



## Watchdog2 Fire Sprinkler Controller Installation Guide

This document provides essential information on how to install, configure and test the Watchdog2. The good news is the Watchdog2 is easy to install and requires minimum set up and configuration.

### Key features:

#### Input connections for:

- Dual pressure switch (monitored)
- Flow switch (monitored)
- Water level

#### Output connections for:

- Pump
- Diverter valve
- Fire panel
- Fault monitor
- Low water alarm

#### USB connection for:

- Uploading of advanced configuration files
- Software updates

Watchdog2 has been designed with failsafe features that help ensure that the pump will run when the pressure drops (in the event of a sprinkler head opening) even if the microprocessor or software fails.

**WARNING** – Watchdog2 is a safety critical device and MUST be installed by a qualified electrician/electrical engineer in accordance with relevant electrical installation regulations and relevant fire sprinkler regulations.

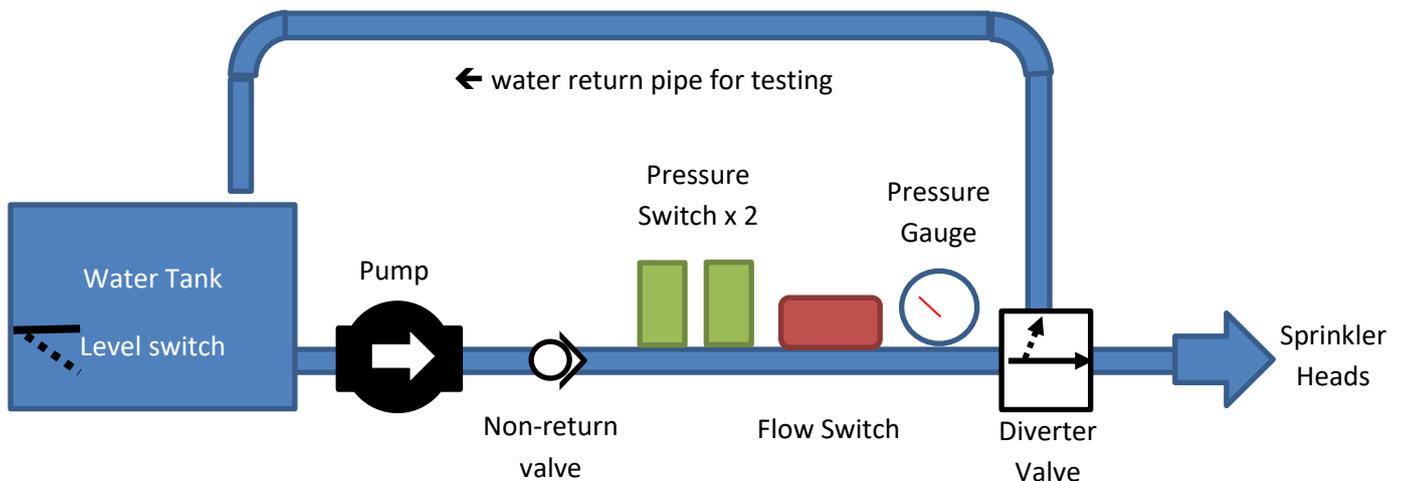
Failure to install and configure correctly may result in the fire sprinkler system failing to operate, resulting in loss of life or severe injury. Coda Octopus Martech Ltd. (Martech) accepts no responsibility for failure of any kind resulting from incorrect installation or from installation by unqualified installers.



For the latest version of this manual and additional resources and technical support, please visit [www.firesprinklerwatchdog.com](http://www.firesprinklerwatchdog.com) or scan the QRcode:



## SUGGESTED\* SYSTEM CONFIGURATION



### Important Note\*

The above is illustrative ONLY and it is the responsibility of the installer to ensure compliance with all relevant and current standards relating to Fire Sprinkler systems, including but not limited to regulations for electrical installations, water supplies, plumbing and pipework.

Martech accepts no responsibility for non-compliance with the standards relating to the installation and choice of components.

### Pressure Switches

Pressure switches are required to be closed at pressure, opening on low pressure, and must be set correctly. For optimum pressure switch settings, please refer to pump manufacturer's advice, and configure in accordance with the latest BS standard for Fire Sprinkler systems.

### Flow Switch

Flow switch is required to be closed at zero flow, opening when flow is detected. The flow switch may optionally be wired for close on flow operation.

