

Read this manual before using the analyzer. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this analyzer.

Please visit our website www.phymetrix.ca for other products that may be applicable to your needs. Every effort has been made to ensure accuracy in the contents of this manual. Should there be any doubts to the accuracy of the content please contact the manufacturer. The contents of this manual are subject to change without notice.

The instructions, procedures, drawings, specifications and concepts contained in this manual are the property of Phymetrix Ltd., and shall not be used as the basis for the manufacture or sale of apparatus or services, or reproduced or copied or transmitted in any form or by any means without written permission.

Warranty

While the Phymetrix's instrument has no problem in materials and workmanship, the manufacturer shall have the right to make the decision to repair or replace the analyzer. The battery is not within the scope of this quality assurance. This warranty is effective from the date of delivery to the original purchaser. If Phymetrix determines that the equipment was defective, the warranty period is:

- one year from delivery for electronic or mechanical failures

If Phymetrix determines that the equipment was damaged by misuse, improper installation, the use of unauthorized replacement parts, or operating conditions outside the guidelines specified, the repairs are not covered under this warranty.

Normal wear and tear, parts damaged by abuse, misuse, negligence or accidents are specifically excluded from the warranty. Purchaser acknowledges that in accepting and using this analyzer, notwithstanding any contrary term or provision in the purchaser's purchase order or otherwise, the only warranty extended by Phymetrix

is the express warranty contained herein. Purchaser further acknowledges that there are no other warranties expressed or implied, including without limitation, the warranty of merchantability or fitness for a particular purpose; that there are no warranties which extend beyond the description of the face hereof; that no oral warranties, representations, or guarantees of any kind have been made by Phymetrix, its distributors or the agents of either of them, that in any way alter the terms of this warranty; that Phymetrix and its distributors shall in no event be liable for any consequential or incidental damages, including but not limited to injury to the person or property of the purchaser or others, and from other losses or expenses incurred by the purchaser arising from the use, operation, storage or maintenance of the product covered by the warranty; that Phymetrix's liability under this warranty is restricted to repair or replacement of defective parts at Phymetrix sole option; and that Phymetrix neither assumes nor authorizes any other person to assume for it any other warranty. The warranty shall be void if serial numbers affixed to the products are removed, obliterated or defaced.

Return Policy / Procedures

If equipment malfunction is suspected or it is determined that the analyzer needs recalibration, please contact York Instrument, who is Phymetrix's general agent in China.

Communicate the instrument model number, serial number, application including oxygen concentration range being measured, and the details of the problem.

If the analyzer needs factory service you will be issued a RMA and shipping instructions.

The factory will diagnose the equipment and upon determining the problem will notify you whether the terms of the warranty cover the required repair. If the costs are not covered you will need to approve the estimated cost in order to proceed with the repair.

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1 Introduction

POA200 portable oxygen analyzer can capture single data points and also can monitor data continuously, and applicable in all occasions when an accurate oxygen concentration measurement is required. It is widely used in many different sectors of the economy. Such as combustion efficiency analysis , gas blending, breathing apparatus, compost monitoring and food storage monitoring, etc.

Standard equipment includes:

- POA 200 Portable Analyzer
- Stainless Steel Quick Disconnect Fittings
- Power Adapter
- Manual
- A Shoulder Strap
- Carrying Case

Options:

- Stainless steel sleeve
- FPT pipe
- Printer function
- Software



Warning: DO NOT turn on the "bypass/sample gas " valve before there is low concentration oxygen flow to the analyzer. In other words: Never expose the oxygen sensor to the air, this will greatly reduce the life of the sensor, or even damage the oxygen sensor!

Analyzer performance characteristics:

- POA200 oxygen analyzer adopts a special weak acidity electrochemical sensor. In its measuring range the sensor is linear and therefore, measuring oxygen concentration is very stable with a very wide measuring range: 0-10ppm and 0-10000ppm.
- The resolution for the high quality LCD screen has a 320 * 240 color high-definition screen, and also shows the oxygen density, maximum and minimum values, the total time of measurement, the time difference, measurement process curve, the power and the current time. Furthermore, it can also display the measurement process curve, which will provide a clear and reliable process analysis data for the users.
- Automatic temperature compensation is corrected for the full range, making the instruments more adaptable to harsh environments..
- A variety of measurement settings, users can choose one appropriate to their needs.
- It can switch interface in between English and Chinese according

to the users' needs.

- The analyzer is small and portable, making it comfortable to service multiple locations on site.

