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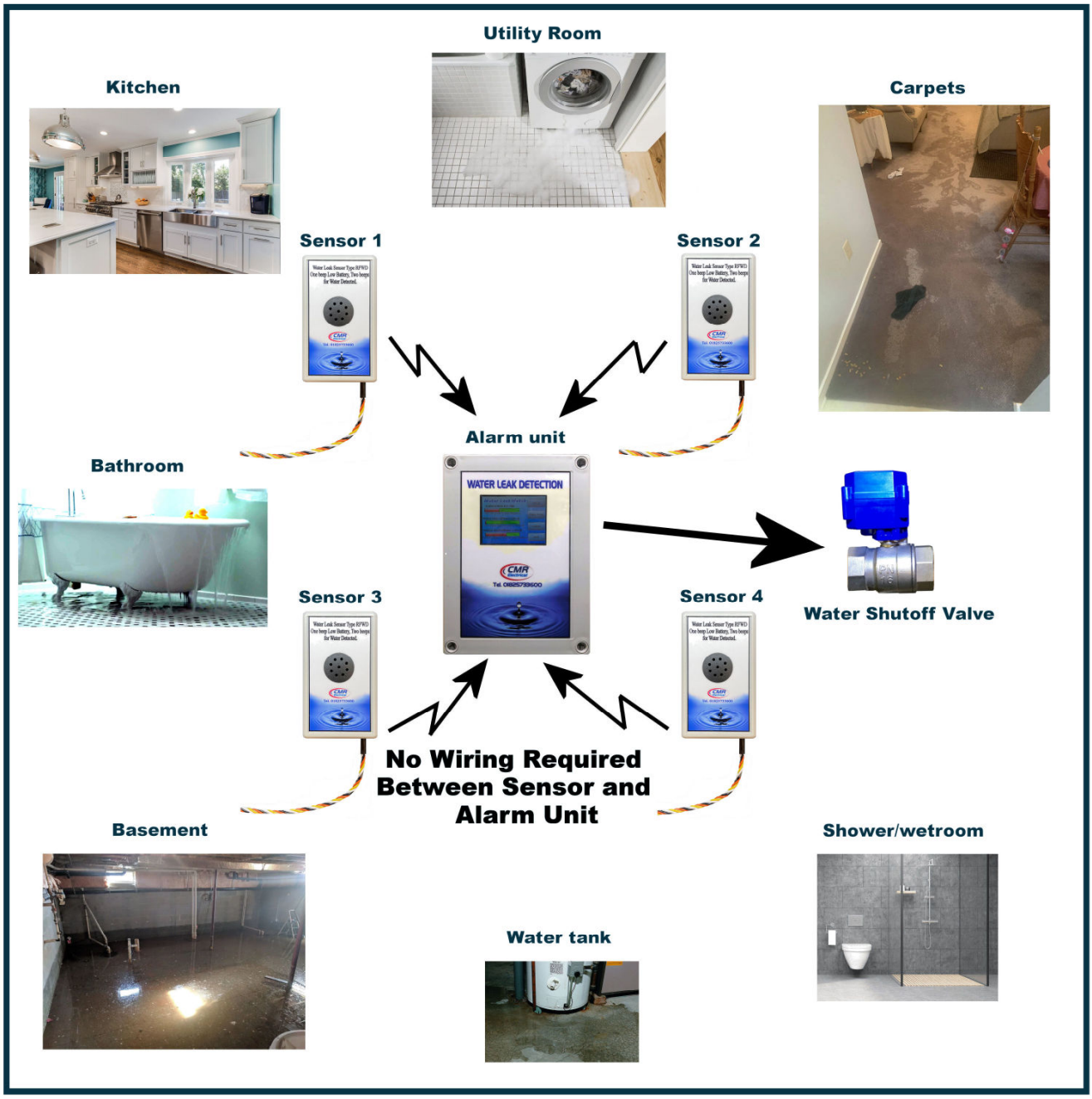
RFWD10
Water Leak Detection Manual



Contents

1) System Overview

Sensor

Between one and ten water leak sensors can be used with each alarm system. Each sensor will monitor itself for water touching the detector wire or low battery voltage. With no water being detected, no sound will emanate from the sensor. If water is detected, a triple beeping sound will be heard and continue until water is removed from the detector wire. When the battery voltage from the two "AA" batteries drops below 2.3V a single beep will be heard. If water is detected in low battery mode, the water alarm will override the low battery alarm.

