PROCESSSENSING V233P Oxygen Analyser Instructions

The

MICROX

Oxygen Analyser

User Instruction Manual

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Revision No: **01**

NTRON
Gas Measurement

Revision History	Description
Rev 00	New Document for Serial No 2xxxxx
Rev 01	Formatting improvement

Zirconia Sensors operate at moderately elevated temperatures and can cause minor discomfort if held in contact with fingers or hands for a number of seconds.

Before turning on power to the Analyser and Sensor, ensure that the voltage is correct. See the specification section of this manual for details.

The DIN Rail Mounting Microx Analyser module and Sensor operate with an Extra Low Voltage power source. (ELV)
No special personnel protective measures are necessary, but it must be ensured that the user connects a suitable power source to the Microx Analyser within the voltage range specified for this product.

The Panel and Wall mount versions can be mains powered (110-240VAC) option at time of order.
The user should ensure that any installation and wiring and upstream protective devices are provided in line with the appropriate regulatory requirements.

1. INTRODUCTION

1.1 Microx Module

This user manual applies to Microx analyzers with a serial number in this format: **2XXXXX**.
For Microx models with a different serial number format, please contact us at
ie.ntron.sales@processsensing.com for user documentation.

The MICROX Module has been designed to allow OEM'S (Original Equipment Manufacturers) to use the module within their own equipment. Typically, the DIN and Panel Mount Microx Analyser would be mounted within a control panel with the sensor connected to the process sample point either within the panel or external to the panel. The Wall Mount version is suitable for mounting in the operational location without further mechanical protection, following a suitable risk survey being undertaken by the user.

Key design features are:

- Compact enclosure
- Simple keypad calibration facility (utilising onboard LCD display).
- 4-20mA current source output for gas level indication (10-bit resolution).
- Input voltage range, 24VDC Nominal

  or 110-240 VAC. (Panel and Wall mount versions)
- PCB mounted screw terminals for all connections.
- RS232 output for transmission of live data to a PC.

3.1 Operation

When power is first applied to the Microx module an initialisation procedure is performed as follows:

- All the display segments are displayed
- The software version number is displayed
- The company name is displayed
- The sensor type is displayed
- The display then shows the gas level.

The module is now operational

1.2 Sensor Inputs

The Microx Module is designed to interface with any one of the following 3 principal types of sensor technology.

Electro-Chemical
Solid State
Zirconia Dioxide

A number of different measurement ranges are possible as follows;

0-1000 ppm O2
0-10000 ppm O2
0-25% Vol. O2
0-96% vol. O2

The above list represents standard ranges. Other measurement ranges are possible.

2 SPECIFICATION

Supply	
Input Voltage Options:	24V DC nominal.(Good quality power supply) 110-240VAC Panel and Wall mount versions only.
Supply current:	140 mA at 24VDC nominal, all relays energised, 20 mA drawn on current loop.
Outputs	
Analogue Output:	4-20mA analogue output (10-bit resolution) Current Source.
Relays (Optional)	
3	Single pole change over. Rating 6 Amps 250 v AC
Fuses	
Fuse	500mA anti-surge on board fuse for circuit protection.
Additional Features	
Display:	4 Digit, 7 Segment Display.
Keypad:	4-Button Keypad
Dimensions:	See the appropriate diagram on page 7 this manual.
IP Rating	IP20. Wall mount version is IP65.
Terminals capacities:	0.2-4.0mm Solid wire 0.2-2.5mm Stranded wire
Software:	Software configuration, calibration and data logging provided by PC communications.
RS232 Output	Communications with PC @ 19200 baud.

3 MICROX MODULE

3.2 Fuses

A 500mA Anti-surge fuse is fitted to the OEM module, which is connected between the power supply and the OEM module. It is located next to the power input terminals.

3.3 Mounting Options

Din Rail Mounting Version.

Overall dimensions:
86mm(H) x 69mm(W) x 58mm(D).

Panel Mounting Version.