1.1 Panel description

Front view:

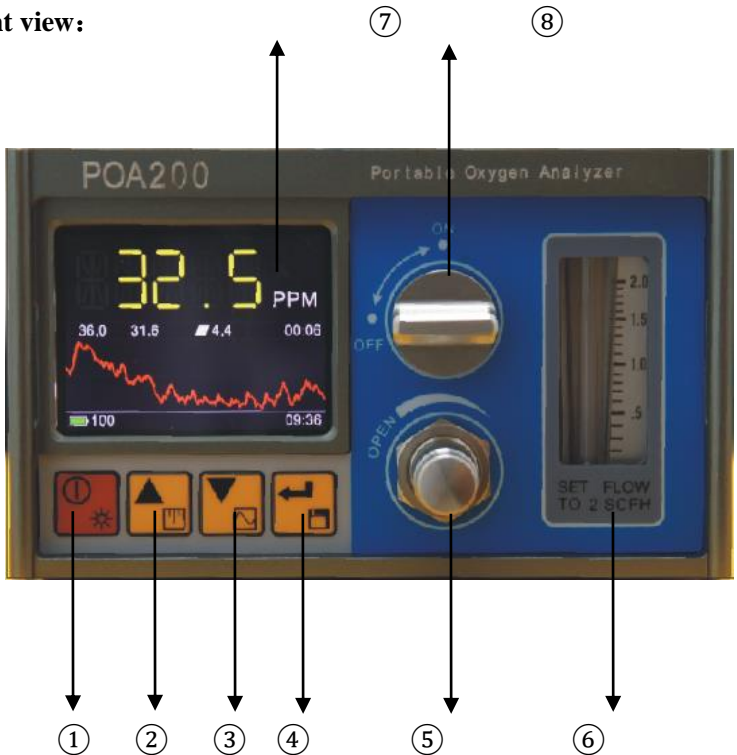


Figure 1

The front panel has a high definition LCD screen, four touch buttons, a special 4-way valve, a flow adjusting valve, and an observation window to monitor the flow on the flowmeter.

Functions of front panel:

No.	Name	Funcion
1	Power/Dimness adjust button	Hold this button to power on or power off; Quick presses will adjust the screen light. When monitoring for long periods, you can dim the screen to save power.
2	Up/calibration button	Only in the measuring interface you can perform the calibration operation, all other interfaces scrolls up.
3	Down/clear curve button	In the measurement interface you can eliminate the displayed curve, all other interfaces scrolls down
4	Confirm/save button	Function keys, long press will save your data, short press to confirm.
5	Flow adjusting needle valve	Adjust gas flow
6	Flowmeter	Display the gas flow, a range of 0.2 to 2, the unit is SCFH
7	By pass/sample 4-way valve	ON, allow sample gas to bypass to exhaust port ,otherwise allows the sample gas to flow via the sensor
8	Display screen	Displays the concentration of oxygen, process time, minimum and maximum difference, the current time, power and other parameters

Table 1

Back View:

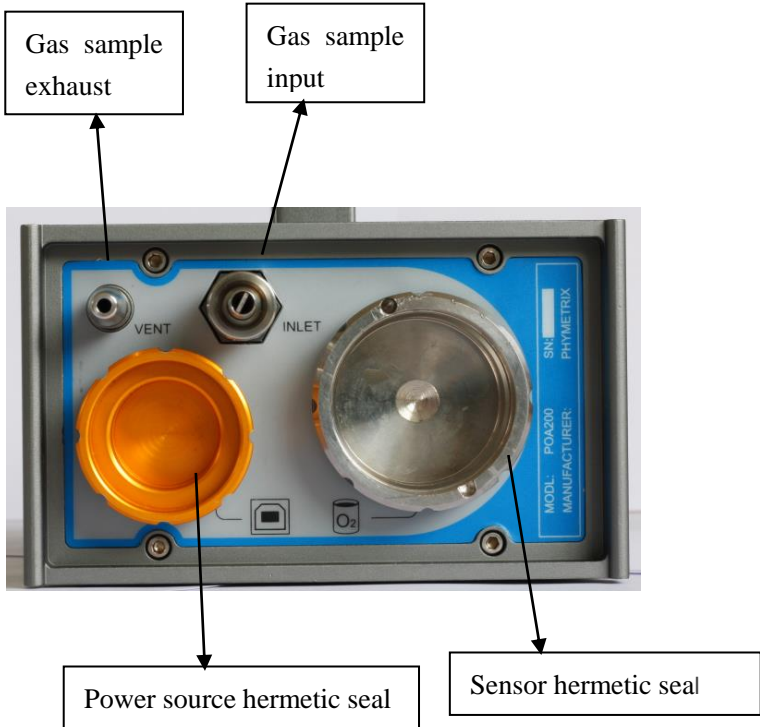


Figure 2

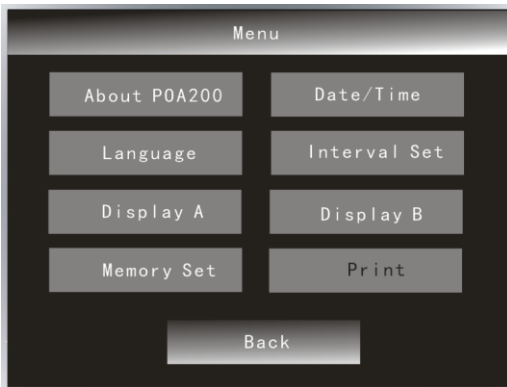


Warning: Never open the sensor hermetic seal, unless you are replacing the sensor. Never expose the oxygen sensor to air, this will greatly reduce the life of the sensor, or even damage the oxygen sensor!

