

AtmoSense™

Single Gas Atmosphere Analyzer

Revision 3



FIXED-MOUNT

PORTABLE

CONNECT WITH US



MANUAL #: 018

Rev No: 3

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PROBE REGISTRATION



Scan to register

Probes are covered by Usage Warranty as indicated from the date of installation.
Usage warranty is not effective until your probe is registered, and only if installation is made according to instructions supplied.

TECHNICAL ASSISTANCE

For all questions or concerns regarding the operation of the **AtmoSense™**, please consult the last page of this manual for contact information.

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1 DESCRIPTION

The AtmoSense™ is a flexible process analyzer designed to provide real-time measurements of process gas variables in a wide variety of atmosphere control applications. The AtmoSense™ is available with a range of sensors and options to provide accurate measurement of dew point (DP), oxygen (O₂), methane (CH₄), propane (C₃H₈), hydrogen (H₂), carbon monoxide (CO), or carbon dioxide (CO₂). In addition, the AtmoSense™ is engineered to be easily serviceable, field calibrated, and comes standard with a color LCD display and industrial sealed inlet sample filter. These industrial analyzers can also be fitted with a sample pump to draw atmosphere samples in low pressure applications.

The AtmoSense™ product family is specifically designed for the industrial measurement of a sample gas. The unit is available with several options as outlined below:

AtmoSense™ Industrial Process Gas Analyzer Product Option Codes

Product Code:		ATMOSENSE	-	-	-
1 Gas Type	Dew point (Range: -60 - 60°C)	DP			
	Hydrogen (Range: 0 - 100%vol)	H2			
	Methane (Range: 0 - 5.0%vol)	CH4			
	Methane (Range: 0 - 100%vol)	CH4a			
	Propane (Range: 0 - 2.1%vol)	C3H8			
	Propane (Range: 0 - 100%vol)	C3H8a			
	Carbon Monoxide (Range: 0.1 - 100%vol)	CO			
	Carbon Dioxide (Range: 0 - 2.0%vol)	CO2			
	Oxygen (Range: 0.0 – 25.0%)	O2			
	No Internal Sensor	NO			
2 Build Options	Basic Build (No Display, Signal Only)			BASIC	
	Color Display (24VDC Only)			DISP	
	Display and Universal AC Power Supply			DISPAC	
	Display, Universal AC Power, Process Controller			CTRL	
	Portable Kit (Includes Display, Universal AC Power with Battery)			PORT	
3 Sample Pump	No Internal Pump				NO
	Integrated Sample Pump				PUMP

2 SPECIFICATIONS

AtmoSense™ Sensor Specifications

AS-DP Dew Point

Technology IR
Range: -60 - 60°C
Accuracy: +-1.5% FS

AS-H₂ Hydrogen

Technology Diffusion
Range: 0-100%vol
Accuracy: +-1% FS

AS-CH₄ Methane LEL

Technology IR
Range: Range: 0.0-5.0%vol
Accuracy: +-2% FS

AS-CH_{4a} Methane %

Technology IR
Range: Range: 0-100%vol
Accuracy: +-2% FS

AS- C₃H₈ Propane LEL

Technology IR
Range: Range: 0.0-2.1%vol
Accuracy: +-2% FS

AS-C₃H_{8a} Propane %

Technology IR
Range: Range: 0-100%vol
Accuracy: +-2% FS

AS-CO Carbon Monoxide %

Technology IR
Range: Range: 0-100%vol
Accuracy: +-1% FS

AS-CO₂ Carbon Dioxide %

Technology IR
Range: Range: 0-2.0%vol
Accuracy: +-0.5% CO₂

AS-O₂ Oxygen %

Technology Catalytic
Range: Range: 0.0-25.0%
Accuracy: +-1% FS

Ambient Temperature Limits 32°-132°F

Minimum Sample Flow Rate 5 CFH (Non-Corrosive/Condensing*)

Maximum Sample Flow Rate 8 CFH (Non-Corrosive/Condensing*)

