

INFRA RED CELLS

POWER SUPPLY

15 to 30Vdc 24v nominal

OUTPUTS

3 wire 4~20mA (Direct) / 4 wire CANbus (Addressable)

Relays Low alarm SPCO
 High alarm SPCO 0.5A @ 30Vdc
 Fault alarm SPCO

Inhibit option during servicing

Logging Intervals – variable time

Roll over/stop

Storage – 2,880 readings

Requires USB A to USB Micro B Cable

GDS Terminal (download from GDS website)

SET UP PROCEDURE

New sensors are supplied ready to connect to the system.

The following procedure is for full set up and where the sensor cell has been replaced - only sections 4, 5, 7, 11 and 13 need to be carried out.

1. Insert jumpers J10 and J9 position SO for 4-20mA source output.
2. Turn sensor voltage potentiometer anti-clockwise (minimum voltage).
3. Connect sensor to J14 terminal W-white Y-yellow P-pink.
4. Connect 24V + and 0V to J2, short the 4~20mA terminal by inserting test link at J1.
5. Measure the sensor voltage at TP5 (0v) and TP8 (SV) and adjust by turning the 'Sensor Voltage' pot for the correct reading.(Standard Sensor – Prime 1/2/3 = 4Vdc)
DO NOT EXCEED THE REQUIRED VOLTAGE OTHERWISE PERMANENT DAMAGE WILL OCCUR
6. Rotate Gain pot fully anti-clockwise (minimum span.)
7. To Zero a Prime 1 (%LEL sensor) when in clean air the sensor bridge is zeroed by adjusting the 'Zero' pot until LED 'D9' is green (4mA should be on TP2 and TP3 at this stage). To Zero a Prime 2/3 (%Vol CO₂) apply a known test gas e.g. 100%Vol Nitrogen for 1 minute to ensure no CO₂ is present, adjust the 'Zero' pot until LED 'D9' is green (4mA should be on TP2 and TP3 at this stage).
8. Connect PC to sensor via GDS terminal using USB-A to USB Micro-B cable at 4800 baud connected to J11. The terminal output screen shows continuous data output/ commands and allows input from the PC keyboard.
9. Select COM Port – Note each new sensor connected to requires a new COM Port to be connected to.
10. Press 'Space Bar' to load sensor information. Press 'C' to enter Calibration Mode. Note if you wish to initialise the sensor ensure Jumper J12 is fitted.
11. Using a digital mV meter measure across test pins TP2/3 and adjust the 'Zero' pot until LED 'D9' goes green for 4mA (zero) = 4mV. Note for Prime 2/3 ensure 100%Vol Nitrogen is applied before setting the Zero.
12. Then press (Z) on the PC to zero the reading.
13. Apply a known test gas to the sensor (e.g. 1%Vol CO₂ test gas for 0-2%Vol range) for 1 minute at a flow rate of 1 litre/minute to give a 12mA=12mV reading across TP2/3, adjust the 'Gain' pot for correct mV reading.
14. Press 'S' to enter the span mode and using 'L' (Lower) and 'H' (Higher) adjust the reading to 1%Vol.
NOTE: This adjusts the mA reading on TP2/3 when adjusted.
15. Press (space) to exit span and then (X) to exit the calibration mode.

An example of continuous data output to the PC from a Flammable sensor is shown below and is the format for all gas types.

O, **H** and **L** represent the Over Range High and Low alarms respectively. **D** indicates if a duplicate address is detected. **F** indicates a fault present **I** shows that this sensor has its alarms inhibited under the **O H L** the **^ ^ v** represent the direction of the alarms. **L** is falling and **H** and **O** are rising. A(*) under the letter(s) OHLDFI represents a detected state so in this example the sensor would be in high alarm and a fault present.

'**Gas val 35.6**' represents the value of the gas present at the sensor head. Pressing (R) on the PC causes a reset to occur. Gas type with address and serial number are then output to the PC together with alarms and calibration date.

