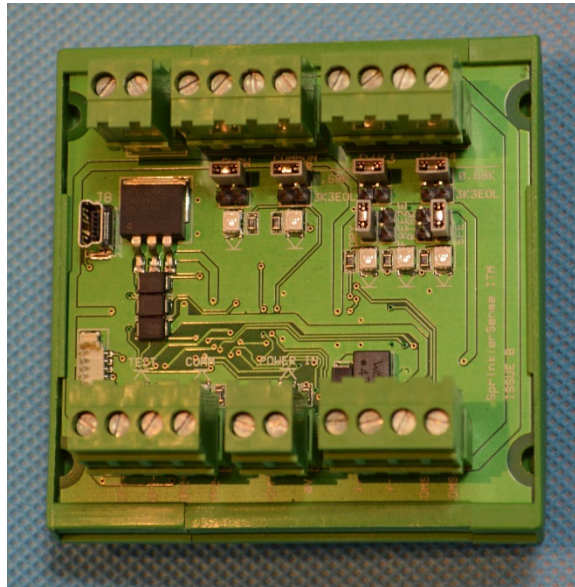


A GUIDE TO THE INSTALLATION, OPERATION & MAINTENANCE OF

Sprinklersense ITM

INTELLIGENT TEST MODULE



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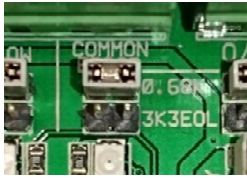
1 Description

The ITM is a DIN rail mounted module which is designed for use in conjunction with a SprinklerSense Flow Alarm Sensor SPDB30/90 to provide switches for individual ERROR outputs and inputs to enable remote activation of both the TEST and COMMISSIONING modes. It is especially useful for connecting to a Tyco QIO850 Quad Input/Output Module and subsequent use with a MZX control panel. LED indicators are also provided to show the status of each input and output.

The ITM module has no IP rating and as such should be mounted within a suitable housing to provide the level of protection required.

2 Outputs

The outputs are solid state relay type, configured as Alarm/Fault on Short (Normally Open). Each output has selectable End of Line (EOL) of 3.3kOhm and Alarm Resistor (RA) of 680Ohm. These are selectable using the individual jumper links for each output.

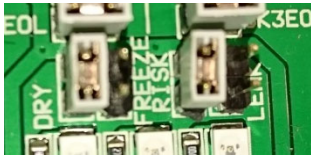


Jumper position to disconnect EOL and RA.



Jumper position to connect EOL and RA.

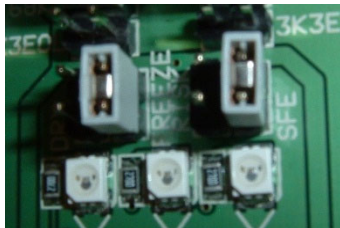
Output 1 is designated as the FLOW alarm output, Output 2 as COMMON ERROR and Outputs 3 and 4 are selectable using jumper links as either DRY PIPE, FREEZE RISK or SUB-ALARM FLOW errors:



Jumper positions for DRY PIPE (Output 3) and FREEZE RISK (Output 4)