### Pump

Watchdog2 is compatible with most commercially available single-phase pumps up to 3kW (13A at 240Vac), and is fused to 15A (T) as standard. Martech recommends Grundfos pumps.

### Diverter Valve

Watchdog2 has a change-over relay for use with a diverter valve (max 5A at 240Vac), and is fused to 0.5A/500mA (T) as standard

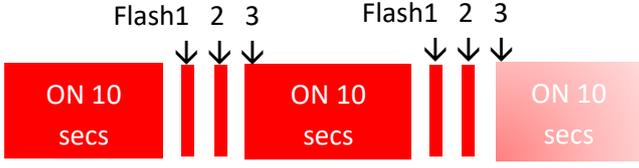
**Pumps with integral pressure switches and other advanced features should not be used unless these features are disabled. Use of these types of pumps may cause problems during use including false alarms or failure to operate in the event of fire.**

## OPTIONAL FEATURES – POWER LOSS ALARM

On boards where J35 is fitted (bottom RH corner), an optional rechargeable NimH battery (not supplied as standard) can be fitted to provide an audible alarm every 10 minutes in the event of a power failure. This battery is not used to maintain the main on-board clock, and will not run the pump in the event of a fire.

Battery type. RS 1769373 <https://uk.rs-online.com/web/p/rechargeable-battery-packs/1769373>

## LED FUNCTIONS

LED	Function
PUMP (yellow)	ON = pump running
FAULT (red)	<p>The LED stays on for 10 seconds then flashes according to the fault. At the last flash the LED stays on for 10 seconds before the sequence is repeated (see below example for 3 flashes).</p> <p>2 flashes - Auto_Test_Failure                      3 flashes - Low_Water                      4 flashes - Pressure_Switch1_Failure                      5 flashes - Pressure_Switch2_Failure                      6 flashes - Excessive_Operation                      7 flashes - Phase_Failure (not on WD2)                      8 flashes - Maximum_Run_time                      9 flashes - Monitored_Valve_Failure (not on WD2)                      10 flashes - Possible Fire (no flow detected)</p> 
FIRE! (red)	Flash 2Hz (0.5 secs) = Fire mode
SERVICE (blue)	Flash 1Hz (1 sec) = Service required
TESTING (orange)	<p>Flash every 2 seconds = Dump Valve open</p> <p>ON = Remainder of auto test in progress OR</p> <p>ON = Wait period after operation (e.g., after jockey mode)</p> <p>Also</p> <p>ON when a USB stick is inserted and read/write is in progress (sounder sounds when read/write is complete)</p>
POWER (green)	Mains power available

## BUTTON FUNCTIONS

Function	Button Press	Action
Run pump	TEST button, short press (>1<5 secs)	Runs pump for 10 seconds (no dump valve operation)
Run periodic Automatic test.	TEST button >10 secs (beep)	Run full test with dump valve etc. See periodic automatic test below
Reset periodic test time.	RESET button > 10 secs (beep) Followed immediately by TEST button >10 secs (beep)	Resets periodic test time (time of day when auto test will run). The frequency of the test (e.g., every 7 days) is configured in the USB settings file
Silence sounder	RESET button, short press (>1<2 secs)	Silences sounder until next weekly test
Stop pump	RESET button >10 secs, when in fire mode or possible fire mode	Stops pump, but only after initial jockey run period.. Will resume if pressure not restored or flow is present.
Clear faults Resets annual service	RESET button >25 secs Beeps after 10 secs, keep held for further 10secs, beeps. Optionally hold for further 5 seconds, beeps	Clears faults after 20 seconds (second beep) Optionally resets annual service after further 5 seconds (25s total, third beep)
FIRE MODE	TEST + RESET >10 seconds	Forces FIRE MODE