1.2 Introduction of displays

Press the "Confirm" button, the following

Interface will be shown:



You can use other functions on using the UP and DOWN button.

1. About POA200

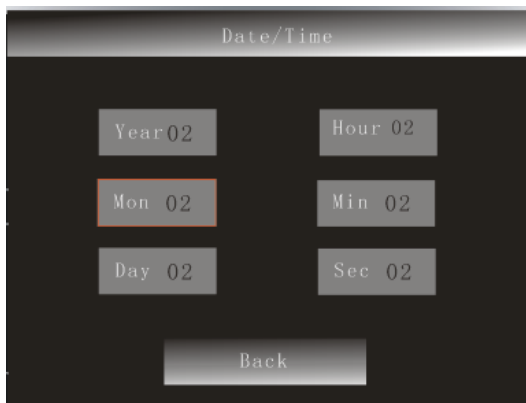
The following interface will be displayed after pressing the “confirm” button



You can see the system information.

2 Date/Time

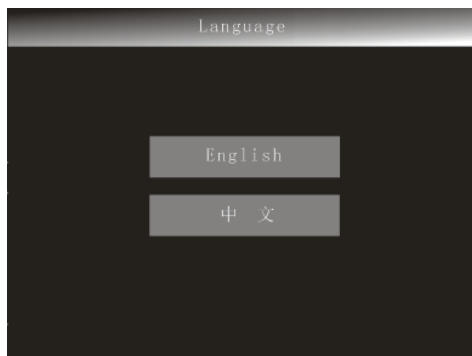
The following interface will be displayed after pressing the “Confirm” button



You can set up the correct date and time by using the UP and DOWN button.

3. Language

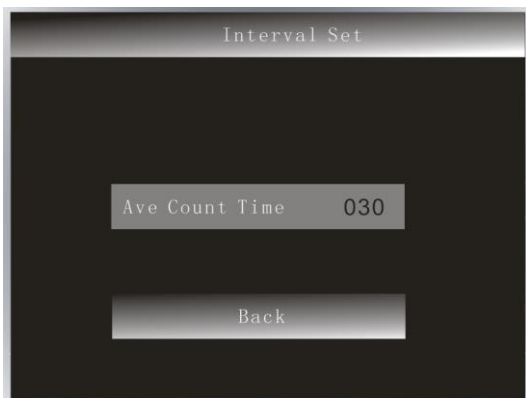
The following interface will be displayed after pressing the “Confirm” button.



You can use either English or Chinese

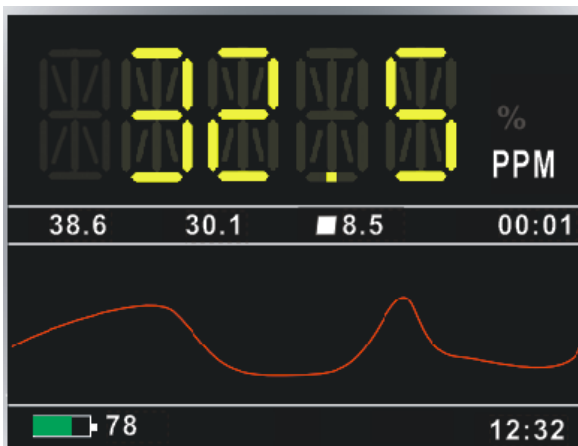
4. Interval Set

The following interface will be displayed after pressing the “Confirm” button.



You can set the average time of the measuring intervals

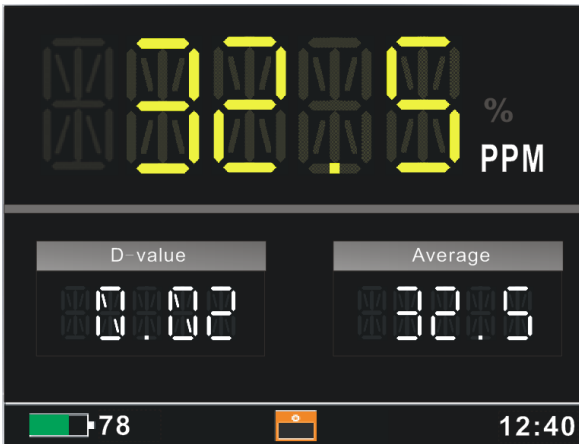
5. Display A: The following screen will be shown after pressing the “Confirm” button.



Displaying the maximum and minimum values of Oxygen

concentration, or the maximum and minimum difference, testing time and process parameters such as displaying the curve.

6. Display B: The following interface will be displayed after pressing the “Confirm” button.



Displaying the maximum and minimum values of Oxygen concentration, the maximum and minimum difference or the average etc.

