

INSTALLATION AND OPERATING INSTRUCTIONS

Solenoid Dropbolt **YD38**

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 cover while device is live.
- 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 A 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 commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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.



This product is carrying the CE Mark in accordance with the related European Directives. Responsible for CE Marking is,

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

The complete EU Declaration of Conformity is available at www.bqtsolutions.com



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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The YD38 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.bqtsolutions.com

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1. DESCRIPTION

The YD38 is a heavy duty solenoid operated dead bolting lock suited for commercial or residential doors. Being rated up to a million cycles makes this lock suitable for long term installations for single acting doors, where reliability is paramount. It is supplied with a matching strike plate and can be surface mounted with the aid of accessories or installed into a mortise for a concealed solution.

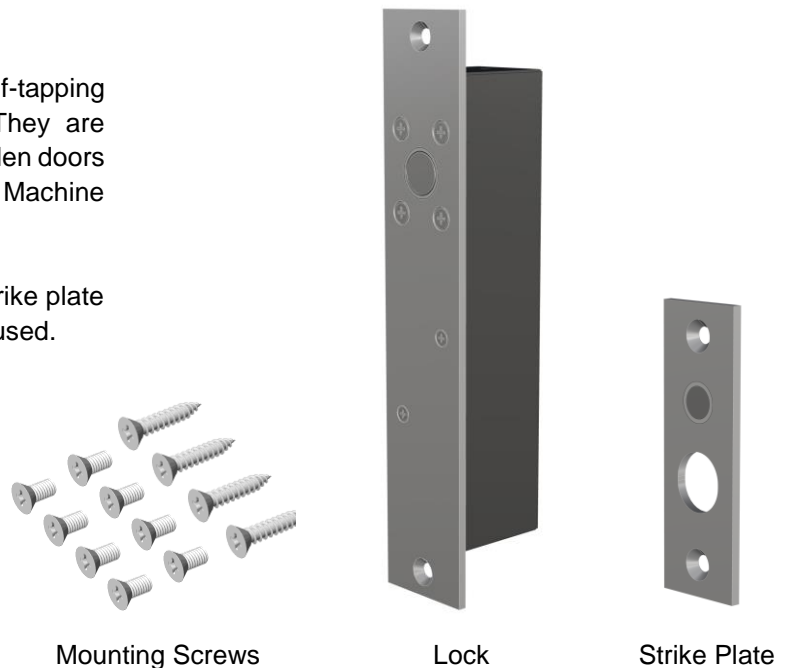
Integrated electronics provide complete control over the lock and offer an array of features;

- Multi-voltage input (12-24VDC)
- Multiple locking / unlocking attempts
- Adjustable timed re-lock
- Current reduction circuitry
- Door position and bolt position monitors
- High physical strength – 10,000N