Overall dimensions:
96mm(H) x 96mm(W) x 83mm(D).
(Including connection Terminals)

Panel cut-out dimensions
91mm(H) x 91mm(W)

Wall Mounting Version

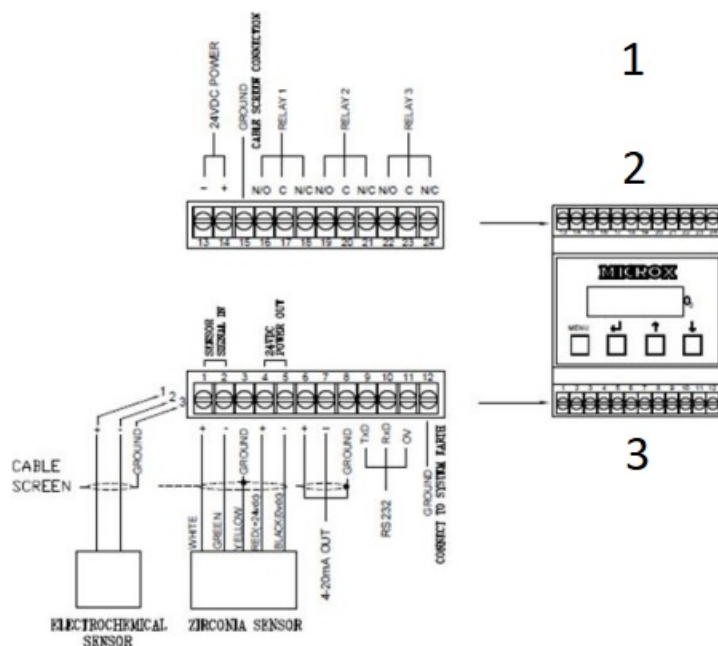Overall dimensions:
145mm(H) x 110mm(W) x 93mm(D).
(Including Cable Glands)

3.4 Field Connections

All connections to the module are provided in the form of screw terminals.

The pin- outs for each Microx version are given below.

**Din Rail Mounting version.**

1. FRONT VIEW OF ANALYSER WITH TERMINAL CONNECTIONS
   (FIXED TERMINALS-NOT PLUG/SOCKET)

2. ELECTRICAL/INTERFACE CONNECTION TERMINALS 'TOP'

3. ELECTRICAL/INTERFACE CONNECTION TERMINALS 'BOTTOM'

Note:
Terminals 4 & 5 are not used with Electro-Chemical sensor.

Panel and Wall Mount Versions – AC/DC Supply option.

(Terminals located at the rear of the Module, identified as below as viewed)
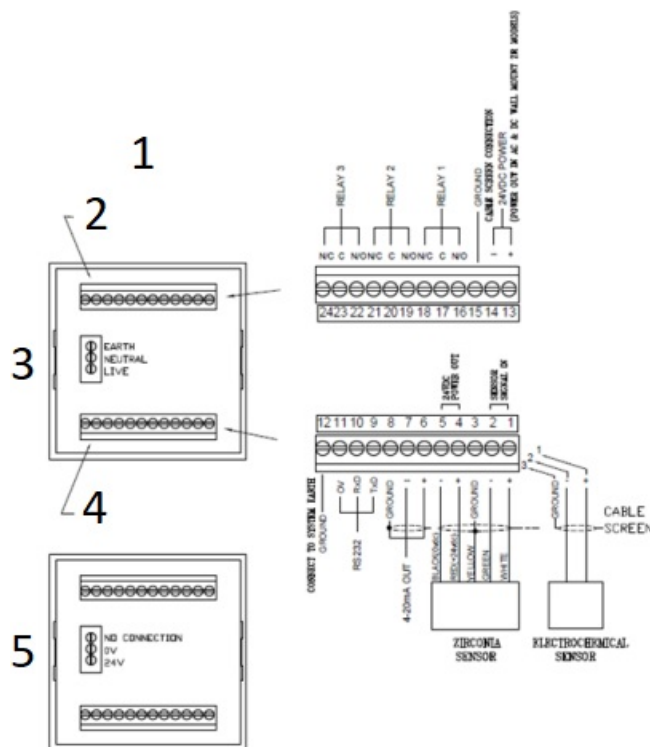
1. REAR VIEW CF ANALYSER MODULE

