

FUEL LEVEL SENDER SET-UP INSTRUCTIONS

TECHNICAL SPECIFICATION

The ATL EL-AD-151 (Resistance Output) and EL-AD-152 (Voltage Output) Fuel Level Senders are highly advanced sensors for continuously measuring the contents of a fuel tank. These sensors are both adjustable and can be cut to length (min. 200mm, max. 540mm).

A low level alarm switches when the fuel drops below a predetermined level (default is 12.5% of the full level).

Fuel Types: Typically diesel, biodiesel, kerosene and petrol. Not suitable for fuels with a high dielectric constant.

Dimensions:

Probe length: Min. 200mm, max. 540mm.

Note: The probe length should leave min. 10mm from the end of the probe to the base of the tank. The probe shaft cannot be cut shorter than 200mm.

Mounting: SAE 5 Hole.

Electrical:

Supply voltage: 10-32 VDC.

Supply current: 28mA@12VDC + output load

Supply protection: Over-voltage 80VDC for 2 minutes. Reverse polarity.

Signal output: Resistive (EL-AD-151): 240 Ω (Empty) to 33 Ω (Full).
Voltage (EL-AD-152): Output 0.25V to 4.75V.

Alarm: Switch to ground. Max load 100mA.
Default setting 12.5% of full level.

Connections: 500mm long, 24 AWG flying leads.

Performance:

Accuracy: $\pm 3.0\%$ of depth @ 20°C (+68°F)

Materials:

Enclosure: 30% glass filled nylon.

Enclosure bush: Polypropylene.

Internal electrode: Aluminium.

Sensor tube: 316 stainless steel.

Internal spacers: Polypropylene.

End plug: PTFE.

Wetted seals: Viton (FKM) & Nitrile.

Gasket: Nitrile

Cable: Polyurethane.

Environmental Ratings:

Sealing: IP67 (Assuming suitably sealed cable breakout).

Operating temp: -20°C to +85°C.

Shock: 50g, 6.3ms.

Vibration: 9.7 Grms BS EN 60068-2-64:1993.

Wire Colours

Red: V+ (Supply)

Green: V- (Ground)

Yellow: Alarm

Blue: Signal out (V)

Black: Signal out (Ω)

White: Calibration

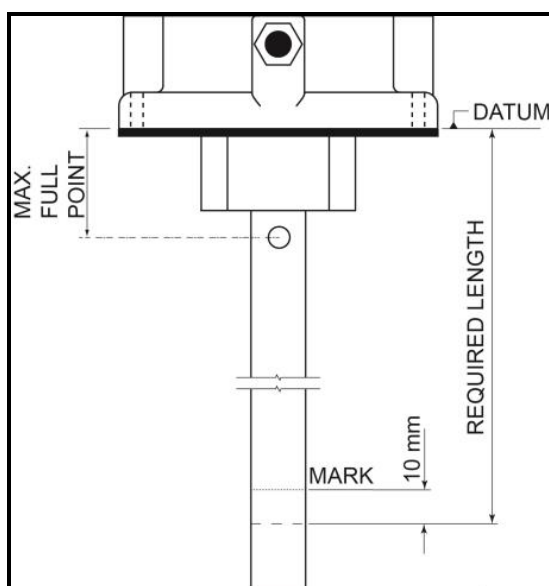
LEVEL PROBE CUTTING, WIRING & CALIBRATION INSTRUCTIONS

Before starting this procedure, please ensure that the correct ATL Fuel Level Probe is being used with the correct Dashboard Gauge/Data Logger. Note: ATL Dashboard Gauge EL-AD-068 **only** works with Fuel Level Probe EL-AD-151. For customers using the Fuel Level Probe EL-AD-152 (Voltage 0-5V Output), these will only work with a Data-Logger.

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|----------|-----------------------------------|
| Stage 1) | Cutting Instructions |
| Stage 2) | Checking the wiring configuration |
| Stage 3) | Calibration Instructions |

Stage 1: Cutting Instructions

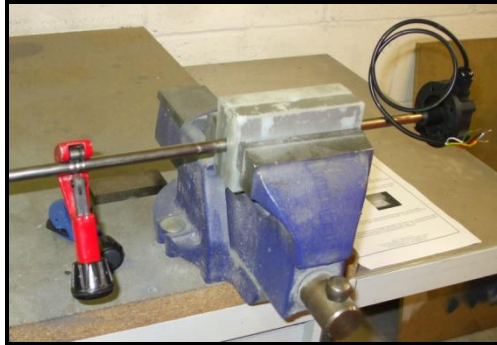
1. Measure the depth of your fuel cell from the inside bottom face to top of mounting plate, where the Header will be positioned.
2. Measure length of probe (from the DATUM POINT), mark this distance on the probe shaft and deduct 10mm. The 10mm reduction in length allows clearance between the probe shaft and the bottom of the tank. **Note: Please do not cut shaft to less than 200mm**



