

EuroLight

Troubleshooting Guide



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1 | Introduction

Introduction to Troubleshooting and Fault-Finding

The important tools for troubleshooting are your senses, in particular your sense of Sight and Touch.

If the fault isn't interference or battery failure, then you will see or feel equipment failure if you know where to look and know how to test.

Due to the nature of the use of our equipment, the following are most likely to cause failure –

- Loose terminations for wires and plugs
- Water ingress
- Physically broken points on equipment

If equipment has generally failed and our Eyes or Touch won't assist, we can use a multi-meter to help us find the issue.

A multi-meter can also finalise your decision on deciding if a piece of equipment has failed or not.

2 | Multi-meter Basic use

The most common multi-meter used in SRL is the SEALEY MM20, all multi-meters have the same basic settings. Most importantly all multi-meters come with a manual or a manual can be found easily online.

- A. DC voltage** allows a reading of voltage on any DC supply. Batteries are a DC supply so when testing any of our equipment for voltage the DC setting is to be used.

Examples of use –

- Battery Voltage level
- Testing various points for power.

- B. Audible continuity test** allows to check if there is continuity. This is a quick audible alarm test using a digital multi-meter to determine whether an electrical circuit or wire is complete or broken.

Examples of use –

- Fuse testing.
- Wires are terminated in correct location.

- C.** Ensure your Black lead is secured into the COM and the Red lead into the VΩmA. This is for most common uses.



3 | Communication and Interference Issues

Comms Faults are normally rectified by performing a channel change on all boxes, preferably a channel that is significantly further from the original channel.

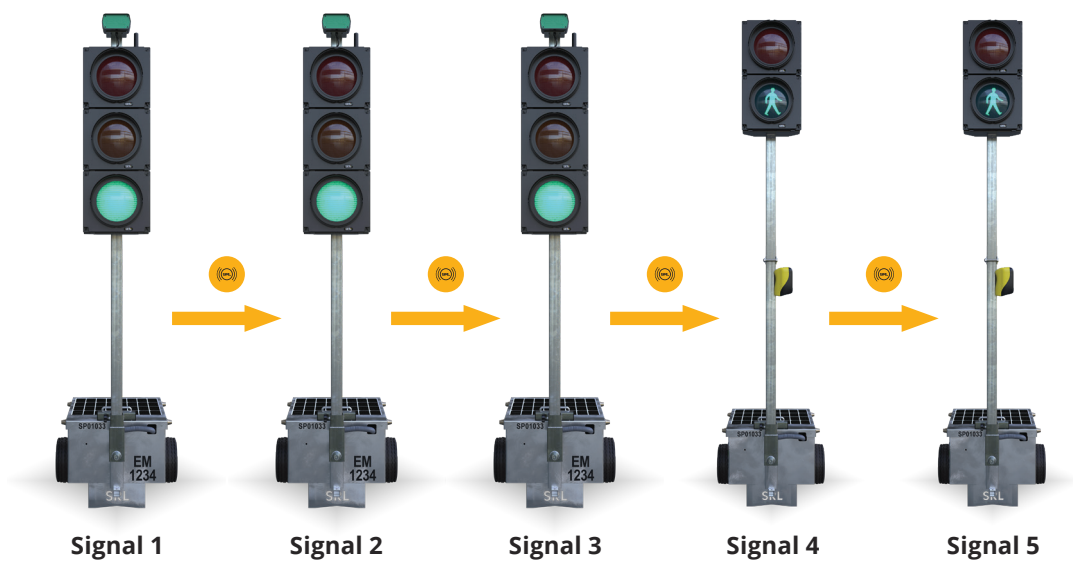
The lowering of radio frequencies on all boxes can tame Comms Faults by forcing the radio to listen much softer, preventing interference. However, if lowered too much, this can prevent listening to other EM boxes or traffic signals that are far apart.

Note: Channel change to be tried first followed by radio frequency lowering.

Radio Frequency Lowering explained on page 8.

3.1 | Understanding how EM connects

The radio signal originates from the Master Box (Signal 1). This radio signal is then bounced to all traffic light EM in ascending numerical order.



The radio comms is then bounced back through the signals to Signal 1 in descending numerical order.