## PERIODIC AUTOMATIC TEST SEQUENCE (ALSO KNOW AS WEEKLY SELF-TEST)

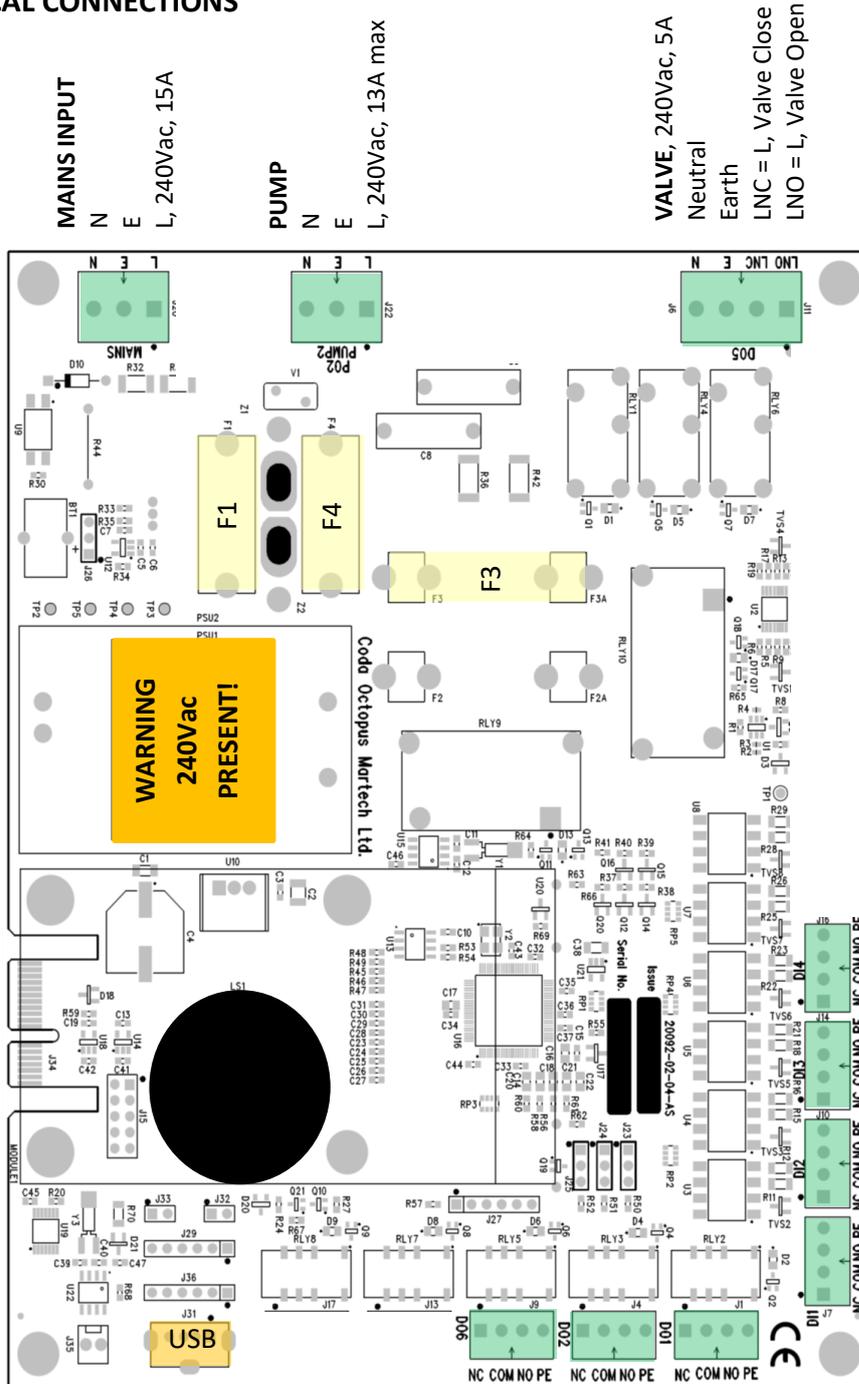
<p>Periodic Automatic Test</p> <p>Refer to Button Functions above to reset the time of day to run the test</p>	<p>Runs periodic test according to time period in settings file.</p> <p>e.g., weekly. (default = 7 days)</p>	<ol style="list-style-type: none"> <li>1. Open dump valve, FLASH TESTING LED</li> <li>2. Wait for pressure drop</li> <li>3. Confirm both pressure sensors detect pressure drop (times out after defined autotest period → fault)</li> <li>4. Close dump valve as soon as pressures switches activated</li> <li>5. Run pump (PUMP LED ON)</li> <li>6. TESTING LED to ON</li> <li>7. Confirm both pressure sensors reinstated/closed</li> <li>8. Run on for X secs after pressure reinstated (jockey run period)</li> <li>9. If any faults, set fault o/p</li> <li>10. TESTING LED OFF</li> </ol>
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# Watchdog2 Fire Sprinkler Controller Installation Guide