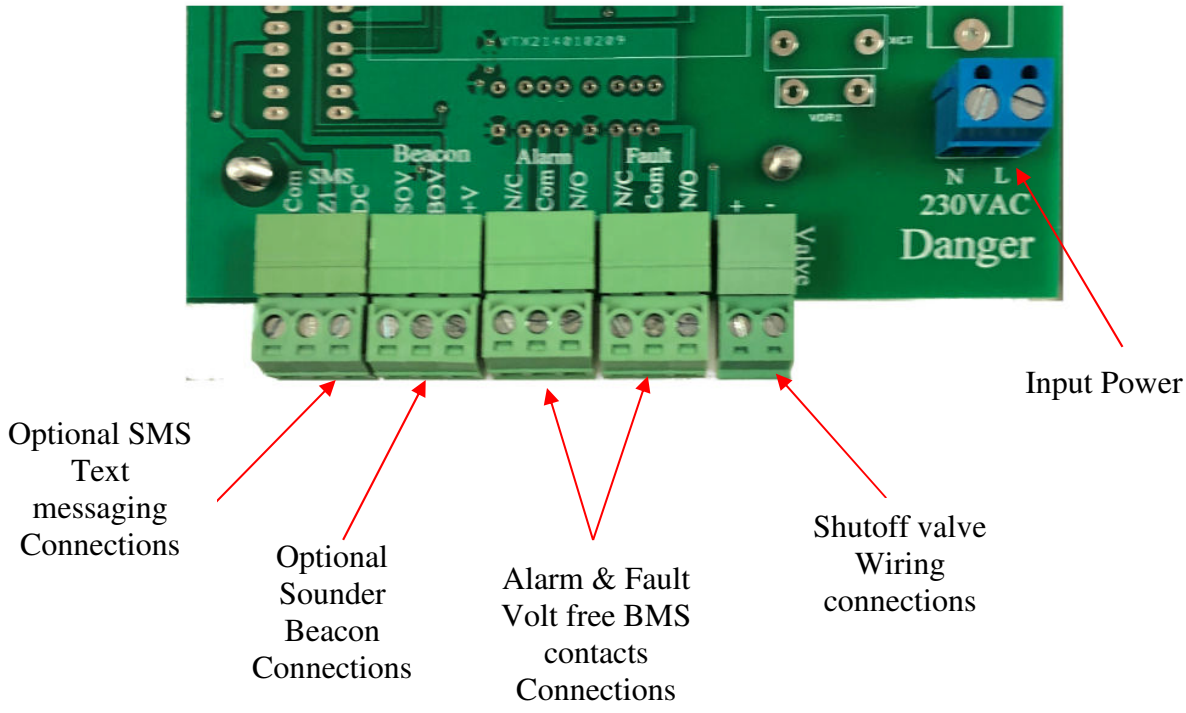
Alarm unit

The alarm unit can monitor up to ten remote sensors for a water leak. A volt free BMS Alarm contact has been provided and the unit has an optional output to a sounder beacon if required. A motorised water shutoff valve can be provided to turn off the mains water supply when a leak is detected or by using the "Water on" / "Water off" push buttons in an emergency or when going on holiday. By using the on screen "Help" button, you can navigate to the status screen to see the status of all fitted sensors, an "add sensors" screen to add or remove sensors from the alarm unit or be provided with some useful information on how the unit operates.

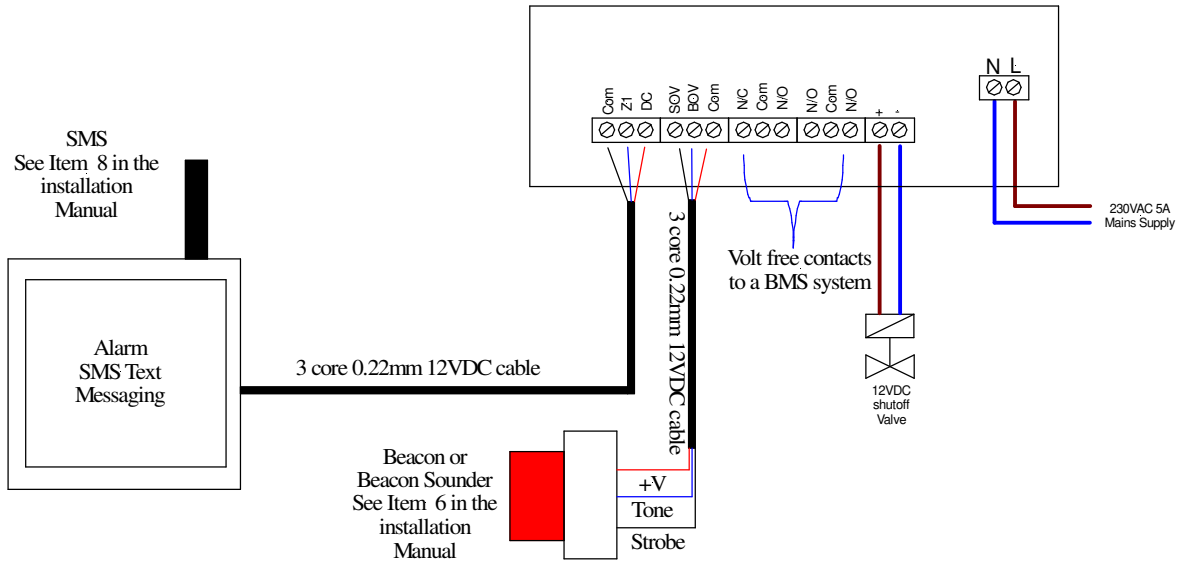
2) Installation

THE ALARM UNIT SHOULD ONLY BE CONNECTED AND WORKED ON BY A QUALIFIED ELECTRICIAN.