2. PRODUCT UNBOXED

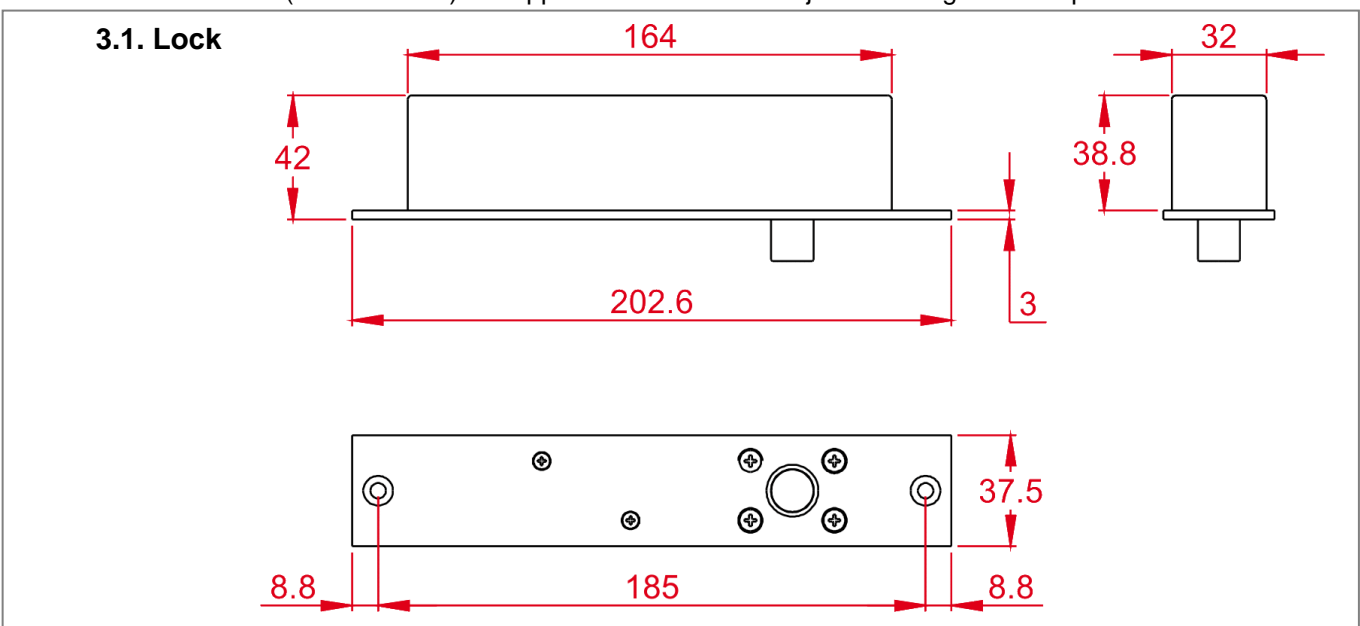
The YD38 is supplied with four 10G x 1" csk self-tapping screws for fitting the lock and strike plate. They are suitable for mounting in both aluminium and wooden doors and frames. Also included are eight M5 x 10 Machine Screws.

The mounting holes in the lock face plate and strike plate are \varnothing 5.2mm so any 10G or 5mm screw can be used.

