

# XDI-XDIwin – 15/30J

## FLAMMABLE SENSOR



General Data Sheet: 198D1C Issue S.v13

Technical Sheet  
ref C893

### Power Supply

15 to 30Vdc 24v nominal

### Outputs

3 wire 4~20mA / 4 wire CANbus

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 RS232 lead  
PC or laptop (dedicated)  
Hyperterminal (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 5, 6, 7, 9 and 11 need to be carried out. Voltage measurements are made wrt AG unless otherwise specified.

1. Insert jumpers J20 and J6 position SO for 4-20mA source output (factory pre-set).
2. Turn sensor voltage potentiometer anti-clockwise (minimum voltage).
3. Connect sensor to J2 terminal W-white Y-yellow P-pink.
4. Connect 24V + and 0V to JP10, short the 4~20mA terminal by inserting test link at J9.
5. Measure the sensor voltage at SV and adjust by turning sensor volts pot for the correct reading.  
(standard sensor CAT300 = 2Vdc.) **DO NOT EXCEED THE REQUIRED VOLTAGE OTHERWISE PERMANENT DAMAGE WILL OCCUR. See sensor cell supply table.**
6. Rotate 20mA pot fully anti-clockwise (minimum span.)
7. When in clean air the sensor bridge is zeroed by adjusting zero pot until the dual colour LED D1 is off.
8. Connect to the \*GDS Terminal ([www.gds-technologies.co.uk](http://www.gds-technologies.co.uk)) via a Windows based PC, using RS232 Combi adaptor (part no. 160-510 and lead part no. 160-515) connected to J3, select sensor (4800) baud and select the comm port. Ensure jumper J29 is fitted before programming and initialise the sensor using (C) calibration mode, then shift + (\$) command from the keyboard.  
\*GDS Terminal is a hyper terminal equivalent
9. Using a digital mV meter measure across test pins TP8/9 and adjust 4mA pot for 4mA (zero) = 4mV
10. Then press (Z) on the PC to zero the reading.
11. Apply a known test gas to the sensor (56% LEL = 2.5% vol methane) for 1 minute at a flow rate of 1 litre to give a 13mA = 13mV across test pins TP8/9, adjust 20mA pot for correct mV reading.
12. When using a PC press (S) to enter span mode and using (H) or (L) adjust the reading to 56% LEL.
13. 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 **OHL** 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

A = Set CAN address  
G = Select gas type  
Z = Zero  
S = Span  
  
D = Enter calibration date  
Y = Toggle auto zero  
H = Set high alarm  
L = Set low alarm  
O = Set over range alarm  
P = List command  
X = Exit calibration mode  
\$ = Initialise this sensor  
U = Alarm direction  
R = Range  
N = Decimal points  
E = Edit user gas text  
B = Toggle deadband  
F = Toggle fault Input  
# = Normally energised  
  
V = View gas log  
  
% = Clear gas log  
I = Log interval log

### Use

Sets the CAN address  
Select the gas type from a list  
Press when no gas on sensor to give zero  
Use when calibration gas applied, H and L change reading  
Enter the calibration date  
Auto zero is ON or OFF, small drift is cleared  
Sets the high alarm threshold  
Sets the low alarm threshold  
Sets the over range alarm threshold  
List these commands on screen  
Exit this PC mode  
Use on new PCB to set gas type to Flam  
Sets rising or falling alarms  
Allows a change in maximum value  
Toggles between 1 and 2 decimal places  
Choose gas description  
Deadband of 2.5% can be on or off  
External fault input contact can be disabled  
Low /high alarm relays and fault relay can be made normally energised  
From current log, display how many historical readings to display, up to 2880  
Set all 2880 log readings to 0.00  
Choose how many seconds between each reading and whether the log will roll over or stop at 2880 (60 second interval and 2880 readings = 48 hours)

14. Connect the sensor to a Combi alarm panel and ensure that it reports in correctly.  
Note:- Fit the end of line (EOL) link J1 if the sensor is to be installed at the end of the sensor cable.
15. If front panel display board is fitted via connector J5 and U12 adjust contrast for LCD contrast.
16. Remove J9 test link for normal operation.
17. Insert link J12 to enable the bridge fault detection. (4-20mA output falls to 2mA in fault).
18. Ensure J29 address link is removed (this is only used when changing address from a 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. Waiting till timeout is acceptable but this 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.

## Sensor cell supply table

CAT300A	2v/300mA
CAT170A	2v/175mA
SEM-1	4v/170mA
GDS PRIME	4v/70mA
CAT335C	2.5v/335mA
THE300A	2v/300mA
SS10	2v/175mA
CAT335A	2.5v/335mA
CAT335B	2.5v/335mA
CAT100A	2v/100mA
CAT165	2.2v/165mA

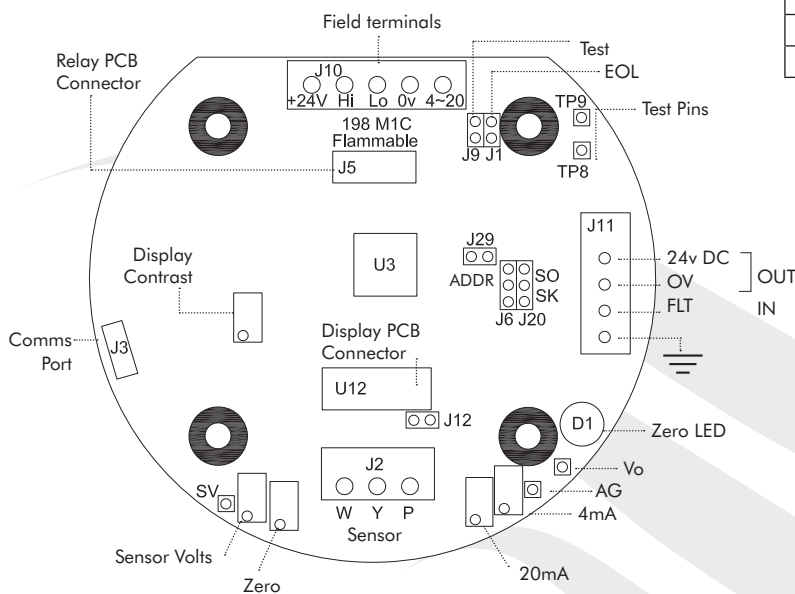


Fig. 1