To mount the alarm unit to a wall, first remove the lid to expose the internal equipment. In the bottom and top corners of the housing are fixing points. 3.5mm pozi-drive screws or any screw with a head no bigger than 7mm diameter can be used to fix the housing in place. Cable access into the box should be via cable glands which can be positioned anywhere around the enclosure or on the inside for back entry. Care should be taken not to damage the internal equipment when drilling the enclosure. A 230VAC power supply should be run from a fused spur to the unit's internal terminal block marked "L", & "N". The fuse within the fused spur should be rated at 5 Amps.



3) Wiring Detail



With the exception of the 230VAC mains terminal block, all terminals are of the plugin type allowing the terminal housing to be removed for ease of terminating the cables. If you do un-plug the terminal housing, please check that you haven't reversed the connections when you plug it back into its housing.

4) Water Solenoid Valve

The shutoff valve is a BSP female/female, normally open, power shut, 12VDC, 5W with position indicator and override switch. To override the valve in an emergency and allow water to flow with the unit in still in alarm, first pull the override switch toward you until the white knob is just clear of the blue housing. Then turn the override switch clockwise (direction marked "O") until the red indicator bar is in line with the pipe run.

To take the valve out of shutdown and revert back to normal running, push the override switch toward the blue housing allowing the valve to automatically open itself.

WARNING, IF YOU USE THE OVERRIDE FACILITY YOU **MUST** TAKE THE VALVE OUT OF OVERRIDE WHEN THE EMERGENCY HAS BEEN RESOLVED.

5) Installing the Sensors

Each sensor is supplied with a strip of hook and loop (Velcro) tape to fix the sensor to a wall or cupboard. This self-adhesive strip should be stuck to the back of the sensor in a position to allow the battery compartment to be opened. If more than one sensor is to be installed, a sensor number will be attached to the side or front of the housing and is used to identify the status of the sensor at the main alarm unit. Care should be used when positioning the sensor to ensure that it is accessible for battery changes and the audible warnings can he heard. Once the sensor position has been decided, the coloured water detection cable can be cut to length with a pair of cutters or heavy-duty scissors. However, you must ensure that the silver sensor wires are not touching each other.

6) Fitting the Sensor Batteries

With the sensor in hand, turn it around to reveal the battery compartment. Slide the battery cover upward to expose the battery compartment and insert two "AA" batteries with the negative (-) terminal facing the contact spring.

For best battery life, choose a high-quality alkaline AA battery with 3000mAh (3Ah) capacity.

7) Beacon and Beacon Sounder

If a beacon or beacon sounder is supplied, connect to the three terminals identified as "Beacon" as follows:

7a) Non Mutable Beacon or Beacon Sounder

If the beacon or the beacon sounder is to be active (on all the time) until the water leak alarm has cleared, connect as follows;

Terminal Reference		Connect Beacon / Beacon Sounder terminals to the following terminals
+V		Beacon +V or Strobe /Tone + terminal
BOV		Beacon -V or Strobe /Tone - terminal
SOV		NO connection to this terminal

7b) Mutable Beacon or Beacon Sounder

If the beacon or the beacon sounder is to turn off when the "Mute" push button is pressed, connect as follows;

Terminal Reference		Connect Beacon / Beacon Sounder terminals to the following terminals
+V		Beacon +V or Strobe /Tone + terminal
BOV		NO connection to this terminal
SOV		Beacon -V or Strobe /Tone - terminal

Also see installation drawing in item 3 above for more information.

7c) Mutable Sounder Beacon on all the time

If the beacon is to remain alight all the time an alarm is current, but the sounder is to be turned off when the "Mute" push button is pressed, connect as follows;

Terminal Reference		Connect Beacon / Beacon Sounder terminals to the following terminals
+V		Strobe and Tone + terminal
BOV		Strobe - terminal
SOV		Tone - terminal

Warning; if the above option "1c" is required, **remove** the electrical link connected between the second (Strobe -) & third terminals (Tone -) terminals within the sounder.

8) Fitting an SCA Repeat Alarm or SMS Unit

If an SCA repeat alarm or SMS text messaging unit is supplied connect to the three terminals identified as "SMS" as follows.

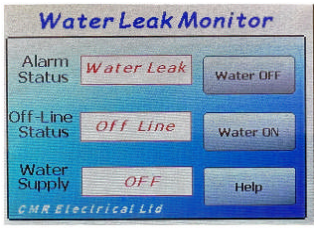
SCA Terminal No.	SMS Terminal No.		Cable wire colours fitted to the SMS text messaging unit
+V	DC		**RED**
Sig	Z1		**BLUE**
0V	COM		**BLACK**

Also see installation drawing in item 3 above for more information.