Minimum Power Requirements

ATMOSENSE-DISP: 2A @ 24VDC

ATMOSENSE-DISPAC: 1A @ 110VAC

Retransmission Signal

Voltage Output (ATMOSENSE-DISP) 1-5V (Default Scale -60°C - 60°C)

Amperage Output (ATMOSENSE-DISPAC) 4-20mA (Default Scale -60°C - 60°C)

Physical Dimensions

Fixed Models 10" H x 8" W x 6" D

Portable Models (ATMOSENSE-PORT) 10" H x 14" W x 8" D

Battery Life (Portable Units)

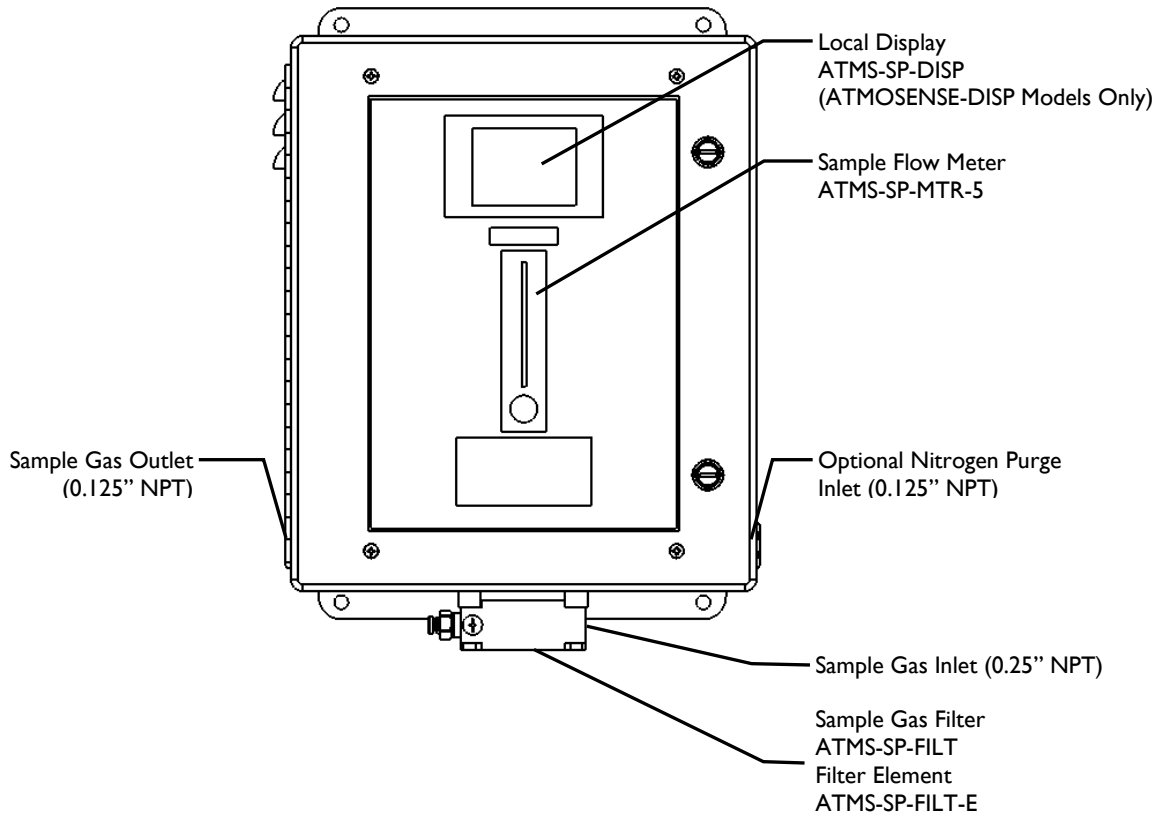
Sample Pump Running 4 Hours Typical

Pump Disabled 14 Hours Typical

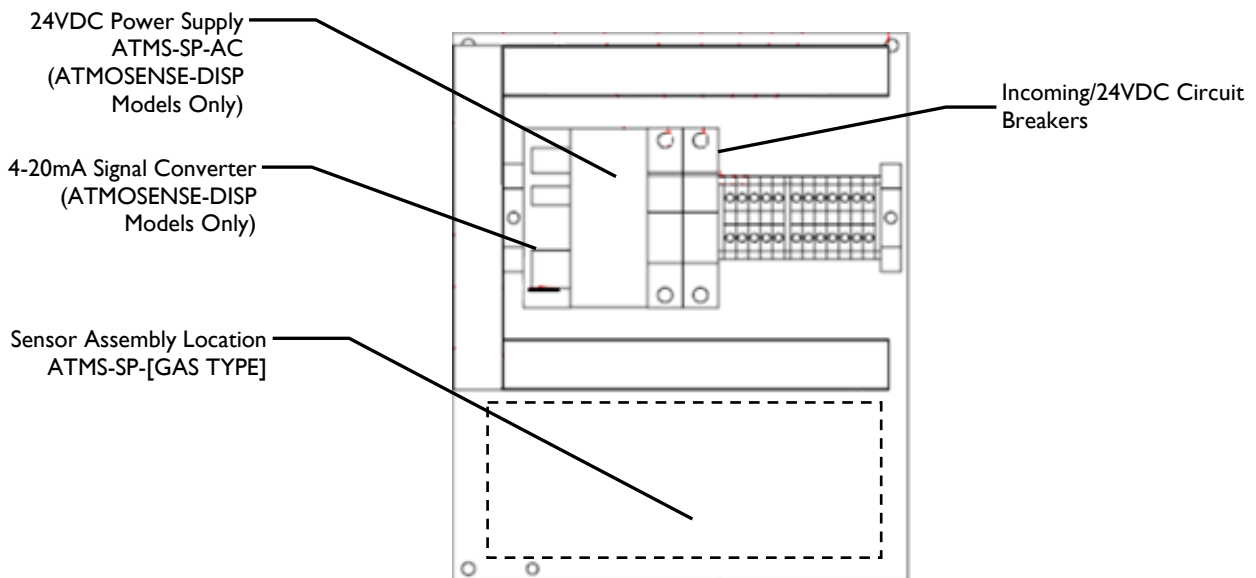
*Note that the AtmoSense™ is not intended for use with for corrosive sample gases including NH₃, SO₃, HCL, or Chlorine.

3 SYSTEM OVERVIEW

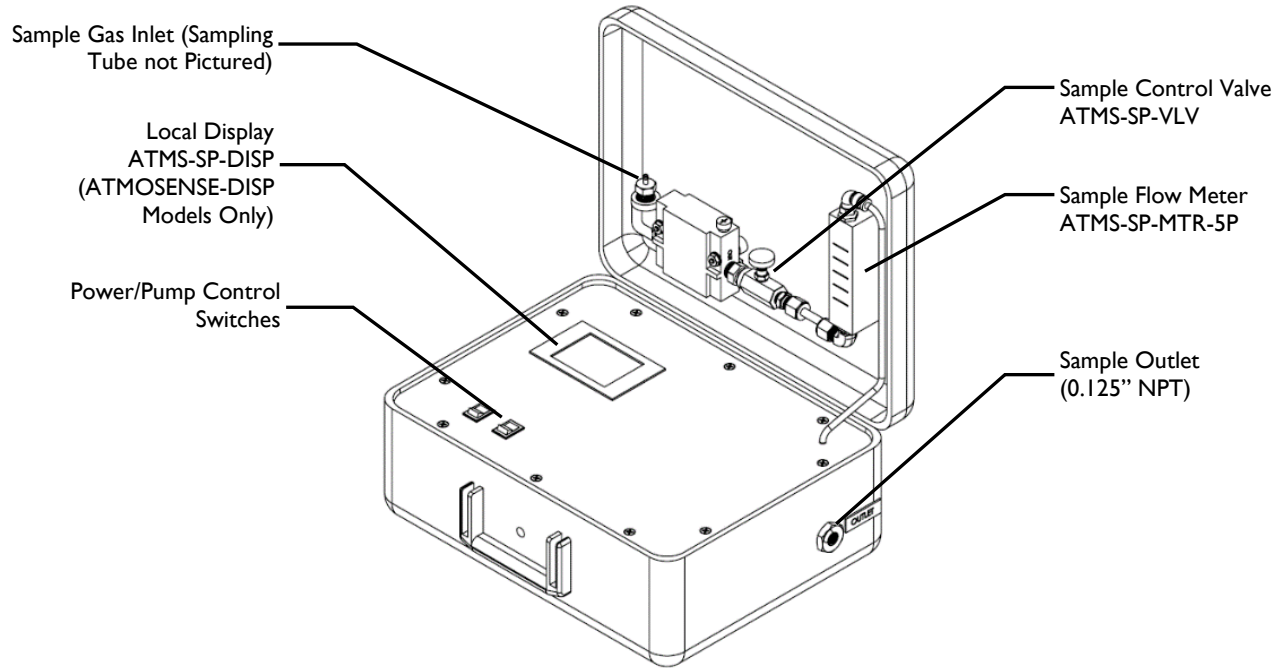
3.1 FIXED CONFIGURATION COMPONENT OVERVIEW



