



## NOTICES



**Please ensure you read all instructions!**

- WARNING - Live parts inside.
- WARNING - The handling and installation of this device is recommended for a professional.
- WARNING - Use of an unsuitable power supply unit may cause product failure or injury.
- WARNING - Do not remove the cover or face plate.
- WARNING - Ensure installation does not expose sharp edges of the product to users.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential, commercial, or industrial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

**Modifications:** Any modifications made to this device that are not approved by the manufacturer may void the authority granted to the user by the FCC to operate this equipment.



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*BQT Solutions (SEA) Pte. Limited, 41B Neil Road, #03-01, Singapore, 088824*

EN 14846:2008  
Notified Body 0905

Reference Number DoPYD30  
*Suitable for use on fire and/or smoke control doors*

Characteristics

3	Y	9	F	0	0	0	1	1/3*
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Declaration of Performance and Declaration of Conformity are available at [www.bqtsolutions.com](http://www.bqtsolutions.com)

\*The product meets the requirements of class 3 for position 9 "Security – Electrical Manipulation" when set to "Fail Secure" mode, and only meets the requirements for class 1 when set to "Fail Safe" mode.



**In the European Union, Norway, Iceland and Liechtenstein:** This symbol on the product, or in the manual and in the warranty, and/or on its packaging indicates that this product shall not be treated as household waste. Instead it should be taken to an applicable collection point for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate handling of this product.

**In Countries Outside the European Union, Norway, Iceland and Liechtenstein:** If you wish to dispose of this product please contact your local authorities and ask for the correct way of disposal.

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BQT Solutions (SEA) Pte Limited will not be liable for any direct, indirect, incidental or consequential loss or damage in any way related to this product. BQT Solutions (SEA) Pte Limited reserves the right to upgrade or change this product or instruction manual without prior notice. BQT Solutions (SEA) Pte Limited assumes no liability for damages incurred directly or indirectly from errors, omissions or discrepancies between the product and the manual.

The Cobalt-mini is designed by BQT Solutions (SEA) Pte. Limited and manufactured by BQT Solutions (NZ) Limited in New Zealand.

For more information and contact details please visit,

[www.alpro.co.uk](http://www.alpro.co.uk)

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## 1. DESCRIPTION

The Cobalt-mini is a motor driven low voltage electric lock designed to secure commercial and residential doors. It is supplied with a matching strike plate and due to its small size it is perfect for installing into a mortise for a concealed solution. The Cobalt-mini offers two unique features not commonly found in this style of lock;

1. **The ability to 'pull' a door in tight against a seal.**
2. **The ability to release when requested even if there is excessive load on the door.**

The bolt pin of the Cobalt-mini operates on a cam action which enables the bolt pin to pull a door into place. In practice as the door closes it may come to rest in a position that is not fully closed, especially if it closing against a door seal of some type. The Cobalt-mini senses when the door is within 8mm of being fully closed and activates the bolt pin. The bolt pin then rotates out and pulls the door from its resting position to the closed and sealed position.

With the door secured and locked the Cobalt-mini can be given an unlock signal and it will instantly unlock. If the door is loaded (pre-load) when the unlock signal is given the Cobalt-mini will still unlock, even with loads in excess of 100Kg on the door. Critically the ability of the Cobalt-mini to instantly release with excessive pre-load on the door even occurs in the event of a power failure if the lock is configured as fail safe.

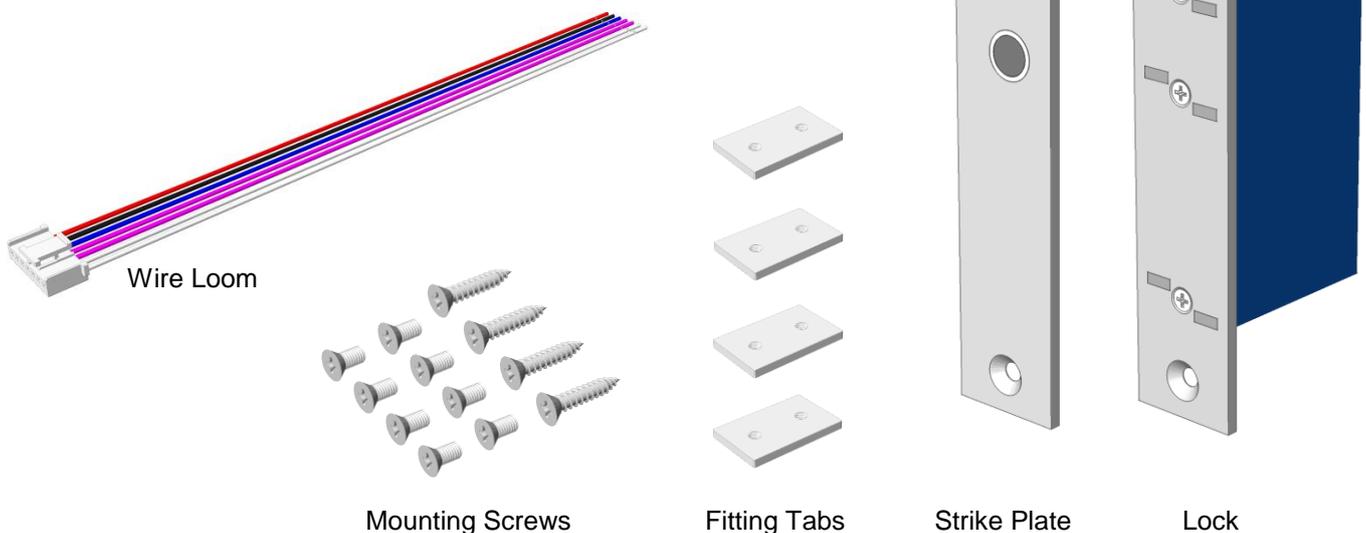
Additional features of the Cobalt-mini are;