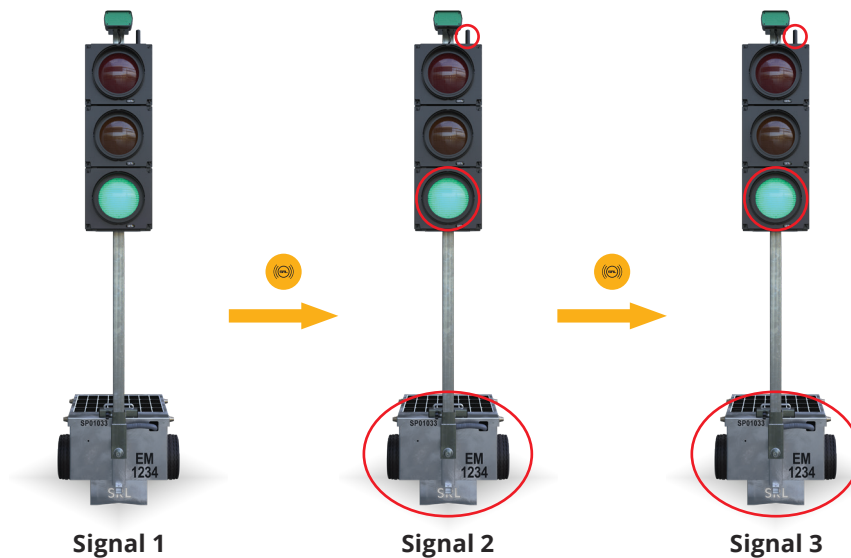
In the next example we are going to look at a comms issue with Signal 3.

So, if there is a comms issue with Signal 3, the problem could be with Signal 3 and you will start there. However, the problem could be at Signal 2 due to 3 relying on good comms from 2 to work correctly.

3 | Communication and Interference Issues

3.2 | Visual and Integrity checks

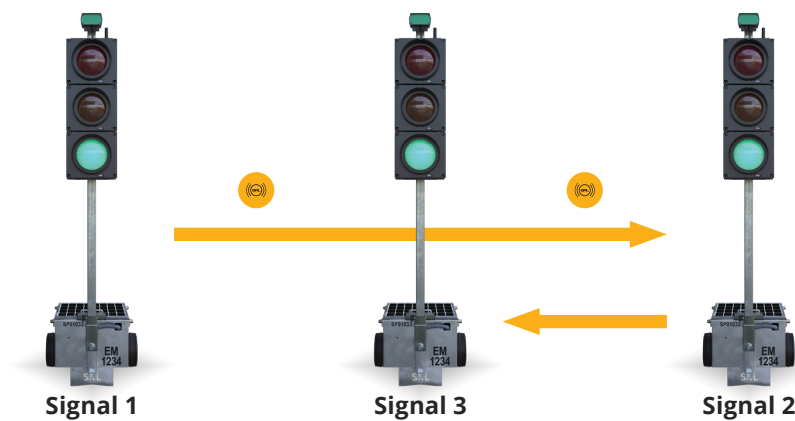
Check all connections for the Antenna, make sure they are all secure and there are no signs of water ingress, this is to be done firstly at Signal 3 followed by Signal 2.



Starting at the top checking the antenna itself.

- Behind the Green aspect is a connection.
- The HARTING Lead has an Antenna connection.
- Finally, the connection for the Radio itself.

If the Visual and Integrity check is all ok next is to identify and change possible faulty parts. Keeping the signals in the same location Signal 2 will be setup as 3 and Signal 3 will be setup as 2, this will help locate the signal with the issue. Reactivate the site.



3 | Communication and Interference Issues

If the fault now comes up as Signal 2 (which is the same physical head and box) then this would point to faulty equipment on that Signal.