2. ELECTRICAL/INTERFACE CONNECTION TERMINALS 'TOP'

3. ADDITIONAL TERMINALS MAINS AC VERSION

4. ELECTRICAL/INTERFACE CONNECTION TERMINALS 'BOTTOM'

5. ADDITIONAL TERMINALS DC WALL MOUNT ZIRCOSIA VERSION

Note:
Terminals 4 & 5 are not used with Electro-Chemical sensor.

3.4 Recommended Sampling System Piping #1
(for stub tube type Sensor connection)
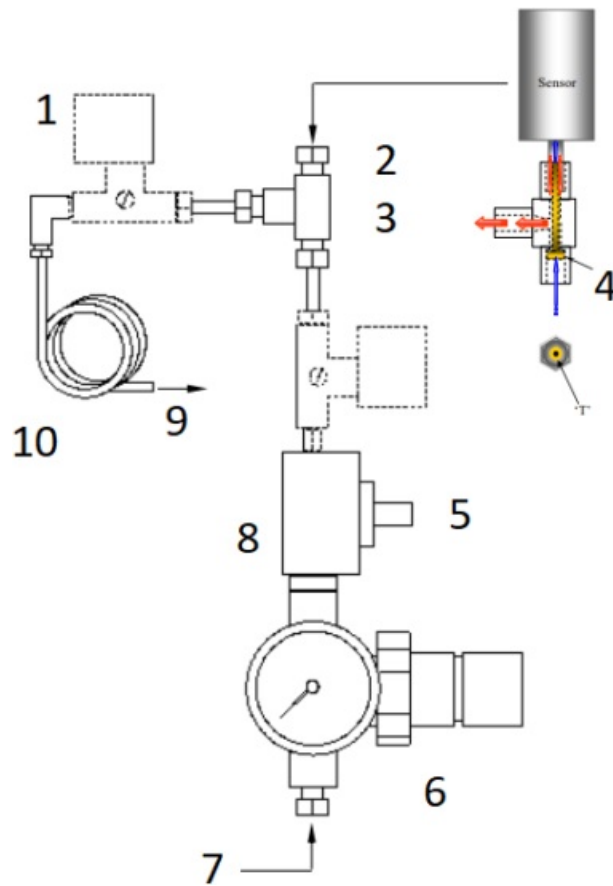
1. Optional Isolation Valve for PPM Sensors, Hand or Solenoid operated

2. 'Tee' connection. (Ntron supplied)