3. Using soft jaws, place probe in vice and gently grip the sensor shaft. **Note: Do not crush the sensor shaft in vice as this is just to support the shaft from turning when trimming to length.**



4. Using a tube cutter, cut the steel tube at the point marked at point (2). **Note: When using the cutting tool, adjust cutting blade slowly to prevent the outer tube being crushed.**



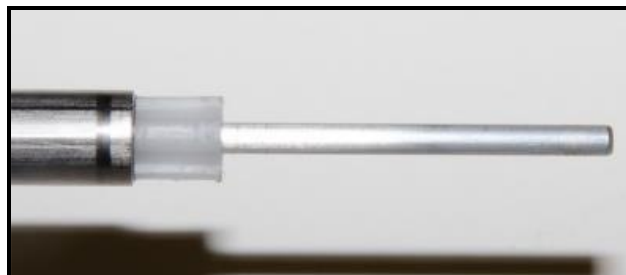
5. Once cut, use a twisting action, to free the centre rod from its end plug, carefully remove and discard the excess tube length.



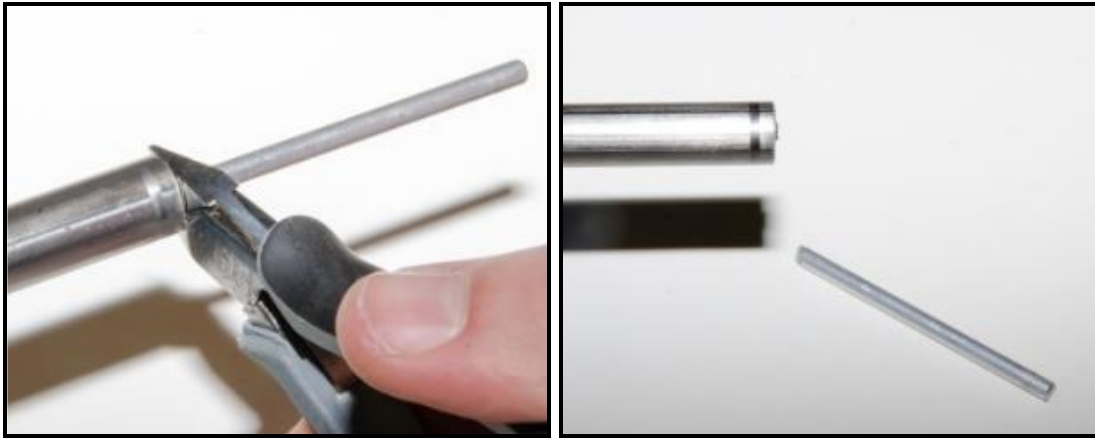
6. Once outer tube is cut, you should be left with an exposed aluminium inner rod.



7. To ensure that the inner rod is located centrally in the outer tube; slide the white spacer over the exposed aluminium rod and insert it fully into the sensor tube.



8. Using a pair of cutters or a fine toothed hacksaw carefully cut the centre aluminium rod. Ensure that this inner rod does not rotate as this could damage the Sensor unit beyond repair. (Discard the excess aluminium rod).



9. Once cut, de-burr the cut edge of outer tube and centre rod.
10. Fit the special black end plug to the end of the outer tube. This end plug is designed to be an interference fit and no mechanical fixing is required.