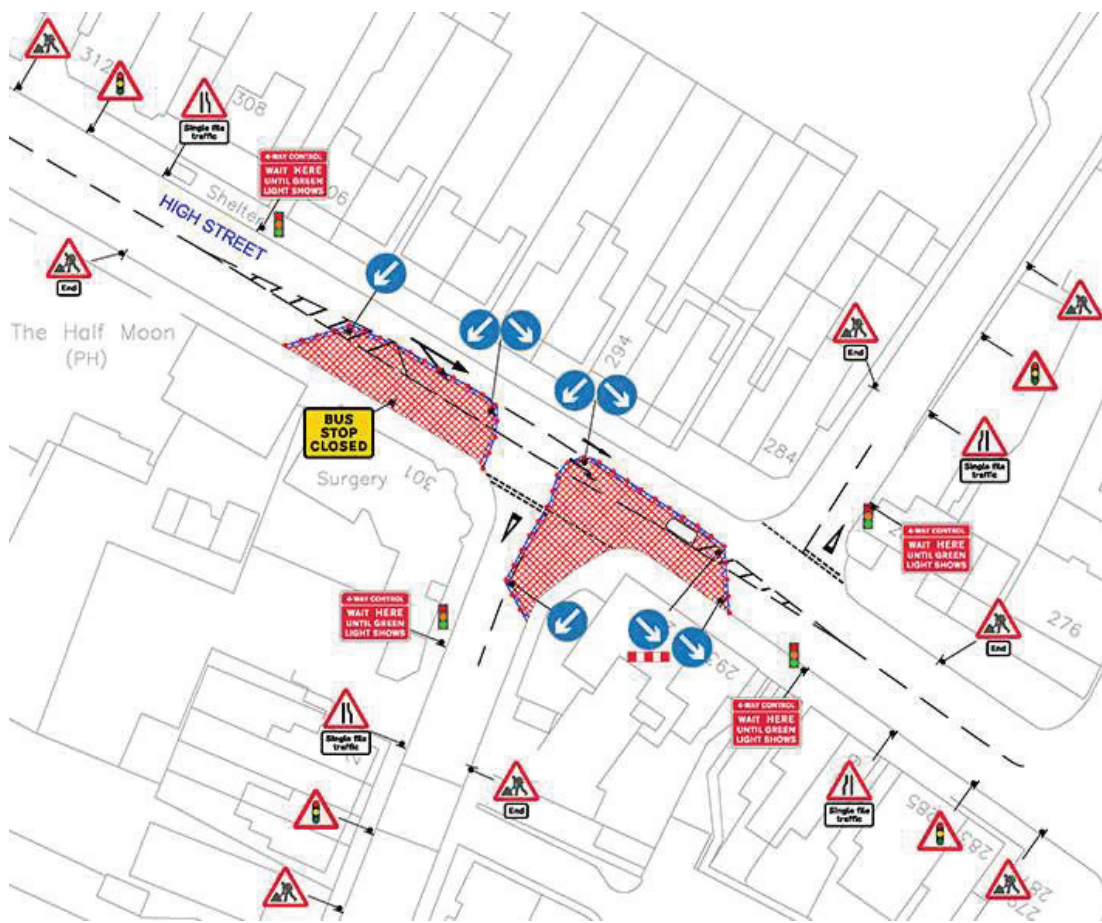
Replace Box and / or Head

If the fault stays as Signal 3 (the original Signal 2) then this would suggest that it is in fact this Signal that has faulty equipment.

Replace Box and / or Head

3.3 | Site Layout Best Practices

As EM bounces the radio signal in numerical order it is best practice to give each "bounce" the shortest route possible. See below the best signal setup for this site –