You can then choose from the following steps:

7. Save set :You can set up automatic storage intervals

8. Print: This is an optional function, if you need this, please contact us for more info.

9. Return: return to previous menu.

1.3 Function

1. Turn on the analyzer, the display will appear. Please wait approximately 15S before beginning to measure;
2. Make sure the Sample/Bypass valve is in the "OFF" position.
3. Connect the sample gas into the "Quick Connect" fitting located on the backside of analyzer.
4. Adjust the sample gas flow with the needle valve between 1.0 to 2.0 SCFH .
5. Allow approximately 1-2min time for the gas to purge the lines.
6. Rotate the Sample/Bypass valve to "ON" so gas flows to the sensor.
7. Please wait for a few minutes for oxygen readings to stabilize.
8. Then, rotate the Sample/Bypass valve to "OFF".It can keep the oxygen sensor in airtight condition by disconnecting the In/Out Gas pots.
9. Disconnect the sample line.
10. Calibration: Introduced in Section 1.4.
11. Use the data storage function, hold "Confirm/Save" button for

about a second, the data will be saved automatically.

12. Download the data stored in analyzer. Open the "power/data connection hermetic seal", connect the USB data connection and instrument computer connections. Note that this operation must be done in a safe area. The USB module must be purchased separately, if necessary, please contact us for more info.

13. Charge the unit by opening the "power/data connection hermetic seal", on the power cord for instrument charging. Please connect the supplied power adaptor to the charging port on the back end of the analyzer. When the instrument is charging it will display the status on screen. Note that the charging process must be in a safe area.

1.4 Calibration

First of all, connect the calibration gas and purge the lines, on the measuring screen, press the "up/calibration "button, as shown by the



button: ,display the calibration interface,and then adjust the reading with the UP and DOWN buttons until the analyzer agrees with the calibration gas value.

Detailed calibration steps:

1. Make sure the Sample/Bypass valve is in the "OFF" position.
2. Allow low oxygen gas flow to purge pressure reducing valve.
3. Allow approximately 1-2min.time for the gas (N_2 would be better)to purge the lines.
4. Connect the calibration gas into the analyzer sample inlet and set the flow to about 1 SCFH.
5. Rotate the Sample/Bypass valve to "ON" so gas flows by the sensor.
6. Wait for a few minutes for the oxygen reading to stabilize.
7. Adjust the reading with the UP and DOWN buttons until the analyzer agrees with the calibration gas value.

8. Then rotate the Sample/Bypass valve to "OFF". Close the gas and disconnect it.
9. Finish calibration.

Attention: It is rather common to find that when you introduce calibration gas into the analyzer, the reading is quite different from what you expect. This is normally caused by errors in gas handling, rather than by calibration errors. If the gas doesn't read close to what you expected, please look at the troubleshooting section of the manual rather than simply adjusting the calibration to what may be a completely incorrect value.

2 Specifications:

Measurement ranges: (auto-ranging when measure):

0-10ppm、 0-100ppm、 0-1000ppm and 0-1% auto-ranging.

Sensitivity: 0.1ppm

Display: truecolor LCD screen

Repeatability: $\pm 1.0\%$ of full range (at 20 °C)

Operating temperature: 32-113 F (0-45 °C)

Humidity: 0-85% , non-condensing

Response time:

< 10 seconds (100ppm-1%)

< 25 seconds (0-10ppm)

Sensor life: 15-24months (typical)

Battery charge: 115/230V AC $\pm 10\%$

Power: it can work continuously 16 hours after charge

Certifications: Intrinsically Safe, Class I, Div. I, Groups B, C, D.

Box dimension: Height: 4.41'' Width: 5.43'' Depth: 7.28''

Height: 112 Width: 138 Depth: 185(mm)

Weight: 88.18oz (2.5Kg)

3 Instrument instructions


3.1 Instructions

The air has a high level of oxygen in it, about 209,000ppm. Since trace oxygen analyzers are intended to measure very low levels it is important that the sensor is not swamped with oxygen from the air. Trace analyzer has a special valve-the " Sample/Bypass" valve-that seals off the sensor from air contamination during transit. Make sure you don't turn the valve until you have a low oxygen level gas ready to flow through the analyzer, otherwise oxygen from the air will get into the sensor and cause it to react sluggishly. This valve not only seals off the sensor, but also allows gas to flow through the rest of the sample passages, thus allowing you to purge them prior to measuring a sample gas.

The analyzer also has a needle valve the is arranged in such a way that it controls both the bypass flow when the Sample/Bypass valve is in the "OFF" position, and also the sample flow, when the Sample/Bypass valve is turned to "ON"(the sampling position). In either case you can

see the flow in the integral meter.

The analyzer automatically reads the oxygen level and scales the display so that it always reads on an appropriate range. You don't need to select a range. The voltage output and the data storage use a preset range (normally 0-100ppm) but that can be changed with the PC interface program.