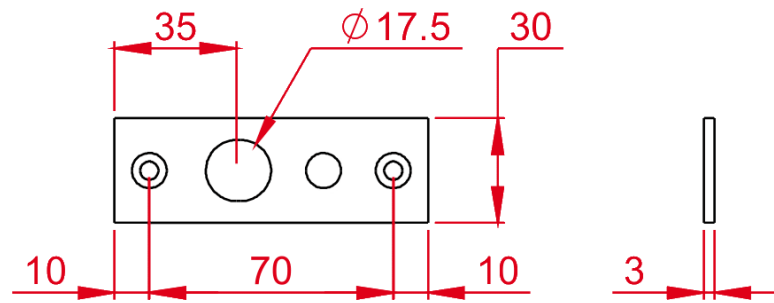


3. DIMENSIONS

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

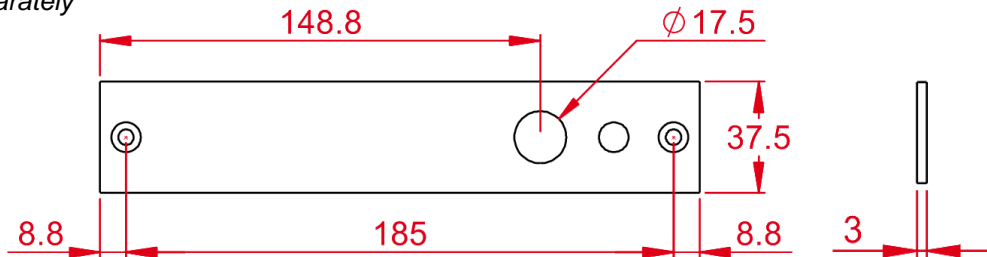


3.2. Strike Plate



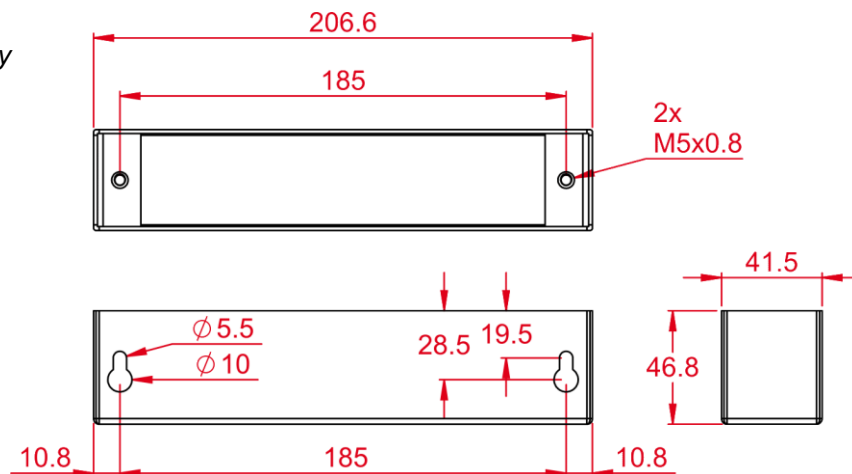
3.1. Long Strike Plate

Available separately



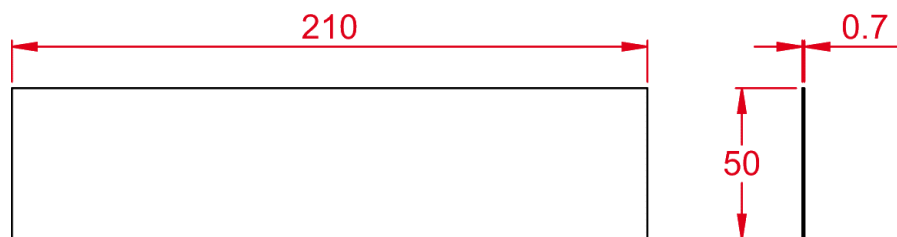
3.2. Housing

Available separately



3.3. Dress Plate

Available separately



4. PRE-INSTALLATION ASSESSMENT

4.1. Mechanical

The first decision regarding installation is whether the YD38 will be mortised or surface mounted to the door / door frame. Mortise installation ensures a discrete solution as the lock and strike plate can be embedded into the door and frame, however in some instances this is not possible. Glass doors for example require surface mounting the lock which is done with the aid of the YD38 housing.

Whichever method is chosen it is important that the lock and strike plate are aligned correctly. This is achieved when the top of the lock face plate aligns with the top of the strike plate. It is also important that when the door is closed the gap between the lock and strike plate does not exceed **6mm** otherwise the lock will not sense the strikes position resulting in incorrect operation.

The YD38 can be installed vertically or horizontally but is not designed to be mounted in a floor cavity firing upwards or in a wet environment.

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 eight available connections and for a fully featured lock it is compulsory to connect three with the other five providing feedback. Alternatively the lock does operate with reduced features on two compulsory connections and five optional.

The three essential connections are; Positive (+), Negative (-) and Control (CL). The five optional connections provide feedback about the lock status; Door Position and Bolt Position. If desired, wires can be run from these connections to integrate into access control or alarm systems to provide full monitoring.

Finally the correct gauge of wire needs to be chosen as when connecting the power wires (+ and -) to the lock, voltage drop across these wires can limit the lock operation. For all the remaining connections, a lower gauge wire can be used as these are only signal wires.

The following chart shows the appropriate wire gauge for a range of distances between the lock and power supply assuming the voltage measured at the lock is within the range of 12-24VDC $\pm 10\%$.

AWG	AREA (MM ²)	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

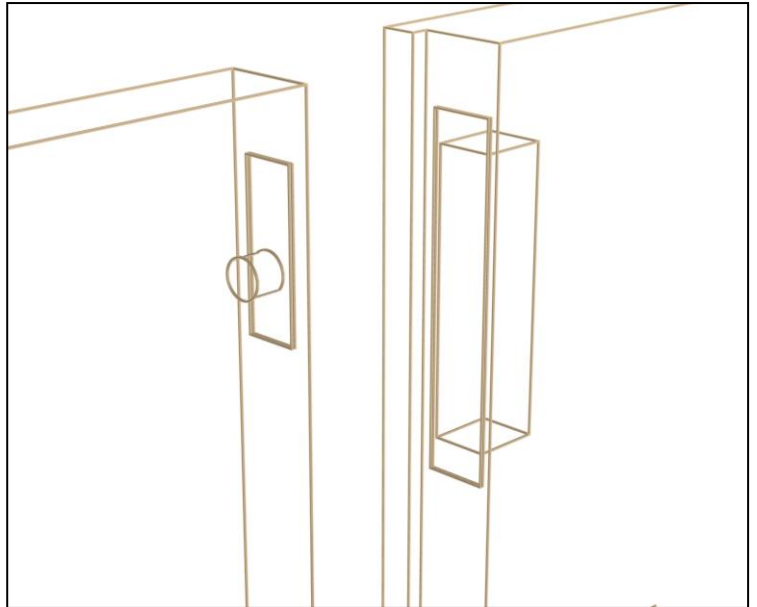
Two installation examples are detailed on the following pages however any combination of mortise and surface mounting can be achieved. Whichever installation method is chosen it is vital to ensure that the lock face plate and the strike plate align correctly and the gap between the locks face plate and the strike plate does not exceed **6mm** when the door is closed.