Watchdog2 Installation Guide 20092-04-15-HBK iss 05\_final.docx

## ELECTRICAL CONNECTIONS

**WARNING: DO NOT OVER-TIGHTEN TERMINALS!**  
Power terminals 0.5Nm max. Overtightening may result in damage to the terminal



**CURRENT RATING AND FUSING:**  
F1 - PCB control electronics 500mA(T)  
F3 - PUMP max 13A\* at 230Vac  
Factory fitted with fuse 15A\*(T)  
F4 - VALVE (DO5), max 5A at 230Vac  
Factory fitted with fuse 500mA(T)  
**DO NOT EXCEED MAXIMUM CURRENT**  
*\*Max running current. Where peak start-up current exceeds 15A, causing fuse to blow, fuse up to 20A(T) may be fitted.*

**OUTPUTS**  
Volt free change-over contacts, max 5A

**LOW WATER ALARM**  
Com-NO contact closes when Low Water detected  
Com-NC contact opens when Low Water detected

**FAULT**  
Com-NC contact open when no fault, closes when fault detected or power failure  
Com-NO, opens on fault or power failure

**FIRE ALARM**  
Com-NO contact closes when in Fire Mode  
Com-NC contact opens in Fire Mode

**INPUTS**, 12Vdc on COM terminal

**WARNING: DO NOT OVER-TIGHTEN TERMINALS!**  
Signal terminals 0.25Nm max. Overtightening may result in damage to the terminal

**PCB** viewed when lid folded downwards for installation. Some circuit boards (PCB) may have additional components or connectors fitted, which are not used.  
**FLOW SWITCH** can be wired NC-COM where the flow switch opens on flow (closed when no flow is present).  
Flow Switch Can also be wired NO-COM where the flow switch closes on flow. In this configuration, the COM-NC contacts must also be linked.

**WATER LEVEL**  
Com-NC contact opens on low water  
**FLOW SW**, see note  
**PRESSURE SW2**  
As per P SW1  
**PRESSURE SW1**  
Com-NC contact OPENS on low pressure, closed on High pressure

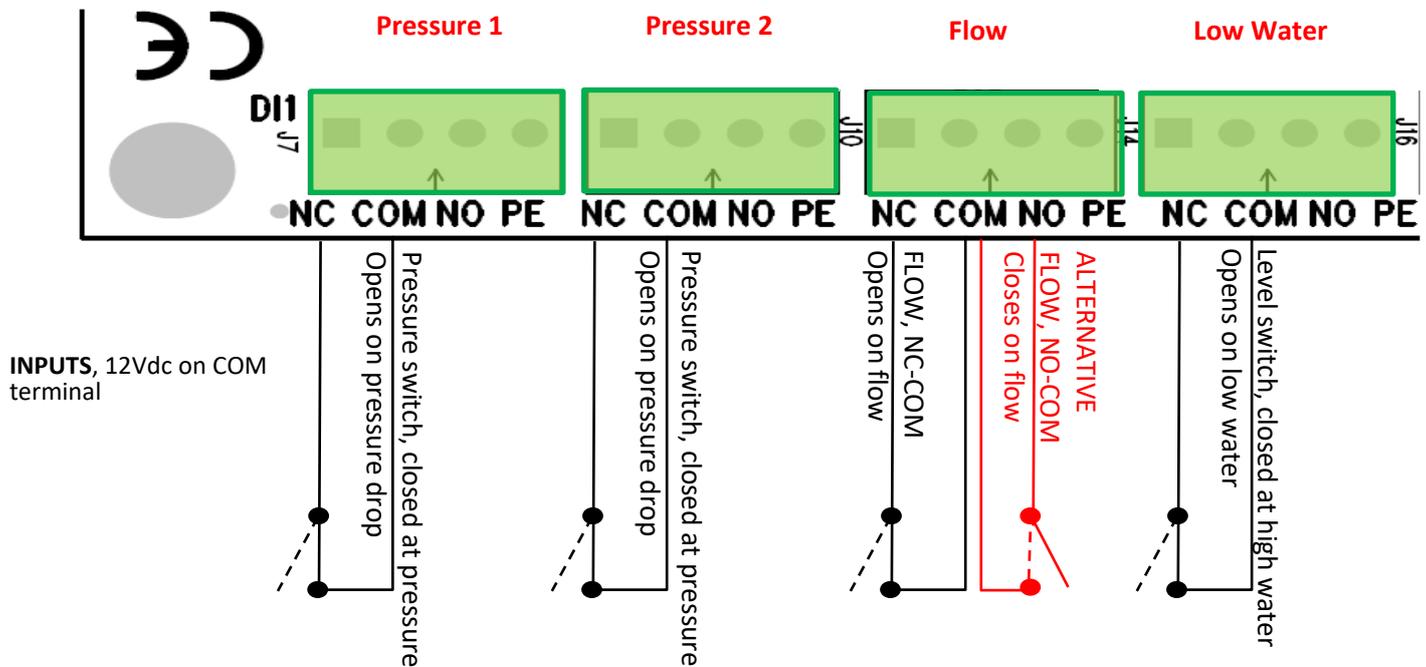
**VALVE, 240Vac, 5A**  
Neutral  
Earth  
LNC = L, Valve Close  
LNO = L, Valve Open