9) Relay Output

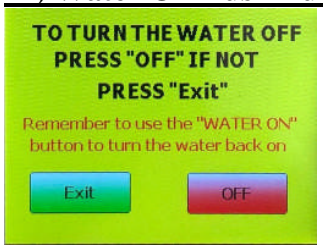
Both "Water Detected" and "Fault" signals to a BMS or building alarm system are provided via volt free changeover relay contacts rated at 1amp 30VAC/DC, see item 3 above. The Alarm relay changes state when any fitted sensor detects a water leak and auto resets when no water is being detected by any fitted sensor. The fault relay operates when any of the fitted sensors go into low battery alarm

10) Home Screen



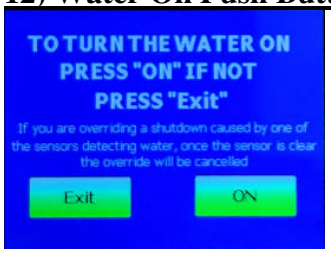
The home screen is on permanent display and shows if any of the sensors are detecting water "***Current Status" "Water Leak/No Leaks"***. The screen also displays the position of the water shutoff valve "***Water Supply" "ON/OFF"***. Three push buttons are provided as detailed below.

11) Water Off Push Button



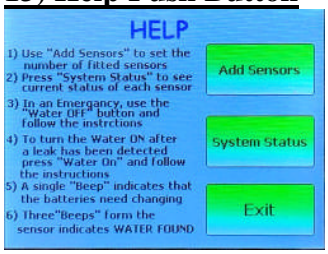
When the "Water Off" button is pressed, the screen will change. To turn off the water supply, press the "**Off"** button, the water shutoff valve will close and the display will change to the home screen. If you do not want to turn the water off, press **"Exit"**. This facility is provided so that the water can be turned off in an emergency, to carryout maintenance work or when going way on holiday. This screen will last 26 seconds before automatically reverting to the home screen.

12) Water On Push Button



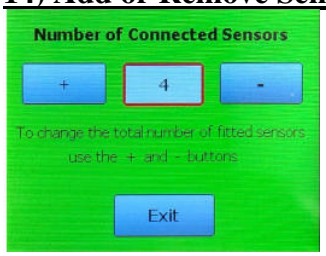
Pressing the "Water On" button changes the screen. To turn on the water supply press the **"On"** button, the water shutoff valve will open and the display will change to the home screen. If you do not want to turn the water on, press **"Exit".** This facility will be required if the system automatically turns off the water due to a leak or you are returning from holiday, or have just finished some maintenance work on the plumbing. The screen will last 26 seconds before automatically reverting to the home screen.

13) Help Push Button



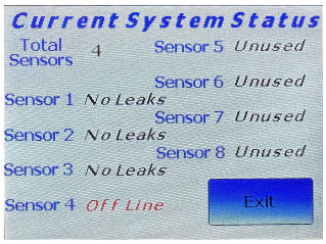
The **"Help"** button displays a screen with some useful operating instructions as well as some additional buttons to add/remove sensors, as well as the individual sensor status and total number of fitted sensors on the system. If you need to exit this screen back to the home screen press **"Exit"**. This screen will last 26 seconds before automatically reverting to the home screen.

14) Add or Remove Sensors from the Alarm Unit (also see ITEM 18 below)



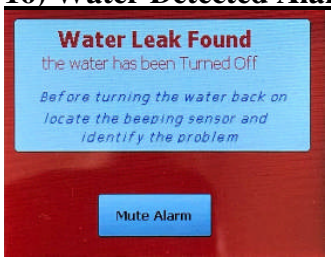
Pressing **"Help"** then **"Add Sensors"** enters into the number of fitted sensors screen. The number in the middle at the top of the display is the current number of sensors the alarm unit is looking at, this screenshot shows 4. To add or remove sensors use the **"+"** and **"-"** buttons. Press **"Exit"** when done or if a change is not needed. Note, if adding sensors, the address on the new sensor might need setting (see item 18 below). This screen will last 26 seconds before automatically reverting to the home screen.

15) View Current Status of all Fitted Sensors



From the **"Help"** screen, pushing the **"System Status"** button enters into the current status screen. The status of each sensor is shown in the box next to the sensor number: **"Water"**, **"No Leaks"** or **"Unused"**. This screen also shows the number of fitted sensors that the alarm unit is looking at. If you need to exit this screen back to the home screen press **"Exit"**. This screen will last 26 seconds before automatically reverting to the home screen.

16) Water Detected Alarm Screen



If any sensor detects water, this screen is displayed, the audible warning device sounds and the water valve closes. The screen will remain on display until the **"Mute Alarm"** button is pressed, this will stop the audible warning device and revert to the home screen *(see item 10)*. Note, the water valve will remain closed even if the water is removed from the sensor wire until the **"Water On"** button is pressed *(see item 12).*

17) Setting the Address of a New Sensor

In order to communicate back to the main alarm unit, each sensor will have been factory set to the correct address and the number will be shown on the outside of the housing i.e., "Sensor 2". If for any reason a sensor needs addressing, use the following procedure.

Before addressing the sensor, first ensure that the main alarm unit has been programmed to look for it. To do this enter the "Current System Status" screen (item 15 above) and ensure that the box next to the sensor number states "Off Line", if it states "Not Fitted", follow item 14 above to add it to the alarm.

