



Total Access & Control

The essential guide to **eGard**



www.fortressinterlocks.com

eGard is the new fully modular approach to controlling access to hazardous machinery and equipment. A compact access and control system has been developed that enables a selection of modules including mechanical trapped key interlocks, electrical safety gate switch interlocks, and electrical operator controls to be integrated in one unit. The system features patented mechanical and electrical connections between every module. It simply clips together and the internal network is self-configuring. With over 4,000 billion combinations of modules it can be easily customised for every access and control application. The **eGard** product range is defined into three sections of head modules, core modules and base modules.

General configuration guidelines

Standard eGard Configurations

- A configuration must be made up of one head module, at least one core module and one base module.

Max No of modules = 11

<p>Trapped Key Interlocking</p> <p>Mechanical Door Lock</p> <p>Teach switch</p> <p>Mechanical door lock releases a safety key to eliminate accidental lock in and it can be used to activate teach function</p> <p>Solenoid locked control isolation configuration</p>	<p>Safety Gate Switches</p> <p>Simple dual circuit Safety gate switch</p> <p>Solenoid locking safety gate switch (Prevents access until it is safe).</p> <p>Solenoid locking safety gate switch, incorporating request to enter green pushbutton, white start button and safety key.</p>	<p>Machine Control</p> <p>Emergency stop with monitoring contact</p> <p>Machine on / off and power indication</p> <p>Machine control configuration incorporating start, stop, speed selector, emergency stop and request to enter.</p>
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eGard Product Range

The **eGard** range is IP65 rated and constructed from PBT and 304 stainless steel. All mechanically tested to 1 million operations.

Head Modules

	<p>Head - for gate switch and door lock configurations.</p> <p>Cap - used to terminate all non doorlock or gate switch configurations.</p> <p>Head and Fixed Actuator - head incorporating standard fixed actuator.</p>	<ul style="list-style-type: none"> ● Rotatable through 360 degrees ● Top and side entry ● Operating force 5 to 10 N ● Retention force 1500N ● Used in mechanical exchange box, machine control or key switch configurations. ● Fixed actuator suitable for bracketless mounting of gate switches mounted on the inside of hinged doors.
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Head

Core Modules

<p>Pushbutton - range of pushbuttons for machine control</p> <p>Button Options</p> <ul style="list-style-type: none"> ● flat ● flat illuminated ● mushroom 	<ul style="list-style-type: none"> ● All pushbuttons have 1NO contact ● All pushbutton use 1 output pin ● Illuminated pushbuttons use 1 output and 1 input 	
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Pushbuttons

<p>Selector switch - range of selector switches for machine control</p> <p>Selector Options</p> <ul style="list-style-type: none"> ● 2 position latching / non latching ● 3 position latching / non latching 	<ul style="list-style-type: none"> ● 2 position 1NO contact (each 2 position switch uses 1 output pin) ● 3 position 2NO contacts (each 3 position switch uses 2 output pin) ● Latching - stay in each switch position ● Non Latching - spring return to original switch position 	
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Selector switches

Safety switch - operates on dual safety circuits. Can be driven by either the operation of the head module (removal of actuator) or a mechanical lock

Electrical locking / unlocking - solenoid module to electrically lock a door or trap a mechanical key. This module restricts access until it is safe (e.g. machines with run down cycles, or robot applications that shouldn't be interrupted).

Runner bar status - additional monitoring contact. Can be driven by either the operation of the head module (removal of actuator) or a mechanical lock.

- 2 force break positive make NC safety contacts (uses none of the I/O pins)



Safety switches

- Power to unlock (standard)
- Power to lock
- Both have 1NO contact to monitor when the module is locked (uses 1 output pin)
- 1 NO monitoring contact (each runner bar status module uses 1 output pin)



Mechanical lock - for use in trapped key configurations (e.g. key switches, exchange boxes and door locks). It can also be used in conjunction with safety gate switches to add further levels of access control (e.g. modular safety keys to prevent accidental lock in of personnel in full body access applications).