3. Ensure correct orientation as shown.

4. Internal 'T' piece

5. For Electrochemical & Zirconia Sensors, set Flow Restrictor to achieve a flow rate of 250ml/m.

6. Regulator set to 5 PSIG Max.

7. Sample Input

8. Flow Restrictor

9. Sample Exhaust

10. Attach a suitable length of piping for the exhaust as illustrated.

3.5 Recommended Sampling System Piping #2
(for flow-through type Sensor connection)
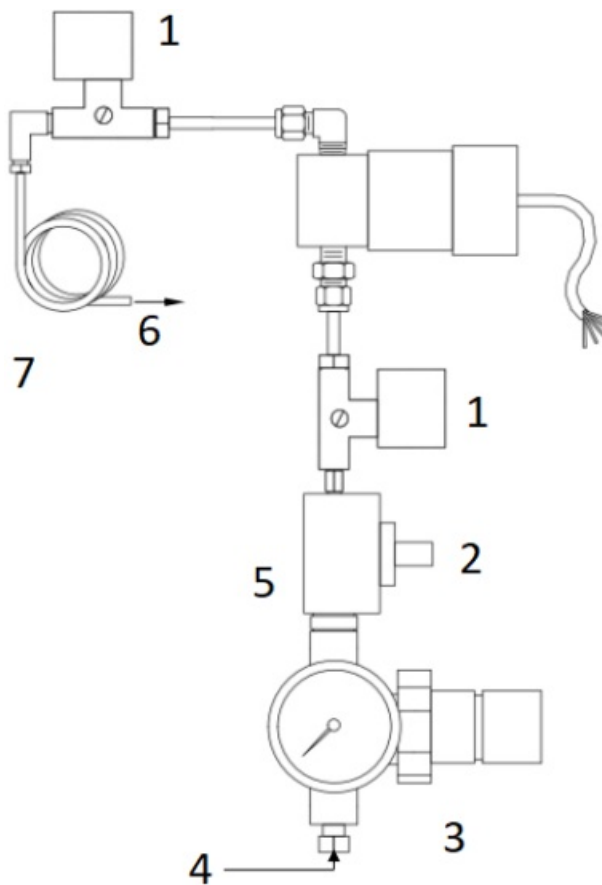
1. Optional Isolation Valve for PPM Sensors, Hand or Solenoid operated

2. For Electrochemical & Zirconia Sensors, set Flow Restrictor to achieve a flow rate of 250ml/m.

3. Regulator set to 5 PSIG Max.

4. Sample Input

5. Flow Restrictor

6. Sample Exhaust

7. Attach a suitable length of piping for the exhaust as illustrated.

3.6 RS232 connections

Contact Ntron for details if required.

3.7 Analogue Output

The analogue output provides a means of indicating to external equipment (e.g. data loggers, remote displays) the gas levels currently being detected by the system. The output is that of a Current Source (4-20mA), where 4mA represents zero gas and 20mA represents gas at the sensor FSD.

4 SOFTWARE FEATURES

The menu system featured within the Microx module allows all calibration and configuration activities to be performed.

Note: It is important that that the Microx module is correctly configured for the sensor in use, prior to performing any feature available in the menu system.
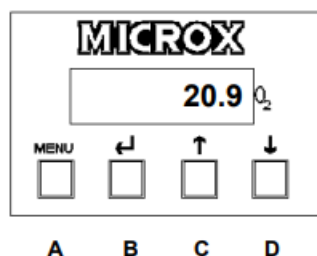
The keypad has the following functionality:

Button	Function	Alternate Function
A	Menu Open/Close	
B	Enter	Numerical value 1
C	Next (Increment)	Numerical value 2
D	Previous (Decrement)	Numerical value 3

4.1 Password

The Microx module uses a password system to restrict the end user from carrying out certain changes that may compromise the use of the equipment. The Password feature may be Enabled or disabled.
Menu access is organised in three levels, 1, 2 and 3.
Each of the three menu levels allows access to specific menu options within the menu system.
When a particular menu level is accessed, the user has 10 seconds to enter a specific menu within that level otherwise the menu level is automatically exited. Once a menu is entered, the user then has a duration of 10 minutes within that menu to make adjustments. When the adjustment is made, the menu is exited to save the adjusted setting to the analyser memory.
The menu structure and Password system is explained on the following pages.

4.2 Menu options and password assignments

Menu option	Function
E:1	Calibrate Sensor
E:2	Analogue output FSD
E:3	Set 4 mA

|	
E:4	Set 20 mA
E:5	Analogue Output Simulation
E:6	Factory Restore
E:8	Diagnostics
E:9*	Sensor type. (Factory Only)
E:10**	Zero Offset (ppm Sensor only)*
E:11	PPM Sensor Gain
E:12	% Vol Sensor Gain
E:13	Sensor Damping
E:14	New Sensor Data
E:15	Electronic Zero
E:16	Noise Rejection
E:17	Relay
E:18	Alarm Levels
E:19	Alarm Hysteresis
E:20	Password Enable/Disable

*This Menu is protected by an additional factory Password and is not for use by the end user.
**This Menu is only visible when certain sensor types are fitted.

To access the Menus, first press the **MENU** button on the Analyser keypad.