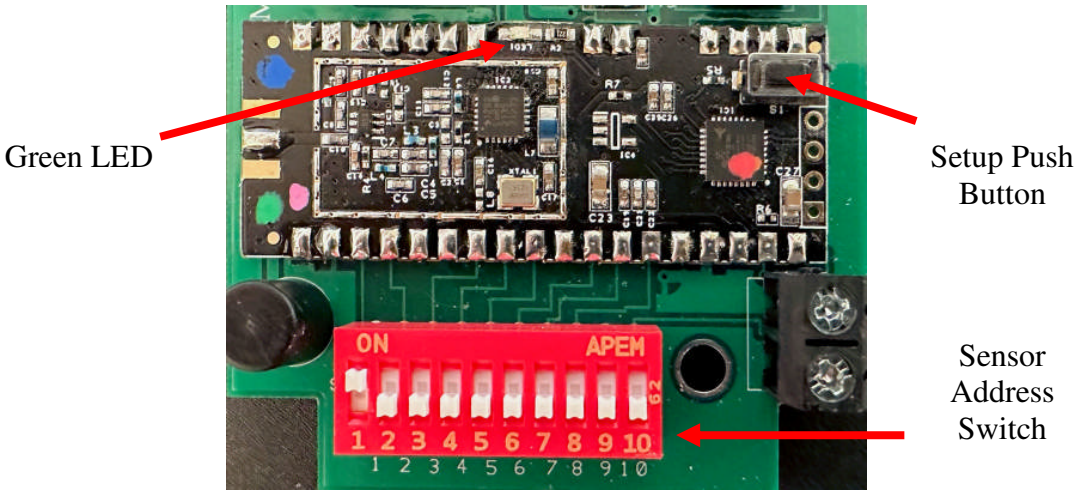
Please note; sensors need to be in a continual numerical order, you can't have the fitted sensors as, sensor 1, sensor 3 & sensor 4, it must be sensor 1, sensor 2 & sensor 3.

1) If fitted, remove both "AA" batteries
2) Remove the four black screws located on the back of the housing
3) Carefully open up the housing to expose the internal PCB as shown below.
4) Locate the multi switch unit shown below.
5) Make sure that all eight switches are in the Off position as shown by switches 1,2,5,6,7 & 8 below
6) To address sensor 1, push up (turn on) only switch 1, for sensor 2, just push up (turn on) switch 2 etc.
7) Fit and screw the housing back together and re-fit the batteries.

Note; If none of the switches are in the on position the sensor will not communicate back to the alarm unit. It is also important to ensure that only one switch is in the "on" position, if you have more that one switch on as shown in the picture below, the system will give false alarms. Once you have finished dip the detection cable into a cup of water and ensure that the alarm unit records the alarm.

