



QUICK STARTUP GUIDE

INSTALLATION

1. Panel mount the Oxymaster housing as required.
2. Connect the Oxygen Sensor to a proper sampling system, along with a source of calibrating gas with a known oxygen value.

Note: At these low levels of gas to be measured, use only clean stainless steel tubing upstream of the sensor. Leak check the system. Also connect a few feet of tubing to the downstream port.

3. Wire the electrical connections to the terminal strip of the instrument as required.
4. If the Data Logger software will be used, connect the supplied interconnecting cable from the RS-232 Serial Port of the computer to the RS-232 connector on the Oxymaster.
5. Plug the Oxygen Sensor cable into the proper connector on the Instrument.
6. If Model 16TDP was supplied, connect the Moisture Sensor to a proper dry gas sampling system. **See Note above.**
7. Plug the Moisture Sensor cable into the proper connector on the Instrument.
8. Allow the sampling system(s) to run for several hours, (preferably overnight) to allow all the materials to outgas before taking readings.
9. Perform the Oxygen Sensor calibration described in the Manual.
10. You are now ready to obtain excellent measurement data. Consult the Oxymaster Manual for programming information.

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EDGETECH INSTRUMENT'S COMMITMENT TO QUALITY

Thank you for purchasing one of our products. At Edgetech Instruments Inc. it is our policy to provide cost-effective products and support services that meet or exceed your requirements, to deliver them on time, and to continuously look for ways to improve both. We all take great pride in the products we manufacture.

We want you to be entirely satisfied with your instrument. The information contained in this manual will get you started. It tells you what you need to get your equipment up and running, and introduces its many features.

We always enjoy hearing from the people who use our products. Your experience with our products is an invaluable source of information that we can use to continuously improve what we manufacture. We encourage you to contact or visit us to discuss any issues whatsoever that relate to our products or your application.

The Employees of Edgetech Instruments Inc.

3.0 INTRODUCTION

3.1 OVERVIEW

Edgetech Instrument's Oxymaster series of analyzers is available in two versions, which are described below.

THE OXYMASTER II 16T: This instrument measures trace oxygen in the presence of other gases, using a unique fuel cell sensor. The quantity of oxygen in the gas is indicated on a front panel digital display and a linear analog output. Gas Temperature measurement is available as an option.

THE OXYMASTER 16TDP: The 16TDP is a dual channel instrument that measures both trace oxygen and trace moisture in a gas. Along with the above fuel cell oxygen sensor, it also uses a phosphorous pentoxide (P_2O_5) cell for moisture measurement.

This manual will cover both versions.

3.2 THE OXYMASTER II 16T TRACE OXYGEN ANALYZER

The analyzer is divided into two systems:

1. The Analysis section, with the electro-chemical micro fuel sensor
2. The Readout section, providing signal conditioning, display, data logging, and control outputs

The Analysis section transports the gas to be measured to the membrane of the micro fuel sensor. The micro fuel sensor is a electro-chemical and galvanic cell which converts the quantity of oxygen in the gas into an electrical current.

In the Readout section, the small electrical current from the cell is conditioned so that it directly corresponds to the concentration of oxygen in the measured gas. This linear signal is available to actuate the programmable Alarm Relay, and also provides information to the Digital Display, Analog Output, and Data Logger. A microprocessor controls all data processing and input and output functions of the analyzer, ensuring a high accuracy measurement of oxygen.

3.2.1 THE MICRO-FUEL OXYGEN SENSOR

The oxygen sensor used in the Oxymaster 16T series is a Micro-Fuel Cell. It is a sealed, plastic disposable electrochemical transducer. The active components of the Micro-Fuel Cell are a cathode, an anode,

and the 15% aqueous KOH electrolyte in which they are immersed. The cell converts the energy from a chemical reaction into an electrical current in an external electronic circuit.

The action of this sensor is somewhat similar to that of a battery and somewhat similar to that of a fuel cell. There are, however, important differences between the operation of the Micro-Fuel Cell, the operation of a battery, and the operation of a fuel cell. In a battery, all of the reactants are stored within the cell. In a true fuel cell, all of the reactants are stored external to the cell. In the Micro-Fuel Cell, one of the reactants (oxygen) comes from outside the device as a constituent of the sample gas being analyzed. The Micro-Fuel Oxygen Cell is therefore a hybrid between a battery and a fuel cell. It is shown below in Figure 3-1.

3.2.2 THE EFFECT OF PRESSURE

In order to display the quantity of oxygen present in the sample in parts-per-million or as a percentage of the gas mixture, it is necessary that the sample diffuse into the cell under constant pressure (Dalton's Law). If the total pressure increases, the rate that oxygen reaches the cathode through the diffusing membrane will also increase. The electron transfer, and therefore the external current, will increase, even though the oxygen concentration of the sample has not changed.

Note: It is therefore important that the sample pressure at the fuel cell (usually vent pressure) remains relatively constant between calibrations.

3.2.3 CALIBRATION CHARACTERISTICS OF THE OXYGEN CELL

Assuming that the total pressure of the sample gas at the surface of the Micro-Fuel Cell input is constant, a convenient characteristic of the cell is that the current produced in an external circuit is directly proportional to the rate at which oxygen molecules reach the cathode, and this rate is directly proportional to the concentration of oxygen in the gaseous mixture. In other words it has a linear characteristic curve, as shown in Figure 3-2. In this system, there is no necessity for measuring circuits to have to compensate for sensor nonlinearity. In addition, since there is zero output in the absence oxygen, the characteristic curve has close to an absolute zero (within ± 1 ppm oxygen). In practical application, zeroing may still be used to compensate for the combined zero offsets of the cell and the electronics. (The electronics section is zeroed automatically when the



Figure 3-1, Oxygen Sensor

instrument power is turned on.)

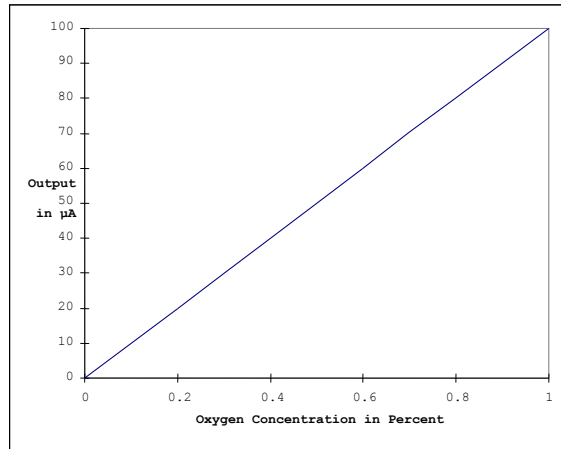


Figure 3-2 Characteristic Input/Output Curve for a Micro-Fuel Cell

3.3 THE OXYMASTER 16TDP TRACE OXYGEN AND MOISTURE ANALYZER

This analyzer, like the 16T, is divided into two systems:

1. The Analysis section, with the electro-chemical micro fuel sensor for oxygen measurement and the phosphorous pentoxide sensor for moisture measurement
2. The Readout section, providing signal conditioning, display, data logging, and control outputs for both sensors

3.3.1 OXGEN MEASUREMENT

The Analysis section transports the gas to be measured to the membrane of the micro fuel sensor. The micro fuel sensor is a electro-chemical and galvanic cell which converts the quantity of oxygen in the gas into an electrical current.