5.1. Mortise installation

A typical mortise installation is described with the lock fitted into the door frame while the strike plate is secured to the door. It is possible to install the lock into the door and the strike plate to the frame however running the wiring to the lock can be difficult.

5.1.1. Cutting the mortises

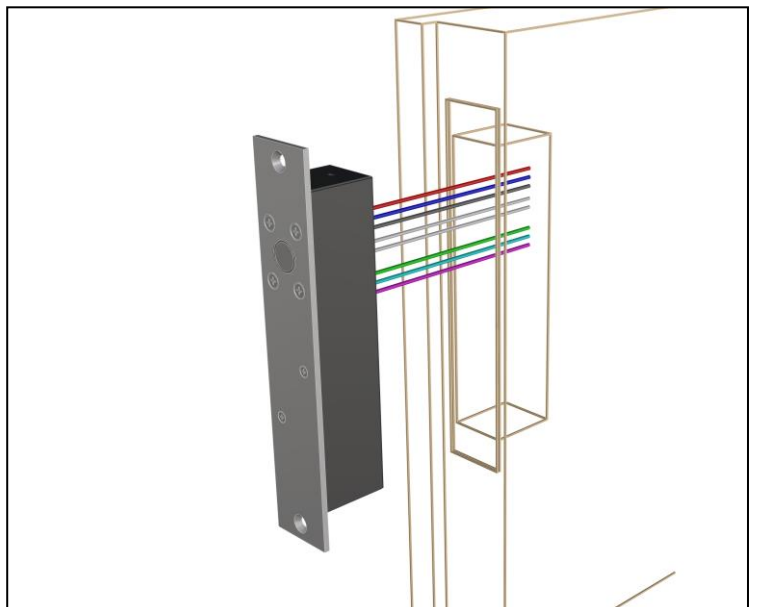
Using the supplied lock dimensions a mortise is cut in the door frame that is suitable to house the lock. An appropriate sized mortise is then cut for the strike plate and hole to accept the bolt pin are drilled. The lock pin hole behind the strike plate needs to be free from debris and deep enough to allow the lock pin to fully extend when locked.



5.1.2. Wiring the lock

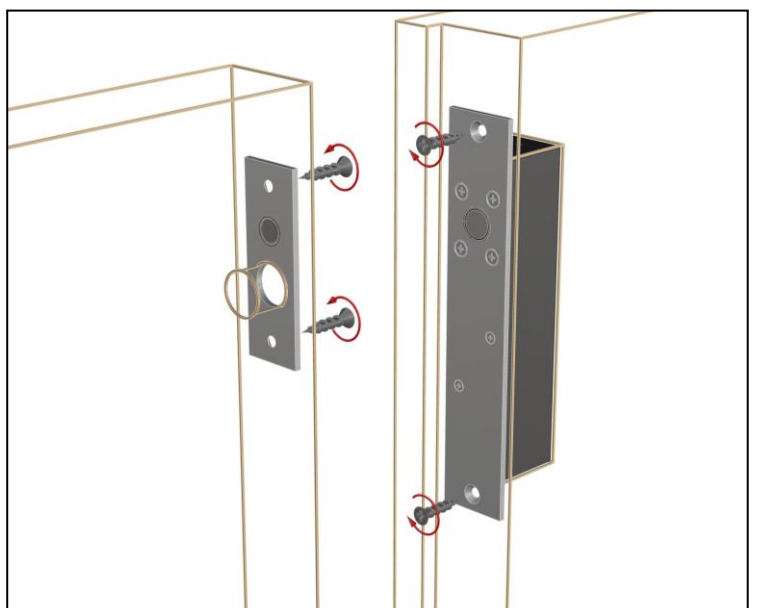
Wires are run out from the back of the mortise and following the connection guide on the locks cover, connected to the lock.