When you turn on the analyzer, the data storage function is always off. If you wish to store data you have to manually turn it on by pressing and holding the "Confirm/Save" button for about 3 seconds. At the same time on the bottom of the screen, you can see the the figure "" flash, indicating the data will be kept.

3.2 Using the analyzer

Although the instrument has a strong and robust structure, one should still be gentle and take care when operating. Please avoid exposure to the rain and rapid temperature changes. For example, during operation

on a cold winter day, the rapid temperature change from indoor to outdoor can cause the temperature compensation function to fail temporarily and the analyzer will need a period of time to rebalance. The low temperature will also make the sensor slow to respond, damaged or even freeze in extreme situations. One should keep the instruments in a temperature stable environment approximately 15°C-30°C. During transit, it is best to stow the instrument in the portable case. Please avoid long exposures to harsh cold temperatures in the winter or direct sunlight.

3.3 Powering up the analyzer

To power up the analyzer, press the "Power/Dimness Adjust" button on the front panel. When powering up, readings will be slowly rising to the measured value of the current analyzer. When the analyzer has been stored for a while with the valve in the "OFF" position, it is normal for the unit to display between 50 and 500ppm. This is caused by diffusion of oxygen through the sealing O rings.

If the battery power is low, the instrument will begin "beeping" alarm

and the battery icon on the display will become red and flashing. After this point, if operation is continued and the battery power is too low, the instrument will eventually be turned off automatically. To be fully charged, please allow up to seven hours, and for the first use, the recommended charging time is at least 14hrs.

3.4 Ranging

The electronics and software in the analyzer automatically sets the display for the best resolution. The maximum it will read is 100% oxygen, and the minimum is 0.01ppm of oxygen. In typical use it will not display more than 20.9% oxygen if the sensor is exposed to air.

The voltage output and the data storage are scaled to a particular range, normally 0-100ppm. It is possible to change this range to one of ten values between 0-10ppm and 0-25% by the use of the optional PC interface program. Normally the setting range is most practical.

3.5 Calibration

When shipped, the analyzer and sensor have already been calibrated at the factory. However you may wish to verify the calibration; the general procedure for doing this is to bring a suitable calibration gas into the analyzer, press the “Up/calibration” button ,and then adjust the reading with the UP and DOWN buttons until the analyzer agrees with the calibration gas value. There is a detailed procedure describing the exact steps given later in this manual.

It is rather common to find that when you introduce calibration gas into the analyzer,the reading is quite different from what you expect.This is normally caused by errors in gas handling,rather than by calibration errors. If the gas doesn't read close to what you expected,please look at the troubleshooting section of the manual rather than simply adjusting the calibration to what may be a completely incorrect value.

3.6 Valves

The analyzer contains two valves, a needle valve flow control, and a unique 4-way valve that either seals the sensor, allowing the sample gas to bypass it, or else allows the sample to flow into the sensor. The needle valve is mounted in the middle of the Sample/Bypass valve, and is designed so that the flow is the same no matter which position the Sample/Bypass valve is in .

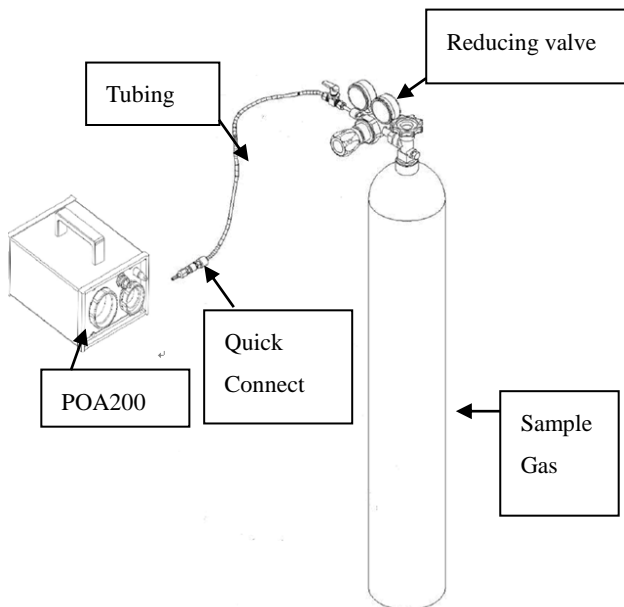
Trace oxygen sensors are of course very sensitive, and so it is desirable that they not be exposed to air(which has a very high oxygen content)more than necessary. If a sensor is exposed to air for more than a minute or so, its electrolyte will become saturated, and it will take a long time for the internal chemistry to reduce all of the dissolved oxygen. During this time the sensor will read high, and not be able to measure low oxygen levels. The arrangement of valves in this analyzer avoids this problem, without requiring any great skill on the part of the operator. The result is that that analyzer can be taken from sampling point to point and immediately used, without having to wait for excess oxygen to be used up.

3.7 Sensor life

Analyzer uses an electrochemical cell. So its working life will slowly decrease. When it is approaching the end of its life, please increase calibration frequency to account for drift.