In the Readout section, the small electrical current from the cell is conditioned so that it directly corresponds to the concentration of oxygen in the measured gas. This linear signal is available to actuate the programmable Alarm Relay, and also provides information to the Digital Display, Analog Output, and Data Logger. A microprocessor controls all data processing and input and output functions of the analyzer, ensuring a high accuracy measurement of oxygen.

3.3.2 MOISTURE MEASUREMENT

In the Analysis section, the gas passing through the phosphorous pentoxide cell results in a small electrical current proportional to the quantity of water molecules (moisture) in the sample.

In the Readout section, the small electrical current from the cell is conditioned so that it directly corresponds to the concentration of moisture in the measured gas. This linear signal is available to actuate the programmable Alarm Relay, and also provides information to the Digital Display, Analog Output, and Data Logger. A microprocessor controls all data processing and input and output functions of the analyzer, ensuring a high accuracy measurement of moisture.

3.3.3 THE PHOSPHOROUS PENTOXIDE (P_2O_5) MOISTURE SENSOR

The phosphorous pentoxide moisture sensor, also called an electrolytic cell, has the ability to measure trace quantities of water vapor in a dry gas. Operation is based on the fact that if a small dc voltage is applied, water vapor molecules can be electrolyzed into their elements of hydrogen and oxygen. To electrolyze each water molecule, it is known that two electrons are required. Therefore, the quantity of current used by the cell is proportional to the number of water molecules being electrolyzed. If the dc excitation current is measured, water vapor content of the gas can be displayed. This measurement process provides a fundamental measurement of water vapor.

While in a typical electrolytic cell the rate of gas flow must be carefully controlled by the user for accurate measurements, this cell is independent of gas flow over



the range of 0.25 to 2.5 liters per minute. It is a diffusion cell, and the flow through it is controlled with a diffusion membrane. Although a fundamental measurement technique normally does not require calibration, each cell is calibrated at the Factory before shipment to the user to compensate for variations in the diffusion membranes. Figure 3-3 shows the moisture sensor.

Figure 3-3 The Phosphorous Pentoxide (P_2O_5) Moisture Sensor

3.4 DATA LOGGER

Each unit is supplied with a built-in software-controlled Data Logger, which allows the user to automatically record Oxygen and/or Moisture information over time. This data may be read out or printed out on an Excel Spreadsheet if desired.

4.0 INSTALLATION

4.1 MOUNTING

4.1.1 INSTRUMENT MOUNTING

The Oxymaster 16T Series is available in either a Panel Mount or Wall Mount version. In either case, some effort should be made to ensure that the instrument is located conveniently for both viewing and programming. See Figures 4-1 and 4-2. Each Panel Mount unit is supplied with panel mount accessories, which attach to the two pins on the sides of the unit. After inserting the unit in the panel cutout, attach it with the mounting brackets.

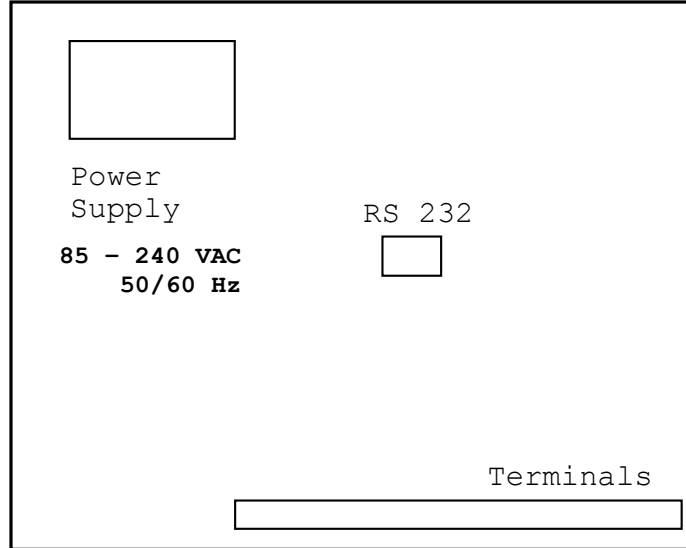


Figure 4-1 Rear View, Panel Mounted Unit

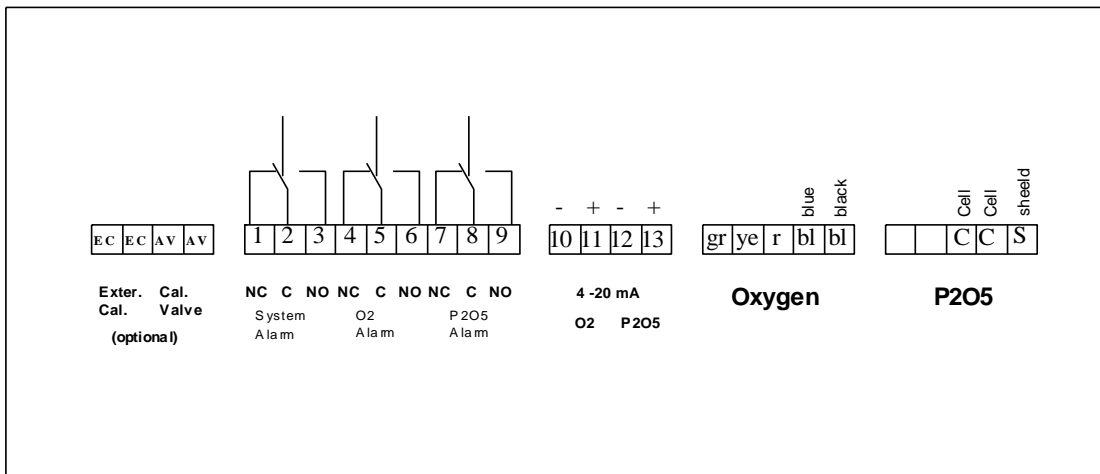


Figure 4-2 Panel Mount Unit Wiring Connections

The wiring connections shown above are for the dual unit, Model 16TDP. Water Vapor measurement information is available at the terminals labeled P2O5.

Figure 4-3 Front view of the Wall Mount unit.

