

# **INSTALLATION PROCEDURE**

## **FOR THE FG2**

### **LOOP POWERED FUEL GAUGE**

# **FG2 LOOP POWERED PROCESS INDICATOR CALIBRATION PROCEDURE**

## **Connection and Calibration Procedure**

### **Step 1: Signal connection.**

The FG2 is self powered from the 4-20mA input signal. Therefore no external power supply is required for operation of the instrument, only the input signal connection.

### **Connection of the Input signal**

- (a) The positive (+) of the loop to terminal 3**
- (b) The negative (-) of the loop to terminal 1**
- (c) Please note: terminal 2 is not used**

### **Step 3: Display Calibration**

The instrument is factory calibrated for 4-20mA equals 0 to 250 counts. **Calibration should not be necessary.**

If just a fine trim is required

- (a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.
- (b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value
- (c) Repeat steps (a) and (b) until the FG2 displays the required value.

### **If a full calibration is required**

From the component overlay drawing it can be seen that there are 2 banks of dual in line switches. There is a four way (SW1) and a 6 way (SW2).

Switch SW1-1 on selects decimal point 1 (DP1) **00.0**

Switch SW1-2 on selects decimal point 2 (DP2) **0.00**

Switch SW1-3 on selects decimal point 3 (DP3) **.000**

Switch SW1-4 selects the polarity of the minus sign. This function is used when connecting the display to a reversed 4-20mA signal (20-4mA) and it is required for example to display 0-100.0 from 20-4mA. SW1-4 in the off position selects positive slope and in the on position selects negative slope

### **Range Selection**

Switch bank 2 (SW2) is used to select the working range of digits on the display.

Switches 1, 4 **ON** and switches 2, 3, 5 and 6 **OFF** selects display range +1000 to 1999

Switches 2, 5 **ON** and switches 1, 3, 4 and 6 **OFF** selects display range -250 to +1000

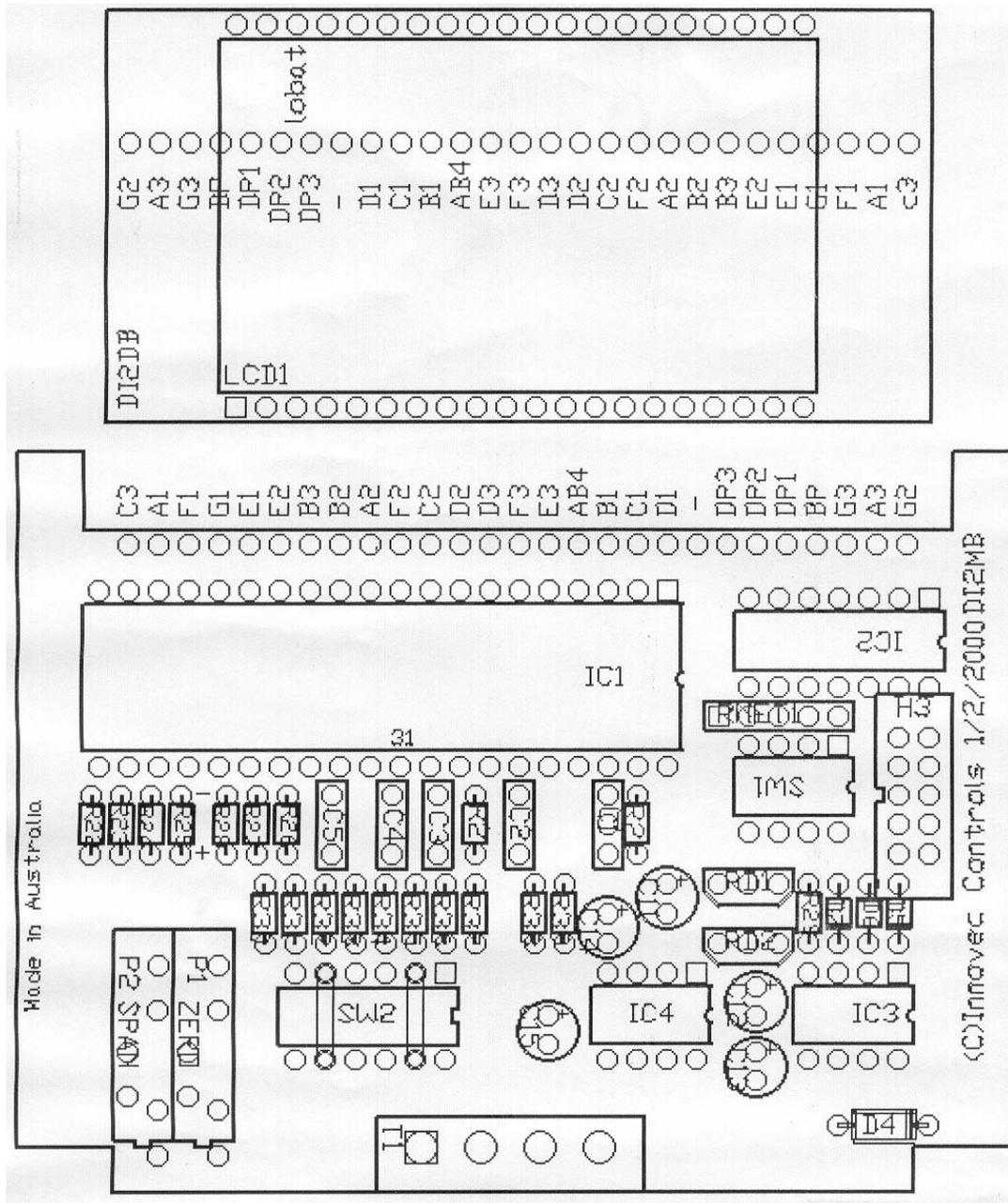
Switches 3, 6 **ON** and switches 1, 2, 4 and 5 **OFF** selects display range -1999 to -200