Stocking the sensor for extended periods of time is not recommended; as the internal chemicals will degrade over time reducing its' useful capacity. Replacements are recommended to be purchased shortly prior to expiry of its' life.

3.8 Sample Line Connection



As shown in the diagram, the sample gas pipeline is inserted into the Quick Connect. Slowly open the needle valve until the flow reaches about 1 SCFH (cubic feet per hour). Please allow time to let the air samples purge the analyzer, you think you have fully cleared the sample gas pipeline, wait for a minute or so to let the readings stabilize. When you have completed the oxygen concentration

measurement, record the current value, and shut off the analyzer.

 **CAUTION: Never allow emissions port to be restricted, this will produce back pressure in the sensor, and will cause erroneous readings and possible damage to the sensor.**

3.9 Data storage: (data storage function by default is turned off)

3.9.1 Data storage function turned on: In measuring interface, holding the “Confirm/Save” key (about 3 S), will open the storage function, at the same time, the flash storage icon will begin flashing at the center bottom of the screen.

3.9.2 Data storage function turned off: In measuring interface, holding the “Confirm/Save” key (about 3 S)), the storage function will be closed; Storage icon will disappear.

3.9.3 Storage interval setting: To enter setup interface, choose the "Storage Settings", and select the storage time interval setting desired;

3.9.4 Storage capacity: Up to 10000 data points. When full capacity,

the earliest data of the storage will automatically overwrite.

3.10 Battery charging and discharging

3.10.1 Battery:charge 7 hours;

3.10.2 Battery discharge: bright: 15 hours less bright: 20 hours dark:
30 hours

3.10.3 Battery replacement: Please contact supplier/distributor if required.

3.11 Safety

This instrument is intrinsically safe, Class I, Div I, Groups B, C, D and can be used in all applicable environments.

Although this instrument has anti-interference protection for its' circuitry, but avoid placint the instrument close to any electrical installations, such as large transformer, generators, relays, etc. Please also avoid operation in an environment with lots of vibration.

4 Calibration Troubleshooting

Sometimes when you get to step 6 of the calibration procedure above, the calibration gas reads something quite different from what you expect. If so, the reason is more likely to be due to a problem with the calibration gas than the analyzer. We recommend that you first perform a sanity check as follows:

1. Turn on the Sample/Bypass valve to the “OFF” position.
2. Disconnect the calibration gas, and instead connect a low level gas such as nitrogen or maybe your sample gas.
3. Allow the low level gas to flow at about 2SCFH while you do the following QUICKLY:
4. Open the cell cap.
5. Blow a little air under the cell in its compartment while waving your hand near the sensor to bring fresh air to it.
6. Observe the reading. It should shoot up to about 20.9%.
7. If it gets reasonably close, calibrate it to 20.9% quickly. You want to take less than a minute to do this whole thing.
8. Turn the Sample/Bypass valve to the “ON” position, and replace

the cell cap.

9. Flow nitrogen or sample gas for long enough for the reading to come down to a low level (ideally less than 1ppm).

10. Turn the Sample/Bypass valve to the “OFF” position.

If it only comes up to a small number, or if you can’t calibrate it up to 20.9%, verify that you have the Sample/Bypass valve in the “OFF” position. If so, you will need to replace the sensor.

If it did easily calibrate to 20.9%, then the analyzer is now approximately calibrated. Go through the calibration procedure above until you get to step 6.

If the value the analyzer now reads is within about 15% of what it says on the calibration bottle, go ahead and calibrate.

If it is further away than this, particularly if it is a lot higher, you have more oxygen in you calibration gas for some reason. You will need to troubleshoot the span gas. Check for leaks, bleed the regulator, and if it still does not read correctly, get a new bottle of gas.

5 Maintenance & Replacement

1. Warranty: Within one year on the acquisition date, any material and/or quality damage of the analyzer due to faulty workmanship or defective parts is covered by warranty, but will not extend to damages caused by careless and/or misuse of equipment.

2. Periodic calibration: Factory recommended calibration cycle is every two weeks, but if the analyzer is used frequently and/or used in harsh environments, shorter intervals are recommended.

3. The sensor replacement:

(i) If the sensor is found to be damaged, electrolyte may be leaking from its' chamber. Please replace the sensor.

(ii) If the sensor has been operational for 9 months. Please replace sensor.