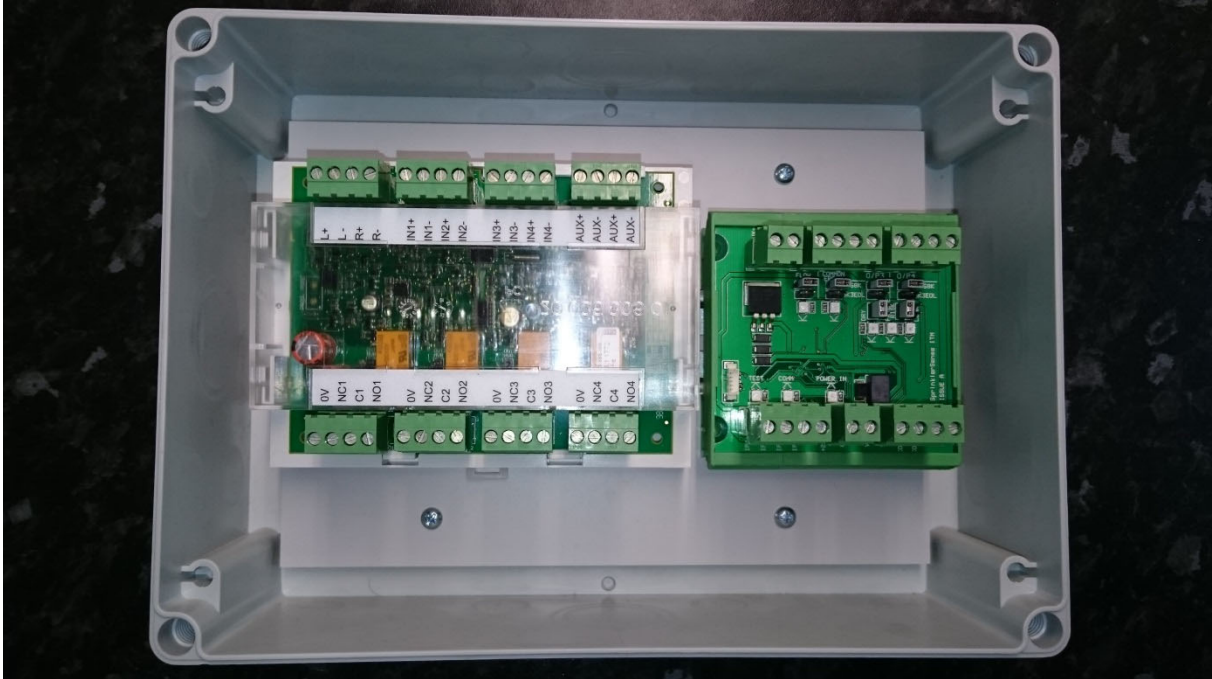
Jumper positions for DRY PIPE (Output 3) and SUB-ALARM FLOW EVENT(Output 4)



Jumper positions for FREEZE RISK (Output 3) and SUB-ALARM FLOW EVENT(Output 4)

3 Inputs

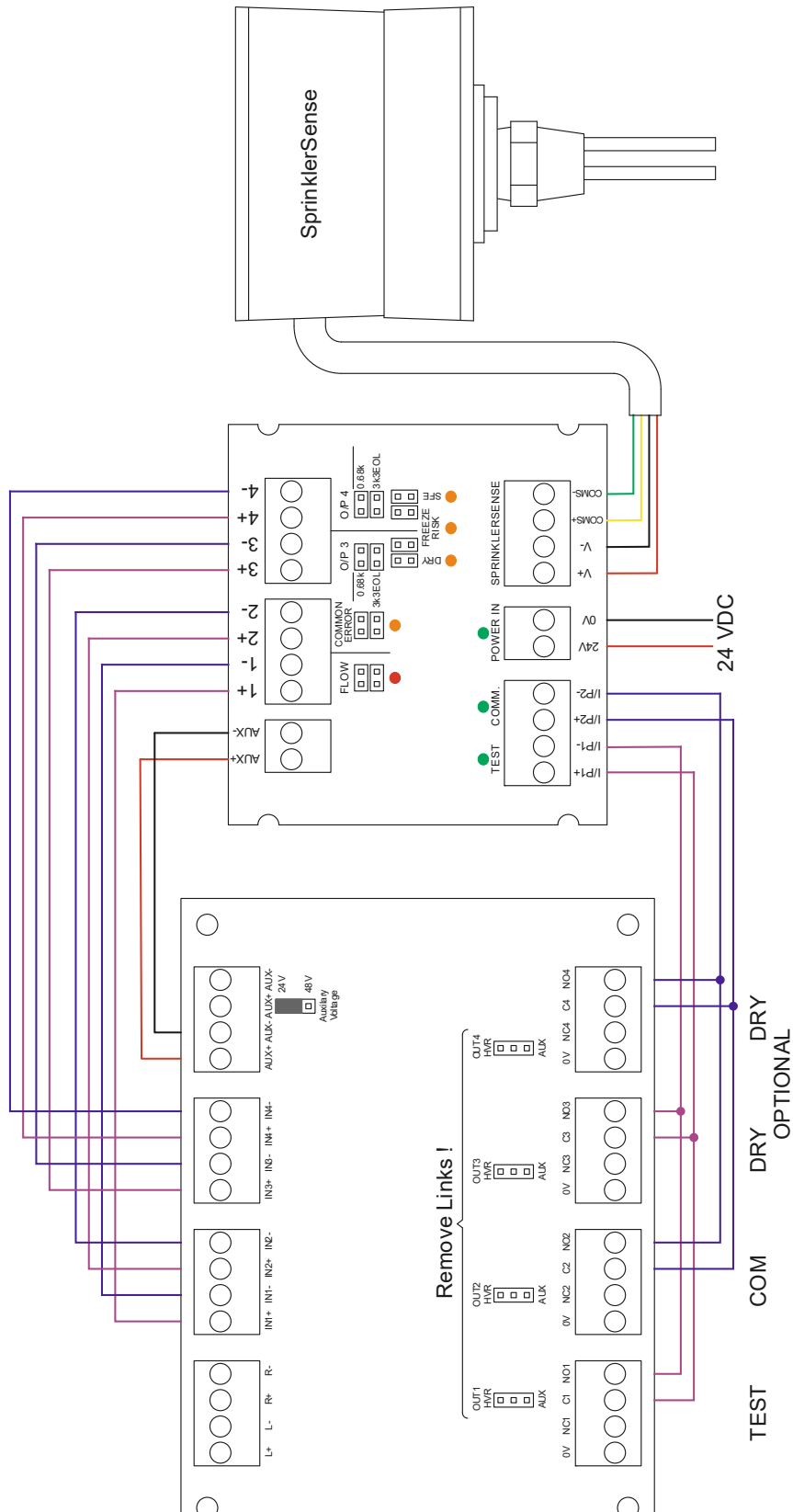
The two inputs accept connection to volt free contacts only, such as relay contacts with NO auxiliary power. **When connecting to the QIO850, the Quad Module jumpers OUT1 to OUT4 must be removed.** Failure to do so will apply auxiliary power to the ITM inputs and may cause failure of the ITM and/or power supply.