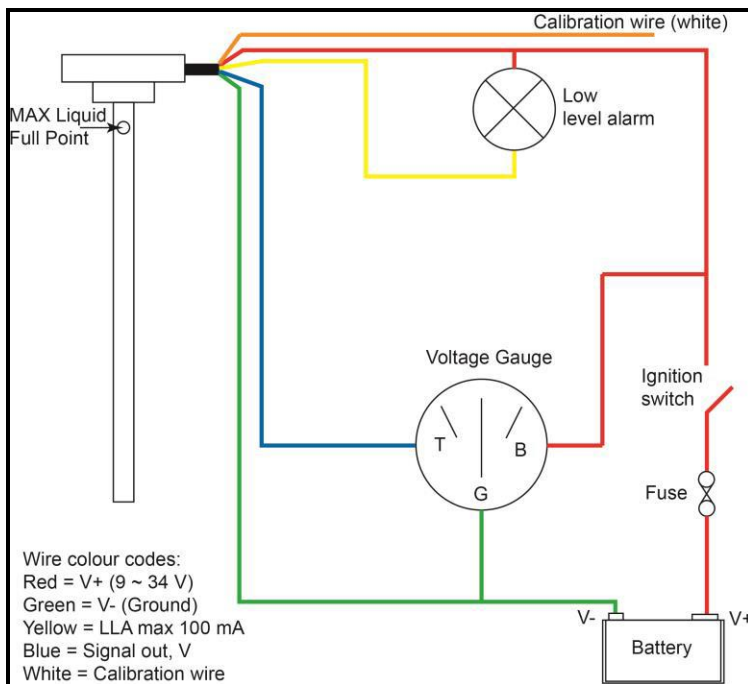


Stage 2: Checking the wiring configuration

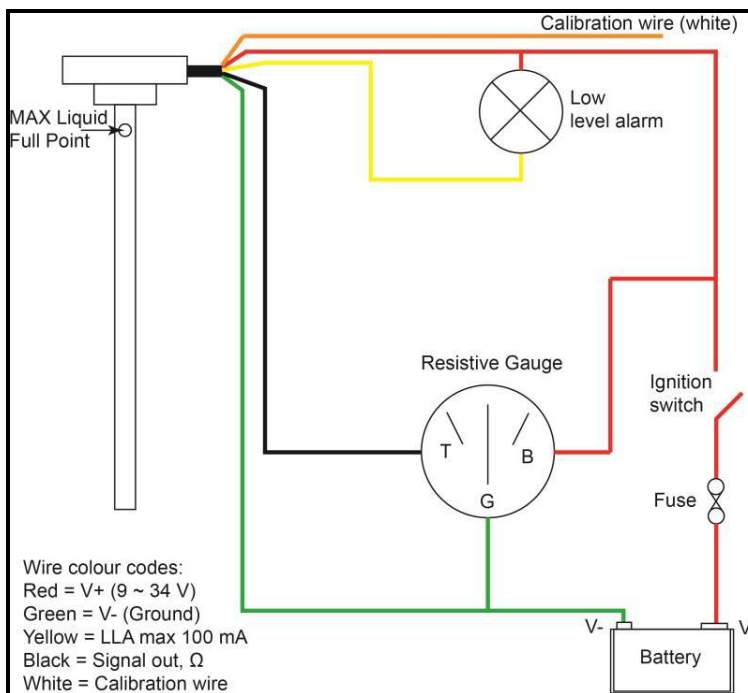
IMPORTANT: PLEASE ENSURE THAT VEHICLE HAS A NEGATIVE EARTH SYSTEM.

Ideally, the sensor output wire (blue or black) should be connected to a gauge or voltmeter while the calibration procedure is performed. You'll then be able to see the sensor output change as the calibration procedure is followed. After calibration, the sensor can be drawn in and out of the fuel and the sweep of the output observed on the gauge or meter.

Voltage output variant (EL-AD-152)



Resistance output variant (EL-AD-151)



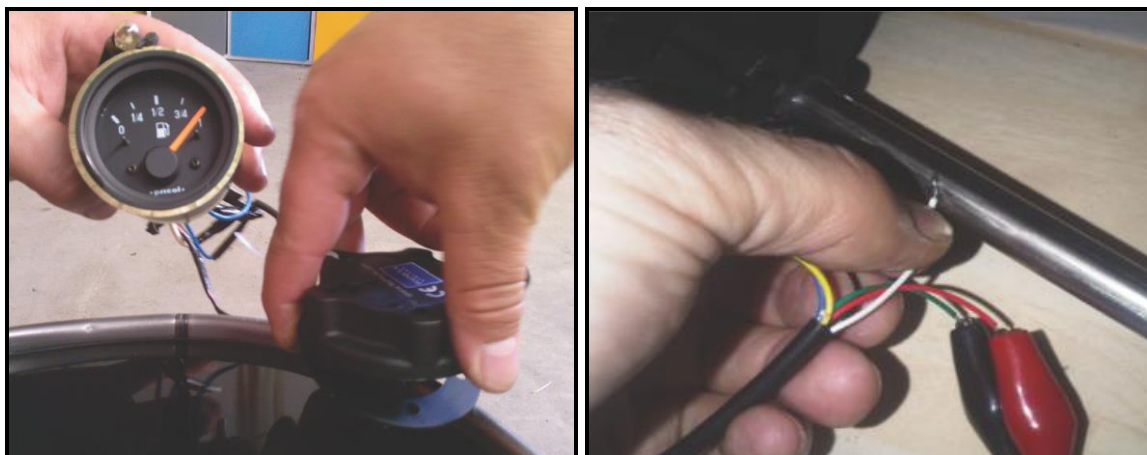
Issue No.	00	Document ID	SA-WI-19-0002	Author	Stuart Wallis
Date Issued	13/04/2020	<u>Uncontrolled if Printed</u>		Approval	Giles Dawson
		Page 6 of 8			