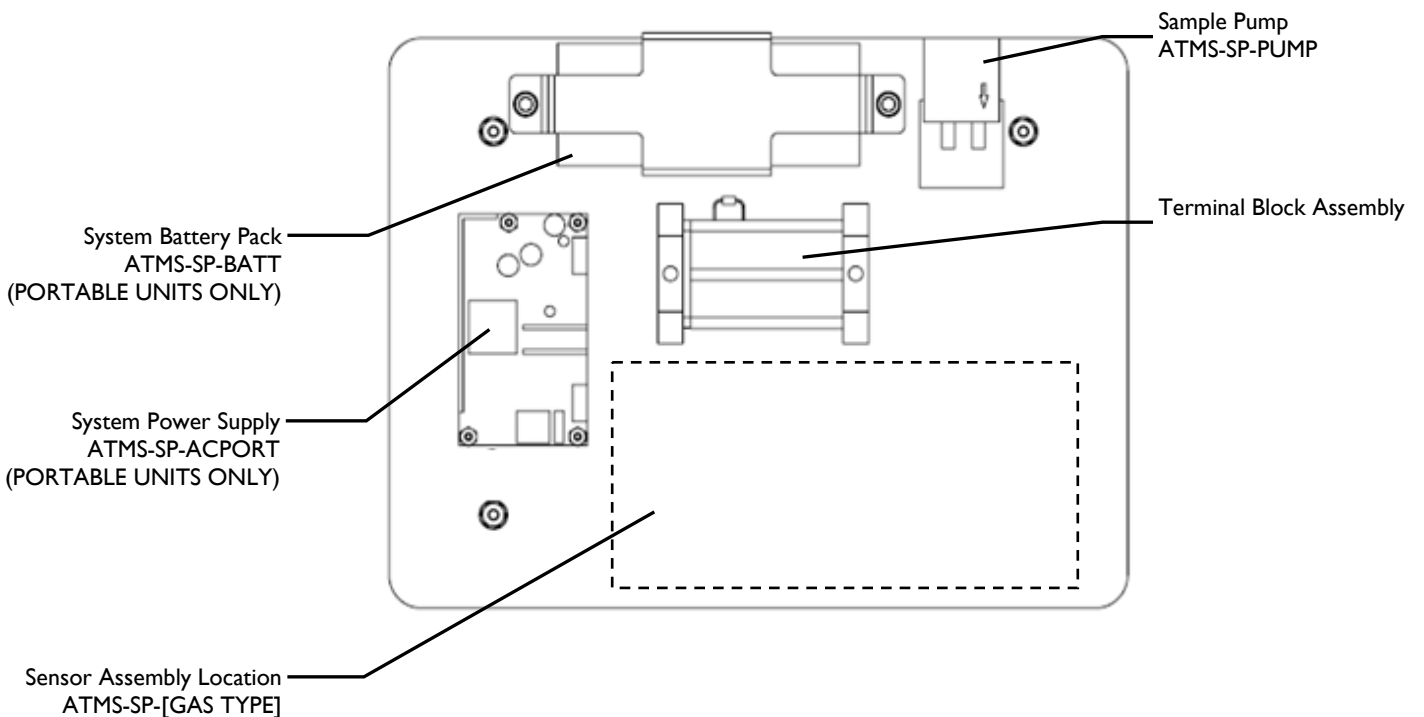
3.2 FIXED CONFIGURATION SUBPANEL OVERVIEW