Example layout of QIO850 and ITM in Quad Module Housing, note that the top left mounting screw has been removed from the back panel to allow this positioning.

4 Power and Wiring

The unit requires a 24VDC power supply. AUX+ and AUX-Terminals are also provided to connect the 24V supply to the QIO850 to enable power supply monitoring.



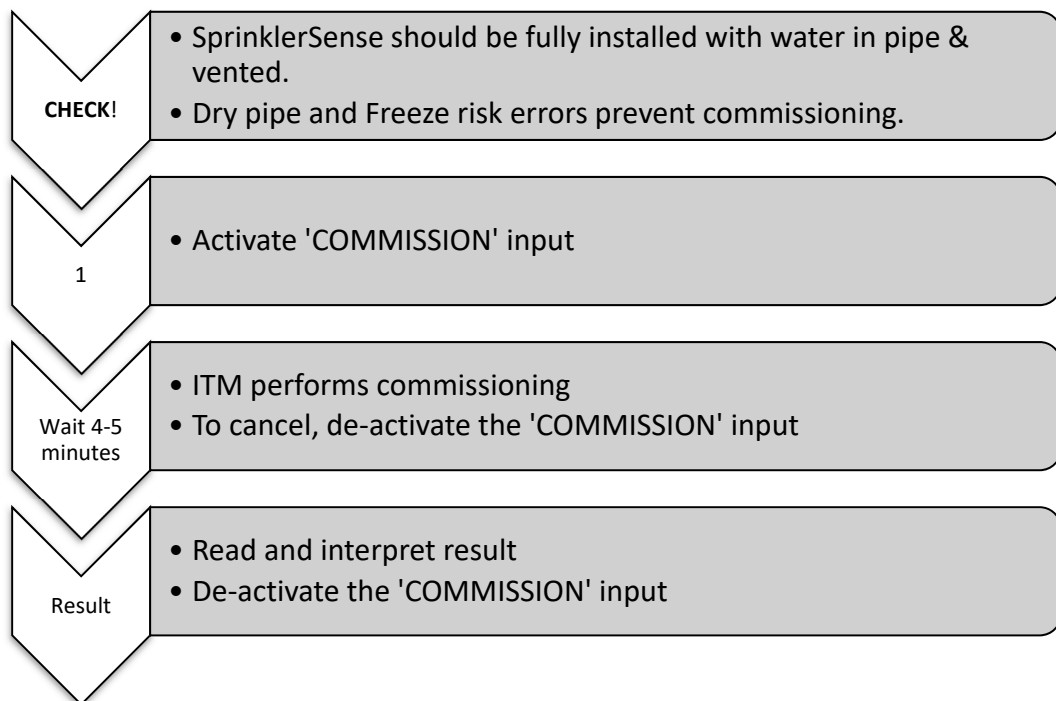
5 Commissioning Mode

This procedure should only be carried out by or with the permission of Fire Safety personnel.