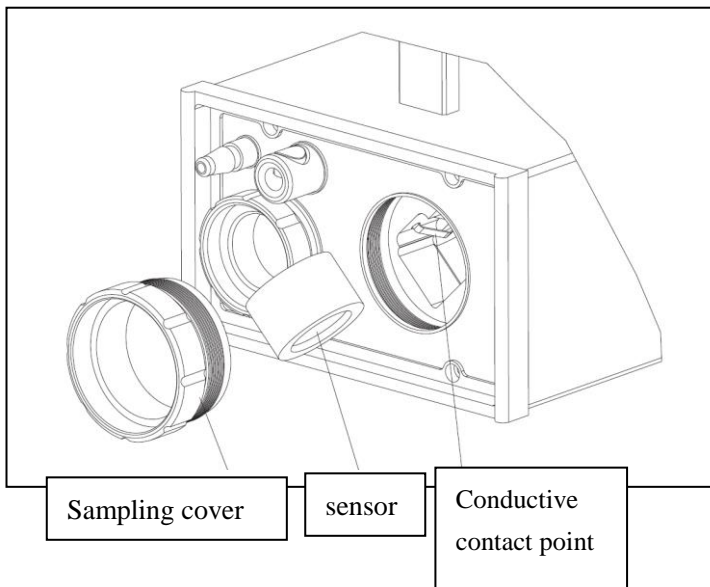
4. The sensor replacement steps

(1) Power off

(2) Have the replacement sensor ready.

(3) Open the sampling cover in the back of the analyzer. Incline the analyzer to make sampling pool face down, shake the analyzer mildly,

- the sensor should slide out. If not, use tweezers to remove old sensor;
- (4) Place the new sensor, pay attention to the direction of sensor, make sure the sampling conductive point contacts the instrument terminals.
- (5) Put on sampling cover and tighten.



 **caution:**

(1) After loading the sensor correctly, the sensor should be lower than outside face and completely inside the cavity, incorrect installation or if installation does not reach the designated position will damage the sensor when you screw in the sampling pod cover as it applies pressure on it.

(2) After loading the sensor, tighten the screw cap to ensure sealing the sensor, if there is no immediate use, make sure sampling pod knob on the front panel is in the level (closed) state.

(3) Never open the sensor hermetic seal unless you are replacing the sensor. Never expose the oxygen sensor to air, this will greatly reduce the life of the sensor, or even damage the oxygen sensor!

6 Troubleshooting

Analyzer does not power up.

1. Recharge the battery. When charging, please check that the charger is plugged into a receptacle that is itself powered.
2. If the instrument is plugged to the adaptor and the battery does not take a charge, replace the battery.

Analyzer reads too low

1. If the sensor has not been calibrated before, flow calibration gas through it as described and adjust the measured value, until the analyzer reads in line with the calibration gas.
2. If sensor readings are still too low, use air to further verify measured values. If readings are still too low, the calibration gas may not be correct.
3. If the use of calibration gas is not correct, the use of air could be a reliable means to calibrate the analyzer, if the reading is still not correct, please replace contact our support agents.
4. Commonly, the tank of compressed air you are using is manufactured air where the oxygen content is not 20.9%. Calibrate the

analyzer using natural air as the calibration gas, and verify it against the bottled air. If it reads incorrectly, replace it with a tank of certified air.

Analyzer readings were too high

1. Verify that there is no flow restriction in the outlet port of the analyzer.
2. If measured Oxygen concentration is less than 20.9% and this fault appears. Increase the sample gas flow through analyzer, if readings decrease accordingly, this shows that the sample gas pipeline into the unit or connecting pieces has a leak. Use "Snoop TM" or similar soap to locate the leaking joint.
3. Remove the sensor, and confirm analyzer reads zero, if not, there is moisture or corrosion between the sensor contacts in the cell block; clean the contacts and the area around them with isopropyl alcohol, dry with dry compressed air or nitrogen, then replace the cap on the cell block.

Analyzer reads zero

1. Confirm the terminals make good contacts with the sensors, if the

contact pieces are bent, remove the sensor, gently straighten the contact pieces and reconnect to get a better contact.

2. Please ensure the contacting terminals are clean, if not, gently use a Q-tip or other cleaning tools clean them. Do not use abrasive cleaning tools as they may cause damage to the metal coating.
3. Check with digital voltmeter against sensor output, the output of the sensor in the air is about 13 ± 3 mV. It takes a few seconds of time to stabilize the output. If the stabilized output is not the suggested value, replace the sensor. Refer to the sensor replacement steps.

Batteries don't last long , or will not charge at all:

1. Charge the batteries with the power turned off, for at least 14 hours.
2. The batteries have an expected life of about 300 charge/discharge cycles. They will last best if they are never completely discharged.

If all else fails, please consult with factory for support.

7 Safety of the analyzer

Understand the following safety prevention measures to avoid injury, and prevent damage to the product and the other connecting products.

To avoid possible danger, please be sure to operate within the guidelines when using this product.

1. Only allow qualified personnel to perform maintenance programs.
2. Avoid fire and injury.
3. Use certified power cables. Only use the product's supplied cable applicable to the country.
4. Ensure correct installation & gas extraction.
5. Products must be properly grounded. This product is grounded by power grounding wires. To avoid electric shocks, conductor must be grounded. Prior to powering up or operation of this product, please make this product is grounded.
6. Connected to the probe properly. View all ratings of terminal. To avoid fire excessive pressurization, please check all the rating and specifications of this product. Please consult the manual before operating products in order to understand the ratings and other

detailed information.