- Multi-voltage input (12-24VDC)
- Very low current consumption
- Door position and Bolt position monitors
- High physical strength – 10,000N holding force
- Fail safe / fail secure on site conversion with the re-positioning of a single jumper

## 2. PRODUCT UNBOXED

Along with the Cobalt-mini and matching strike there are also four 10G Self Tapping Screws and eight M5 Machine Screws supplied. Four fitting tabs are also enclosed and can be used in conjunction with the M5 screws for recessing the lock or strike plate to metal doors and frames.

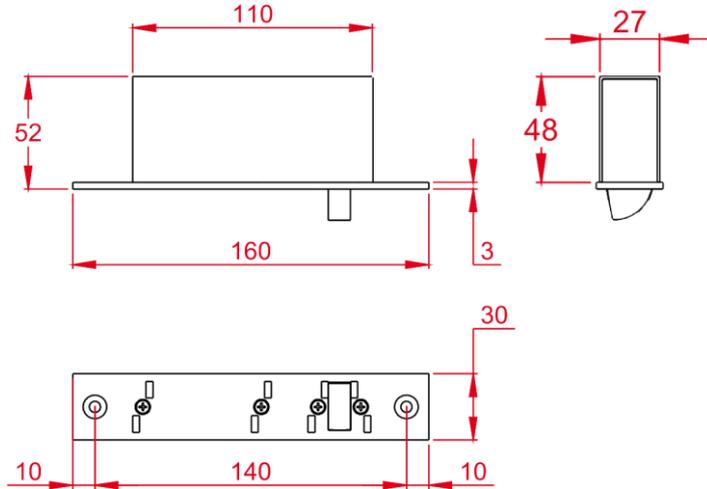
The 7-way wire loom supplied is used to ease installation as the wiring can be done without the lock being installed until the very end.



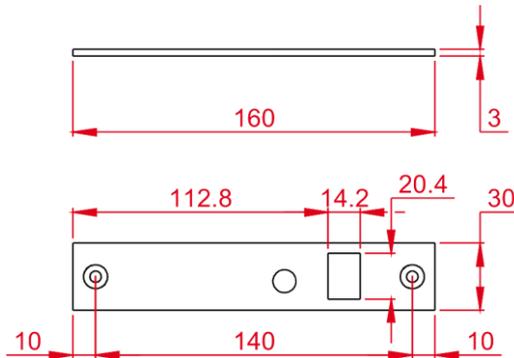
### 3. DIMENSIONS

The dimensions shown (in millimetres) are approximate and are subject to change without prior notice.