- 1) Check the LED status on the ITM, if a red and/or yellow LED are ON then the Commissioning procedure may not be available. In this case refer to the diagnostic section of this document.
- 2) Apply a closed contact to Input 2.
- 3) Commissioning will now be in progress for 4 to 5 minutes.

Note: We advise that during initial installation or following significant maintenance, that the function of the flow switch and system is confirmed by means of an actual water flow test.

Summary of Procedure:



To interpret the result:

(FLOW) Output 1 active = Commissioning passed OK

(COMMON ERROR) Output 2 active = Commissioning failed

Outputs 3 & 4 active = Commissioning passed but the sensor sensitivity is below 25% of normal.

If commissioning has failed see Diagnostic section 9.3.

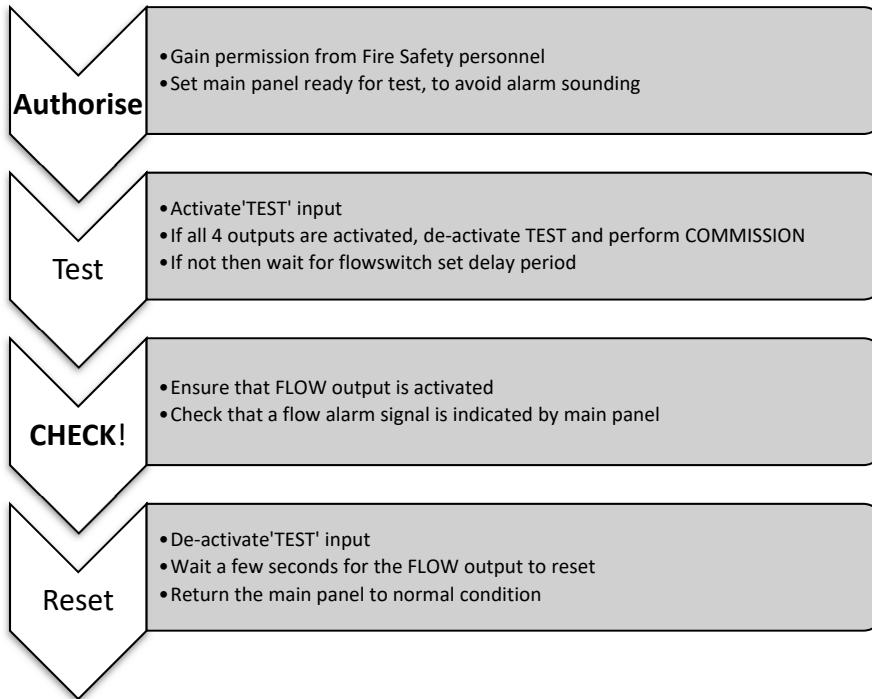
If sensitivity is below 25%, immediate action is not essential but it is advisable to plan a sensor check as in section 9.3 as soon as possible.

6 Test Mode

If the unit detects a closed contact on Input 1, it will attempt to enter TEST mode to perform a flow switch check. This should only be carried out by or with the permission of Fire Safety personnel, after the main panel has been set ready for the test. Failure to carry out this procedure in the correct order could result in a false alarm condition.

If the Sprinklersense SPDB30/90 has not commissioned as in section 5 above, TEST mode will not commence and all four outputs will activate together to indicate that the unit should first be COMMISSIONED.