- (a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.
- (b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value
- (c) Repeat steps (a) and (b) until the FG2 displays the required value.

### **Step 4: Mounting of the instrument**

The instrument is housed in a panel mount enclosure measuring 48x96x80mm. The instrument should be mounted through a panel cut out of 45.6 x 92.8mm.

The instrument should be pushed through the cut out from the front and the two side clamps should be tightened from the rear.



CIRCUIT BOARD LAYOUT

# **INSTALLATION PROCEDURE**

## **FOR THE FG2**

### **LOOP POWERED FUEL GAUGE**

#### **With alarm**

# **FG2 LOOP POWERED PROCESS INDICATOR CALIBRATION PROCEDURE**

## **Connection and Calibration Procedure**

### **Step 1: Signal connection.**

The FG2 is self powered from the 4-20mA input signal. Therefore no external power supply is required for operation of the instrument, only the input signal connection.

### **Connect of the Input signal**

- (a) The positive (+) of the loop to terminal 3**
- (b) The negative (-) of the loop to terminal 1**
- (c) Please note: terminal 2 is not used**

### **Step 3: Display Calibration**

The instrument is factory calibrated for 4-20mA equals 0 to 300 counts. **Calibration should not be necessary.**

If just a fine trim is required

- (a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.
- (b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value
- (c) Repeat steps (a) and (b) until the FG2 displays the required value.

### **If a full calibration is required**

From the component overlay drawing it can be seen that there are 2 banks of dual in line switches. There is a four way (SW1) and a 6 way (SW2).

Switch SW1-1 on selects decimal point 1 (DP1) **00.0**

Switch SW1-2 on selects decimal point 2 (DP2) **0.00**

Switch SW1-3 on selects decimal point 3 (DP3) **.000**

Switch SW1-4 selects the polarity of the minus sign. This function is used when connecting the display to a reversed 4-20mA signal (20-4mA) and it is required for example to display 0-100.0 from 20-4mA. SW1-4 in the off position selects positive slope and in the on position selects negative slope

### **Range Selection**

Switch bank 2 (SW2) is used to select the working range of digits on the display.