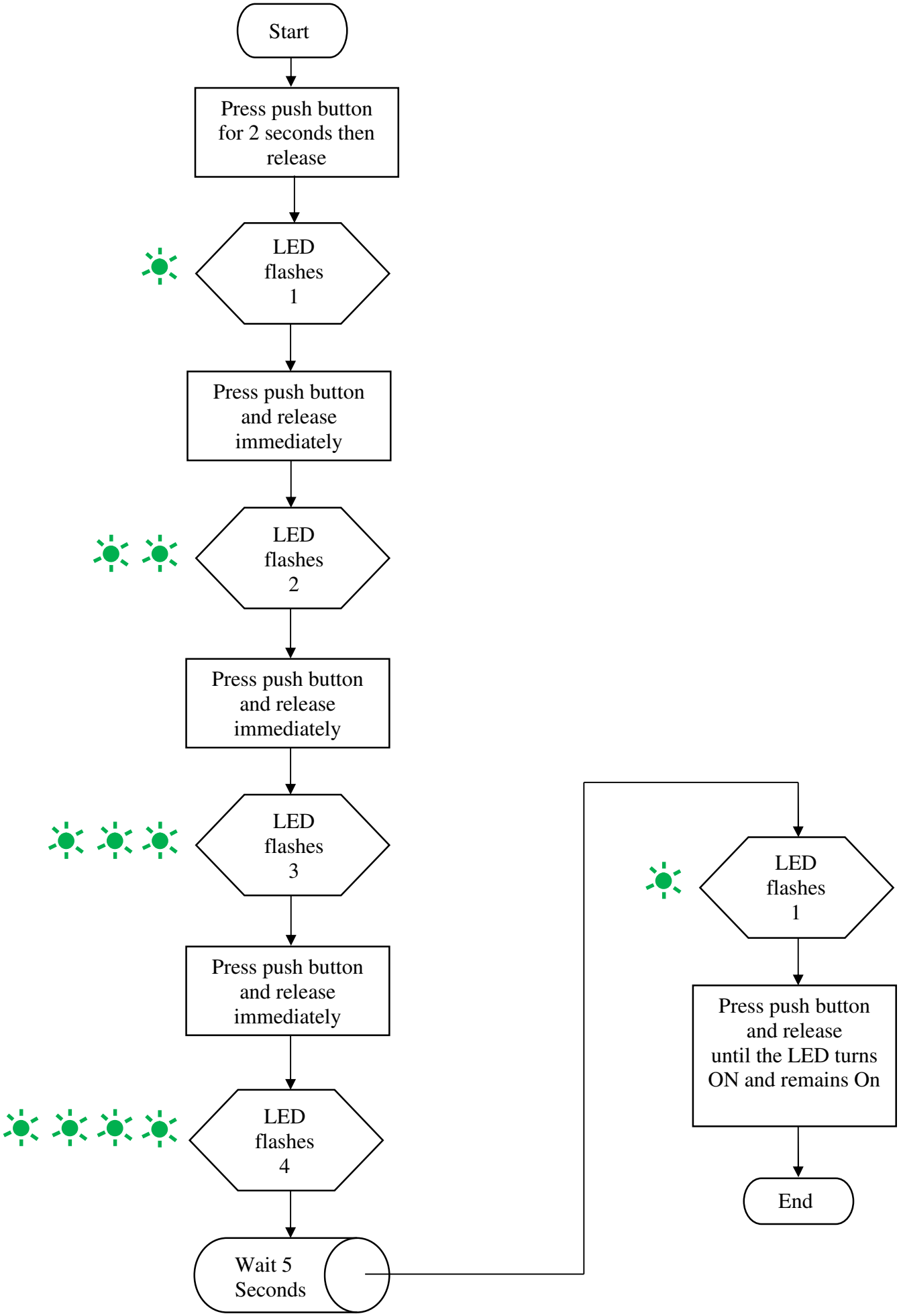
18) Adding a Sensor to the Alarm Unit

If you are just adding a sensor to an existing system, go to Item 18.3 as Items 18.1 and 18.2 will have been completed at our works, if the system is being setup for the first time, start at Item 18.1



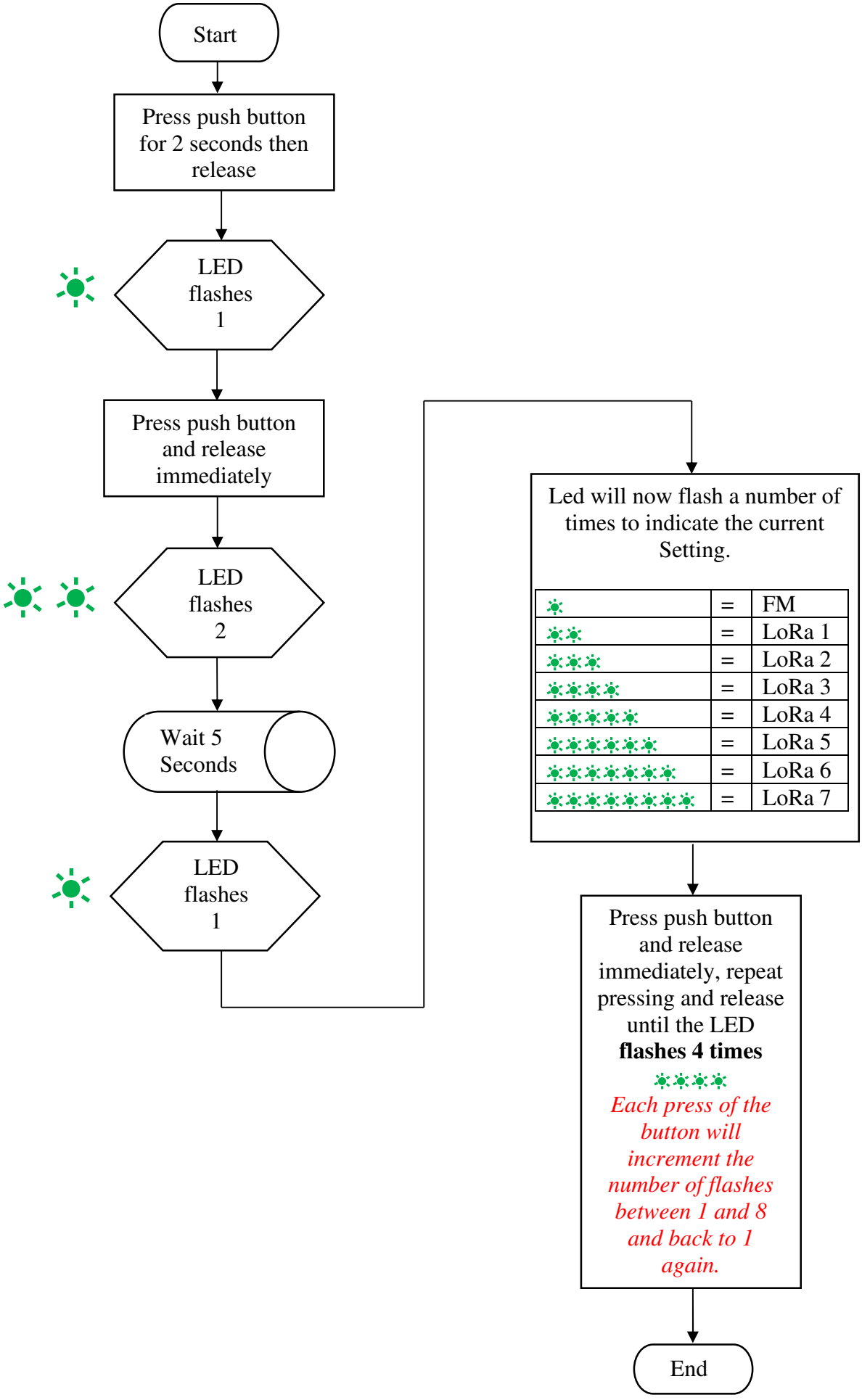
18.1 Setting sensor RF module to send all inputs to receiver

The RF module in the sensor will need to be setup to transmit all 10 inputs at the same time. This is done by using the flow diagram below.