7. Do not open the front cover. Do not open the sampling pod cover when powered on.
8. Avoid any exposed circuit when powered on, please do not touch any of the exposed components.
9. If malfunction is suspected, please do not operate. When in doubt, please contact a qualified service personnel for inspection.
10. Please keep the product surface clean from dust or debris.

8 Safety of sensor

Electrolyte's primary route of entry to human body: Ingestion, eye/skin contact.

The Effects of overexposure:

1. Ingestion: May be fatal if swallowed. The electrolyte will cause a burning sensation; the lead will cause symptoms such as loss of sleep, loss of appetite, metallic taste and fatigue.
2. Eye: The electrolyte is corrosive: it will produce a burning ,soapy sensation ,irritation or severe chemical burns.
3. Dermal: The electrolyte will cause a soapy, slippery feel, and eventually a burning sensation. It may cause irritation and chemical burns .
4. Inhalation: Inhalation of the electrolyte will cause severe irritation and chemical burns.

➤ **Symptoms of exposure:**

The electrolyte is harmful if swallowed, inhaled or absorbed through the skin. It is extremely destructive to the mucous membranes, stomach, mouth, upper respiratory tract, eyes and skin. The lead will

cause symptoms such as loss of sleep, loss of appetite, metallic taste and fatigue.

➤ **Medical conditions aggravated by exposure:**

Persons with pre-existing skin disorders, eye condition or impaired respiratory function may be more susceptible to these substances. Lead exposure may aggravate blood diseases and/or blood forming organs, hypertension, kidney damage, nervous and possibly reproductive system damage.

➤ **Emergency and first aid procedures**


Eye contact: Flush eyes with water for at least 15 minutes and receive immediate medical attention.

Skin contact: Wash affected area with plenty of water and remove contaminated clothing.

Ingestion: Give large amounts of cold water. Do not induce vomiting. Seek medical attention. Do not administer liquids to an unconscious person.

Inhalation: Liquid inhalation is unlikely. If it occurs, provide fresh air and seek immediate medical attention.

➤ **Handling information**

 **NOTE: Oxygen sensors are sealed and under normal circumstances their contents do not present a health hazard. The following information is given as a guide in the event of a leak.**


Hygienic practices: Wash hands after handling.

Protective clothing: Rubber gloves, chemical splash goggles.

Clean up procedures: Wipe down the area several times with a wet paper towel. Using a fresh towel each time .

➤ **Protective measure during sensor replacement:**

Before opening the bag containing the sensor, check the sensor for leakage. If any leakage is found, do not open the bag. If there is liquid around the sensor installed in the instrument, put on gloves and eye protection before removing it.

 **NOTE: The above information is derived from the supplier's MSDS. This information is believed to be correct, but is not necessarily inclusive, thus should be used only as a guide. Phymetrix shall not be held liable for any damage arising out of using or abusing this product.**

9 Glossary of Terms

Accuracy

In general with analyzers when we use the word “accuracy” we imply “repeatability” as well; which is the degree to which an analyzer can repeat the same measurement reading on the same gas. All factory analyzers are compared using a measured gas against a known standard, and the accuracy of the measurement is therefore dependent upon this standard.

Come-down

A term referring to the operation of an analyzer reducing its reading from a high level to a low or zero level. For trace analyzers this can be quite long, as it can take a long time for the final traces of oxygen to diffuse out of the gas sampling system.

Electrochemical

A type of chemical reaction which produces an electrical current as part of the reaction. In this case, the oxygen sensors produce an electrical current in proportion to the amount of oxygen present at their membrane surface.

LCD

Liquid Crystal Display-a form of digital display suitable for reading in bright light conditions. The display degrades below about -20°C and above about 60°C .

Membrane

A thin layer of permeable material (normally teflon or a similar fluoro-carbon) that controls the rate of diffusion of oxygen into the electrochemical sensor. It also controls the rate of diffusion of electrolyte out of the sensor. If the membrane is torn the sensor must be discarded.

Output-voltage or current

An analog voltage or current proportional to the oxygen measurement as a percentage of range, suitable for driving a chart recorder or computer input.

Range

The operational measurement range of the analyzer. The range is dependent by its amplifier sensitivity forming the analyzer working measurement range. This process is performed via an induction

amplifier. If the Oxygen concentration is above the full scale value, it will not be measured accurately. Usually, the analyzer can measure oxygen concentrations between the ranges of the 20-80% accurately.

Response

The response time of an analyzer is defined as the time taken to go from the beginning of a noticeable change to 90% of the final level. The beginning is often defined as 10% of the final level. This is also called the “t90” time. The transit time of the gas is not included in this measurement.

Calibration

Regularly performed on the upper end range of measurement, as opposed to the bottom end or zero. Generally this is done by exposing the sensor to a gas of known concentration, and making the analyzer read that value.

Trace

Low levels of, in this case, oxygen. This term is used to describe unwanted levels of oxygen as a contaminant, typically in the low ppm levels.