3 | Communication and Interference Issues

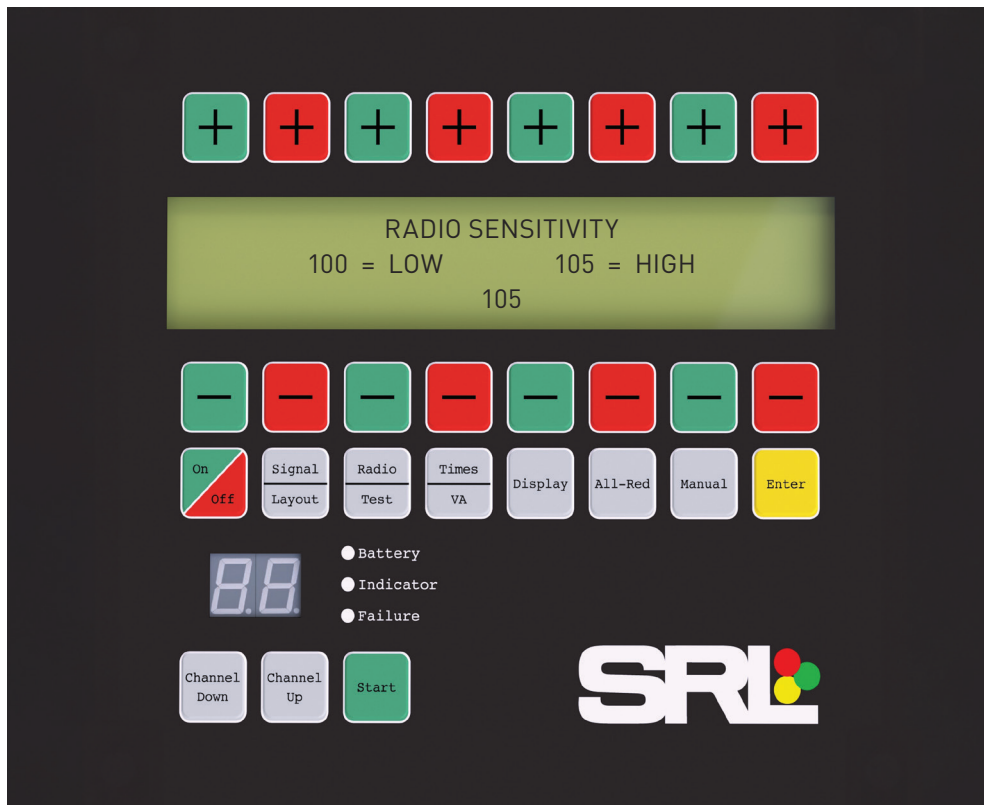
3.5 | Radio Frequency

The radio frequency setting on the EM is essentially how hard the Radio is listening for communications from other EM boxes.

The harder it listens the more likely it will pick up boxes further away, but it will also pick up more interference. The softer it listens the less interference it will pick up but will struggle with boxes further away.

To access this option, the box must be failed, this can be achieved by simply changing the radio channel.

Once failed, press the Radio / Test button until you see the following screen -



Depending on the reason for the sensitivity change do not go below 100 or over 105 – remember to press Enter.

Once happy with the setting, change your radio channel back.

This is to be altered on the problem signal box first and system tested, if no positive effect, then complete on all boxes.

4 | Sequence Fault

A sequence fault is basically a signal (Red, Amber, or Green) coming on when it shouldn't be on. Initially the setup is to be checked –

Ped head set as Traffic or Traffic head set as Ped.

Once checking the setup is complete, a full visual and integrity check needs to be completed.

4.1 | Water Ingress and Loose Wiring

If water gets into the various parts of the signal, it can short and cause a sequence fault. If water is causing the issue, then it needs to be identified, dried out or replaced.

Starting at the top of the signal and working down –

1. The Squid (Secondary head connection)

Remove the cap (if it has one, which it should) and check for signs of water. If water is found, try to dry it out and finish with a good spray of contact cleaner.

2. Signal Head

Open each aspect and check all wiring terminations are tight using a terminal screwdriver. If water is found, try to dry it out and finish with a good spray of contact cleaner.

3. Harting Lead

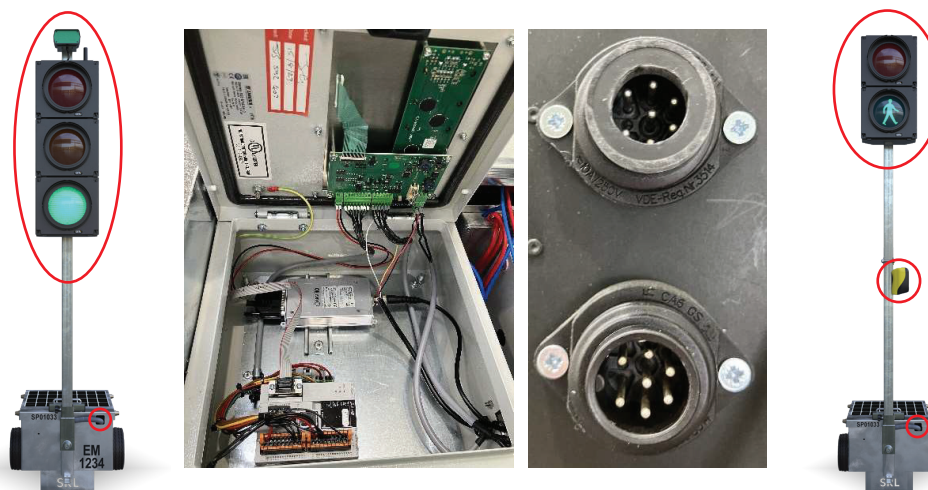
Disconnect and check all pins are in good condition and connecting as designed. If water is found, try to dry it out and finish with a good spray of contact cleaner.