**MAINS INPUT**  
N  
E  
L, 240Vac, 15A

**PUMP**  
N  
E  
L, 240Vac, 13A max

## SENSOR WIRING DETAIL

NOTE for correct operation and compliance with BS9251-2021, dual pressure sensors and a flow switch must be fitted. ALL sensors are CLOSED during normal operation (high pressure, zero flow, water high) and open when these conditions change (e.g. in the event of a sprinkler opening). WD2 does however also support other flow switches which close on flow only, shown below in red. In this configuration, the NC-COM contacts MUST be linked.



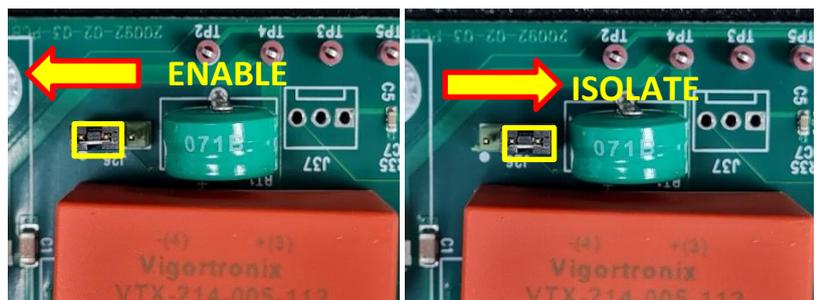
If a low water sensor is not required the input MUST be linked across to prevent alarms.

If the alternative flow connection (COM-NC) is used, COM-NO MUST be linked across

## BACK-UP BATTERY ENABLING

Battery Link (J26) has been fitted as shown, to isolate the battery and prevent the battery running down when in storage.

Before installing, move battery link (J26) as shown to the 2 pins furthest from the battery.



**This is essential to ensure that the clock is maintained when no power is applied.**

The battery is rechargeable and requires the unit to be power on for >24hours to achieve a full charge.

The battery **ONLY** maintains the clock and does not allow operation.



## SETTINGS AND CONFIGURATION

**Watchdog2 is factory-configured with standard settings that should be suitable for most installations. Where required, these settings can be changed. See below for instructions on downloading advanced settings from a USB memory stick.**

Settings file can also be configured and downloaded using our ON-LINE TOOL at [www.firesprinklerwatchdog.com](http://www.firesprinklerwatchdog.com), or using the QR code



Using a USB stick to configure settings. Settings can be edited on any PC/Laptop and uploaded to the Watchdog2 from a USB memory stick (FAT32 format).

**ALWAYS USE A CLEAN/EMPTY USB STICK.**

The USB connector is internal as shown on the electrical connection diagram. The settings text file is named **settings.txt** and can be edited in Windows Notepad. The file must be a plain text file format. The text file must be saved to a memory stick in the root/top level (not in a sub-folder). When a Settings file is detected on the USB stick, all LEDs flash to indicate new settings being uploaded. After uploading, the system will beep and the LEDs will stop flashing. The settings text file on the USB stick is also renamed to avoid inadvertent re-use. **ALWAYS WAIT FOR SOUNDER BEFORE REMOVING USB STICK**

The below is an example of the recommended default settings text file (settings.txt) that is pre-installed.