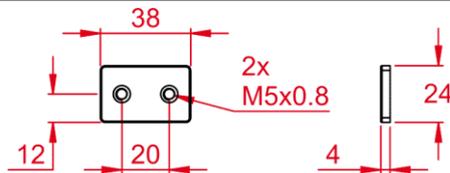
#### 3.1. Lock



#### 3.2. Strike Plate

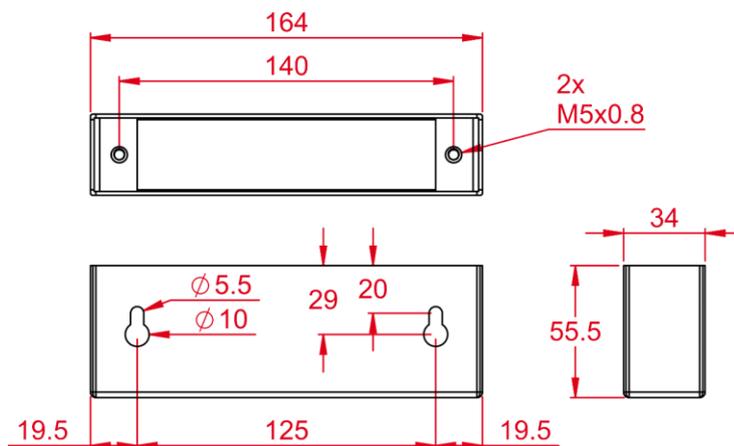


#### 3.3. Fitting Tab



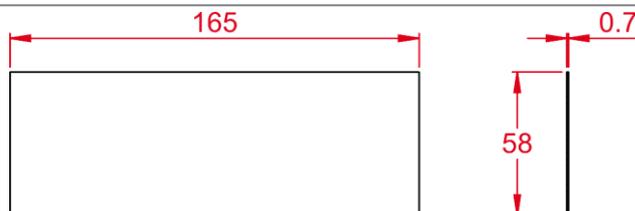
#### 3.4. Housing

Available separately



#### 3.5. Dress Plate

Available separately



## 4. PRE-INSTALLATION ASSESSMENT

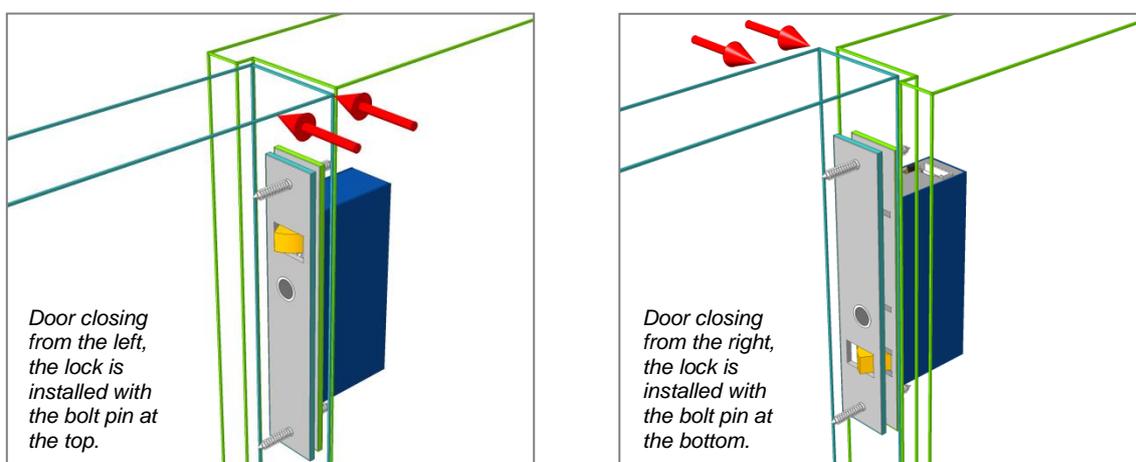
Care should be taken to refer to *Section 9 - Maintenance and Inspection* before proceeding with the installation.

### 4.1. Mechanical

The Cobalt-mini is designed for mortise installations as this offers a discrete solution as the lock and strike plate can be embedded into the door and frame. In some instances however mortise installation is not possible so by utilizing the YD30M housing, surface installation of the Cobalt-mini is possible. Whichever installation method is chosen it is important that the lock and strike plate are aligned correctly. The strike plate has an opening to accept the bolt pin and centring this opening with the bolt pin will ensure correct operation.

**The Cobalt-mini can be installed vertically or horizontally but is not designed to be mounted in a floor cavity firing upwards or in a wet environment.**

When installing the Cobalt-mini vertically, take note of which way the door is closing from. If the door is approaching from the left the bolt pin is at the top, if the door is approaching from the right then the bolt pin is at the bottom, as indicated below:



### 4.2. Electrical

The first consideration is to establish where to run the wires and decide on what feedback is required from the lock. There are a total of seven available connections; three are compulsory power connections whilst the remaining four provide optional door and bolt position feedback. These optional connections can be integrated into access control or alarm systems to provide full monitoring.

The correct gauge of wire needs to be chosen as voltage drop across the power wires (+ and -) can limit the locks operation. For all the remaining connections, a lower gauge wire can be used as these are only signal wires. The following chart shows the maximum distance that the power supply can be away from the lock, assuming the power supplies output 12VDC or 24VDC:

AWG	AREA (MM <sup>2</sup> )	MAXIMUM DISTANCE (M)	
		12VDC	24VDC
24	0.20	10	30
22	0.33	16	48
20	0.52	26	77
18	0.82	41	122
16	1.31	65	195
14	2.08	103	310

## 5. INSTALLATION

Two installation examples are detailed on the following pages; mortise and surface, however any combination of the two can be achieved. Whichever installation method is chosen it is **vital to ensure that the lock face plate and the strike plate align correctly and the gap between the lock face plate and strike plate does not exceed 7mm when the door is closed.**

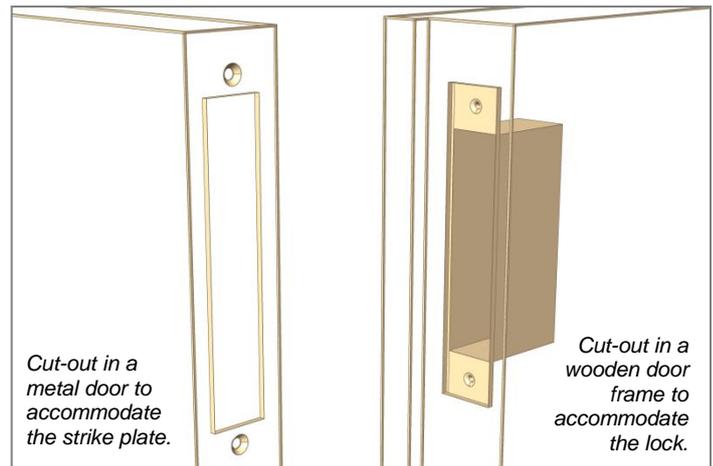
### 5.1. Mortise Installation

A typical mortise installation is described with the lock fitted into the door frame and the strike plate secured into the door. It is possible to install the lock into the door and the strike plate into the frame however with this method running wiring to the lock requires additional work.