The Analyser display will show the word **PASS**. Enter the Password depending on the menu access required. The numerical Passwords are to be entered by using the keypad buttons as identified on the previous page.
(e.g. for numerical password 1331, press button 'B' then button 'D' twice, then button 'B' again.) (Note! At each press of the relevant button, '**Po**' is displayed on the screen, not the number value being entered)
Next, press the MENU button again and press the **UP** arrow button to advance through the menu levels.
Note! For access to the Level 1 menus, no password entry is required.

Password Structure
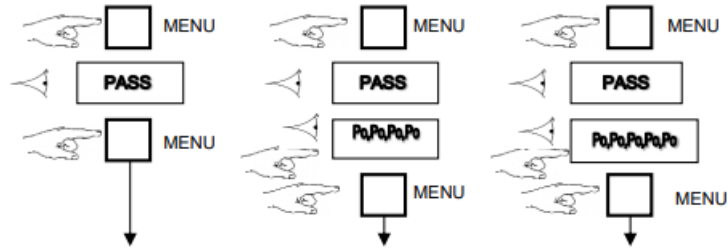
4.2.1 Menu 1 – Calibrate sensor

Level 1	Level 2	Level 3
Password	Password	Password
None	**1331**	**12231**
Menu	Menu	Menu
		E:1
		E:2
	E:3	E:3
	E:4	E:4
E:5	E:5	E:5
		E:6
E:8	E:8	E:8
		E:9*
		E:10**
		E:11
		E:12
		E:13
		E:14
		E:15
		E:16
E:17	E:17	E:17
E:18	E:18	E:18
E:19	E:19	E:19
		E:20

*E:9-Password protected, Factory only; **E:10-visibilty according to sensor type.

- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:
  E:1
- Press ENTER.
- Apply a known concentration of gas (applicable to sensor type) at a flow rate of between 100 to 500 ml/m.
  Allow time for the sensor to respond. (see diagram on page 8)
- Using the INC and DEC buttons set the reading to that of the calibration gas level.
- Press ENTER to span the sensor, '– – – –' will be displayed to confirm the sensor span has been performed.
  Note: Pressing the MENU button rather than the ENTER button exits the span feature without performing the calibration.
  Wait until the reading is stable, if not press the ENTER button to span the sensor.

- Press the MENU button to close the menu system.

  Note: The sensor span setting will be displayed (as a percentage value) on exit while the MENU key is pressed.

  Note that this value is a percentage of the initial calibration value set via "New Sensor Data" in menu E:14. See note below.

- Turn off and disconnect the calibration gas.

Note: On each occasion that a new sensor is connected and calibrated the "New Sensor Data" should be set via the procedure in menu 14. The setting should only be carried out after the calibration and not before. This will ensure that subsequent span setting figures displayed on exit of menu 1 will be valid.

Important!
Electro-Chemical Sensors.
For ppm configured modules that have been fitted with a replacement sensor the "Zero Offset" (Menu 10) must be entered prior to a calibration.

4.2.2 Menu 2 – Analogue output FSD

- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:

  E:2
- Press ENTER.
- Using the INCREASE and DECREASE buttons adjust the FSD to the required level.
- Press ENTER.

  Note: Pressing the MENU button rather than the ENTER button exits the sensor FSD feature without any change.

- Press the MENU button to close the menu system.

  Note: The Sensor FSD will be displayed on exit while the MENU key is pressed.

4.2.3 Menu 3 – Set 4 mA output

- Monitor the current sourced from the analogue output of the OEM module using a multimeter set to read milliamps.
- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:

  E:3
- Press ENTER.
- Using the INCREASE and DECREASE buttons adjust the output to 4mA.
- Press ENTER.

  Note: Pressing the MENU button rather than the ENTER button exits the 4 mA feature without performing the calibration.

- Press the MENU button to close the menu system.

  Note: The 4 mA factor will be displayed on exit.