4. Signal Box

It is very rare that water will be found in this box, but it can happen. The main check here is for loose connections and loose wire terminations.

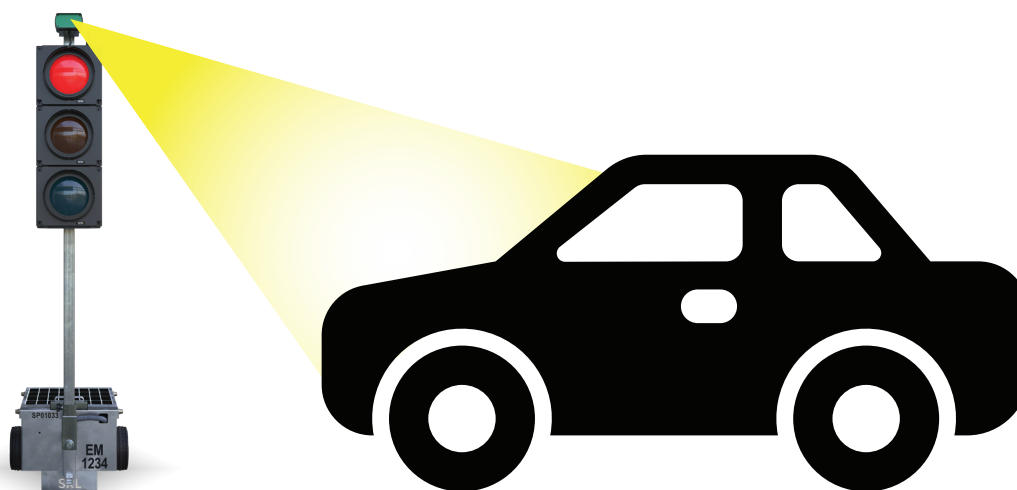
5. Push Button

Lastly, if it's a Ped then the pushbutton needs to be opened for inspection - wiring / water.



5 | Detection / VA / Demand issues

The detector used on temporary traffic signals are predominantly Microwave Vehicle Detectors which work by seeing a moving mass. Depending on the type of MVD depends how big and / or fast the mass must move before being detected.



The MVD used on SRL traffic signals are very sensitive hence why they can be activated with a wave of a hand in front of the detector. This sensitivity is useful for ensuring all vehicles and cyclists are detected with minimal alignment.

The downside to this sensitivity is that it can detect unwanted traffic, causing demands and a change to the traffic signals when not required. This can be overcome by aligning the MVD and checking the * on the signal box.

Remember: The first * indicates there is a demand for that phase, the second ** indicates a live detection.

No Demand (no * appearing)

1. Check the VA settings are correct.
2. Wiring Check for correct / loose wiring in green aspect and in the control box.
3. If 1. and 2. are fine, then suspect faulty detector.

Permanent Demand (constant * appearing) Traffic Phase

1. Check the VA settings are correct.
2. Disconnect power to VA detector in the traffic head and check if this stops the permanent demand.
3. If 2 is True, then a new VA is required (onsite for ease – change the traffic head).
4. If 2 is False, then check for water ingress on the whole signal and box, if none found, then change the EM box.

Note: You can follow this same VA troubleshooting for the ADS detector.

5 | Detection / VA / Demand issues

5.1 | Detection / VA / Demand issues - Peds

The Ped unit doesn't have a VA / detector, the Ped phase is demanded by having the push button activated. So, if there is no demand or a constant demand then the controller thinks the button is either being constantly pressed or not pressed at all.

