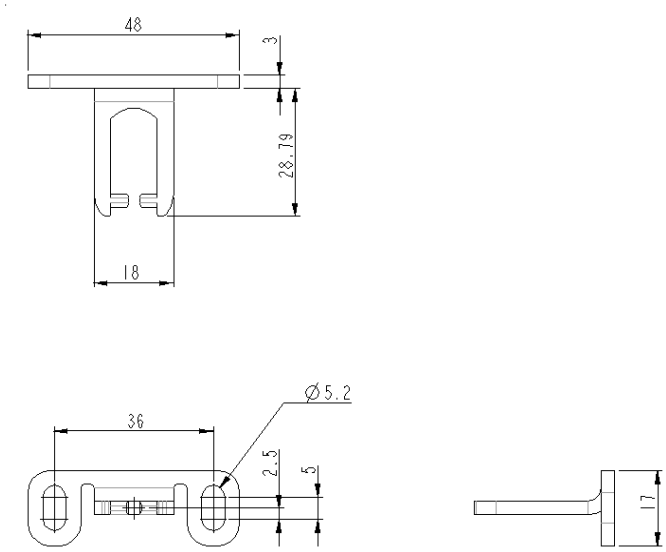
Technical Data head modules:

head / cap / actuators

HC Drawing



AF Drawing



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