#### 5.1.1. Cutting the mortises

Referring to the dimension drawings in *Section 3 - Dimensions*; mortises are cut into the door and door frame suitable to fit the strike plate and lock. Wooden doors and frames require full mortises where metal doors and frames, being hollow, often only require a single rectangle cut-out to accommodate the lock face plate or strike plate. For these installations the supplied fitting tabs can be used to secure the lock and strike plate in place.

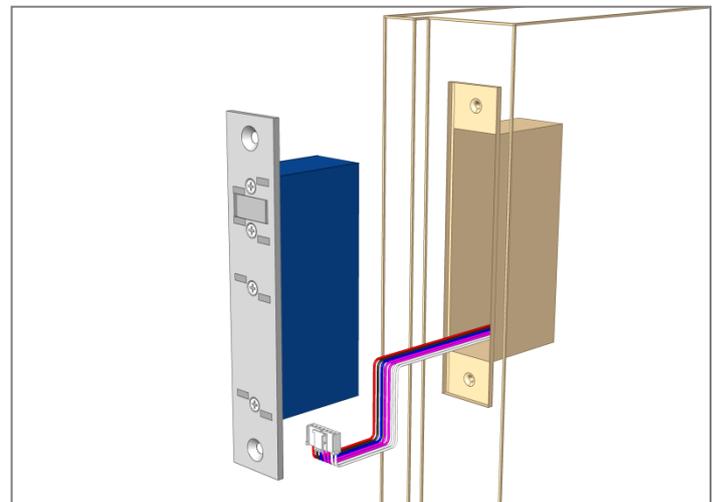
The mortise behind the lock body needs to have enough space to accommodate the wiring.



#### 5.1.2. Wiring the lock

Wires are run from the power supply to the lock. A hole needs to be drilled in the back of the mortise to bring the wires out and a connection can be made to the supplied wire loom which in turn plugs into the lock. The jumper needs to be positioned for fail safe / fail secure configuration as per the instructions on the lock cover.

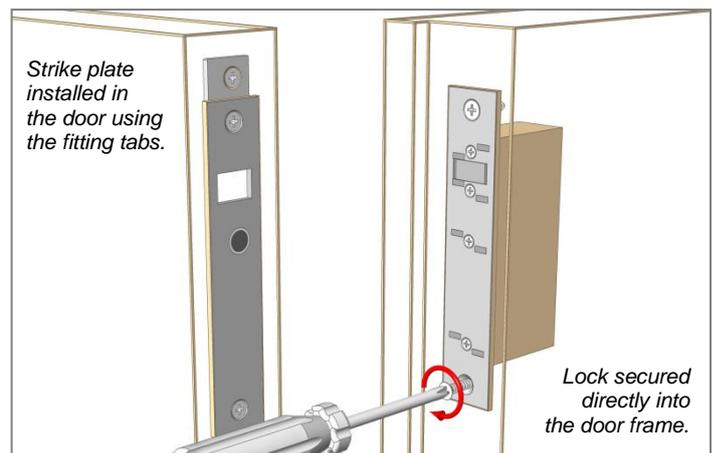
The Red, Black and Blue wires are essential connections whilst the Violet and White are optional. Detailed wiring instructions are found in *Section 6 - Wiring*.



#### 5.1.3. Fitting the lock and strike plate

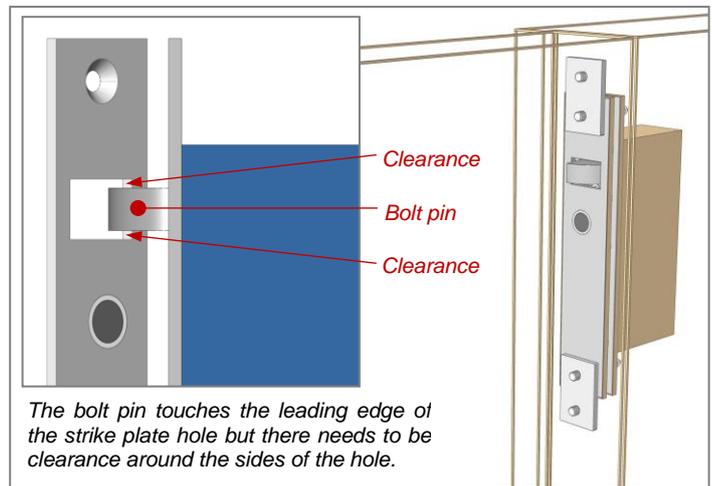
The lock is slid back into the mortise, making sure that the wiring integrity is maintained and secure in place with the supplied 10G self-tapping screws.