Detailed wiring information can be 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 secured with the supplied mounting screws. Likewise the strike plate is fitted into its mortise and secured in place.



5.1.4. Checking the operation

With the lock and strike installed and the wiring complete the door is closed to check alignment and operation.

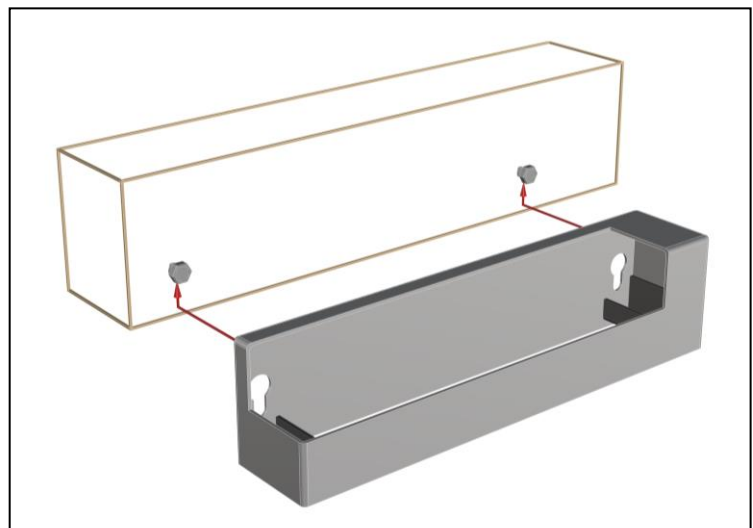


5.2. Surface installation

By using a YD38 housing the lock and or strike plate can be secured 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 housing to wood

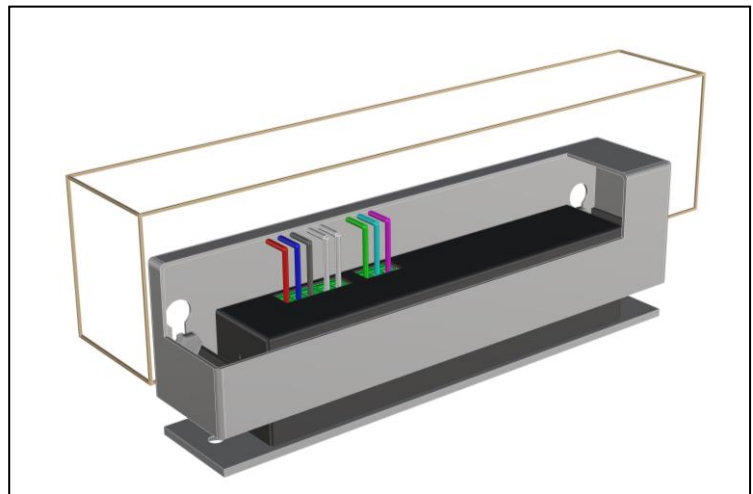
Two 10G x 1" hex head self-tapping screws are supplied with the housing and can be screwed into the wood door frame. The housing has two keyhole cut outs that fit over the screw heads and once the housing is in place the screws can be tightened with a spanner.



5.2.2. Wiring the lock

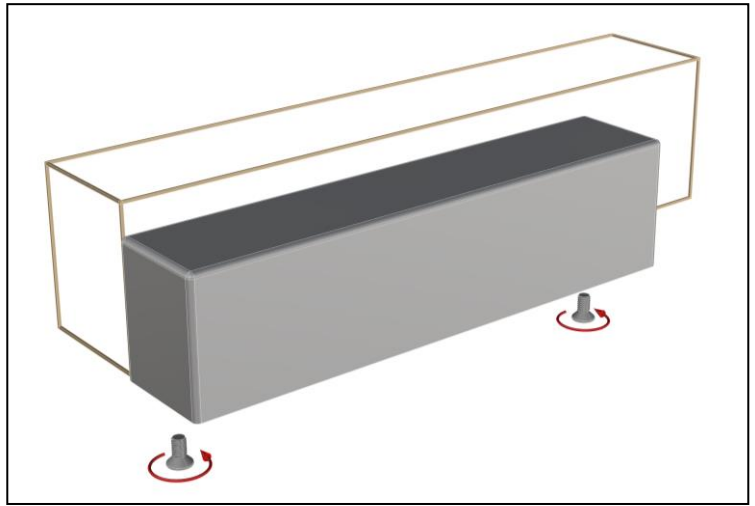
The wires will need to be run into the housing to connect to the lock. The position of the hole is determined at installation time by finding exactly where the wiring will enter the housing, and drill an 8mm hole through the housing wall. The housing is supplied with one grommet, which can be pushed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