Switches 1, 4 **ON** and switches 2, 3, 5 and 6 **OFF** selects display range +1000 to 1999

Switches 2, 5 **ON** and switches 1, 3, 4 and 6 **OFF** selects display range -250 to +1000

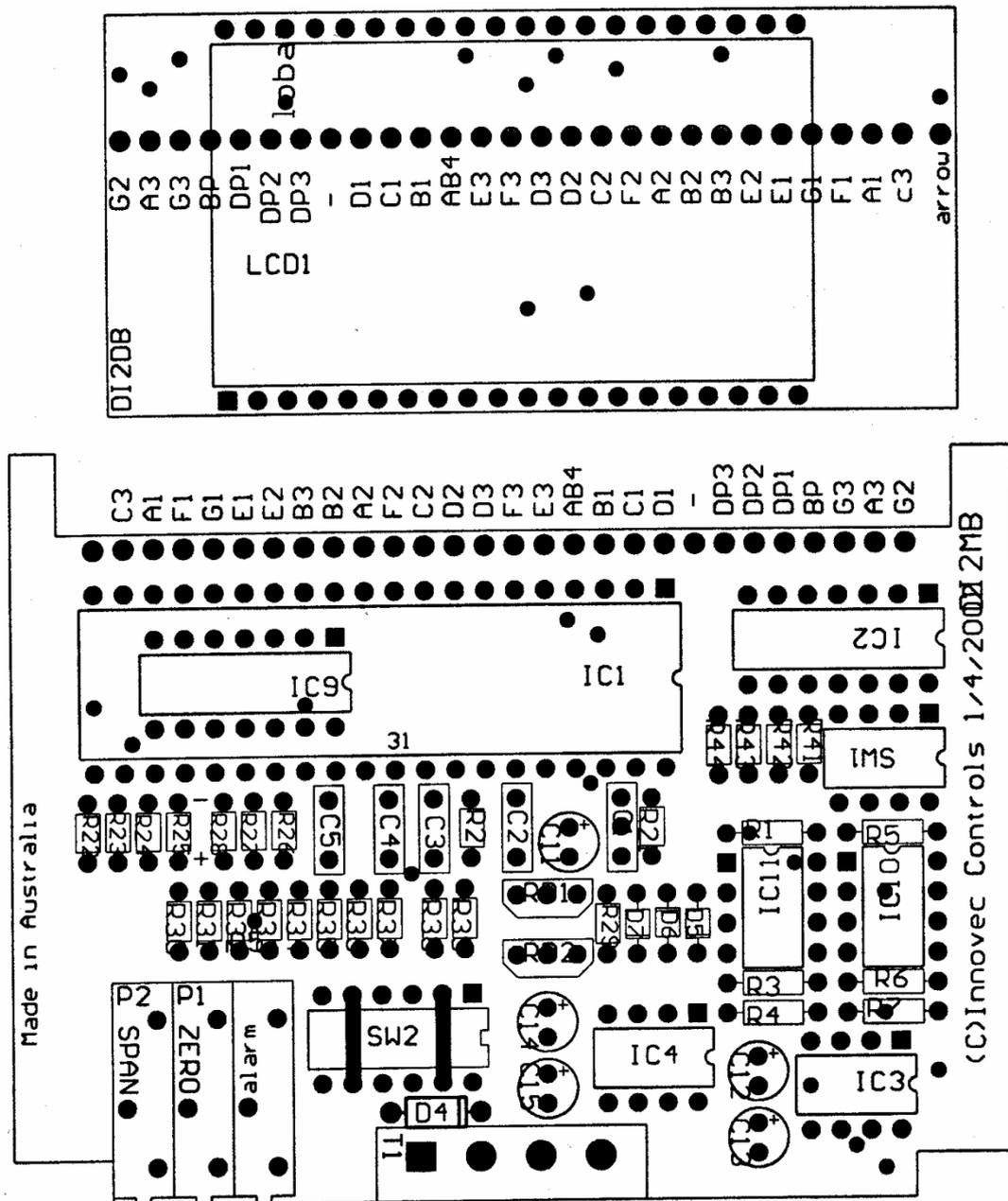
Switches 3, 6 **ON** and switches 1, 2, 4 and 5 **OFF** selects display range -1999 to -200

- (a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.
- (b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value
- (c) Repeat steps (a) and (b) until the FG2 displays the required value.

