
IS-OXYAN-300

Portable Oxygen Analyser

User Guide



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Portable Oxygen Analyser

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July 2010

Revision 1.3

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1. Features and Specifications

- Range from 0.1% to 100%
- Super long-life sensor due to non-consumptive technology (5 to 10 years)
- High accuracy of 1%
- Single and 2-point calibration
- Linearity of better than 0.3% from 0.1% to 100% oxygen
- Built-in pressure regulator
- Maximum input pressure of 10bar
- Consumption of 300ml / min
- Built-in internal restriction
- Max ambient temperature of 60°C (convection cooled)
- Internal resettable fuse (automatic)
- Cold start-up time of 5 minutes
- Heartbeat / Ready LED and Power LED
- Backlit LCD display and 12 key keypad
- Block manufactured from anodised aluminium
- Powder coated chassis of size: 220 X 165 X 120mm
- 4mm push pipe gas inlet and outlet

2. Introduction

The **IS-OXYAN300** is a microprocessor-controlled portable oxygen analyser with a zirconium-dioxide sensor. It is designed to continuously measure the oxygen content of pure, dry gases and gas mixtures that demand high measuring-accuracy, reliability and long-term stability. The **IS-OXYAN300** can measure over the range from 0.1% to 100%. It displays its output on a backlit LCD display and features an extremely long operational life due to its non-consumptive sensor design – in excess of 5 years under ideal conditions.

3. Installation and Usage Precautions

- 1) The sensor can be damaged by mechanical impact.
- 2) The sensor can be damaged due to thermal shock eg if the input gas is very cold.
- 3) The measured gas should be pure and dry. Dust or moisture in the gas may lead to incorrect measuring results. If required, use a filter on the input gas.
- 4) **Blocking or restricting of the exhaust outlet can lead to incorrect measurements.**
- 5) The **IS-OXYAN** series module is designed to measure oxygen purity where the measuring gas is available in the form of an overpressure. It has an integrated restriction and pressure regulator, which gives the correct flow rate for an input pressure of up to 10bar.

Warning1: Substances such as fluorine, chlorine, bromine, iodine, sulphur compounds and vapours of organic silicone compounds may reduce the service life of the sensor and at worst, destroy it.

Warning2: In the case of the **OXYAN-200**, the auto-calibration solenoid valves **MUST** be cleaned for oxygen use.

4. Wiring Instructions

Wiring

- a) Oxygen inlet 4mm push-pipe from concentrator
- b) Outlet 4mm push-pipe to external environment.
- c) Do a calibration cycle after waiting for 1 hour for sensor to heat up properly.

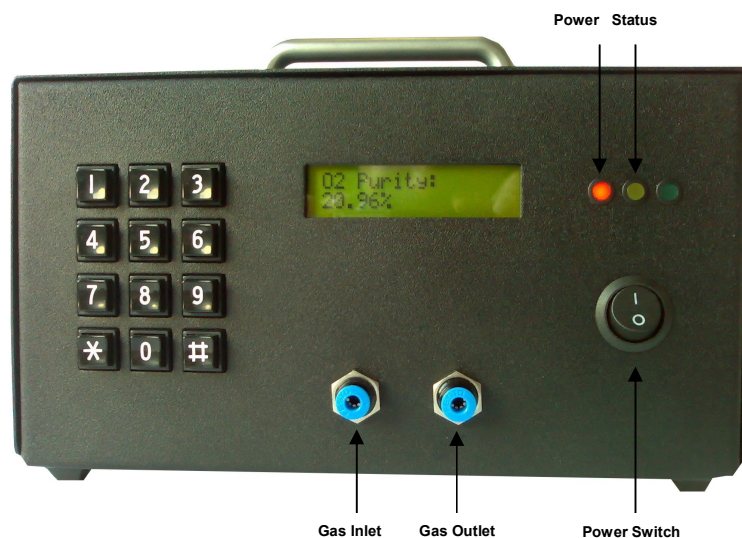
* **WARNING:** Maximum input pressure of 10 bar.

The unit is now ready to operate.

Indicators

Note that on power-up, the red power LED will light up.

When the sensor has heated up adequately (about 2minutes), the yellow status LED will begin to flash. This is the heartbeat signal which indicates that the OXYAN series module is operating correctly. As the oxygen purity increases, the LED will flash slower (about 5secs at 95% and about 1sec at 21%.)



5. Setup and Calibration

Setup

The initial setup and maintenance of your **OXYAN-300** oxygen analyser is managed via the keypad. Please read the user guide in full before attempting to configure your **OXYAN-300**.

On power-up of the **OXYAN-300** oxygen analyser, the unit will beep 3 times. After an initial warm-up period of 5mins, the unit will begin to output the oxygen purity on the LCD display.

The calibration / setup menu has 3 options:

- 1) Single-point calibration
- 2) Two-point calibration, and
- 3) MA filter point number.

To enter the setup / calibration menu, the “*” key must be pressed.

a) Thereafter, you will be prompted for the password.