3.3 PORTABLE CONFIGURATION COMPONENT OVERVIEW



3.4 PORTABLE CONFIGURATION SUBPANEL OVERVIEW



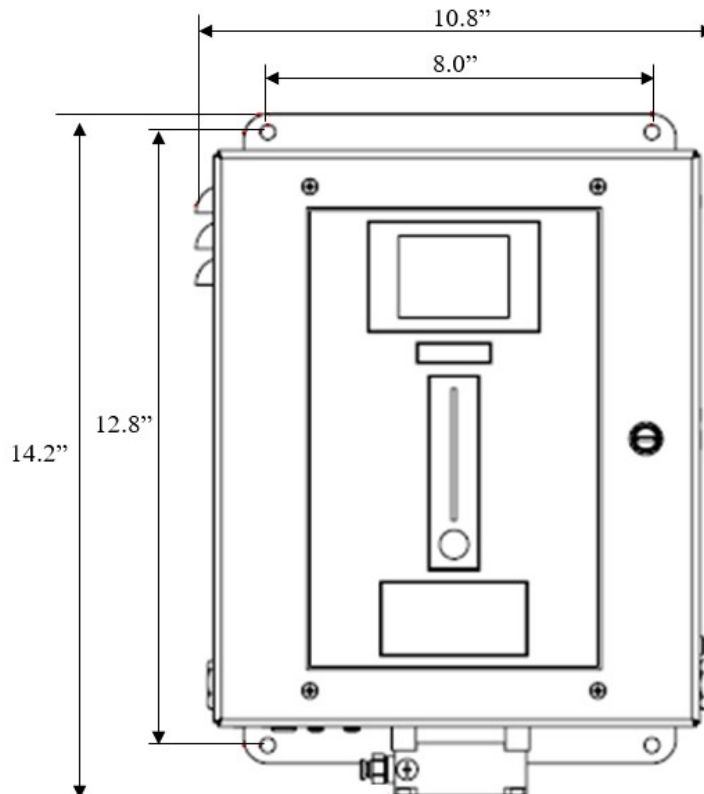
4 INSTALLATION

4.1 MECHANICAL INSTALLATION

The AtmoSense™ Gas Analyzer is shipped as a calibrated unit and ready to be mounted. Steps to complete the mechanical installation of the system are as follows:

1. Inspect the system for any damaged or missing components and confirm the mounting location.
2. The system is to be mounted using the mounting holes as noted on the diagram below. Note the overall dimensions of the system detailed in the drawing(s). Do not mount the system in an environment that exceeds the rated temperature outlined in the specifications.
3. Identify the source of the sample gas and connect to the sample gas inlet.
4. Connect the sample gas outlet port to an appropriate vent location.

AtmoSense™ Fixed overall and mounting dimensions:



4.2 ELECTRICAL INSTALLATION

The AtmoSense™ is designed for easy electrical installation, and ½” conduit knockouts are provided for electrical connections to the unit.