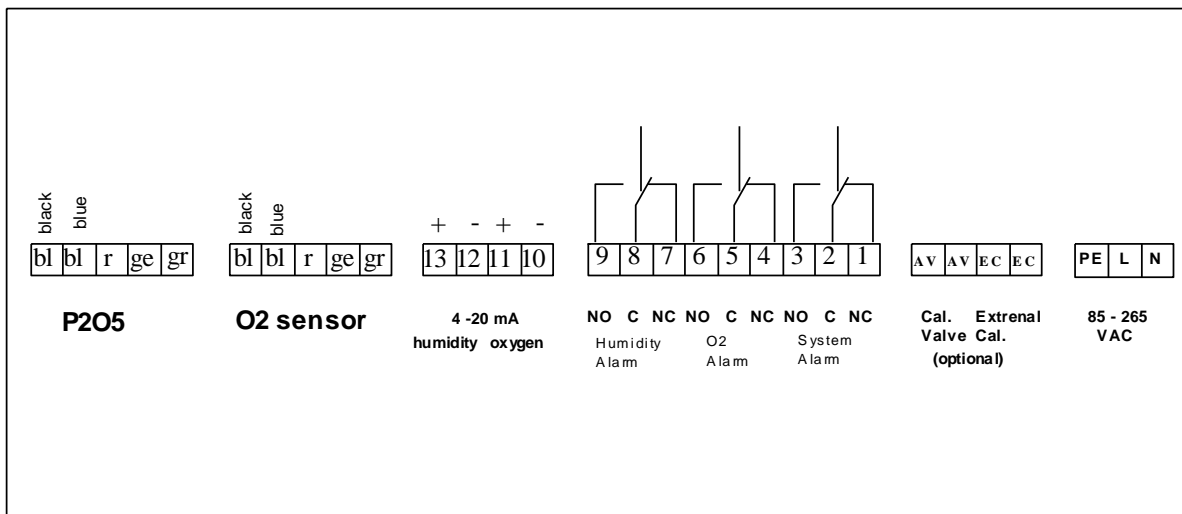
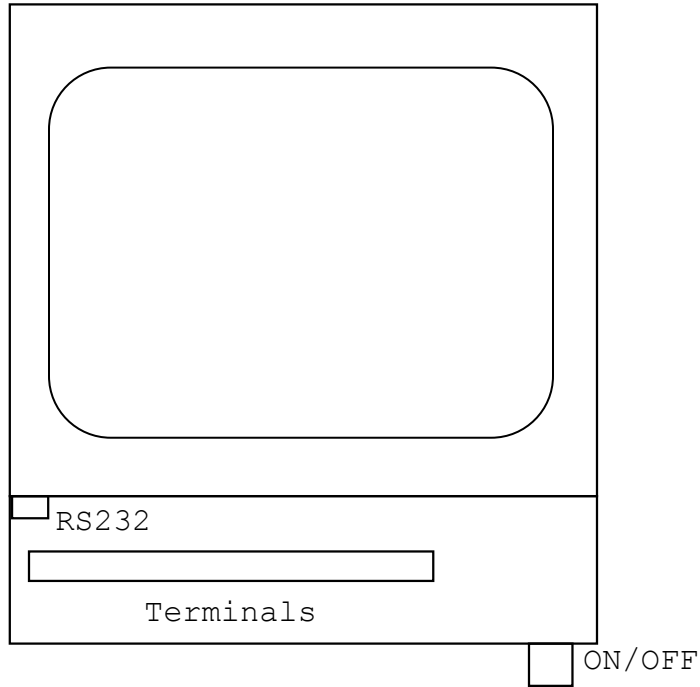


Figure 4-4 Wall Mount Unit Wiring Connections

4.1.2 SENSOR MOUNTING AND SAMPLING SYSTEM

Both the Micro-Fuel Cell Oxygen Sensor and the P₂O₅ Moisture Sensor are designed to measure very small quantities of Oxygen and Water Vapor in the

presence of other gases. They are manufactured of carefully selected non-hygroscopic materials such as stainless steel. The use of more porous materials such as plastic in your measuring system is strongly discouraged. In order to obtain correct readings and acceptable response times, the sensor sampling system must be carefully planned. Here are some recommendations:

- Tubing should be stainless steel, not plastic.
- If gas is brought from a long distance, use larger diameter tubing for faster response time. Reduce diameter at the sensor fitting.
- Leak check the system after installation.
- Purge the sampling system with dry gas after installation.
- Do not expose the sensor to excess pressure.

The sensor gas connections are ¼ inch (6.35 mm) compression fittings.

5.0 OPERATION

5.1 KEYPAD AND DISPLAY

Mounted on the instrument front panel is an LCD digital display and a numeric keypad that includes Enter and Function keys.

Use of the Menu and Keyboard will be described in the Programming section.

ALARM : If the sample value exceeds the programmed alarm value, the Alarm Relay will actuate. The alarm is disabled during calibration.

ERROR: An ERROR indication can be caused by:

- calibration error
- system error
- change cell requirement

5.2 PROGRAMMING

Function Keys

The Function keys allow you to navigate to the next menu for programming input data.

ENTER Key

The ENTER key is used to confirm your inputs.

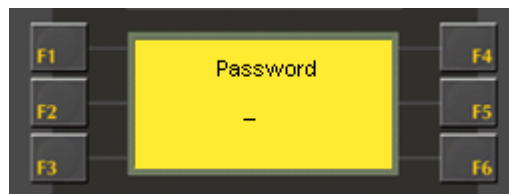


5.3 PASSWORD AND MENU

In the following example you can use the F6 Key to call up the Menu display.

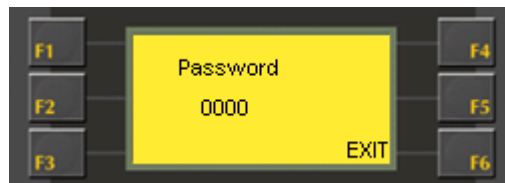


In the Standard Screen, press F6 (**MENU**) and the Password display will appear.



You must put in a Password. The Factory Default value is **0000**. The Password can be changed with the following steps.

Go in to the Menu mode with **0000**. The Menu window will be displayed. Press F5 for **SERVICE** and F3 for **PASSWORD**. The following window will be displayed:



You can change the password with the numeric keys and confirm it with ENTER.

NOTE:

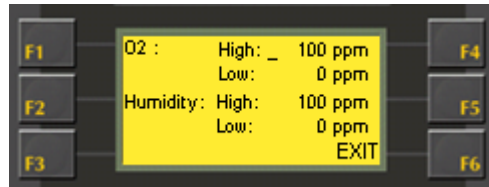
KEEP YOUR NEW PASSWORD IN A SAFE LOCATION. IF IT IS LOST YOU WILL NOT BE ABLE TO OPERATE THE INSTRUMENT. CONSULT THE FACTORY FOR ASSISTANCE IF NECESSARY.

5.4 PROGRAMMING THE ALARM SETPOINTS

From the Standard Display:

1. Press the F6 (Menu) key. Then, insert your password.

2. Press F2 (**Outp/Alarms**) and then press F4 (**Alarms**) in the submenu. The following display will be seen:



The cursor can be seen to be blinking on the first value. Set your new values with the numeric keypad and confirm it with ENTER. Each time you ENTER a value, the cursor will step down to the next line.

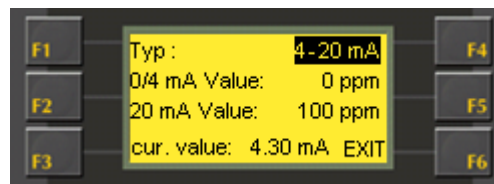
To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

5.5 PROGRAMMING THE ANALOG OUTPUTS

The two linear 4 - 20 mA Analog Outputs can be programmed anywhere over the measurement range of the instrument. One output corresponds to the Oxygen measurement and one output corresponds to the Moisture measurement.

1. Setting the Analog Output for Oxygen measurement

From the Standard Display press the F6 (**Menu**) key. Insert your password. In the submenu that appears, press F2 (**Outp/Alarms**) and the F1 key (**an. Out. O2**) in the next submenu. The following display will be seen:



The blinking cursor can be seen on the first value. Set the new values by using the numeric keypad and confirm it with ENTER.

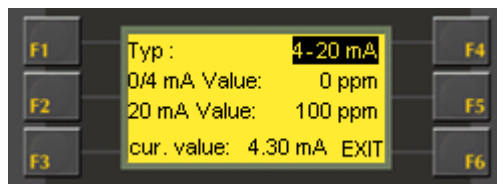
You can select either 0-20 or 4-20 mA for the Analog Output. It can be changed by using the UP and DOWN cursor keys.