Before the strike plate is installed the fitting tabs are secured in behind the cut-out using the supplied M5 machine screws. The strike plate is then placed into the cut out and the remaining M5 screws are used to secure it.



#### 5.1.4. Checking the operation

With the lock and strike installed and wiring complete the door is closed to check the alignment and operation. The key area for alignment is the bolt pin; the pin is designed to touch the leading edge of the strike plate hole to pull the door in, but it cannot be allowed to touch the sides of the hole as this will limit its unlocking ability. If it rubs or touches the side of the strike plate hole, either the lock or strike plate needs to be re-positioned.

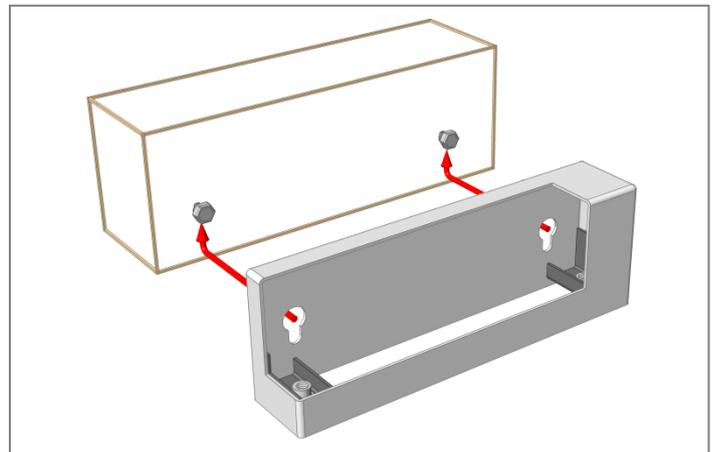


### 5.2. Surface Installation

By using a YD30M housing, the lock and or strike plate can be surface mounted to the door or door frame eliminating the need for cutting mortises. Housings are available with adhesive tape supplied for easy application to glass doors in addition to having screw hole mounting points for wood and metal doors.

#### 5.2.1. Securing the lock housing to wood

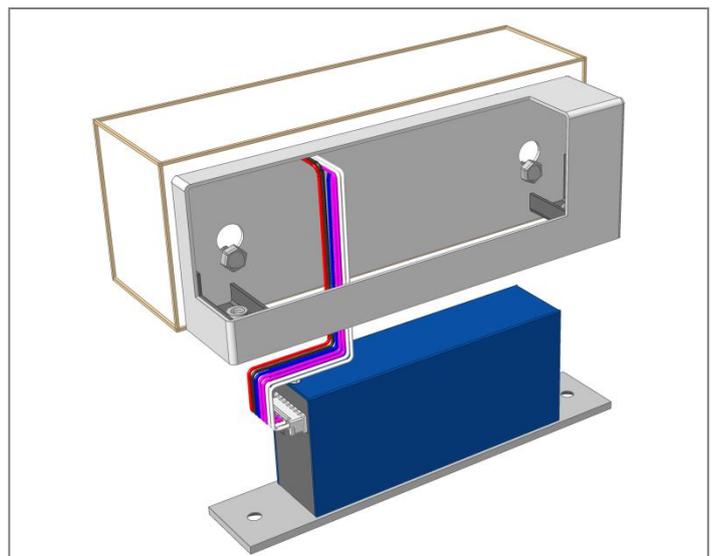
Two 10G x 1" hex head self-tapping screws are supplied with the housing and can be screwed into the wood door frame. The housing has two keyhole cut outs that fit over the screw heads and once the housing is in place the screws can be tightened with a spanner.



#### 5.2.2. Wiring the lock

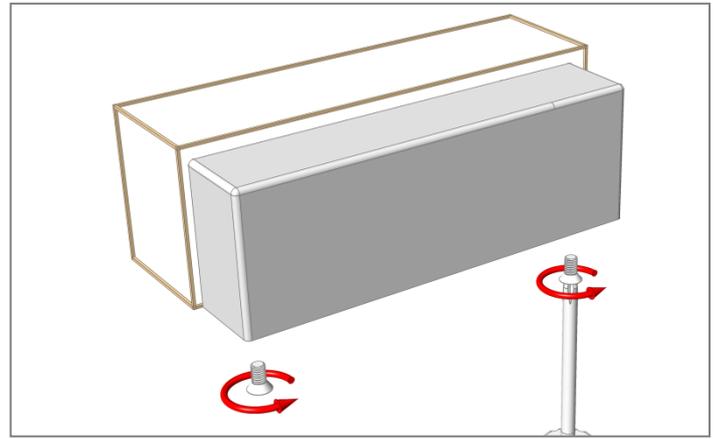
The wires will need to be run into the housing to connect to the lock. The position of the hole is determined at installation time by finding exactly where the wiring will enter the housing, and drill an 8mm hole through the housing wall. The housing is supplied with one grommet, which can be pushed into the drilled hole to protect the wires from the sharp edge of the hole.