*Text in green is for information only and not part of the file*

```
Current Time:-11:30; enter the time here, WD2 will update to this when USB inserted
Current Date:-16/02/2023; enter date here, WD2 will update to this when USB inserted
Service Reminder:-ON; ON or OFF, sets whether service reminder is active
Service Interval:-12; 1-12 Months, period for service reminder
Low Water Delay:-10; 0 to 60 Seconds, delay for low water detection
Maximum Run:-OFF; DISABLED ON WD2
Maximum Run Time:-480; 1 to 480 Minutes DISABLED ON WD2
Excessive Operation Limit:-7; 0 to 30 Starts/week, jockey runs allowed, (0=off)
Jockey Pump Duration:-20; 5 to 120 Seconds, length of time pump runs for Jockey run
Flow Switch Delay:-3; 0 to 25 Seconds, trigger delay for flow switch
Pressure Switch Delay:-3; 0 to 10 Seconds, trigger delay for Pressure switch
Fire Mode Wait:-5; 0* to 30 Secs. Window for Possible Fire Mode trigger (* see note below)
Device Name:-INSTALLATION INFO (no ;)insert installation info here such as location
INSTALLATION INFO (no ;)insert installation info here such as location
INSTALLATION INFO; three lines each less than 20 characters inc spaces (; after 3rd line ONLY)
Installer Name:-INSTALLER NAME (no ;) insert YOUR company name/details
INSTALLER NAME (no ;)insert YOUR company name/details
INSTALLER NAME; three lines each less than 20 characters (; after 3rd line ONLY)
Installer Contact details:-CONTACT DETAILS (no ;)insert YOUR company contact info
CONTACT DETAILS (no ;)insert YOUR company contact info
CONTACT DETAILS; three lines each less than 20 characters (; after 3rd line ONLY)
Auto test Duration:-300;60 to 600, Seconds, max time for autotest, timeout = fault
Auto test Open:-15; 1 to 90 Seconds, auto test dump valve open duration
Auto test Period:-7; 1 to 30 Days, frequency of autotest
Cooling line Duration:-3; 0 to 60 Seconds (WD2, firmware Rev2.8 onward)
Cooling line Cycles:-30; 1 to 60 times/hour (WD2, firmware Rev2.8 onward)
Model Variant:-0; 0=watchdog LOCKED on WD2
Timer override:-0; 0-60 minutes, set to zero normal for operation
```

\*Firmware V2.91 onwards. When Fire Mode Wait is set to 0, pump runs on pressure drop but does not latch on repeated operations (self-resets when pressure restored unless is flow detected). May not be fully compliant with BS9251-2021 section 5.12.4.b.

**IMPORTANT!** After uploading new settings files, **always POWER CYCLE the WD2**, and review the config file on the memory stick to check that new settings have correctly uploaded. **ALWAYS WAIT FOR SOUNDER BEFORE REMOVING USB STICK**

**NOTE - IF IN DOUBT, ALWAYS DOWNLOAD THE STANDARD SETTINGS FILE FROM**

[www.firesprinklerwatchdog.com](http://www.firesprinklerwatchdog.com).

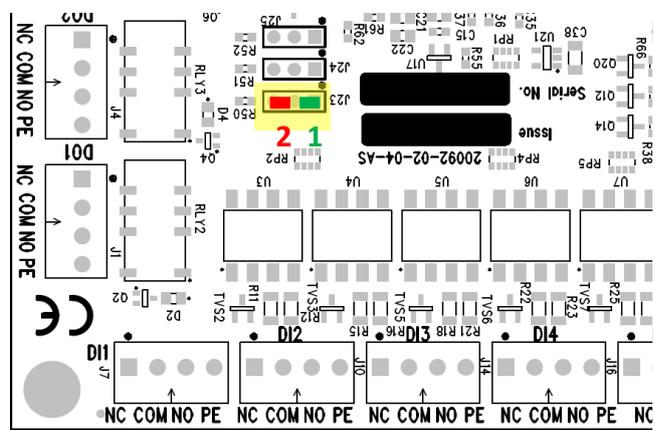
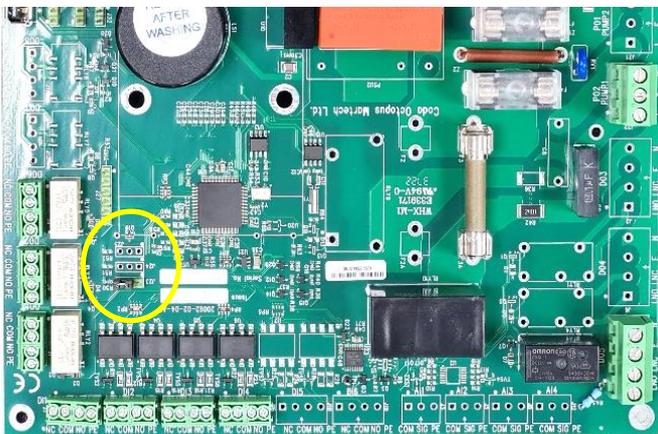
All text after the semi-colon (;) are comments only and are not used by the system.