Start
Press push button for 2 seconds then release
LED flashes 1
Press push button and release immediately
LED flashes 2
Press push button and release immediately
LED flashes 3
Press push button and release immediately
LED flashes 4
Wait 5 Seconds
LED flashes 1
Press push button and release until the LED turns ON and remains On
End

18.2 Setting sensor RF module to LoRa 3 mode

The RF module in the sensor will need to be setup to LoRa 3 transmit mode.

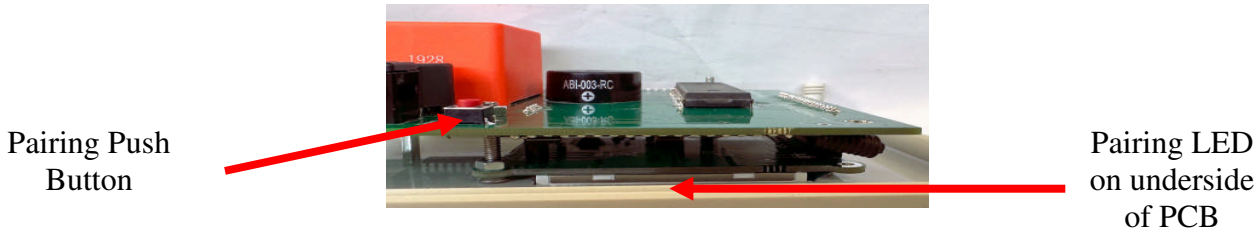


18.3 Pairing the sensor with the alarm unit

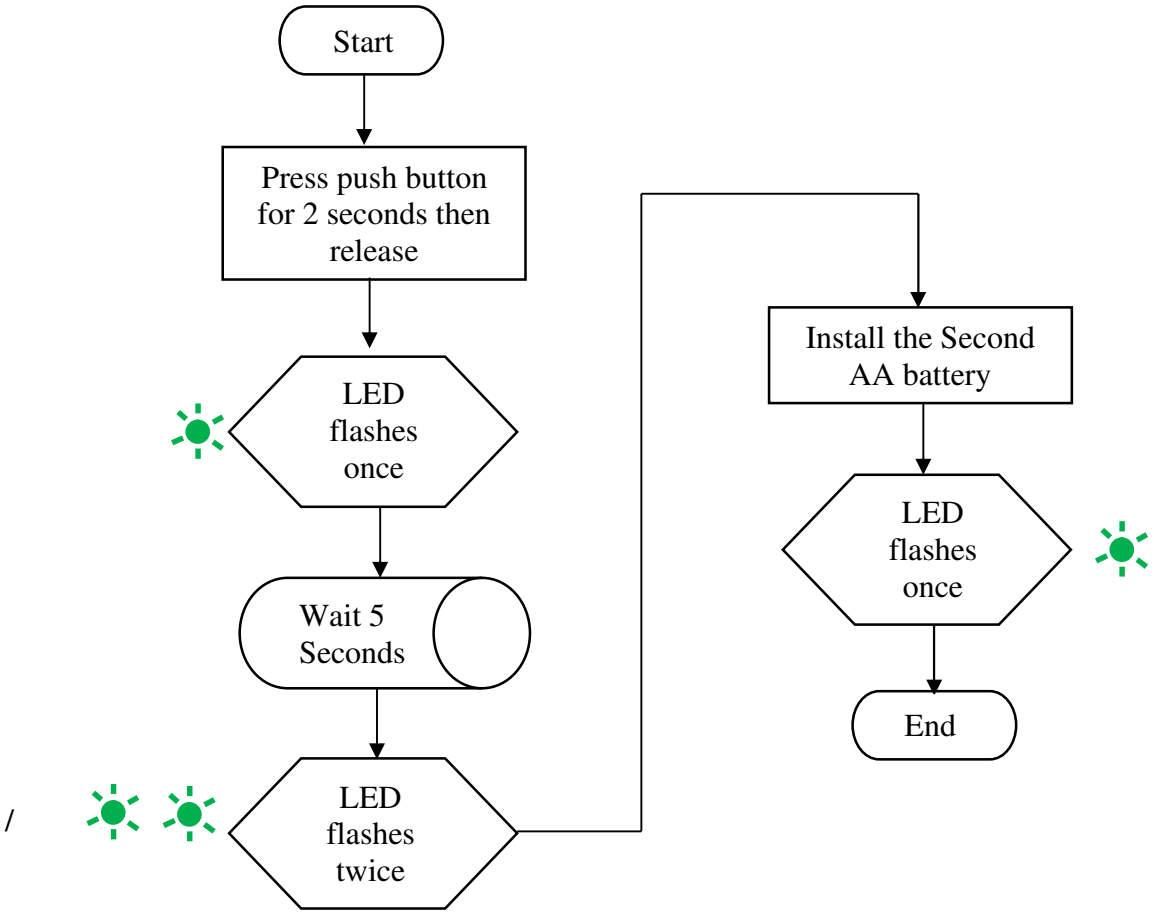
When adding an additional sensor, the alarm unit will also need setting up (pairing) to recognise the new sensors unique address code that is sent every time the sensors communicates with the alarm unit. To enable the sensor to communicate to the alarm unit, the following procedure and also Item 18 above will need to be completed.