The bottom line of the digital display shows the actual current value.

To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

2. Setting the Analog Output for Moisture Measurement

From the Standard Display press the F6 (**Menu**) key. Insert your password. In the submenu that appears, press F2 (**Outp/Alarms**) and the F2 key (**an. Out. Humidity**) in the next submenu. The following display will be seen:



The blinking cursor can be seen on the first value. Set the new values by using the numeric keypad and confirm it with ENTER.

You can select either 0-20 or 4-20 mA for the Analog Output. It can be changed by using the UP and DOWN cursor keys.

The bottom line of the digital display shows the actual current value.

To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

5.6 CALIBRATING THE OXYGEN SENSOR

Obtain a source of dry gas with a known Oxygen value. To calibrate the equipment, take the following steps:

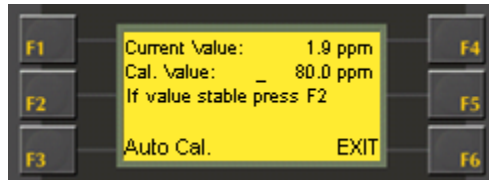
First, connect to the calibration gas and let it flow through the measurement cell.

Notes:

1. **Do not leave the downstream side of the Oxygen Sensor open to the room atmosphere. Connect a few feet of tubing.**
2. **Make sure there are no leaks upstream of the sensor.**
3. **Wait for the reading to equilibrate.**

From the Standard Display press the F6 (**Menu**) key. Insert your password. In

the submenu that appears, press F1 (**Calibration**) and F1 again in the following submenu (**Calibration Oxygen**). The following display will be seen:



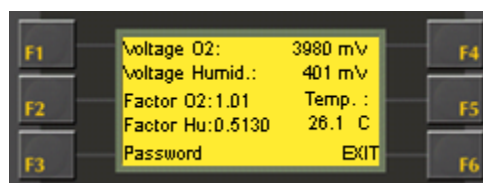
The cursor will be blinking on the **Cal. Value**. Set your known Calibration Gas value with the numeric keypad, and confirm it with ENTER.

Current Value shows the current measured value of oxygen in the sensor. If the value is stable press F2 to confirm it. The **Current Value** will gradually equilibrate to the **Cal.Value**.

To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

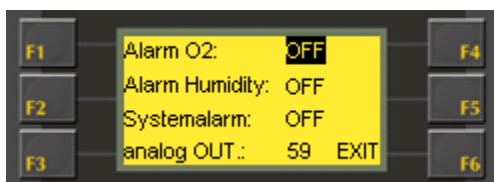
5.7 THE SERVICE DISPLAY

From the Standard Display press the F6 (**Menu**) key. Insert your password. In the submenu that appears, press F5 (**Service**), and you will see a display like the picture shown below. You can see the current factor of Oxygen (**O2**) and Moisture (**Hu**), the mV output of the preamplifiers, and the actual measured temperature.



5.8 TESTING THE OUTPUTS

From the Standard Display press the F6 (**Menu**) key. Insert your password. In the submenu that appears, press F4 (**Test**) in the next submenu. The following display will be seen:



You can use this mode to turn alarms On or OFF by using the cursor UP and DOWN keys, and to check the Analog Output level. The Analog Output scaling and Alarm Relay positions should correspond to the Oxygen level of the Calibration Gas, depending upon the scaling that has previously been programmed into the instrument.

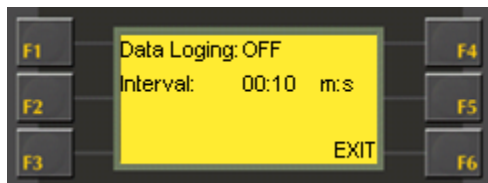
To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

Important: If you leave this Menu, the Test will be terminated.

5.9 DATA LOGGING

The Oxymaster is supplied with a Data Logger capable of 10000 Readings.

From the Standard Display press the F6 (**Menu**) key. Insert your password. In the submenu that appears, press F3 (**Data**), and then press F2 (**Logger config.**) in the next submenu. The following display will be seen:



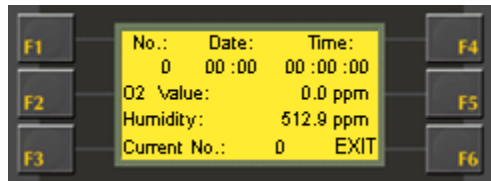
The cursor may be seen blinking on the first point. Set the Logger ON/OFF with the cursor keys UP and DOWN and confirm it with ENTER.

The interval can be changed by using the numeric Keys or the UP and DOWN Keys of the Keypad. Confirm the value with ENTER.

To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

Under the Read Data menu, you can read all the previously stored data points. To get there, press F6 (**MENU**), and insert your password. Then press F3 (**DATA**), and F1 (**Read Data**). The display (see below) shows you:

No: Reading number
 Date: Date of storage
 Time: Time of storage
 Value: Stored oxygen value
 Value: Stored moisture value
 Current No: Shows the data point where the Logger is now.



To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

5.10 AUTO CAL (OPTIONAL – FOR OXYGEN ONLY)

With the Auto Calibration function, you can program the instrument to self-calibrate on specific times and dates. (For example, nights and weekends.) A permanent connection to the calibration gas is necessary. With the stainless steel 2/3 way calibration valve provided with the instrument, the calibration gas must be connected with the cell housing.

To enable the Automatic Calibration mode and to adjust the Calibration times, proceed as follows:

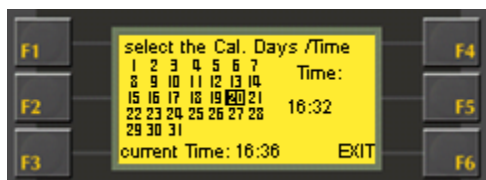
From the Standard Menu, Press F6 (**MENU**) and insert your password. Then press the F1 key (**Calibration**), followed by F3 (**Autocal.**) in the next submenu shown. The following display will be seen:



You can use the UP and DOWN arrows to turn the Autocal function ON or OFF. Then, the Waiting Time (**T wait**) can be adjusted to delay the measurement while the unit is being filled with calibration gas. The factory default delay time is 20

minutes. If the Oxygen reading is not stable by this time, adjust T wait to a higher reading. The Dead time is the waiting time after disconnecting the calibration gas and flushing the cell with sampling gas. This too can be adjusted if necessary. The Analog Output is held at a fixed value during this time.

If you press F3 (**Days press F3**), you will go to the next menu. Here you can select the days of the month for the automatic calibration. Use the UP and DOWN cursors to select the day. The selected day will blink. Confirm it with ENTER and the background of the selected day will turn black. In the following example, the 20th of the month has been selected. Then, select the time for calibration. If you have selected the days, press the right cursor key and the time will blink. Select the time with the numeric keys and confirm it with ENTER. The bottom line in the display shows the current time.



To leave the Menu press F6 (**EXIT**). Each time you press the EXIT Key, you will go one step higher in the Menu. If you wish to leave the MENU completely, you can press the ESC key at any time.

5.11 USING THE DATA LOGGER SOFTWARE

5.11.1 INTRODUCTION

The Data Logging software package is standard with each Oxygen Analyzer. By using it, you can store data to be read out later. This data can be displayed easily on an Excel Spreadsheet in your computer. The interconnecting communications cable is also provided.