A full command list via PC is available by pressing the letter (P) which will relist on the PC.

```
Flam %LEL
OHLDFI
^^v
-*--*-Gas val = 35.6
```

COMMAND	USE
A = Set CAN address	Sets the CAN address
G = Select gas type	Select the gas type from a list
Z = Zero	Press when no gas on sensor to give zero
S = Span H and L change reading	Use when calibration gas applied
D = Enter calibration date	Enter the calibration date
Y = Toggle auto zero	Auto zero is ON or OFF, small drift is cleared
H = Set high alarm	Sets the high alarm threshold
L = Set low alarm	Sets the low alarm threshold
O = Set over range alarm	Sets the over range alarm threshold
P = List command	List these commands on screen
X = Exit calibration mode	Exit this PC mode
\$ = Initialise this sensor	Use on new PCB to set gas type to Flam
U = Alarm direction	Sets rising or falling alarms
R = Range	Allows a change in maximum value
N = Decimal points	Toggles between 1 and 2 decimal places
E = Edit user gas text	Choose gas description
B = Toggle deadband	Deadband of 2.5% can be on or off
F = Toggle fault Input	External fault input contact can be disabled
# = Normally energised	Low /high alarm relays and fault relay can be made normally energised
V = View gas log	From current log, display how many historical readings to display, up to 2880
% = Clear gas log	Set all 2880 log readings to 0.00
I = Log interval	Choose how many seconds between each log reading and whether the log will roll over or stop at 2880 (60 second interval and 2880 readings = 48 hours)
Space Bar = Enters Data	
W= Set 4-20mA output	
* = Toggle Baud Rate 20kBits/40Kbits	

16. Connect the sensor to a Combi alarm panel and ensure that it reports in correctly.

NOTE: Fit the end of line (EOL) link J3 if the sensor is to be installed at the end of the sensor cable.

17. If a display PCB is fitted to the sensor, adjust the contrast by turning pot 'U14'.

18. Remove J1 test link for normal operation, (this does not need to be removed when used as an Addressable sensor)

19. Ensure J12 address link is removed (this is only used when changing address from the alarm panel).

20. On completion and when used as an addressable sensor, future calibrations may be carried out at the Combi alarm panel.

USING MAGNETS (SET UP)

The Combi sensors which have an LCD display fitted also incorporate 3 reed switches which can be activated using external magnets through the glass window of the flameproof XDIwin enclosure. **These magnets do not act instantly and have to be in close proximity to L, M and R on the front display for a few seconds to activate a software setup function.**

The left magnet enters the Auto zero ON or OFF menu. This allows small drift changes in the sensor to be compensated for but is not operational when the sensor readings are greater than 5% of full scale. Therefore auto zero is inactive when a larger gas reading is present. When the remove magnets message appears, move the left magnet away and then the display shows if auto zero is ON or OFF. The left magnet puts auto zero ON and the right magnet turns it OFF. With no magnets present, the display will return to normal after a few seconds timeout.

The right magnet allows the CAN address of the sensor to be changed. When the ADDRESS menu is displayed with a prompt to remove the magnet, and then the display shows the address and that the right magnet decreases it whilst the left magnet will increase it. This is then stored in internal non volatile memory and the display will automatically revert to normal operation.

The centre magnet is used to inhibit the sensor. As with the left and right magnet functions the display requests that you remove the magnet and then the state of the inhibit appears on the LCD. The left magnet then puts the sensor into inhibit whilst the right magnet removes it. An amber LED on the front panel under the LCD flashes when the sensor is inhibited. When all magnets are removed, the display will revert to normal operation.

The left and right magnets together allow the calibration menu to be used.

Removing both magnets as instructed on the LCD presents the first part of this multi menu which is ZERO. With no gas present use the left magnet to increase the reading and the right magnet to decrease to achieve a zero reading on the display. A timer is displayed on the LCD and when this reaches 0, the next menu is displayed. This timer is 15 seconds approximately and is reset back each time a magnet is near, timeout can be speeded up by placing a magnet near to the centre position.

SPAN is the next part of the menu and gas should be applied to the sensor at this time.

The left magnet increases the gain and the right magnet reduces gain. The actual sensor value can be seen on the display to rise or fall respectively.

LOW ALARM is the next menu and left and right magnets increase and decrease this value.

HIGH ALARM is next followed by OVER RANGE alarm.

The direction of the alarms is displayed as ^ for rising and v for falling but these can be changed using left and right magnets together.