Detailed wiring information can be found in Section 6 - Wiring.



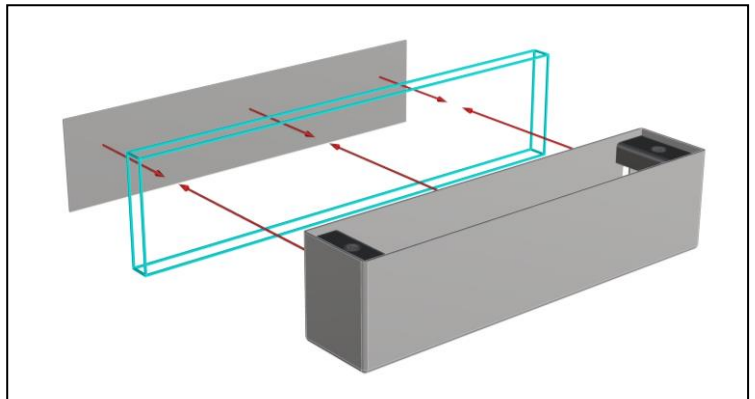
5.2.3. Fitting the lock

Once wired, the lock is slid into the housing and secured in place with the M5 X 10 csk screws that were supplied with the lock.



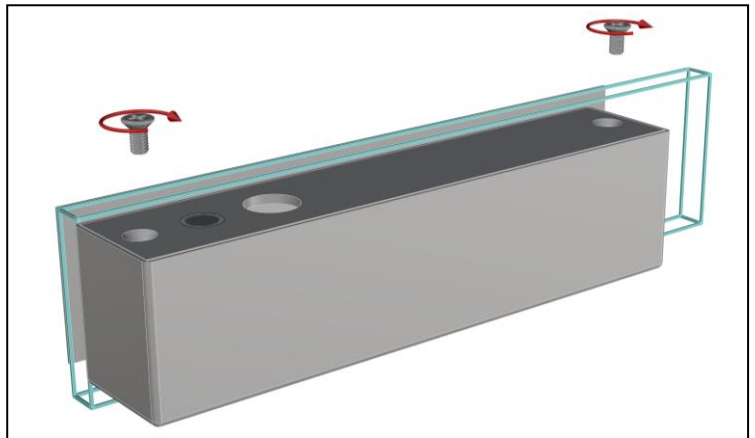
5.2.4. Securing the housing to glass

For simple application to glass the YD38 housings are 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 of the glass to give a clean finish.



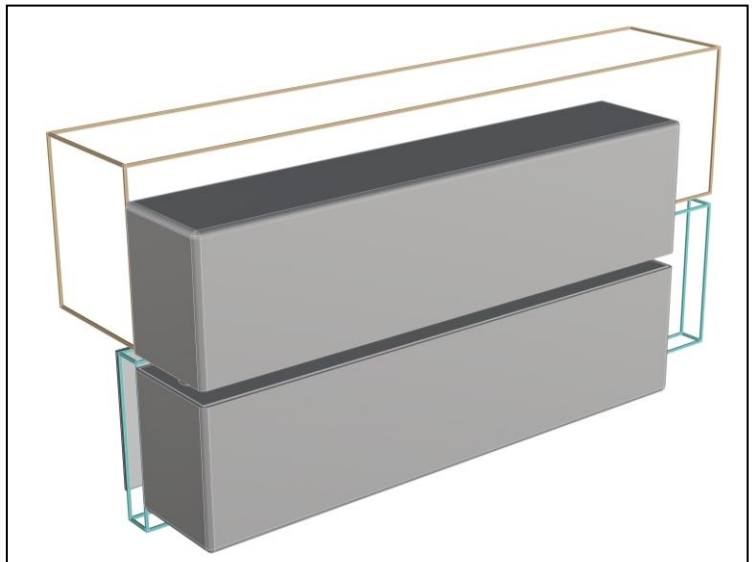
5.2.5. Fitting the strike plate

The strike plate is placed into the housing and secured in place with the M5 x 10 csk screws that were supplied with the lock.