5.11.2 CONNECTING TO YOUR COMPUTER

Connect the provided interconnecting cable between the Oxymaster and your computer. The 4 pin connector plugs into the rear panel of the instrument, and the 9 pin DB (DIN) connector plugs into the RS-232 Serial Port on your computer.

5.11.3 STARTING THE SOFTWARE

Insert the CD into your CD-ROM drive. It is not necessary to install the software. You should copy the software to a directory and call it up from there.

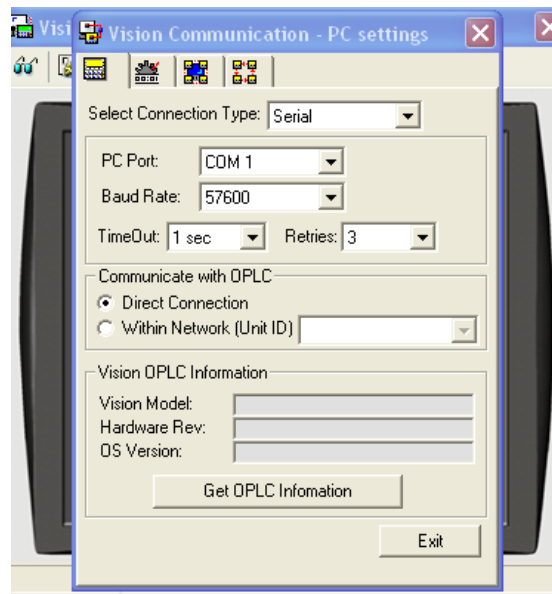
To run the software, call up the file "UnRmAccExe.exe". The Logging Program

should be running and the following picture will appear:



The default Com Port is COM1. If your computer uses a different port, such as COM 2, you will have to change it. Using your mouse, click on the second button from the left and choose "Communication - PC settings".

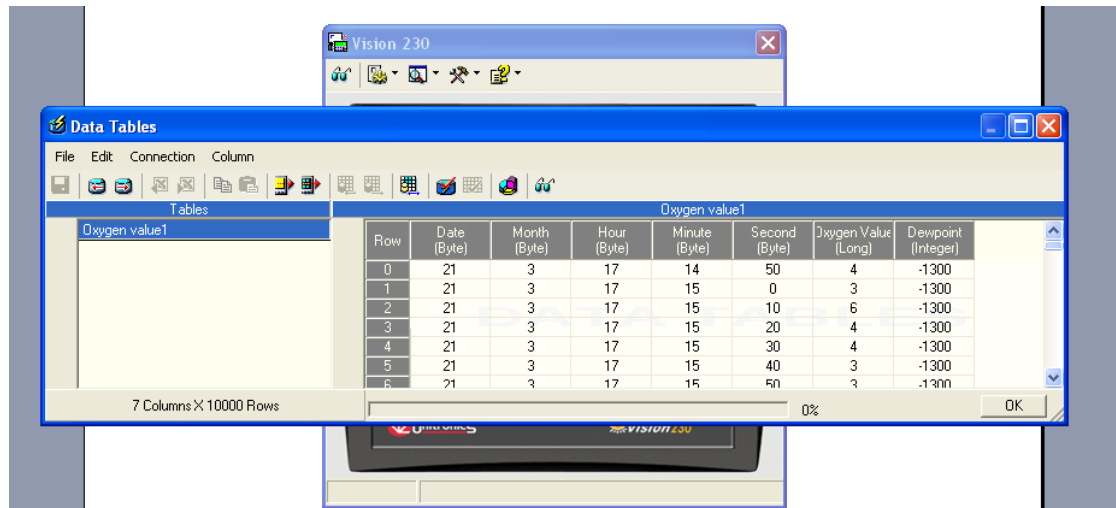
You will see the following picture:



Adjust the COM port only. The other settings should be correct. Leave the Menu by clicking on "Exit".

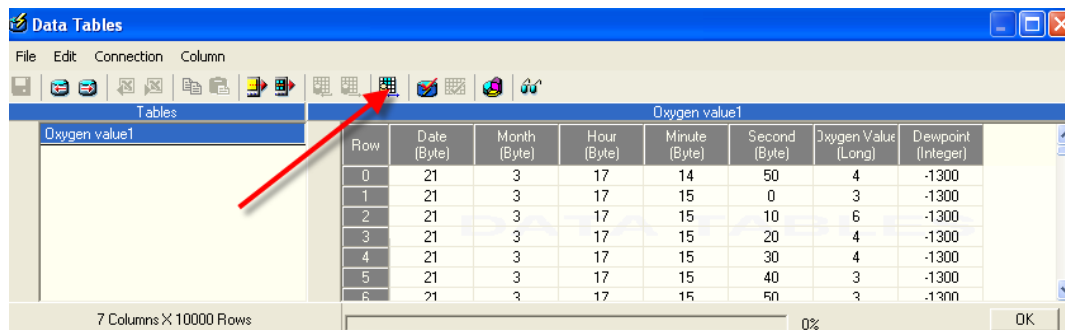
5.11.4 USING THE SOFTWARE

Next, you can go to the Data tables and find your readings. Click on the second Button from the right and choose “Tools“ and then “Data Tables“ . You will see the following picture:

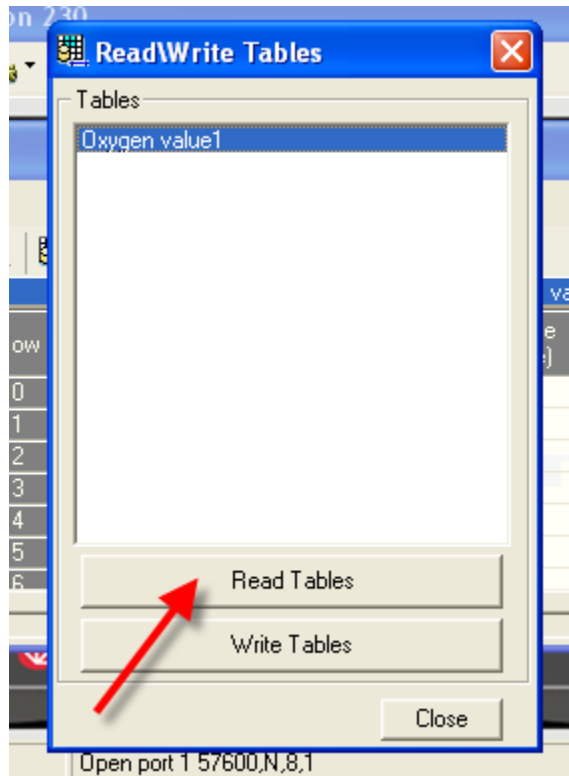


Here, you will see the Data table showing the readings.

To read the table, click on the point shown below, “Read/Write Tables“



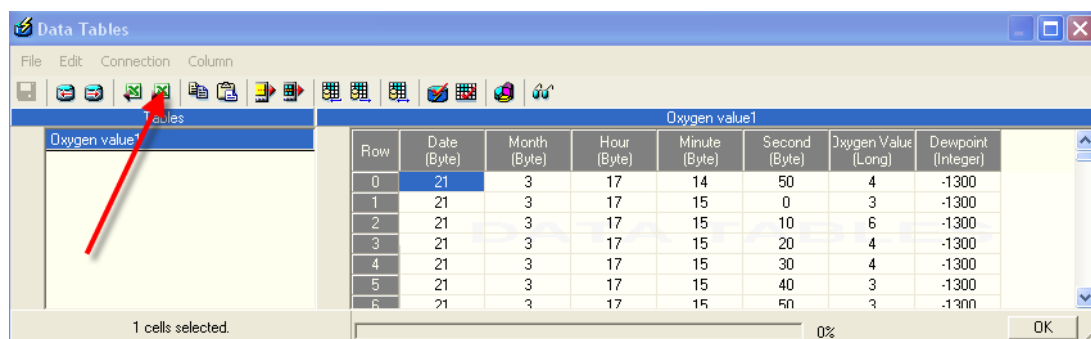
You will then see the following Menu:



Click here to “Read Tables“, and the computer will fill in the data. After this, close the window.