### **Step 4: Mounting of the instrument**

The instrument is housed in a panel mount enclosure measuring 48x96x80mm. The instrument should be mounted through a panel cut out of 45.6 x 92.8mm.

The instrument should be pushed through the cut out from the front and the two side clamps should be tightened from the rear.



CIRCUIT BOARD LAYOUT

### Rear view of fuel gauge terminal strip and potentiometers

The zero and span potentiometers will adjust the minimum and maximum value displayed on the digits. The alarm potentiometer will adjust the trip point for the alarm indication.

The alarm is a low alarm which means the symbol on the display will be active when the input signal is below the trip point value. It has been set for 30 Bar.

When looking at the instrument from the rear turning the alarm potentiometer anti-clockwise will reduce the value that the alarm will trip at.

# **INSTALLATION PROCEDURE**

**FOR THE FG2**

**LOOP POWERED FUEL GAUGE**

**With alarm and Backlight**

## **FG2 LOOP POWERED PROCESS INDICATOR CALIBRATION PROCEDURE**



**Photo 1: Front panel of fuel gauge shown with**

- 1. Arrow icon on LCD display active showing low fuel alarm on**
- 2. Red LED illuminated (active) showing low fuel alarm on**

Thank you for purchasing an Innovec Product. The fuel gauge system incorporates a gas pressure sensor, 5 metres of screened cable, a fuel gauge with an adjustable low fuel alarm with led indication and audible warning.

### **Connection and Calibration Procedure**

#### **Step 1: Electrical connection.**

The FG2 is self powered from the 4-20mA input signal.

This instrument includes the back light option which does require an external power supply of 24VDC.

#### **Connect of the Input signal**

- (a) The positive (+) of the loop to terminal 3**
- (c) Terminal 2 is not used**
- (b) The negative (-) of the loop to terminal 1**
- (d) For backlight operation connect (+) 24VDC supply to terminal 5**
- (e) For backlight operation connect (-) 0VDC supply to terminal 4**

#### **Step 2: Display Calibration**

The instrument is factory calibrated for 4-20mA equals 0 to 300 counts. **Calibration should not be necessary.**

If just a fine trim is required

- (a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.**
- (b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value**
- (c) Repeat steps (a) and (b) until the FG2 displays the required value.**

### **If a full calibration is required**

From the PCB overlay drawing it can be seen that there is a four way switch SW1.

Switch SW1-1 on selects decimal point 1 (DP1) **00.0**

Switch SW1-2 on selects decimal point 2 (DP2) **0.00**

Switch SW1-3 on selects decimal point 3 (DP3) **.000**

Switch SW1-4 selects the polarity of the minus sign. This function is used when connecting the display to a reversed 4-20mA signal (20-4mA) and it is required for example to display 0-100.0 from 20-4mA. SW1-4 in the off position selects positive slope and in the on position selects negative slope

(a) Insert minimum input signal (4mA) and adjust the zero potentiometer for the minimum display value.

(b) Insert maximum input signal (20mA) and adjust the span potentiometer for maximum display value

(c) Repeat steps (a) and (b) until the FG2 displays the required value.

### **Step 3: Alarm Calibration**

The alarm potentiometer will adjust the trip point for the alarm indication.

The alarm is a low alarm which means the symbol on the display and the red LED will be active when the input signal is below the trip point value. It has been set for 54 Bar.

