

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.

1. Insert jumper SO (Source) into JP3 for 4~20mA output.
2. Turn sensor voltage potentiometer RV3 fully anti clockwise (minimum voltage.)
3. Connect sensor to J2 terminal W-white P-pink Y-yellow.
4. Connect 24v + and 0V to JP9, short the 4~20mA terminal by inserting JP4.
5. Adjust the sensor supply voltage across sensor terminals J2-W and P by turning RV3 clockwise until the required voltage is achieved (standard sensor CAT300 = 2vDC.) **DO NOT EXCEED THE REQUIRED VOLTAGE OTHERWISE PERMANENT DAMAGE WILL OCCUR.**
6. Rotate RV1 fully anti clockwise (minimum span.)
7. The sensor bridge is zeroed by adjusting RV2 until LED's 4 and 5 are both flickering.
8. Connect PC - hyper terminal using RS232 Combi adaptor (part no 160-510 and lead part no 160-515) at 4800 baud connected to J1 and initialise the sensor using (C) calibration mode, then shift + (\$) command from the keyboard.
9. Using a digital mV meter measure across test pins TP3/4 and adjust RV4 for 4mA (zero) = 4mV
10. Then press (Z) on the PC to zero the reading.
11. Apply a known test gas to the sensor (50% LEL = 2.5% vol methane) for 1 minute at a flow rate of 1 litre to give a 12mA = 12mV across test pins TP3/4, if necessary adjust potentiometer RV1.
12. When using a PC press (S) to enter span mode and using (H) or (L) adjust the reading to 50% 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 opposite and is the format for all gas types.

O represents the Over range alarm and **H** and **L** the High and Low.
D shows that duplicate address is detected
F indicates a fault present
I shows that this sensor has its alarms inhibited

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Flam %LEL
O H L D F I
^ ^ v
- * - - * - Gas val = 35.6
    
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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 represents a detected state so in this example the sensor would be in high alarm and a fault present. 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 C on the PC keyboard.

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	use when calibration gas applied, H and L change reading
D = enter calibration date	enter the calibration date
M = catalytic monitor	select on or off for check of catalytic sensor voltages
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 commands	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
C = clear sensor data logger	An internal data logger is wiped (not in use)
U = alarm direction	Sets rising or falling alarms

13. Connect the sensor to a Combi Alarm Panel and ensure that it reports in correctly. Note: - Fit the end of line (EOL) link if the sensor is to be installed at the end of the sensor cable.
14. If front panel display board is fitted via connector J3 and JP2 adjust RV5 for LCD contrast.
15. Remove JP4 for normal operation.

Note that P1 is a 1/4 black crimp blade for zero volts and P2 is a crimp blade for chassis earth.

Using magnets (set up)

The Combi sensors which have an LCD display fitted also incorporate 3 relays 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 and 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 will decrease 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 displayed gas. 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.

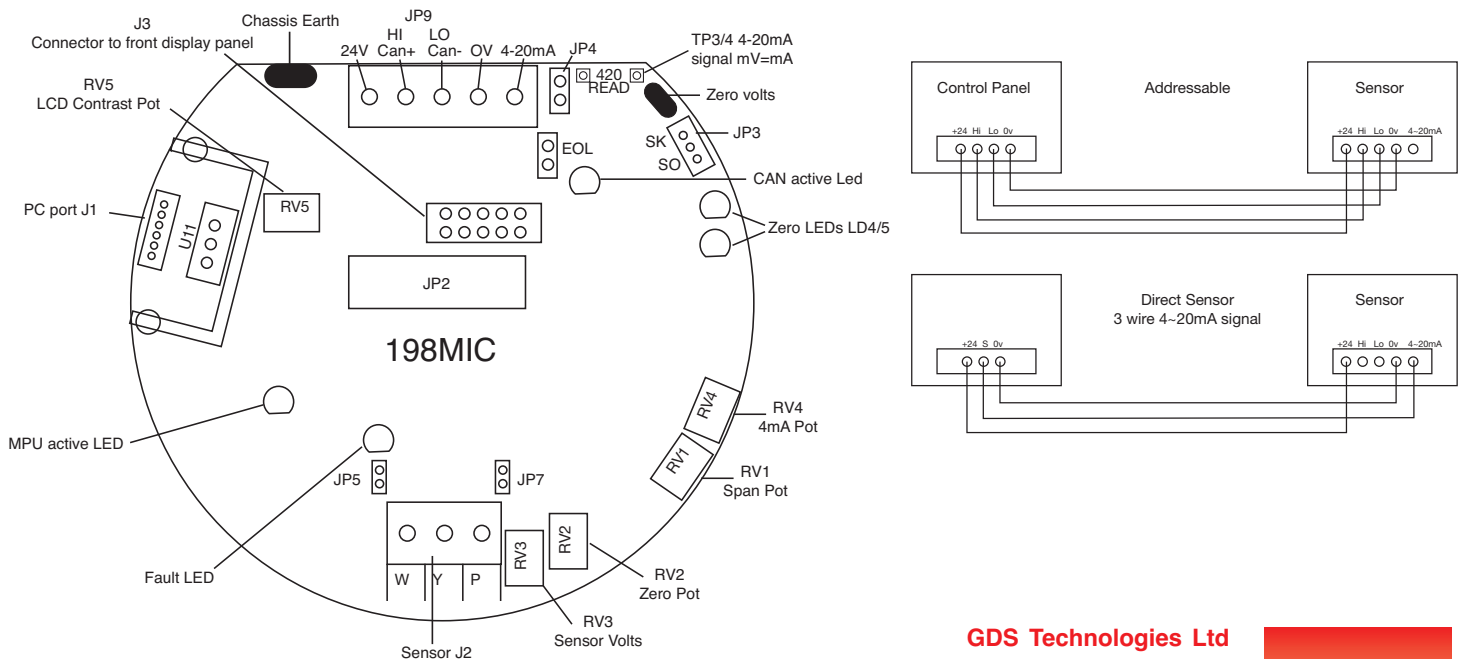
SPAN is the next part of the menu and gas should be applied to the sensor at this time.

The left magnet now 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.



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