5.11.5 EXPORTING THE DATA TO EXCEL

To export the data, perform the following steps:



Select only the desired cells by clicking on them, or select all cells by pressing the “Row” button.

Then click on “Export Cells to Excel“, and wait for the Input window to put in the Name and Path.

The Data will then be saved.

IMPORTANT: TO OBTAIN THE CORRECT VALUES IN THE TABLES, MULTIPLY ALL READINGS BY THE FACTOR 0.1. IN OTHER WORDS, MOVE THE DECIMAL POINT ONE PLACE TO THE LEFT.

Example (See the picture above, Row 0):

Oxygen value: 4 x 0.1 = 0.4 ppm

Dew Point value: -1300 x 0.1 = -130 °C

6.0 MAINTENANCE

6.1 OXYGEN SENSOR

6.1.1 PLACING THE O₂ SENSOR IN STANDBY MODE

Important: When the Analyzer will be out of service for more than 12 hours, please make sure that the measurement cell is closed. No room air, dry air line, or oxygen from any external source should be connected to the measurement cell. Exposure to oxygen during Standby will shorten the life of the sensor.

6.1.2 BEFORE RESTARTING THE EQUIPMENT

1. Purge the sampling system with Nitrogen.
2. Calibrate the sensor, using the calibrated Oxygen source as discussed in the Operation chapter.

6.1.3 CELL REPLACEMENT



THE OXYGEN SENSOR IN THIS ANALYZER USES ELECTROLYTES WHICH CONTAIN TOXIC SUBSTANCES, MAINLY LEAD AND POTASSIUM HYDROXIDE. THEY CAN BE HARMFUL IF TOUCHED, SWALLOWED, OR INHALED. AVOID CONTACT WITH ANY FLUID OR POWDER IN OR AROUND THE UNIT. WHAT MAY APPEAR TO BE PLAIN WATER COULD CONTAIN ONE OF THESE TOXIC SUBSTANCES. IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES. CALL PHYSICIAN. (SEE APPENDIX, MATERIAL SAFETY DATA SHEET.)

CAUTION:

Do not disturb the integrity of the cell package until the cell is to actually be used. If the cell package is punctured and air is permitted to enter, the cell will require an excessively long time to reach zero after installation (as long as 1-2 weeks!).

6.1.4 WHEN TO REPLACE A CELL

The characteristics of the Micro-Fuel Cell show an almost constant output throughout its useful life, and then a sharp fall off towards zero at the end. Cell failure in the Oxymaster is usually characterized by the inability to zero the instrument down to a satisfactorily low ppm reading. When this occurs, the System alarm trips, and the LCD displays a failure message.

Before replacing the cell:

- a. Check your gas source to make sure it is within specifications.
- b. Check for sources of leaks where oxygen may be entering the sampling system.

If there are no leaks and the sample gas is OK, replace the cell.

6.1.5 STORING AND HANDLING REPLACEMENT CELLS

To have a replacement cell available when it is needed, we recommend that one spare cell be purchased 9 -10 months after beginning use of the Oxymaster, or shortly before the end of the cell's one year warranty period.

CAUTION:

DO NOT STOCKPILE CELLS. THE WARRANTY PERIOD STARTS ON THE DAY OF SHIPMENT.

The spare cell should be carefully stored in an area that is not subject to large variations in ambient temperature (75 °F nominal) or to rough handling.

6.1.6 REMOVING THE MEASUREMENT CELL

The micro fuel cell is build in a sampling cell block. To take out a defective or unusable cell, perform the following tasks:

1. Shut off the unit.
2. Unscrew the wing nuts from the cell block.
3. Carefully remove the bottom of the cell block with the cell.
4. Take the cell carefully from the bottom. Please don't touch the sensor surface because of the possibility of toxic liquid!
5. Please dispose of the old cell lawfully.

6.1.7 INSTALLING A NEW MEASUREMENT CELL

CAUTION:

DO NOT TOUCH THE SENSOR MEMBRANE! THE SENSOR SURFACE HAS A SMALL TEFLON MEMBRANE WHICH CAN BE DESTROYED BY CONTACT. THE SENSOR WILL HAVE TO BE REPLACED IF THIS SURFACE IS DAMAGED.

1. Shut off the unit.
2. Remove the new micro fuel cell from the package.
3. Unscrew the wing nuts from the cell block. Take care that you don't shift or damage the O-ring.
4. Carefully install the new cell in the center of the cell block bottom. The sensor membrane wall will be below.

5. Push the cell together with the cell bottom in the cell block (the contact surface will be on the top) and reinstall the wing nuts.

NOTE: THE COVER WILL ONLY FIT IN ONE DIRECTION.

6. Restart the equipment and purge the sampling system with nitrogen immediately.

6.1.8 CELL WARRANTY

The Class L-2 Micro-Fuel cell is used in the Model Oxymaster16T. This cell is a long life cell and is warranted for 1 year from the date of shipment. Note any Addenda attached to the front of this manual for special information applying to your instrument. With regard to spare cells, warranty period begins on the date of shipment. The customer should purchase only one spare cell. Do not attempt to stockpile spare cells.

NOTE: THE L-2 CELL IS NOT DESIGNED APPLICATIONS WHERE CO₂ IS A MAJOR COMPONENT IN THE SAMPLE.

However, concentrations of 1,000 ppm or less will not adversely effect the cell performance. Consult the Factory for available options for either intermittent or continuous CO₂ exposure. If a cell was working satisfactorily, but ceases to function before the warranty period expires, the customer will receive credit toward the purchase of a new cell. If you have a warranty claim, you must return the cell in question to the Factory for evaluation. If it is determined that failure is due to faulty workmanship or material, the cell will be replaced at no cost to you.

NOTE: EVIDENCE OF DAMAGE DUE TO TAMPERING OR MISHANDLING WILL RENDER THE CELL WARRANTY NULL AND VOID.

6.1.9 TROUBLESHOOTING

Erratic readings of the Oxygen concentration as reported by the analyzer:

Possible Causes:

- 1.) The analyzer may have been calibrated inaccurately
- 2.) Leakage in the Sampling System
- 3.) Atmospheric Oxygen may be diffusing in through the outlet vent
- 4.) Unstable pressure
- 5.) Defective Micro Fuel cell

Solutions:

- 1.) Turn the analyzer off, then back on again. Then, proceed to carefully calibrate and zero the analyzer.
- 2.) Check the Sample and Calibration gas inlet and the outlet vent for leaks and make sure that fittings are tight.
- 3.) Increase flow rate and/or length of vent tubing in order to minimize the diffusion of oxygen from the vent back to the sensor.
- 4.) Make sure that the measurement gas pressure is stable. The measurement cell is a pressure sensitive medium and the operation must be at atmospheric pressure. Changes in the system pressure will cause measurement value deviations. In the worst case, the measurement cell may be destroyed. Use an adjustable pressure reducer on the measurement gas inlet, not the outlet. Make sure that the measurement gas outlet is open to the atmosphere (with a length of tubing – see 3 above) and there is no pressure build-up in the cell cavity.
- 5.) If none of the above steps solve the problem, replace the sensor.