1. Connect the incoming power to the unit.

ATMOSENSE-DISP

Power Requirements:2A @ 24VDC

Terminal Locations:24VDC POWER TO +V, -V, GND

ATMOSENSE-DISPAC:

Power Requirements:1A @ 110-230VAC

Terminal Locations:110VAC POWER TO L, N, GND

ATMOSENSE-PORT:

Power Requirements:1A @ 110-230VAC

Terminal Locations:USES SUPPLIED POWER CABLE

2. If desired, connect the process variable retransmission signal per the unit wiring diagram.

ATMOSENSE-DISP (1-5VDC Signal)

+ Process Variable Signal: Terminal 1410

- Process Variable Signal:..... Terminal 1301 (Common to –VDC)

ATMOSENSE-DISPAC (4-20 mA Signal)

+ Process Variable Signal: Terminal 1540

- Process Variable Signal:..... Terminal 1530

ATMOSENSE-PORT (4-20 mA Signal)

+ Process Variable Signal: Terminal 1540

- Process Variable Signal: Terminal 1530

5 SYSTEM OPERATION

5.1 INITIAL SYSTEM SETUP PROCEDURE

The AtmoSense™ is designed as a robust industrial device, however precautions must be taken to handle the unit with care.

- 1) Verify that the Mechanical and Electrical Installation has been properly completed
- 2) Apply power to the unit
- 3) Verify that the ambient sensor reading is in line with standard conditions
- 4) Introduce sample gas to the unit at a flow rate of 5-6 CFH
 - a. If the sample gas is not pressurized, turn on the sample pump to draw the sample through the unit
- 5) Allow for 30 minutes for the sensing unit to stabilize before recording readings

5.2 INITIAL TYPICAL OPERATION PROCEDURE

- 1) Apply power to the unit
- 2) Introduce sample gas to the unit at a flow rate of 5-6 CFH
 - a. If the sample gas is not pressurized, turn on the sample pump to draw the sample through the unit
- 3) Allow for 60 seconds for the sensing unit to stabilize before recording readings
- 4) For portable units, turn off main power to prevent battery drain

6 RECOMMENDED MAINTENANCE

6.1 MAINTENANCE

The AtmoSense™ is designed to be a robust and relatively maintenance free industrial instrument. However, to ensure the unit is operating properly the sample inlet filter should be changed on a regular basis (every 1-3 months depending on gas sample quality.) In addition, the unit should undergo a yearly calibration process to ensure the sensor is reading accurately. This can typically be done in the field or the unit can be sent back to AEC for calibration.

Spare Parts List

AtmoSense System Spare Parts

Part Number:

Spare Intake Filter Assembly	ATMS-SP-FILT
Spare Intake Filter Element (each)	ATMS-SP-FILT-E
Spare Intake Filter Element Package (Qty10)	ATMS-SP-FILT-E10
Spare Sample Pump	ATMS-SP-FILT-PUMP
Spare Meter (0-5CFH)	ATMS-SP-MTR-5
Spare Meter (0-10CFH)	ATMS-SP-MTR-10
Spare Meter (0-20CFH)	ATMS-SP-MTR-20
Spare Meter - Portable (0-5CFH)	ATMS-SP-MTR-5P
Spare Display	ATMS-SP-DISP
Spare Sensor: Dew point (Range: -60 - 60°C)	ATMS-SP-DP
Spare Sensor: Hydrogen (Range: 0 - 100%vol)	ATMS-SP-H2
Spare Sensor: Methane (Range: 0 - 5.0%vol)	ATMS-SP-CH4
Spare Sensor: Methane (Range: 0 - 100%vol)	ATMS-SP-CH4a
Spare Sensor: Propane (Range: 0 - 2.1%vol)	ATMS-SP-C3H8
Spare Sensor: Propane (Range: 0 - 100%vol)	ATMS-SP-C3H8a
Spare Sensor: Carbon Monoxide (Range: 0.1 - 100%vol)	ATMS-SP-CO
Spare Sensor: Carbon Dioxide (Range: 0 - 2.0%vol)	ATMS-SP-CO2
Spare Sensor: Oxygen (Range: 0 - 20%)	ATMS-SP-O2