When looking at the instrument from the rear turning the alarm potentiometer anti-clockwise will reduce the value that the alarm will trip at.

Setting the alarm level:

By using a 4-20mA source injector, inject a signal of a value that the display shows the alarm level. i.e. 54 bar. (Please note: this value can be between 1 Bar to 250 Bar)

With this figure on the display adjust the alarm potentiometer until the audible transducer and the red LED turn on. Your low fuel alarm has now been set.

### **Step 4: Mounting of the instrument**

The instrument is housed in a panel mount enclosure measuring 48x96x80mm. The instrument should be mounted through a panel cut out of 45.6 x 92.8mm. The instrument should be pushed through the cut out from the front and the two side clamps should be tightened from the rear.

Installation cable:

A screened cable with a length of 5 metres has been supplied. It is a cable which has

1. Aluminium screen
2. Two pairs of instrument cores
3. (one pair is orange and white )
4. ( and one pair is blue and white)
5. One earth wire
6. Installation of the cable. As the cables are clearly colour coded and twisted together as pairs, the two white wires are easily identified and not necessary to mark with heat shrink.

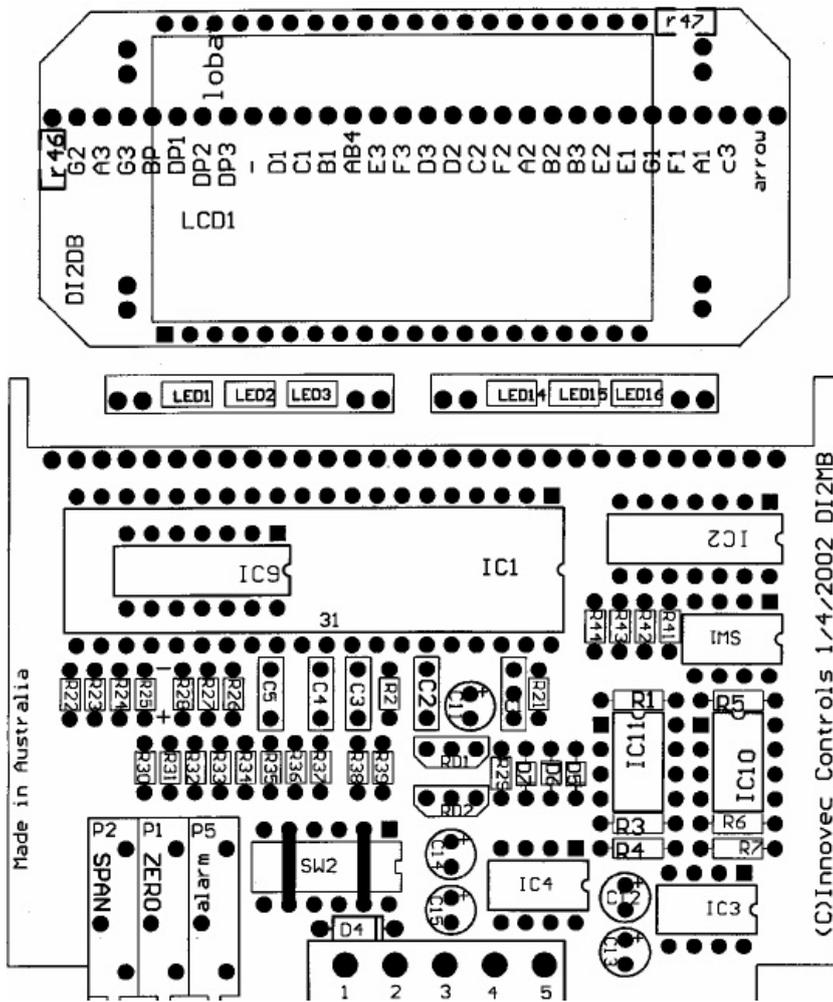


Fig.1 Circuit board overlay with rear view of fuel gauge terminal strip and potentiometers