Stage 3: Calibration Instructions

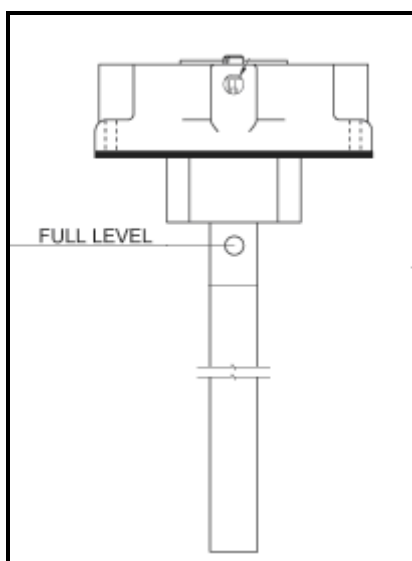
Note: Do not connect the calibration wire (white) to V+ wire (red) or the sensor will be permanently damaged.
Note: Please do not extend the calibration wire.

1. With the probe out of the Fuel Cell, wire up the Fuel Level Sender Probe to the ATL Dashboard, or Data Logger, as per the wiring diagram (Page 5). Connect the calibration wire (white) to ground, or onto the shaft of the Sensor Probe, and then power up the Sender with a 12V supply. Disconnect the calibration wire (white) after 10 seconds, but keep the Sender connected to the 12V supply. This has calibrated the **Zero** (Empty) point of the Sender output.

Note: If using a Dashboard Gauge, this will stay on 'Full'. Please ensure that a 12V supply is connected at all times during calibration.



2. Insert the Fuel Level Probe into the Fuel Cell and refuel the cell until the fuel level reaches up to the "Full Level" hole in shaft (see diagram).



3. Touch the calibration wire (white) to ground for 10 seconds and then remove it. This has calibrated the **'Full'** point of the Sender output.
4. On completion of the calibration process please cut back/tie the calibration wire (white) to ensure the unit doesn't enter calibration mode when not required.

Note: After calibration, the sender can be manually raised and lowered, in and out of the fuel cell so that the fuel level output can be observed on the Gauge or Data Logger.

Note: After calibration is complete, the gauge will default to full deflection on power up. The time delay between this full deflection and the correct output is application specific.

Note: After the calibration process is complete a constant live feed is not required to maintain calibration levels.

Customer Support

Please visit our website to view instructional support video - <https://www.atlld.com/news-media/video-archive>

Troubleshooting Guide

1. Is the correct sender being used for the application?
 - EL-AD-151 gives a resistance output
 - EL-AD-152 gives a voltage output
2. Is the correct probe being used with the gauge?
 - Gauge EL-AD-068 only works with Probe EL-AD-151
3. Are the vehicle electrics negative earth?
 - Sender probe only works with negative earth.
4. Is the power supply 12 volts, as per instructions?
5. Has the probe been cut to correct length? Sender probe must only be cut as per the instructions. Take care not to bend or damage the central element when cutting to length. Care must be taken when fitting the plastic centre into tube. The inner tube must NOT touch the outer tube.
6. Was the foot fitted leaving clearance to the base of the cell? If the sender foot is 'trapped' when it is bolted in (i.e. it is too long) then it is unlikely to read the fuel level unless full. It may also read full as the level drops (as fuel is trapped in the tube).
7. When fitting the plastic spacer (after cutting the tube to length), please ensure that it does not form a seal against the foot as the foot is fitted to the outer tube. Ensure it is a minimum of 10mm from the end of the tube.
8. Does the installer have the instruction sheets?
9. Is the probe being immersed in the fuel that will be used? Please note that due to differing dielectric constants, the Fuel Level Probe must be re-calibrated each time a different fuel is used (e.g. race or road).
10. Has the wiring diagram been followed as per instructions?
11. Is the number on the shaft of the probe correct?
12. When calculating low and high settings the time delay should be between 3 and 10 seconds.
13. Once the system has been correctly set up, the temperature of the fuel during use may affect the reading at the gauge.
14. If the sender has been cut to length, both low and full settings will have to be re-calibrated. This is because the default factory settings are for the manufactured length not the cut length.