The Red, Black and Blue wires are essential connections whilst the Violet and White are optional. Detailed wiring instructions can be found in *Section 6 - Wiring*.



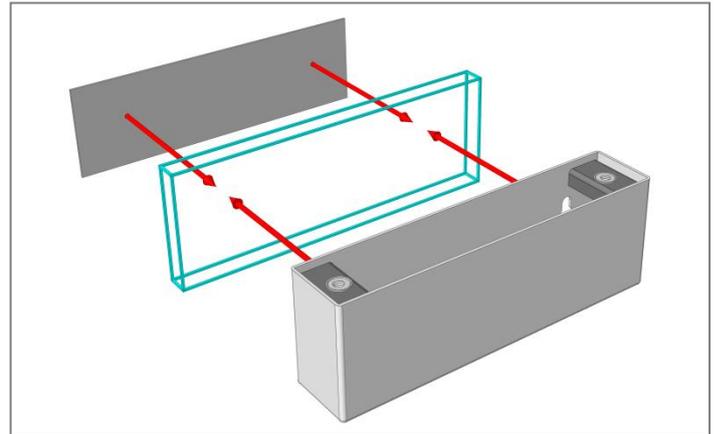
### 5.2.3. Fitting the lock into the housing

The jumper next to the connector on the lock needs to be positioned for fail safe or fail secure configuration as per the directions on the lock cover. The 7-way wire loom should be attached to the wiring protruding from the housing and plugged into the lock. The lock should then be slid into the housing and secured in place with the supplied M5 machine screws. Make sure that the wiring integrity is maintained as the lock is screwed in place.



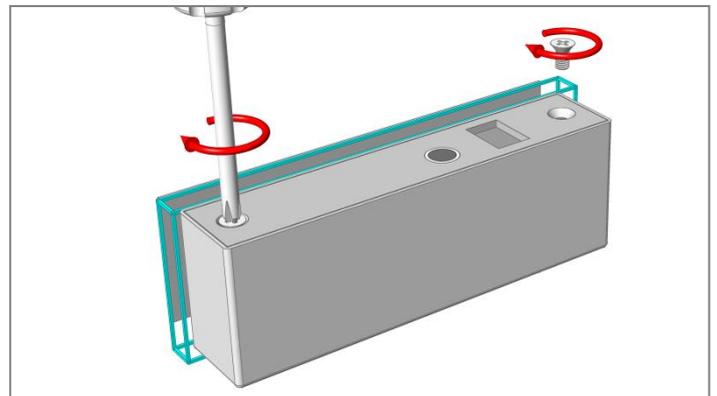
### 5.2.4. Fitting the strike plate housing to glass

For simple application to glass the YD30M housing is supplied with self-adhesive tape. With the backing removed the housing can be applied directly to the glass. A flat stainless steel dress plate is fitted on the opposite side of the glass to give a clean finish. The protective coating on the dress plate can be removed once it is in place.



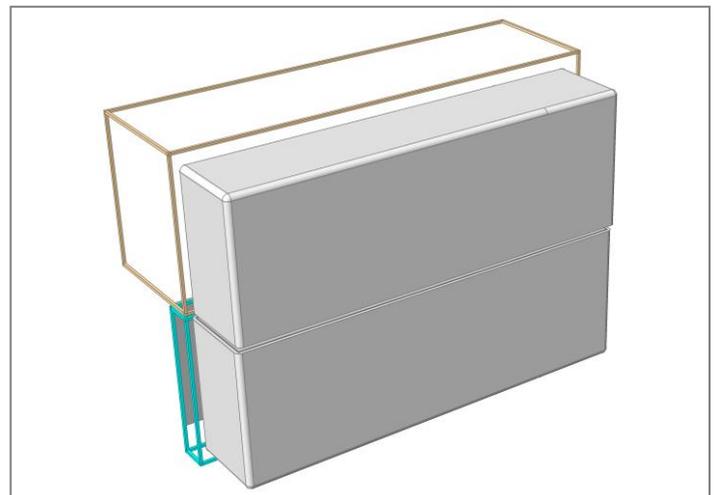
### 5.2.5. Fitting the strike plate into the housing

The strike plate is placed into the housing and secured in place with the supplied M5 machine screws.



### 5.2.6. Checking the operation

With the lock and strike installed and wiring complete the door is closed to check the alignment and operation. The key area for alignment is the bolt pin; the pin is designed to touch the leading edge of the strike plate hole to pull the door in, but it cannot be allowed to touch the sides of the hole as this will limit its unlocking ability. If it rubs or touches the side of the strike plate hole, either the lock or strike plate needs to be re-positioned.