Time and date sets an *approximate* time/date on the Watchdog2 for time stamping of activity logs. The time entered will be taken as the correct time when the file is read by the Watchdog2 from the USB stick. Attempting to change features shown as disabled or locked will have no effect and will not be used.

A time & date only settings file can also be downloaded from [www.firesprinklerwatchdog.com](http://www.firesprinklerwatchdog.com) which allows changing of the time and date without affecting the other settings.

**DIAGNOSTIC MODE**

With the unit powered OFF, move link J23 in the position 2 (viewed with the front panel folded down) as shown, the system will power up into an engineering diagnostics mode. In this mode it **WILL NOT operate as a fire sprinkler controller**, but will illuminate LEDs only in response to certain inputs. will allow manual operation of the pump and valve. This is intended to assist the engineer to manually check inputs during installation.



**NOTE it is critical that J23 is reverted to the normal operating position (position 1) after diagnostics, to ensure correct Fire Sprinkler operation.**

TEST MODE	Test Mode Function
TEST Button	Press and hold to run pump, release to stop pump
RESET Button	Press and hold to open valve, release to close valve - pressure will drop.
PUMP LED (yellow)	ON, Valve opening Flashing 1 per second, Pump running Flashing 5 per second, Valve opening and pump running
FAULT LED (red)	Pressure switch 1 (D11), on when active/low pressure/NC-COM open circuit
FIRE! LED (red)	Pressure switch 2 (D12), on when active/ low pressure/NC-COM open circuit
SERVICE LED (blue)	Flow switch (D13) on when NC-COM open circuit, <b>OR</b> NO-COM is closed circuit
TESTING LED (orange)	Water level (D14), on when active/water low/NC-COM open circuit
POWER LED (green)	Mains power available

Test mode LED functions are shown in red:

<b>NORMAL</b>	<b>DIAGNOSTIC</b>
PUMP ●	PUMP+VALVE ●
FAULT ●	PRESSURE 1 ●
FIRE! ●	PRESSURE 2 ●
SERVICE ●	FLOW ●
TESTING ●	WATER ●
POWER ●	

## INSTALLATION CHECK LIST

The following is a suggested checklist to help ensure that you have carried out key actions when installing the Watchdog2.

**NOTE - This check list is not exhaustive and it is the installers responsibility to ensure that the installation is working correctly and complies with all regulatory requirements.**

	Description	Checked By	Date
1	Battery Link correctly fitted to ENABLE back up battery?		
2	Diagnostic Mode Link returned to POSITION 1?		
3	Settings file updated including correct time? (optional)		
4	Copy of updated configuration downloaded from WD2 and checked against expected settings? (Recommended to be retained for your records)		
5	Pressure in system manually dropped and correct operation confirmed?		
6	Flow manually created and flow switch activated and correct operation confirmed?		
7	Low water alarm operation checked?		
8	Fault o/p operation checked?		
9	Faults/alarms created during installation have been cleared?		
10	Automatic Test time set?		
11	Automatic Test manually started and correct operation confirmed?		
12	Pressure reinstated after tests completed?		
13	USB stick removed?		
14	Front panel securely attached to the box?		
15	Repeat items 11 & 12 after refitting lid, confirm correct operation and pressure reinstated?		
16	Customer provided with installer details for future reference?		

## INSTALLATION RECORD

Customer			
Location			
Installed by (Company)		Installation Engineer (name)	
Phone No.			
Email and Website			
System Pressure	Bar	Installation date	