6.1.10 CLEANING THE SAMPLE CELL HOUSING

If you have a reason to clean the sample cell housing, please do not insert a cloth, which may break the gold plated spring contacts inside. Remove the screws on the top of the housing, and disassemble the case. You can then clean all components individually by using a clean cloth. After the cleaning, reassemble the housing. Be sure that the O-Ring is in the correct position and is not damaged. The plate on top of the cell housing may be mounted rotated 90°. The direction depends on the individual installation.

6.2 MOISTURE SENSOR

Many of the above instructions for the Oxygen Sensor also apply to the Moisture Sensor. They have much in common.

1. Both are carefully constructed of non-hygroscopic materials that will not out-gas for long periods of time, slowing down the sampling system.
2. Both should use a sampling system also made of non-hygroscopic materials such as stainless steel, use tubing downstream of the sensor to avoid ambient air backing up into the housing, and should be checked for leaks.

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3. **Important:** Both sensors must not be exposed to wet gas. If that occurs, very long periods of time will be required to dry out the sensor before it can be used. Extended periods of exposure to high humidity may possibly damage the sensor.

7.0 SPECIFICATIONS

7.1 OXYGEN SENSOR

Measurement Range: 0 - 10000 ppm O₂, programmable
Lowest range: 0-10 ppm

Calibration: With calibration gas (example: 80 ppm O₂ in N₂)

Accuracy: +/- 2% FS (T= constant)
+/- 5% FS over full temperature range (at 0 -10 ppm +/- 1ppm)

Resolution: 0.1 ppm

Response time : 90 % of FS at 25°C
0-10 ppm < 45 s
0-100 ppm < 30 s
0-1000 ppm < 10 s

Operating Temp: 0 - 50°C

Sample Pressure: 0.1 - 1 bar

7.2 MOISTURE SENSOR

Measurement Range: 0.1 – 1000 ppm, programmable

Resolution: 0.1 ppm

7.3 INSTRUMENT

Output signal: 4 - 20 mA/DC, isolated, for Oxygen
4 -20 mA/DC, isolated, for Moisture

Display: Graphic LCD

Alarm: 1 programmable Alarm for Oxygen
1 programmable Alarm for Moisture

System diagnostics: Self diagnosis with relay output

Voltage: 85 - 230 VAC at 44/60 Hz, or 24 VDC

Dimensions: 8.7 x 7.5 x 7.5 inches (220 x 190 x 190 mm)
(W x H x L) Mounting Dimensions

Weight: 6.6 pounds (3 kg)

8.0 APPENDIX

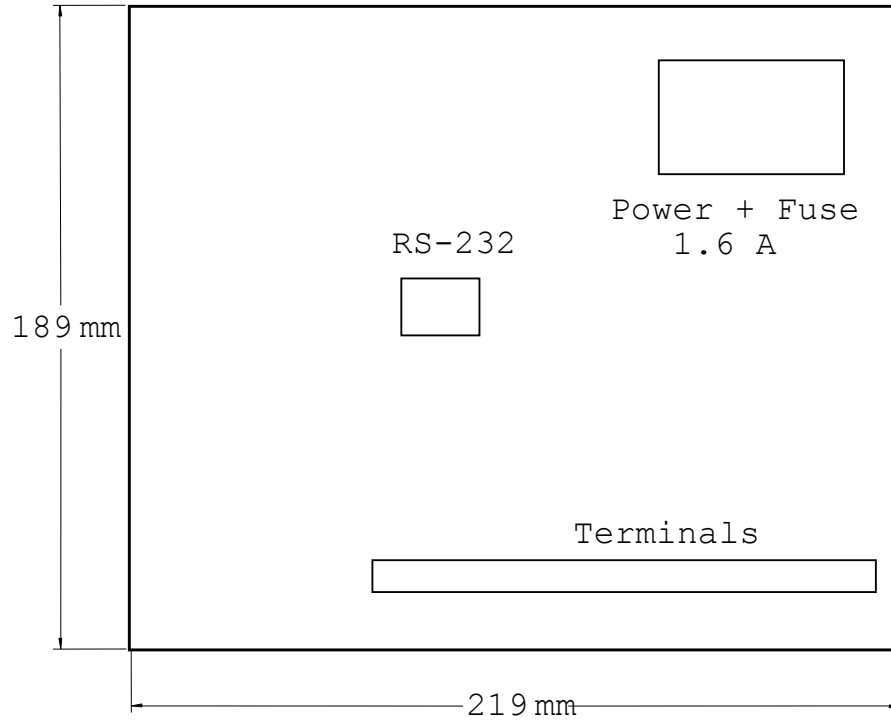
8.1 WARRANTY STATEMENT

All equipment manufactured by Edgetech Instruments Inc. is warranted against defective components and workmanship for repair at their plant in Massachusetts, free of charge, for a period of twelve months. Malfunction due to improper use is not covered in this warranty and Edgetech Instruments Inc. disclaims any liability for consequential damage resulting from defects in the performance of the equipment. No product is warranted as being fit for a particular purpose and there is no warranty of merchantability. This warranty applies only if (i) the items are used solely under the operating conditions and in the manner recommended in the instruction manual, specifications, or other literature; (ii) the items have not been misused or abused in any manner or repairs attempted thereon; (iii) written notice of the failure within the warranty period is forwarded to Edgetech Instruments Inc. and the directions received for properly identifying items returned under warranty are followed; and (iv) the return notice authorizes Edgetech Instruments inc. to examine and disassemble returned products to the extent Edgetech Instruments Inc. deems necessary to ascertain the cause for failure. The warranties expressed here are exclusive. There are no other warranties, either expressed or implied, beyond those set forth here, and Edgetech Instruments Inc. does not assume any other obligation or liability in connection with the sale or use of these products.

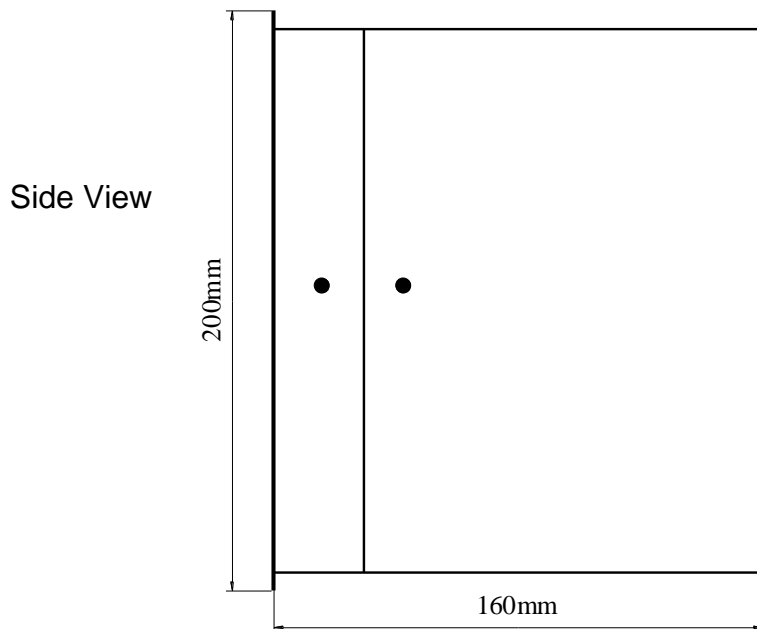
Equipment not manufactured by Edgetech Instruments Inc. is supported only to the extent of the original manufacturer's warranties.