Flow Switch Test Procedure:



7 WET and DRY modes

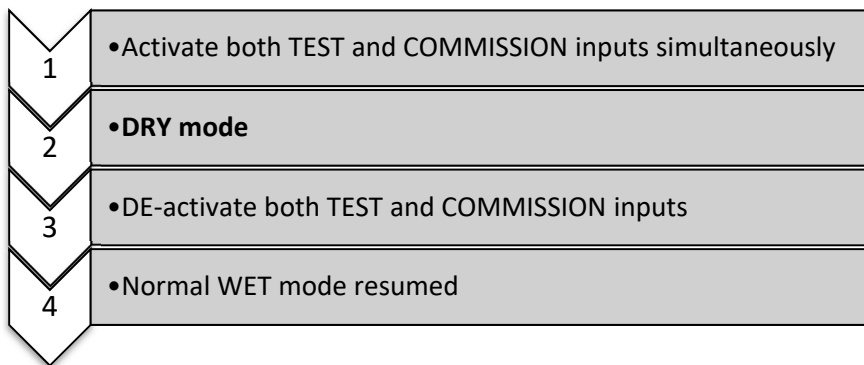
The Sprinkler Sense system is primarily designed for use on sprinkler systems which are permanently filled with water (WET mode). The default mode is factory set to WET.

For systems which are drained for a long period, i.e. prior to commissioning, Sprinkler Sense can be set to DRY mode. This mode disables the Dry pipe supervisory and some of the self-diagnostics which require water to be present. An extra supervisory is added which warns if the pipe is filled with water at the flow switch position. This extra supervisory replaces the Dry pipe error output on the ITM.

If a sprinkler is activated during DRY mode, the flow switch output will be set as normal once water flow is detected. Note that multiple zones may detect flow as the system fills with water and air pockets are compressed.

- 1) Activate both the TEST and COMMISSION inputs simultaneously.
- 2) Unit is now in DRY mode, most self-testing is disabled and DRY pipe output error will only activate if water is present. The Sprinkler Sense unit will remain in this mode until the inputs are de-activated.
- 3) To return to normal WET mode, de-activate both the TEST and COMMISSION inputs
- 4) Normal WET mode is resumed.

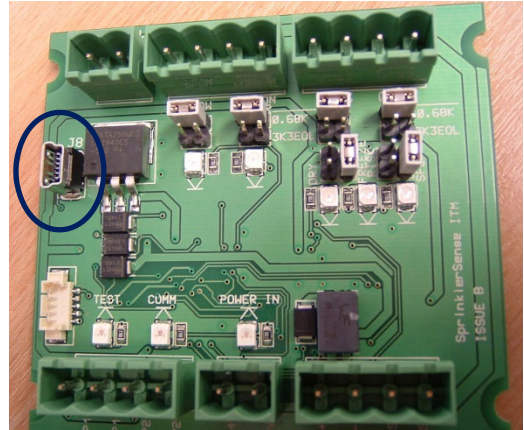
Summary of Procedure:



8 PC Connection via USB

To access the Sprinklersense unit via the ITM USB connector (J8), the Sprinklersense PTE application must be installed on a suitable PC.

For Sprinklersense PTE installation, refer to the software installation guide. If the software is installed but does not connect when expected, it is likely that the PC has not yet recognised that the device is connected. This can be checked using the Device Manager which can be found via Control Panel and then System on the PC. The device should appear as a COM port in the list. The list can be refreshed by right clicking on the list and selecting 'Scan for hardware changes'.



9 Diagnostic Information

The errors that can be detected are listed in this section in the order of which they are most likely to be seen. If multiple errors are displayed it is possible that one error type has caused the other/s. When more than one error is noted, address them in the order listed here. If these measures are unsuccessful consult service and/or replace unit.

9.1 No LEDs or Apparent Power

The ITM unit should normally indicate power on and good function with the flashing green LED "POWER IN".

- 9.1.1 If there is no indication of power, check that the power supply is connected correctly: at the power supply source; the ITM; and also at the SPDB30/90, and switched on.
- 9.1.2 Measure the voltage between the "POWER IN" terminals of the ITM using a multi-meter. The power supply must be between 18VDC and 30VDC. Nominally the voltage should be 24VDC. The power supply must provide a DC voltage, NOT AC.
- 9.1.3 When using a battery backup system to power the Sprinklersense, ensure that the battery system's installation manual has been followed correctly and that batteries have been installed.
- 9.1.4 If using a **Quad Module QIO850**, ensure that the **jumpers OUT1 to OUT4 are removed**.