5.2.6. Checking the operation

With the lock and strike installed and the wiring complete the door is closed to check alignment and operation.



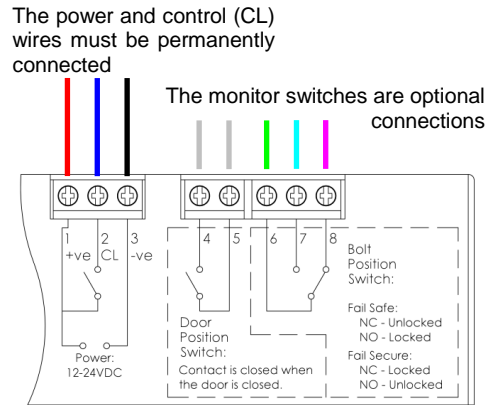
6. WIRING

The YD38 is fitted with eight connectors; five are optional and provide monitoring of the lock pin and door positions. Control of the lock is achieved by using the remaining three wires however a reduced function two wire mode is available if desired. Connect the YD38 as per the following chart.

+	1	Power	Positive connection to DC power supply (12 – 24V)
CL	2		Switched positive control input
-	3		Negative connection to DC power supply (12 – 24V)
C	4	Door Position Switch	Common contact of the door position monitor
NO	5		Normally open contact of the door position monitor
C	6	Bolt Position Switch	Common contact of the bolt position monitor
NO	7		Normally open contact of the bolt position monitor
NC	8		Normally closed contact of the bolt position monitor

6.1. Three wire connection

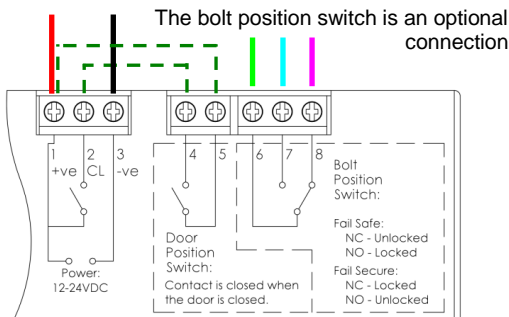
The three wire mode requires a continuous connection of power to terminals 1 (+ve) and 3 (-ve). Wiring the lock for fail safe or fail secure configurations is identical.



6.2. Two wire connection

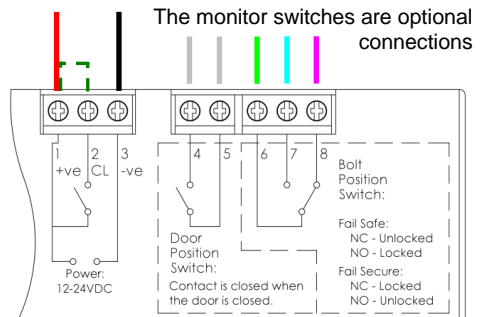
The two wire mode differs between fail safe and fail secure configurations but both require a switched power supply connected to terminals '1' and '3'. In addition, for fail safe configuration the dip switch needs to be repositioned as shown in Section 6.4 - Dip switch positions. Wire links (not supplied) are connected from terminals '2' to '4' and '1' to '5' for fail safe. A wire link is connected between terminals '1' and '2' for fail secure.

Switched power supply permanently connected



Fail Safe

Switched power supply permanently connected



Fail Secure

6.3. Monitors

The five monitor connectors found on the YD38 are available to provide door and bolt position feedback. If desired wires can be run from these connections to integrate with access control or alarm systems to provide full monitoring. When a two wire fail safe operation is chosen the door position monitor is not available.

6.4. Dip switch positions

In addition to running the necessary wires for the desired mode, positioning the three dip switches located on the lock printed circuit board determines the operation. These are accessed by removing the cover.