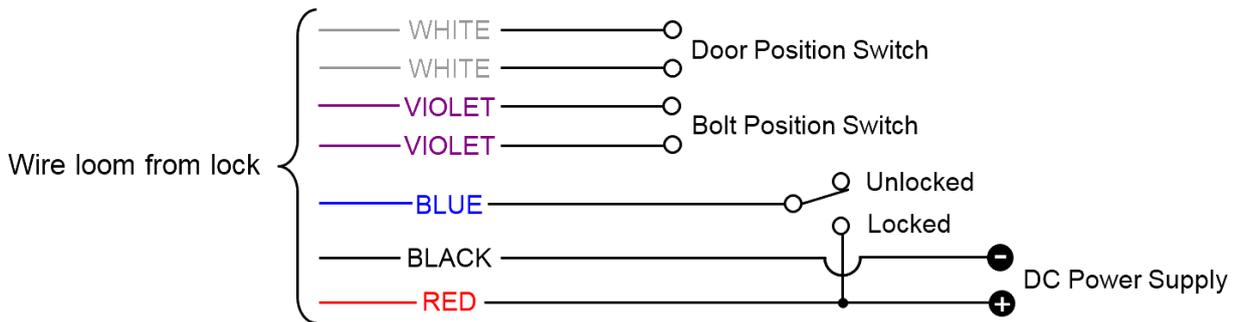
## 6. WIRING

The Cobalt-mini is supplied with a 7-way wire loom that plugs directly into the lock. **The wires are colour coded with the three Power wires being essential connections and four Position Switch connections optional.** Control of the lock is achieved by using the three power wires, whilst door and bolt position monitoring are available when desired. Connect the Cobalt-mini as per the chart:

RED	Positive +	Positive connection to DC power supply	Power (12 – 24V)
BLACK	Negative -	Negative connection to DC power supply	
BLUE	Control	Switched positive control input	
VIOLET	Bolt Position Switch	Normally open contact (NO), closed when the bolt pin is extended	
VIOLET			
WHITE	Door Position Switch	Normally open contact (NO), closed when the strike is aligned with the lock	
WHITE			

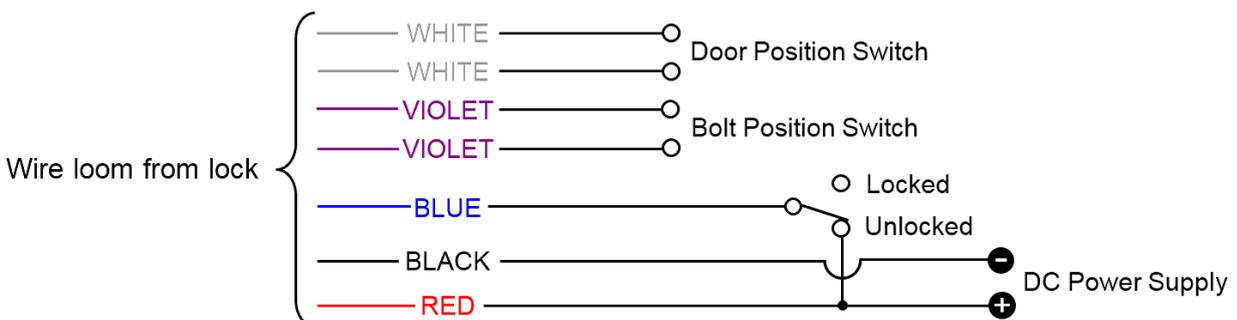
### 6.1. Fail Safe Connection

When wiring the Cobalt-mini, the positive voltage is connected to **RED**, negative is connected to **BLACK** and a switched positive voltage wire connected to **BLUE**. In Fail Safe configuration applying voltage to the Cobalt-mini signals it to lock. The lock signal in Fail Safe configuration is active high.



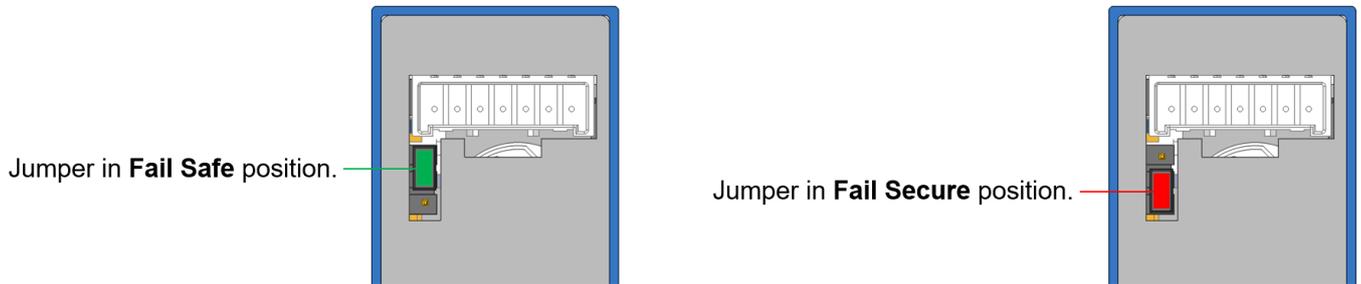
### 6.2. Fail Secure Connection

When wiring the Cobalt-mini, the positive voltage is connected to **RED**, negative is connected to **BLACK** and a switched positive voltage wire connected to **BLUE**. In Fail Secure configuration applying voltage to the Cobalt-mini signals it to unlock. The lock signal in Fail Secure configuration is active low.



