

NEW SENSORS ARE SUPPLIED READY TO CONNECT TO THE SYSTEM.  
THE FOLLOWING PROCEDURE MAY NEED TO BE CARRIED OUT FOLLOWING SENSOR CELL REPLACEMENT:

The first part of this procedure will set up the 4-20mA circuit followed by processor trimming.

1. Select JP6 for sink or source mode (standard - source mode - SE).
2. Insert jumper J9 centre two pins to divert the 4-20mA output signal to JP7 and connect this 4~20mA output to zero volts on JP7.
3. Insert J4 DIL header to match the electrochemical sensor to be used (see table C895) (normally factory selected)
4. Connect electrochemical cell W Y and P (Toxic) and Y P for oxygen to terminals J2.
5. Connect 24V and 0V to JP7.
6. Adjust RV2 anti clockwise to give minimum span.
7. Using digital mV meter measure across test pins TP1/2 and adjust RV1 for 4mA (zero) = 4mV
8. Apply span gas to sensor and adjust RV2 to give correct output current as measured in mV at TP1 and TP2.
9. Remove span gas and if necessary adjust RV1 to give 4mA.
10. Ensure that the CAN LED is ON and flashing occasionally.
11. Move jumper JP9 to the right hand side 2 pins to divert the 4-20mA to the processor.
12. Connect RS 232 pod to connector J1 and to a PC running HyperTerminal at 4800 baud.
13. The HyperTerminal display shows a continuous data output and allows input from the PC keyboard.
  - a. Press C to enter calibration mode.
  - b. Press shift \$ to initialise the memory if new PCB (defaults to Flam %lel).
  - c. Press G to change the gas to the cell in use.
  - d. Press A and enter the CAN address of this sensor.
  - e. Press M and disable catalytic sensor voltage monitor.
  - f. Press Z to zero the reading.
  - g. Press S to span the reading. Apply gas and press H or L to adjust the reading.
  - h. Press space to exit the span.
  - i. Press X to exit the calibration mode.
14. Connect to a combi panel and ensure that the sensor reports in correctly. Note that if this sensor is at the end of the communication wires then it will need terminating by inserting jumper JP1 (EOL).

The continuous data output when connected to HyperTerminal is the same format as for the Flammable sensor. The software used is identical.

Oxygen sensors are a special case in that they are generally 2 wires with a 25% range and behave like a small battery sourcing a small current according to how much oxygen is present. With the correct DIL header J4 inserted, the positive terminal of the cell is connected to P+ on J2 and the negative terminal to Y- on J2 also. To adjust the 4mA Zero point, the P+ terminal is disconnected and RV1 rotated. On reconnecting the P+ terminal and with the cell in air, the current will rise and is adjusted to (17.3mA TP1/2) using RV2 which represents 20.9% oxygen. Use the PC commands above to adjust the processor readings accordingly.

**Notes:** A duplicate 4-20mA output can be obtained by fitting a jumper into the left two pins of JP9.

This sensor can also be used in 2 wire mode using JP7 24v and 4-20mA terminals only (Displays & processor are disabled). JP9 centre 2 pins have to be linked.

If LCD option fitted, magnets can be used to set some sensor parameters. See magnet section overleaf.

## 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 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.

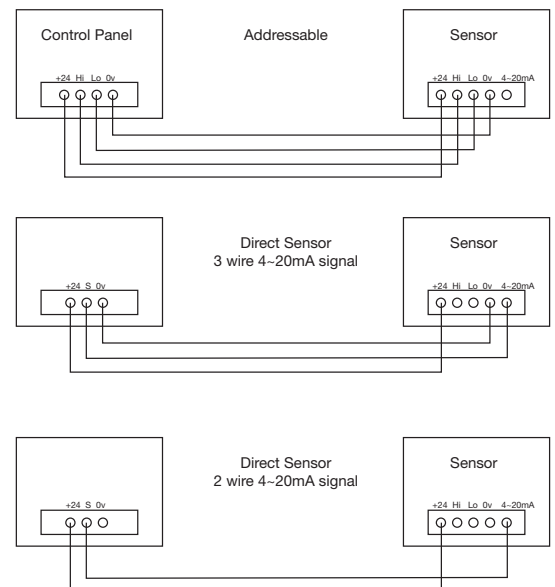
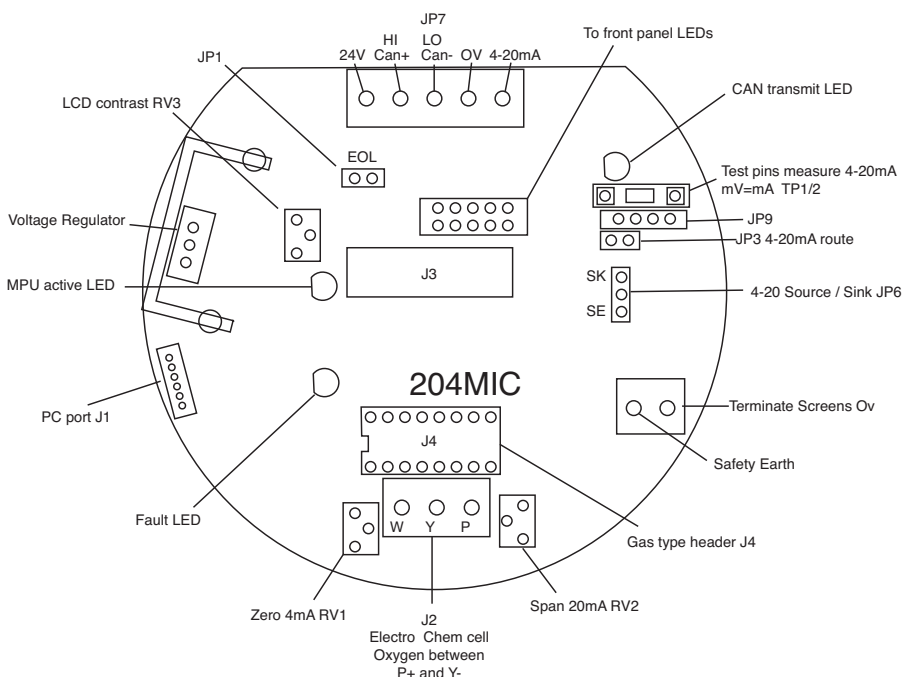
SPAN is the next part of the menu and gas should be applied to the sensor at this time.

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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