8.2 DRAWINGS

8.2.1 RACK MOUNT HOUSING DIMENSIONS

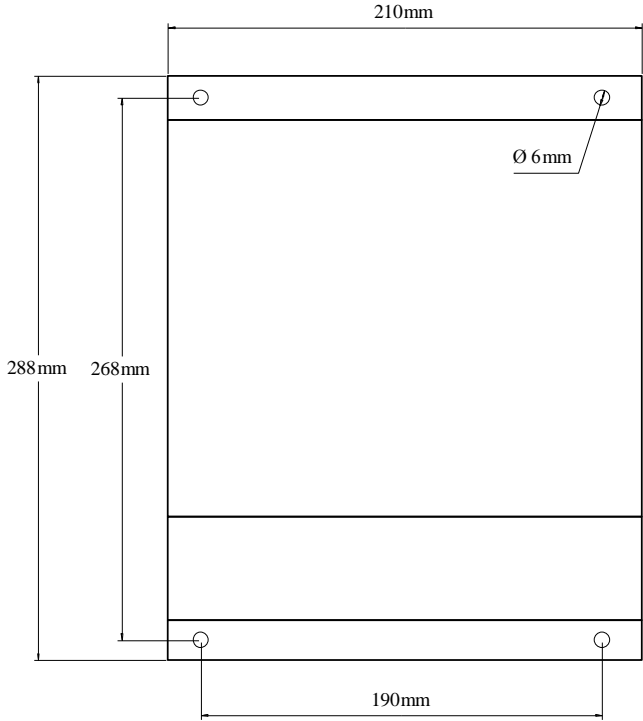


Rear View



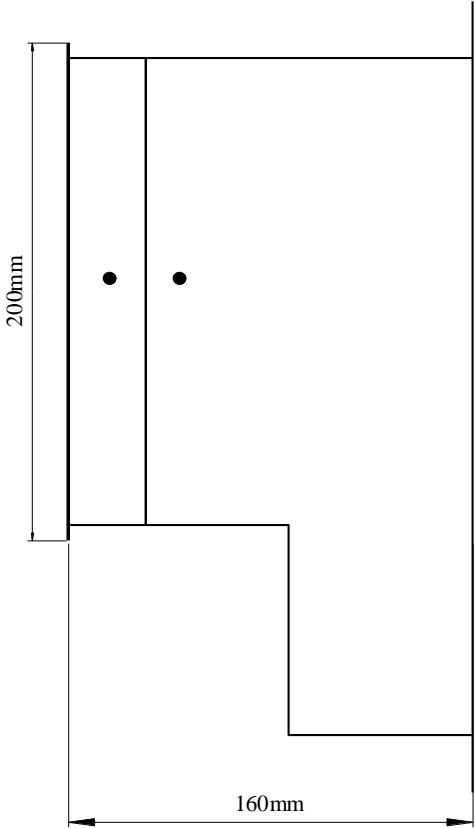
Side View

8.2.2 WALL MOUNT HOUSING DIMENSIONS

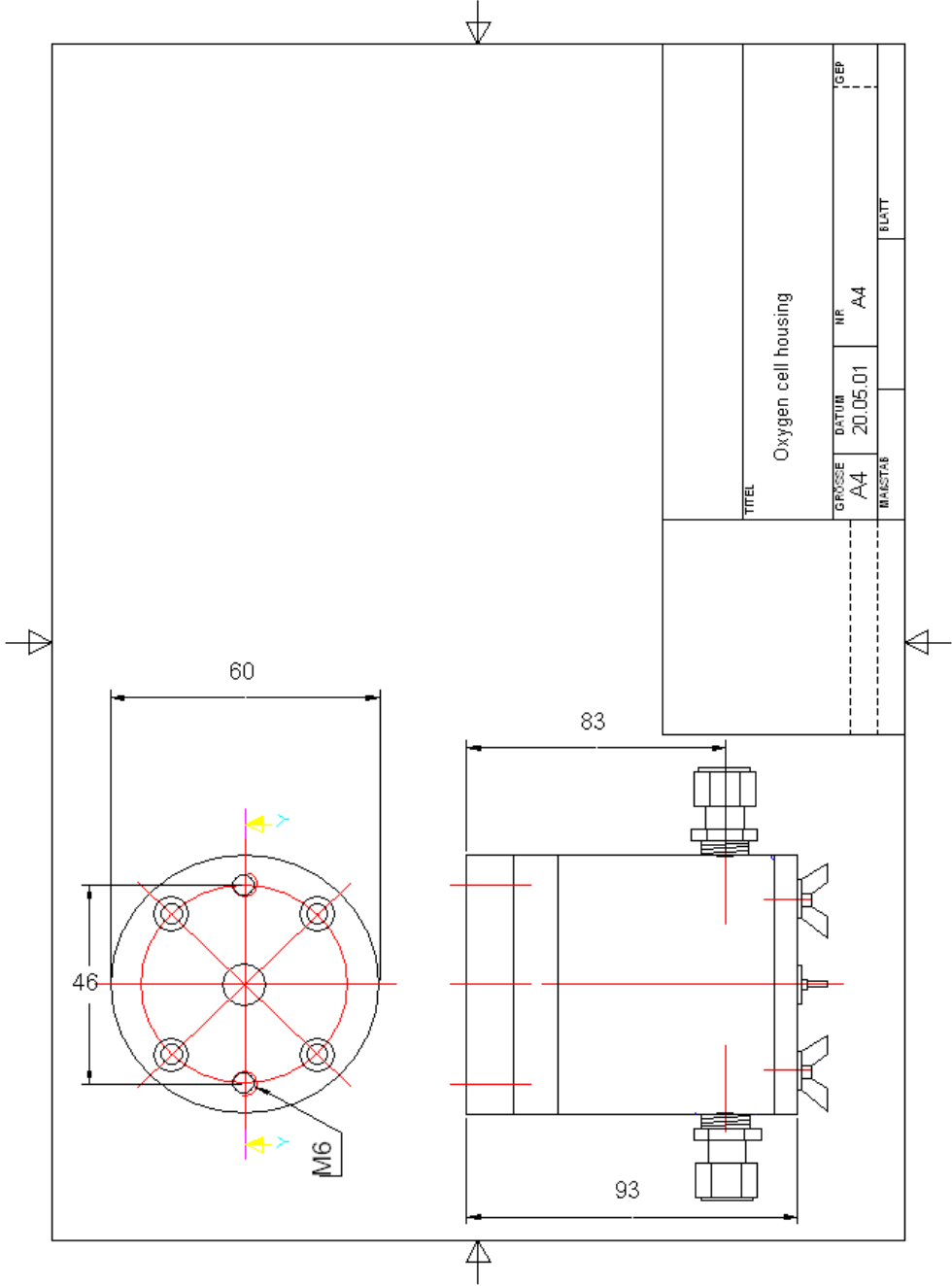


Front view

Side View



8.2.3 OXYGEN CELL



Notes