6.2 SENSOR CALIBRATION PROCEDURES

6.2.1 AtmoSense -DP Calibration Procedure

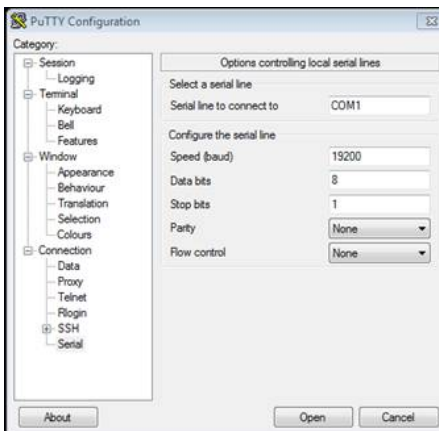
This procedure allows the user to apply a correction to the Dew Point sensor reading to compensate for offsets that have occurred over time:

Required Tools/Software:

- Calibration gas with a known dew point
- puTTY Terminal Software
- W-7571 4 Position M8 Cable
- E-4458 USB to RS485 Serial Converter

Procedure:

- 1) Ensure that the AtmoSense Dew Point is powered (green LED on sensor is on)
- 2) Connect the W-7571 Cable to the digital connector of the Dew Point Transmitter
- 3) Wire -485 (black) and +485 (wire) to the RS485 converter
- 4) Verify the com port # that has been assigned to the USB/RS485 Converter
- 5) Change the serial port settings on your computer to match the sensor:
 - a) Baud = 19200
 - b) Parity = None
 - c) Data bits = 8
 - d) Stop bits = 1
 - e) Flow Control = None
- 6) Open the PuTTY application and set the settings under the serial tab to the same settings:
 - a) Serial line to connect to = (Set to com port # from step 4)
 - b) Baud = 19200
 - c) Parity = None
 - d) Data bits = 8
 - e) Stop bits = 1
 - f) Flow Control = None



- 7) Under the Terminal tab, enable the local echo/local line editing:
 - a) Local echo – Force on
 - b) Local line Editing – Force on
- 8) Open the connection
- 9) Type “?” then press enter and the terminal will display the sensor information
- 10) To offset the sensor:
 - a) Type “LI” then press enter to see the user adjustment parameters
 - i) Note that the only parameter recommended to adjust is the Tdf
 - b) Press enter to scroll through the commands until prompted for “Tdf offset”
 - c) Input the value of the “Tdf offset” and press enter
- 11) To change the sensor scaling:
 - a) Type “ASEL” then press enter to see the analog output parameters and scaling
 - b) Input the minimum scaling setting “-60” (or alternative if desired) and press enter
 - c) Input the maximum scaling setting “60” (or alternative if desired) and press enter
 - d) To leave the settings at previous press enter with no input
 - e) The measurement range of the sensor is -60°C to 60°C.

When complete, exit the terminal application

6.2.2 AtmoSense -O₂ Calibration Procedure

Required Tools/Software:

- #2 Standard Screwdriver

Procedure:

- 1) Disconnect any sample gas from the AtmoSense inlet
- 2) While the sample pump is active, set the flow meter to 5 CFH of sample flow
- 3) Record the oxygen % on the screen
- 4) Adjust the span screw on the O₂ Sensor Board until the screen displays ambient levels of Oxygen (20.9%)
- 5) Cycle power to the unit and verify the reading

6.2.3 ADDITIONAL MODELS

The following models must be returned to AEC for factory calibration:

ATMOSENSE-H2
ATMOSENSE-CH4
ATMOSENSE-C3H8
ATMOSENSE-CO
ATMOSENSE-CO2

7 CUSTOMER SUPPORT

Americas	Asia	Europe
support.na@group-upc.com	service@mmichina.cn	support.eu@group-upc.com
USA: +1 414 462 8200	Shanghai: +86 21 3463 0376	France: +33 3 81 48 37 37
Canada: +1 514 335-7191	Beijing: +86 10 8217 6427	Germany: +49 7161 94888-0
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