Enter: 888888

b) You will now be prompted with:

Calibrate (1)
Setup (2)

Press “2” to select setup menu.

c) You will now be prompted with:

Set Single Point (1) or Two-Point (2) Calibration Purities or MA points (3):

Type “1”, “2” or “3” to select single-point calibration, two-point calibration or the filter point number respectively.

As the names denote, single-point calibration allows for calibration on the slope of the sensor output only. The sensor is very linear, so usually single-point calibration is adequate.

Two-point calibration allows for the calibration of the slope and the offset. This allows one to eliminate any non-linearities in the sensor output.

The MA (moving average) filter value allows one to filter out noise at the expense of response time. The values vary from 1 to 100. The output response time with 100 is 100 times slower. The default is 10.

d) If single-point calibration is selected, you will then be prompted as follows:

Enter single point CAL gas %:

Enter the % eg 90.00% and press the “#” key.

If 2-point calibration is selected, you will then be prompted as follows:

Enter 1st CAL gas %:

Enter the % eg 0.30% and press the “#” key.

Enter 2nd CAL gas %:

Enter the % eg 90.00% and press the “#” key.

If MA value is selected, you will then be prompted as follows:

Enter MA filter number:

Enter the value eg 10 and press the “#” key.

The range is 1..100. Default is 10.

Measurement Calibration

(I) Single point calibration cycle

- 1) Connect the input reference gas
- 2) Set the single-point calibration to the reference gas purity value as above
- 3) Allow 30min settling time and then go to the CALIBRATE menu (option 1)
- 4) The unit will beep twice. The calibration is now complete.

(II) Two-point calibration cycle

- 1) Connect the first input reference gas to the oxygen gas input.
- 2) Set the 2-point calibration values to the reference gas purity value as above
- 3) Allow 30min settling time and then go to the CALIBRATE menu (option 1)
- 4) The unit will beep once.
- 5) Connect the second input reference gas to the oxygen gas input.
- 6) Allow 30min settling time and then go to the CALIBRATE menu (option 1)
- 7) The unit will beep twice.
- 8) The calibration is now complete.

NOTE 1: Allow OXYAN-300 one hour warm-up time before calibrating.

NOTE 2: Do not under any circumstances restrict the outlet in any way during normal operation or calibration, since this will affect the output result.

6. Contact Details

South Africa:

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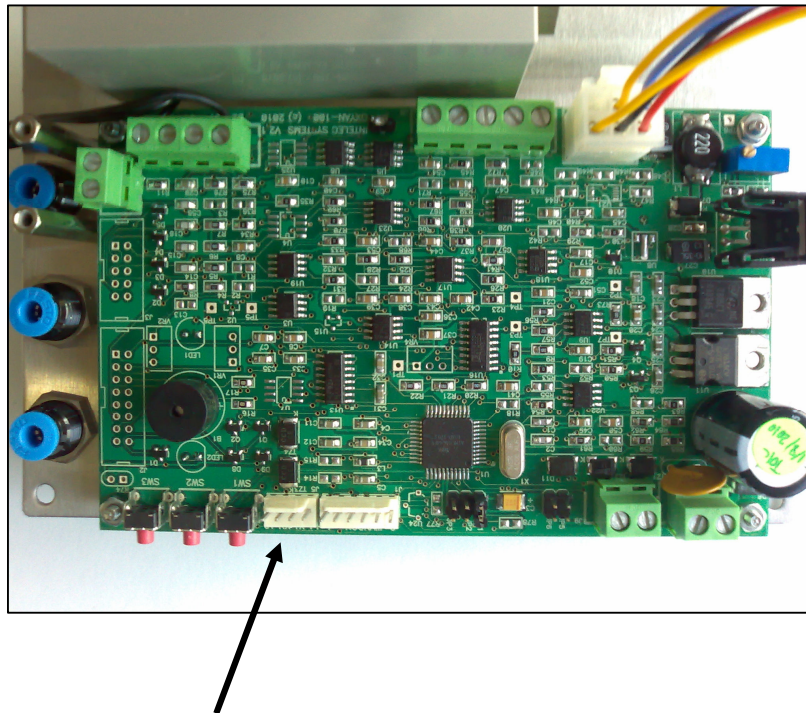
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Appendix A Firmware Upgrading

Procedure

- a) Make sure laptop mains cable is **unplugged** or a USB / RS232 **isolator** is used.
- b) Plug cable into J5.
[* **Note: make sure of correct orientation**]
- c) Plug DB9 end of cable into laptop.
[* **Note: make sure laptop mains cable unplugged**]
- d) With the OxyAn power off, run the supplied batch file eg UpdateOxyAn10.
[* **Note: you may have to edit the batch file (eg update_oxyan10.bat) parameter COM2 to have the correct serial port number – eg. change COM2 to COM1**]
- e) Power up OxyAn. A fast beeping will be heard. If it is followed by a constant long beep and the percentage counter on the program counts up to 100% with a “Target updated successfully!” message, then the upgrade was successful.
- f) If the “Target updated successfully!” message was not received then disconnect the OxyAn’s power and repeat the process.



Firmware upgrade connector J5 on the OxyAn PCB.