The following procedure should only be carried out by a qualified electrician as it entails powering up the alarm unit when open thereby exposing live connections.

1) Set the sensor address as outlined in item 18 above, only install **ONE** of the AA batteries
2) Power down the alarm unit and separate the housing to expose the internal PCB.
3) Identify the pairing push button and LED as shown below.



4) Power up the alarm unit
5) Briefly press the pairing push button, the led should flash once
6) Immediately install the second battery to power up the sensor. The Pairing LED should flash
7) Turn off the alarm unit's power and screw the housing back together
8) Power up the alarm unit again
9) Set the sensor into alarm by submerging 5cm of detection cable in cup of water the alarm unit should go into sensor alarm
10) Remove and dry the sensor detection cable to remove the alarm



NOTE,
You only have 10 seconds from pressing the pairing button to installing the last battery. If you exceed this time, start again. Only press the pairing button for a couple of seconds until the LED flashes. If you keep the button pressed too long you will un-pair all outstations from the alarm unit. If this happens, you will need to pair all outstations again.

19) Water Shutoff Valve Details

Media: air – water – gas – liquid
Pressure range: 0 to 10 bar max
Media temperature: -15°C +100°C max
Ambient temperature: -20° to +45°C
Media viscosity: 500 centistokes max
Duty cycle: 70,000+
Mounting: Any
Seals: PTFE

Actuated Ball Valve

3/8 – 1
NORMALLY CLOSED
2 WAY DIRECT
0 – 10 Bar

TYPE ABVM-AR

PRESSURE

Ø Port BSP	Orifice mm	Max Opening Time Seconds	Max Closing Time Seconds	Min (Bar)	Max (Bar)	Voltage	Part Number
1/2	15	3	3	0	10	5 to 6vDC	ABVM04S-6V
						9 to 24v AC or DC	ABVM04S-9AR
						85 to 265v AC	ABVM04S-2AR
3/4	20	5	5	0	10	5 to 6vDC	ABVM06S-6V
						9 to 24v AC or DC	ABVM06S-9AR
						85 to 265v AC	ABVM06S-2AR
1	25	5	5	0	10	5 to 6vDC	ABVM08S-6V
						9 to 24v AC or DC	ABVM08S-9AR
						85 to 265v AC	ABVM08S-2AR

OPTIONS

Manual Over Ride, Visual Position Indicator, 316 Stainless Steel or Brass Valve
Failsafe open, 2 wire control, 3 wire 2 point control, 3 wire 1 point controls and open / closed signal position feedback.

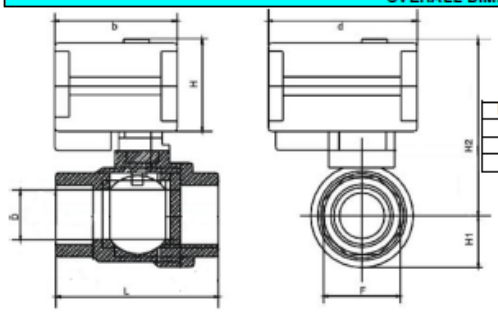
ELECTRICAL DATA

Voltage Min - Max Continuous duty 100%	Actuator		Power	Enclosure	Electrical connections
	Model	Torque			
5 to 6 volts DC	ABVM	2 Nm	5 Watts	*IP65*	2 lead wires 0.5 meter
9 to 24 volts AC 50/60Hz or DC					
85 to 265 volts AC 50/60Hz					

CONSTRUCTION

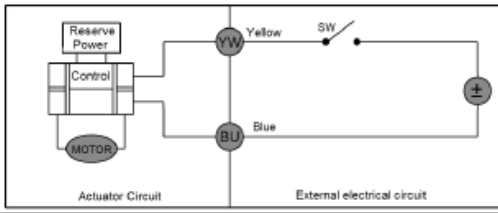
Valve Body: 304 stainless steel, Optional Brass or 316 stainless steel
ABVM Actuator: ABS Engineering Plastic , Gears Metal and POM

OVERALL DIMENSIONS



Port	D	L	F	H1	H2	H	d	b	Kg
1/2	15	55	26.5	17	75	45	67	52	0.4
3/4	20	70.5	31	20	75	45	67	52	0.5
1	23	72	37	22	80	45	67	52	0.6

Requires minimum 60 second power ON time to charge the reserve power to close.



Switch power ON valve motor actuates valve into fully open position and then automatically powers off.
Valve stays open.

Switch power OFF valve motor actuates valve into fully closed position utilising reserve power.
Valve stays closed.

Option: failsafe open, 2 wire control, 3 wire 2 point control, 3 wire 1 point control and signal feedback.