4.2.4 Menu 4 – Set 20 mA output

- Monitor the current sourced from the analogue output of the OEM module using a multimeter set to read milliamps.
- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:
  E:4
- Press ENTER.
- Using the INCREASE and DECREASE buttons adjust the output to 20 mA.
- Press ENTER.
- Press the MENU button to close the menu system.
  Note: The 20 mA factor will be displayed on exit.

4.2.5 Menu 5 – Analogue Output Simulation

The Microx analogue output can be tested for functionality via menu 5. This option allows the user to simulate the analogue output.

- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:
  E:5.
- Use the UP and DOWN button to increase or decrease the analogue output. The value displayed on the Microx display will be equivalent to the analogue output.
- Press the MENU button to close the menu system.
  Note: The module will return to the conditions on entry.

4.2.6 Menu 6 – Factory Restore

This option allows the user to restore the configuration data to the factory default values.

Warning
A restore will overwrite all previous calibration data for the selected sensor excluding those set at the factory.

- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:
  E:6
- Press ENTER button. Hold for 5 or 6 seconds.
- When – – – – is displayed, release the ENTER button.
  Note: Pressing the MENU button rather than the ENTER button exits the restore feature without performing any change.
- Press the MENU button to close the menu system.

4.2.7 No Function

4.2.8 Menu 8 – Diagnostics

This feature is a view-only feature. No configuration changes are possible from within this menu.

- Press the MENU button to open the menu system.
- Using the NEXT and PREVIOUS buttons select menu option:

  E:8
- Press ENTER.
- The display will alternate between the current value and diagnostic code **E:8x**: where x is:

  0   Sensor signal, A to D counts low ppm range.

  1   Sensor signal, A to D counts high ppm range.

  2   Sensor signal, A to D counts %vol range.

  3   Firmware version.

  4   Analyser Serial Number. First four digits

  5   Analyser Serial Number. Last four digits.

  (The Analyser Serial number comprises typically of 6 numerical digits)
- The diagnostic code can be selected by pressing the UP button.
- Press MENU to return the instrument to its standard mode of operation.

4.2.9 Menu 9 – Factory Only

Warning
Customer adjustment of this setting is not permitted. The module will be factory set prior to shipment to the correct Sensor supplied with the Analyser.

4.2.10 Menu 10 – Zero offset

For ppm configured modules a "Sensor Zero Offset" value will need to be entered or re-entered each time the ppm sensor is replaced. The appropriate value will be marked on the ppm sensor and this figure will need to be programmed in to the module. A zero offset figure allows accurate calibration of ppm sensors that do not give a zero output for zero gas.

The zero offset value is expressed in PPM oxygen and takes a value of between -10.0 and +10.0 ppm.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:10
- Press ENTER. The display shows the zero offset.
- Use the UP / DOWN keys to set the level at that marked on the sensor.
- Press ENTER to store the new value in the memory.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

Note: The zero offset must be programmed prior to a menu 1 calibration.

4.2.11 Menu 11 – PPM sensor Gain

This option is used to allow the user to adjust the sensor gain for optimal performance. Care should be taken when using this option, which is normally only used when a new sensor is fitted.

Warning

Customer adjustment of this setting is not recommended. The module will be factory set prior to shipment at a value appropriate to the sensor type fitted. Otherwise changing this value may limit the performance and, in extreme cases, the instrument may no longer detect gas.

The display alternates between the sensor signal level, indicated as a number between 0 and 4095, and the menu number, E:11. The value used should be about 2500.
The display indicates the gain setting when the Up / DOWN keys are pressed.
The gain is between 0 and 31, a typical value would be 20.

Apply 1.8 mV to the sensor input.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:11
- Press ENTER. The display shows the sensor peak output level.
- Use the INCREASE and DECREASE buttons to set the required signal level.

  Note: When the INCREASE and DECREASE buttons are being operated the display shows the amplifier gain setting as a number between 0 and 31. The larger the number the higher the gain, the lower the signal reading.
- Press ENTER to store the new value.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

  Note: The signal gain setting will be displayed on exit while the MENU key is pressed.