### 6.3. Jumper position

The fail mode of the Cobalt-mini is factory set as Fail Safe, i.e. in the event of a power cut the Cobalt-mini will unlock. Before the lock is installed this can be changed to Fail Secure by repositioning the jumper located next to the 7-way plug on the end of the lock. Select the desired jumper location as indicated:



Fail Safe	=	Fail Unlocked	=	Power To Lock	=	PTL
Fail Secure	=	Fail Locked	=	Power To Open	=	PTO

## 7. OPERATION

### 7.1. Fail Safe Operation

Assume the lock is installed and wired, the door is open and there is voltage **applied** to the **BLUE** wire. As the door closes the Cobalt-mini senses the door approaching and activates the bolt pin to pull the door into alignment. The Bolt Position and Door Position monitors will have changed state as the door is moved into place and secured.

To unlock the door, voltage is removed from the **BLUE** wire. The Cobalt-mini will immediately release and will do so even when significant load is being applied to the door. With the door now open the Bolt Position and Door Position monitors change state again. The Cobalt-mini will remain unlocked as long as the door is open but will instantly re-lock when voltage is applied to the **BLUE** wire and the door is closed.

In the event of a power failure, the Cobalt-mini unlocks.

### 7.2. Fail Secure Operation

Assume the lock is installed and wired, the door is open and voltage is **removed** from the **BLUE** wire. As the door closes the Cobalt-mini senses the door approaching and activates the bolt pin to pull the door into alignment. The Bolt Position and Door Position monitors will have changed state as the door is moved into place and secured.

To unlock the door, voltage is applied to the **BLUE** wire. The Cobalt-mini will immediately release and will do so even when significant load is being applied to the door. With the door now open the Bolt Position and Door Position monitors change state again. The Cobalt-mini will remain unlocked as long as the door is open but will instantly re-lock when voltage is removed from the **BLUE** wire and the door is closed.

In the event of a power failure, the Cobalt-mini locks if the door is closed.

## 8. SPECIFICATIONS

MATERIALS									
Bolt Pin	Stainless Steel (SS17-4PH), 10mm Thick, 13mm Extension								
Lock / Strike Plate	Stainless Steel (SS304), 3mm Thick								
MECHANICAL									
Cycle Life	300,000 normal operations								
Maximum Strike Gap	6mm								
Holding Force	10,000 newtons (1,000kg)								
Side Load Release	1,000 newtons (100kg)								
Door Misalignment	8mm								
ELECTRICAL									
Voltage at Lock	12 – 24VDC $\pm$ 15%								
Initial Power Up Time	11 seconds max, only after power has been removed for an extended period.								
Current Usage	Standby Current	50mA@12V	30mA@24V						
	Maximum Current	1.0A@12V	0.5A@24V						
Monitor Switches	Bolt Position – 30VDC, 0.1A								
	Door Position – 100VDC, 0.5A								
CERTIFICATIONS									
FCC	Title 47, Part 15, Subparts A & B – Class B Device								
Fire Test	Fire Rated for 30 / 60 minutes <i>Timber / mineral composite doorsets</i>	BS EN 1634-1:2014							
		BS 476-22:1987							
	Fire Rated for 120 / 240 minutes <i>Mineral E-Core doorsets</i>	AS 1905-1:2005							
		BS 476-22:1987							
	Fire Rated for 260 minutes <i>Steel doorsets</i>	EN 1634-1:2014							
		BS EN 1634-1:2014							
CE / EU	CPR 305/2011	EN 14846:2008							
		3	Y	9	F	0	0	0	1
	EMC 2014/30/EU	EN 61000-6-1:2007							
		EN 61000-6-3:2007+A1:2011							
RoHS 2011/65/EU	RoHS 2 Compliant								

\*The product meets the requirements of class 3 for position 9 "Security – Electrical Manipulation" when set to "Fail Secure" mode, and only meets the requirements for class 1 when set to "Fail Safe" mode.

## 9. MAINTENANCE AND INSPECTION

The Cobalt-mini has been lubricated at assembly and applying any other type of lubricant may void the warranty. A dry cloth can be used to polish the stainless steel face plate and strike plate as required. This lock contains components that are subject to wear based on usage, doorway operation and installation; all such factors are beyond the control and measurement of the manufacturer. The lock may be vulnerable and subject to failure as a consequence of wear and as its components near the end of the period of normal usage.

It is the responsibility of the owner/end-user to:

- Ensure that the lock is installed in accordance with the instructions set out in these guidelines.
- Determine the suitability of this lock for the application intended and in particular when using this lock in critical applications such as on fire, high security, safety, or emergency exit doors.
- Regularly inspect this lock in order to assess signs of wear and tear, and determine if the operation still conforms to the instructions set out in these guidelines.
- Regularly inspect the lock and evaluate cycle life.
- Determine when this lock should be replaced.