9.2 Dry Pipe

The Dry Pipe error indicates that the sensors are not submerged in water. This could be indicative of an empty or a partially filled pipe.

- 9.2.1 Ensure that the pipe section with the sensor installed is supplied with water.
- 9.2.2 Check that the water is within the designed system pressure range.
- 9.2.3 Vent air from the system using any vent/bleed valve fitted and/or by running flow through the system via the inspectors test valve until no more pulses of air are noticed.
- 9.2.4 If the problem persists, a vent/bleed valve may need to be fitted close to the sensor.
- 9.2.5 The design of the pipework should be such that the sensor is not fitted in a high section of pipe which could trap air. Ideally the pipework downstream of the SPDB30/90 sensor should allow air to exit towards the inspectors test valve or a vent/bleed valve.

Once the sensors are submerged the indicated error will automatically reset.

9.3 Commissioning Failed or Sensitivity below 25%

This error can be a result of scale build up or debris around the sensors which could prevent the detection of a sprinkler being activated. The symptoms looked for by the test can however also be caused by an empty or partially filled pipe and by low system pressure.

- 9.3.1 Check as for Dry Pipe error above and re-commission.
- 9.3.2 If this does not remedy the problem, remove the sensor from the pipework and check for signs of debris or scale build up on the sensor legs. Clean if necessary. Refit the sensor and re-commission.

Once the cause is removed it is recommended to carry out the Commissioning Routine in Section 5, otherwise the error will reset only after several days.

9.4 Freeze Risk

This error indicates that the water temperature in the pipe near the sensor has been below 2°C (36°F) and has not yet risen back above 3°C (37.4°F), giving a warning of potential freezing within the pipework.

9.4.1 Carry out appropriate steps to ensure operation above 3°C, e.g. trace heating.

This error will automatically clear when the water temperature rises above 3°C.

9.5 Flow Event (Sub-alarm Flow Event, SFE)

A flow event is identified when a flow of more than 66% of the sprinkler flow switch point is present for more than 66% of the set retard time without the Flow output activating. This may indicate large air pockets trapped within the sprinkler system.

9.5.1 Vent air from the system using any vent/bleed valve fitted and/or by running flow through the system via the inspector's test valve until no more pulses of air are noticed.

9.5.2 If the problem persists, a vent/bleed valve may need to be fitted at high points in the piping, where air may be trapped.

9.5.3 If venting cannot be carried out immediately the retard time should be increased to minimise the possibility of false triggering of the flow output.

This error will automatically clear after 14 to 28 hours or can be cleared immediately by activating the commissioning routine.

9.6 Auxilliary Voltage Low

9.6.1 Investigate as in Section 8.1 above.

9.6.2 If the buildings mains power has failed, take reasonable precautions until power is restored.

9.7 Common Error

This output will activate if any ERROR is detected. If the problem is not highlighted by any of the outputs above, the following checks can be made:

9.7.1 Check the power supply at the SPDB30/90 unit terminals 1 (+ve) and 2(-ve).

9.7.2 With the power off, check the wiring continuity and polarity to terminals 3 (+ve) and 4 (-ve) of the SPDB30/90 (COM+ and COM-).

9.7.3 Check as for Dry Pipe error above and re-commission.

9.7.4 Ensure that the ambient and water temperatures are within the flow switches operating range of 3 to 68°C.

9.7.5 Check the sensor legs for signs of damage.

9.7.6 Carefully remove the SPDB30/90 lower sensor lid (not the top terminal lid) by unscrewing the four corner screws. The sensor should be connected to the electronics via six short leads. Check for damage to these leads and that they are all soldered to the PCB connector. Note that this should be carried out with care as the leads are short. Do not pull on the sensor wires or use them to suspend the electronics.

9.7.7 It is possible that a sprinkler flow will still be detected. To test this carry out a flow test by opening the inspectors test valve. Even if this test is passed the unit should only be left as a temporary solution until a new SPDB30/90 unit is installed.

9.7.8 Remove power from the Spinklersense system, leave for around 2 minutes and re-apply power.

9.7.9 Re-Commission the unit as in section 5 above.

9.7.10 Fit a replacement SPDB30/90 unit.

9.7.11 If these steps have not solved the problem then replace the ITM unit.