MARKINGS S1, S2 AND M ARE FOUND ON THE PRINTED CIRCUIT BOARD.

Switches S1 and S2 are used to set the timed re-lock. If an unlock signal is given to the lock but the door is not opened the YD38 can automatically lock itself again after a selected time. This ensures that a door cannot be left unsecured if it has been unlocked but not opened. The timer is factory set to 9 seconds but 0, 3 and 6 second options are offered and selected by positioning the dip switches accordingly.

Switch M is used to select fail safe or fail secure mode. **This is factory set as ordered and the only time it will need to be moved is when operating a fail-safe lock in the two wire mode.**

TIMED RELOCK	0 second	3 second	6 second	9 seconds - default
SWITCH POSITIONS	S1 On & S2 On	S1 Off & S2 On	S1 On & S2 Off	S1 Off & S2 Off

MODE	Fail Safe	Fail Secure
3 WIRE MODE	M Off	M On
2 WIRE MODE	M On	M On

7. OPERATION

7.1. Three wire mode (Recommended)

In either fail safe or fail secure configuration, maintained connection of '1' to '2' will keep the YD38 unlocked regardless of the door position. The following scenarios assume that the control signal is open at the start of the operation sequence as a maintained connection will cause the lock to stay unlocked indefinitely.

7.1.1. Fail safe operation

Assume the door is closed and locked. Momentarily connecting '1' and '2' unlocks the door for a period of 9 seconds*. After the 9 seconds has elapsed if the door has not been opened the YD38 automatically locks again. If the door has opened within the 9 second window (which is the case in normal operation) the timed re-lock is overridden and automatic relocking occurs as soon as the door is closed. On closing, full power is applied to the YD38 9 times in 15 seconds before the current is reduced and the lock goes into a holding mode to minimize heating and power consumption. The YD38 will remain unlocked as long as the door is open.

7.1.2. Fail secure operation

Assume the door is closed and locked. Momentarily connecting '1' and '2' unlocks the door and over a 9 second period full power is applied to the lock 5 times. If the door remains closed, after 9 seconds* has elapsed the YD38 automatically locks again. If the door has opened within the 9 second window (which is the case in normal operation) the YD38 will remain unlocked and in a holding mode until the door is closed again and automatic re-locking occurs.

7.2. Two wire mode

In installations where running three wires to the lock is not possible or desired the YD38 can operate effectively on two wires. Although the functions are reduced, as seen in the table below, controlling the lock this way still offers a high security locking solution.

FEATURES	Multiple re-lock (fail safe)	Multiple unlock (fail secure)	Auto re-lock	Anti-Tamper	Adjustable timed re-lock
3 WIRE MODE	Yes 9x	Yes 5x	Yes	Yes	Yes
2 WIRE MODE	Yes 5x	Yes 5x	Fail safe only	Yes	No

8. SPECIFICATIONS

MATERIALS			
Bolt Pin	Stainless Steel (SS304), \varnothing 14.2mm, 14mm Extension		
Lock / Strike Plate	Stainless Steel (SS304), 3mm Thick		
MECHANICAL			
Cycle life	1,000,000		
Max Strike Gap	6mm		
Holding Force	20,000N (2000kg)		
ELECTRICAL			
Voltage at Lock	12 – 24VDC \pm 15%		
Current Usage	Max Holding Current	230mA@12V	90mA@24V
	Max Operating Current	1500mA@12V	1400mA@24V
Monitor Switches	Bolt position – 25VDC, 0.5A		
	Door position – 100VDC, 0.5A		
CERTIFICATIONS			
CE	EMC 2014/30/EU	EN 61000-6-1:2007	
		EN 61000-6-3:2007+A1:2011	
	RoHS 2011/65/EU	RoHS 2 Compliant	
	MD 2006/42/EC	EN ISO 12100:2010	

9. MAINTENANCE AND INSPECTION

The YD38 has been lubricated at assembly and applying any other type of lubricant may void the warranty. With the cover removed it is important to take care when selecting the dip switch positions. 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:

- a) Ensure that the lock is installed in accordance with the instructions set out in these guidelines.
- b) 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.
- c) 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.
- d) Regularly inspect the lock and evaluate cycle life.
- e) Determine when this lock should be replaced.