Ped demand
(Similar to traffic VA)



Wait Lamp will illuminate if demand is active. Use this or the * on the controller Ped phase for reference.



Determining which Ped – Constant Demand / No demand

Cableless

1. Put all Ped signals into TEST on the master. Ensure there is no wait light on any of the pushbutton units.
2. Add one Ped signal back to RADIO at a time letting the signals cycle (servicing the Peds) waiting to see if once put back into the system it brings in a demand.
3. Once the demand is back in, the fault will be on the last Ped box that was put back to RADIO.

Cabled

1. Disconnect cables from the live box one at a time letting the signals cycle (servicing the Peds), if this stops the constant demand then it could be the cable or Ped box you have just disconnected.
2. Replace with new (known working) cable, if no changes then the faulty Ped unit has been identified.

If the faulty ped still hasn't been identified, then check all live Peds -

3. Put all live Ped signals into TEST on the master. Ensure there is no wait light on any of the pushbutton units.
4. Add one Ped signal back to RADIO at a time letting the signals cycle (servicing the Peds) waiting to see if once put back into the system it brings in a demand.
5. Once the demand is back in, the fault will be on the last Ped box that was put back to RADIO.

The faulty Ped unit is now found, the Ped post can be changed and if this doesn't fix the issue then follow with the EM control box.

5 | Detection / VA / Demand issues

Issues causing a Ped to have no demand or permanent demand –

Visual and Integrity checks

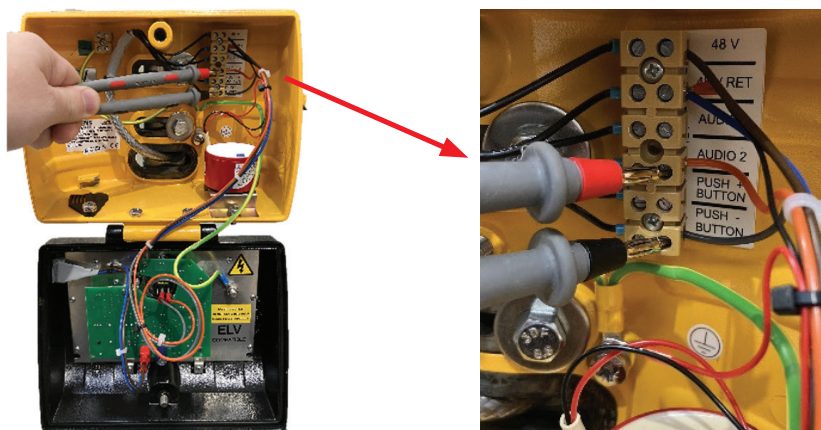
In descending order starting with the most common –

1. The Squid

Remove the cap (if it has one, which it should) and check for signs of water. If water is found, try to dry it out and finish with a good spray of contact cleaner.

2. Push Button

Open the pushbutton and check all terminations are tight with no loose wires. Using your multi-meter, set to continuity with sounder, test the button is functioning correctly.



Ignore the label and ensure you are testing the Orange and Grey going to the push-button switch.

If the button doesn't test correctly then replace.

3. Folding Mast

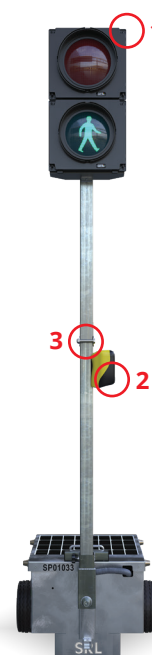
There is a weak point on the Ped mast where it folds in half for transportation. The cable running up the mast to the Ped head experiences multiple folding at this point which can cause a break down in the cable. Fold and inspect the cable for any signs of damage, then replace accordingly.

4. Ped head

Check all terminations are tight and no loose wires.

5. Signal Box

Check all terminations are tight and no loose wires.



6 | Red Light Defect

A Red-Light Defect fault is caused by the traffic light controller not seeing a Red Light correctly. If the controller thinks it can't see a Red Light then by law the system must revert to a safe state – All Red.