- Robust radial disk tumbler lock
- >3000 combinations
- 10 mastered combinations (can be used with all 3000 individual combinations)

Mechanical Interlocking

Lamp - LED status indicators for either machine or interlock

Lamp options



- Each lamp uses 1 input pin



Lamps



Emergency stop - standard twist release operates dual safety contacts

- 2 force break positive make NC safety contacts (uses none of the I/O pins)
- Monitored version also has 1 NO monitoring contact, uses 1 output pin

Emergency Stop

Base modules - selection of modules to terminate a configuration

Base Modules

- Foot for terminating mechanical configurations (no wiring)
- Safety only connector 4 pin M12 for connecting dual safety circuits 24V DC
- Safety and control, two versions both connect dual safety circuits and either up to 2 I/O or up to 8 I/O 24V DC
- ASi connector 4 pin (only 2 pins used) M12 for connecting dual safety circuits and up to 4 inputs and up to 4 outputs



Connectors

Accessories



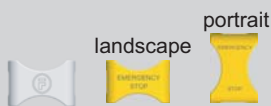
Actuators - selection of robust tongue actuators

- Handle actuators suitable for bracketless mounting for either sliding or hinged doors
- Fixed actuator suitable for bracketless mounting of gate switches and door locks mounted on the inside of hinged doors



Cables - black single ended straight connector

- 4 pin M12 in either 2m or 5m lengths
- 14 pin in either 2m or 5m lengths



Marked legend plates - custom laser marked

- Grey (or yellow for emergency stop modules)
- For vertically mounted configuration (landscape legend plate) up to 3 lines of text 17 digits long and 3mm high
- For horizontally mounted configuration (portrait legend plate) up to 2 lines of text 11 digits long and 3mm high

Accessories

general configuration guidelines

- A configuration must be made up of one head module, at least one core module and one base module.
- Max No of modules = 11

electrical guidelines

Control modules with inputs/outputs (I/O) (pushbuttons/lamps/selector switches) can be configured in any order in the stack (the internal **eGard** network is self configuring). Table 1 shows how many I/O connections can be made using the different types of connector, and table 2 shows each core modules I/O requirements.

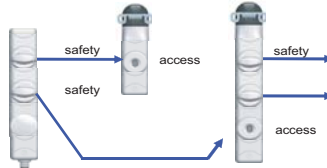
Table 1. max I/O connections per base connector type:

Part No	Desc	Max I/O	Connects safety circuits
BS	Safety Only	Zero	Yes
BB	Safety and Control 2 IO	Max 2 I/O	Yes
BC	Safety and Control 8 IO	Max 8 I/O	Yes
BA	Safety and Control ASi	Max 4 I & 4 O	Yes

		core module I/O requirements:			
(I/O relative to eGard)		input (I)	output (O)	order of pin assignment from base to head	module operates on safety circuits
Head	head & fixed actuator	0	0	-	0
	head only	0	0	-	0
Core	cap	0	0	-	0
	flat push buttons	0	1	-	0
	mushrooms	0	1	-	0
	2 position selector switch	0	1	-	0
	runner bar status	0	1	-	0
	illuminated push buttons	1	1	input (LED) assigned first for P1-P4	0
	solenoid locking	0	1	input (LED) assigned first for P1-P4	0
	3 position selector switch	0	2	clockwise output assigned first	0
	mechanical locks	0	0	-	0
	extension blank	0	0	-	0
safety switch	0	0	-	✓	
e-stop	0	0	-	✓	
start / restart	0	0	-	✓	
lamps	1	0	-	0	
monitored e-stop	0	1	-	✓	

mechanical trapped key, sequencing guidelines:

Mechanical lock modules and safety switch modules need to be configured in a specific order and runner bars linked (or un-linked) in the stack, to produce the desired trapped key sequence.



lock choice

1. Choose safety or access function:

With the machine operating and therefore all access doors locked, the locks with keys are Safety modules (and come including keys) and the locks without the keys are Access modules.

eGard Range Leaflet

Head: head / cap: head with fixed actuator (HF), head only (HM), cap (HC)

pushbuttons: flat (PG, PB, PR, PW), flat illuminated (P1, P2, P3, P4), 40mm mushroom latching (M1, M2), 40mm mushroom non-latching (MB, MR, MG)

selector switches: 2 position latching / non latching (2A, 2D, 2B, 2E, 2C, 2F), 3 position latching / non latching (3A, 3D, 3B, 3E, 3C, 3F)

electrical interlocking: solenoid lock (EL), safety switch (SS), runner bar status (RB)

mechanical interlocking: access module no key no dustcover (AB), safety module with key no dustcover (SB), access module no key with dustcover (AD), safety module with key with dustcover (SD)

keys and dustcovers: key (KS), dustcover (KM, DC)

lamps: clear (LR, LG, LC)

emergency stop: twist release e-stop (ES), e-stop with monitoring (EM)

re-start: start / re-start for safety relay re-set (SR)

extension blank: extension blank module (EB)

connectors: control & safety connector (2 I/O, BA), as-i control & safety connector (8 I/O, BS), safety only connector (BS), foot (BF)

actuators: sliding door actuator (AS), hinged actuator (AH), fixed actuator (AF)

cables: 4 pin (24, 2m, 54, 5m), 14 pin (21, 2m, 51, 5m)