4.2.12 Menu 12 – % vol sensor gain

This option is used to allow the user to adjust the sensor gain for optimal performance. Care should be taken when using this option, which is normally only used when a new sensor is fitted.

Warning
Customer adjustment of this setting is not recommended. The module will be factory set prior to shipment at a value appropriate to the sensor type fitted. Otherwise changing this value may limit the performance and, in extreme cases, the instrument may no longer detect gas.

The display alternates between the sensor signal level, indicated as a number between 0 and 4095, and the menu number, E:12. The value used should be about 3500.
The display indicates the gain setting when the Up / DOWN keys are pressed.
The gain is between 0 and 31, a typical value would be 3.

Apply 13 mV to the sensor input.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:12
- Press ENTER. The display shows the sensor peak output level.
- Use the INCREASE and DECREASE buttons to set the required signal level.

  Note: When the INCREASE and DECREASE buttons are being operated the display shows the amplifier gain setting as a number between 0 and 31. The larger the number the higher the gain, the lower the

signal reading.

- Press ENTER to store the new value.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.

- Press MENU to close the menu system.

  Note: The signal gain setting will be displayed on exit while the MENU key is pressed.

4.2.13 Menu 13 – Sensor damping

Oxygen sensors output change when subjected to pressure changes.
The damping option is used to allow the user to reduce the effects of sudden changes by applying digital filtering.
The larger the number the more the signal damping that is applied.

Note: The minimum setting is 5.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:13

- Press ENTER. The display shows the damping factor that is applied to the sensor.
- Use the INCREASE and DECREASE buttons to set the required damping level.
- Press ENTER to store the new value.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.

- Press MENU to close the menu system.

  Note: The signal damping setting will be displayed on exit while the MENU key is pressed.

4.2.14 Menu 14 – New sensor data

This option allows the initial sensor calibration data to be set. It is used to predict the remaining sensor life.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:14

- Press ENTER. The display displays E:14
- Press ENTER to store the new data in the memory.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.

- Press MENU to close the menu system.

4.2.15 Menu 15 – Electronics zero

Warning
Customer operation of this function is not recommended. The Electronic Zero operation has been completed prior to shipment and under normal circumstances, is not required to be actioned again. Performing this function may result in operational errors if not done correctly.

Disconnect the sensor and place a short at the sensor input to simulate 0% oxygen.

- Press the MENU button to open the menu system.

- Using the NEXT and PREVIOUS buttons select menu option:

  E:15
- Press ENTER.
- Press ENTER to zero the sensor, '**– – – –**' will be displayed to confirm the sensor zero has been performed.

  Note: Pressing the MENU button rather than the ENTER button exits the zero feature without performing the calibration.
- Press the MENU button to close the menu system.

4.2.16 Menu 16 – Noise Rejection

Warning
Customer adjustment of this setting is not recommended. The module will be factory set prior to shipment at a value appropriate to the sensor type fitted. Otherwise changing this value may limit the performance and, in extreme cases, the instrument may no longer detect gas.

The unit has a noise rejection value associated with the reading and displaying of the measured gas level.

The noise rejection value is expressed in number of readings that must be within approximately 20 counts of each other on the A to D converter before the display is updated. It takes a value of between 0 and 9, where 0 is no rejection and 9 is the maximum rejection.

Setting the noise rejection results in a two second delay for fast changing gas levels.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:

  E:16
- Press ENTER. The display shows the Noise rejection value.
- Use the UP / DOWN keys to set the desired level.
- Press ENTER to store the new value in the memory.

  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

Note each range noise rejection differs in the equivalent gas level as follows:

Range %vol	Fixed A to D Counts	Typical span factor	Equivalent gas level %vol
0.00 – 0.0200	20	0.05	0.0001
0.02 – 0.1000	20	0.3	0.0006
0.10 – 1.0000	20	3.5	0.0070
0.0 – 5.0	20	0.004	0.08
5.0 – 25.0	20	0.013	0.26

4.2.17 Menu 17 – Relay

The unit is fitted with three relays that are operated in conjunction with one of three alarm levels.
Relay 1 is associated with alarm level 1.
Relay 2 is associated with alarm level 2.
Relay 3 is associated with alarm level 3.