The most common issue that causes this fault is simply the Harting Lead not being plugged in.

If the Harting Lead is ok, then check for Water Ingress and Loose Wiring.

Guidance for this can be found under Sequence Fault on page 9.

On Site, if a Red aspect is not available – change the Signal Head, the Red aspect will need to be changed in the depot.

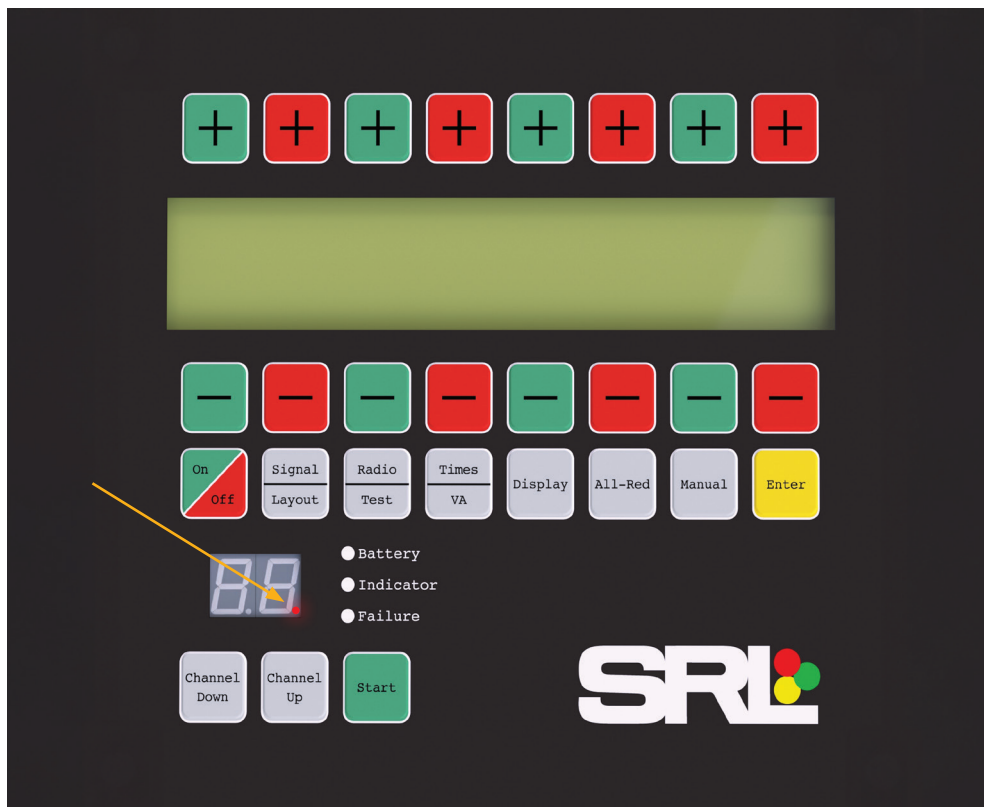
7 | No Power to control box

1. Battery levels can be checked using your multi-meter, ensure the battery is unplugged before testing.
2. Blade fuses in diode to be checked with multi-meter.
3. If both blade fuses test ok, then checking the power into and out of the diode will test if the diode itself is faulty. Power in but no power out = faulty diode.
4. Fuse to be checked on circuit board behind front panel with multi-meter.
5. Ensure flat band cable is securely connected.



8 | Controller Stuck with Red Dot

Sometimes when powering an EM controller, it will freeze simply showing a Red Dot by the channel number display.



If this isn't rectified by a full power cycle, then the firmware needs to be redownloaded into the EM via an upgrade box or someone with the ability to download via laptop.

If this isn't available, then the EM box will need to be replaced. Workshop job to have serial number and all information noted.

9 | Channel Number Reverting and Not Staying at Selected

This is normally because the board is not receiving a signal from the radio telling it to change the channel number, hence why it goes back to the last channel number it remembers.

Check all connections associated with the radio in the EM, ensure all terminations are secure.

After a power cycle, if the issue carries on then the radio will need to be replaced.

10 | Version Control

Document Details			
Version:	1.1	Date:	April 2026

For more information and help,
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