The user can select if the relay is normally Energized, E' or normally deenergised, 'd' when the unit is **<u>not</u>** in an alarm condition. The relay can also be set to act on rising, 'r' or falling 'F' gas levels.

This option allows the user to configure the operation of the relays.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:
  E:17
- Press ENTER. The display displays r:1
- Use the UP / DOWN keys to select the desired relay.
- The display will show the following:
  E:r   Normally energized, rising alarm
  d:r   Normally de-energized, rising alarm
  E:F   Normally energized, falling alarm
  d:F   Normally de-energized, falling alarm
- The mode of operation can be changed by pressing the UP button.
- Press ENTER to store the new data in the memory.
  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

4.2.18 Menu 18 – Alarm levels

This option allows the user to set the operation of the alarm levels. There are three alarms levels associated with 3

relays.
Alarm level 1 is associated with relay 1.
Alarm level 2 is associated with relay 2.
Alarm level 3 is associated with relay 3.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:
  E:18
- Press ENTER. The display displays A:1
- Use the UP / DOWN keys to select the desired alarm level.
- Press ENTER. The display shows the alarm level.
- Use the UP / DOWN keys to set the desired alarm level.
- Press ENTER to store the new value in the memory.
  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

4.2.19 Menu 19 – Alarm hysteresis

The unit has a hysteresis value associated with the alarm levels to avoid relay chattering as the unit goes in and out of alarm conditions.

The hysteresis value is expressed as a percentage of the alarm set point and takes a value of between 0 and 10.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:
  E:19
- Press ENTER. The display shows the hysteresis level.
- Use the UP / DOWN keys to set the desired level.
- Press ENTER to store the new value in the memory.
  Note: Pressing the MENU button rather than the ENTER button exits without any change
- Press MENU to close the menu system.

4.2.20 Menu 20

The Password function can be enabled or disabled in this Menu.

- Press MENU to open the menu system.
- Using the NEXT and PREVIOUS buttons, select menu option:
  E:20
- Press ENTER. The display shows the current status **On** or **Off**
- Use the UP / DOWN keys to set the desired status **On** or **Off**.
- Press ENTER to store the new value in the memory.
  Note: Pressing the MENU button rather than the ENTER button exits without any change.
- Press MENU to close the menu system.

5 ROUTINE MAINTENANCE & SERVICING

The Microx module will provide reliable and fault free service when given regular maintenance and calibrations.

5.1 Routine Inspection and Maintenance

It is advisable to periodically inspect the Microx module installation:

Clean gas detector head using a clean DAMP cloth.

Inspect the sensor and ensure it is sound and the sensor-housing aperture is not obstructed (where applicable).

The maximum time interval between routine inspections and should be assessed by the calibrating personnel and will depend upon the environment in which the equipment is installed.

Calibration requirements and periods vary depending on sensor type and application. A reasonable schedule should be arrived at by the user.

Sensors utilising Zirconia Technology

These are very stable over their normal lifespan and usually do not require regular calibrations. A check on calibration can be made at intervals to suit the application by the user and if a calibration operation is deemed necessary, follow the instructions contained in this manual.

Avoid exposing the Sensor to moisture or wetting particularly if the gas being presented for measurement by the sensor contains condensable vapours or entraned liquids. Pre-filtering and drying of the gas to be sampled may be required by the user.
If the Sensor is not powered for any period, then condensable moisture must be prevented from entering the sample system and reaching the sensing element.
Other gases to avoid are halogens, organic vapours, H2S and SO4.

08-441 **www.processsesnsing.com**

Documents / Resources

	PROCESSSENSING V233P Oxygen Analyser [pdf] Instructions NT-UM-2113-EN-01, V233P, V233P Oxygen Analyser, V233P, Oxygen Analyser, Analyser

References

- **User Manual**