

# H2S-725

## Hydrogen Sulfide Analyzer



## Instruction Manual

# Table of Contents

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## Part 1 Introduction

- 1.1 General Introduction
- 1.2 Principle of Operation - The H2S Sensor
- 1.3 H2S-725 Specifications
- 1.4 General Safety Installation
- 1.5 Location Installation Considerations
- 1.6 Safety Considerations

## Part 2 Installation

- 2.1 Receiving Your New H2S Transmitter
- 2.2 Mounting The H2S Analyzer
- 2.3 Electrical Connections
- 2.4 Gas Connections
- 2.5 Installing the H2S Sensor
- 2.6 Integral Sample System Flow Diagram

## Part 3 Operation

- 3.1 Understanding the Controls and Their Operation
- 3.2 Manual Range Output Adjustment
- 3.3 Analog Output 4 - 20mA or 1 - 5 VDC
- 3.4 Calibrating the Analog Output to your PLC or DCS System
- 3.5 Alarm Configuration

## Part 4 Maintenance

- 4.1 Span Calibration, using Certified Span Gas
- 4.2 Procedure for Replacing the Sensor
- 4.3 Troubleshooting

## Part 5 Annexures

- 5.1 Spare Parts List
- 5.2 Warranty
- 5.3 Material Safety Data Sheets
- 5.4 Conformance Certificate

## 1.1 General Introduction

The Southland Sensing H2S-725 Hydrogen Sulfide Analyzer is a microprocessor based online unit designed for continuous measurements in a variety of applications and gas mixtures.

The analyzer was designed with the customer in mind keeping the operations simple, while still featuring a fast response and rugged design. Every effort has been made to use modern industrial components and materials which has resulted in an advanced design, excellent performance and an overall low cost of ownership.

Southland Sensing Ltd. appreciates your business and recommends to read through the complete manual to be able to get the full experience from your new H2S transmitter.

## 1.2 Principle of Operation - The Hydrogen Sulfide Sensor

The precision electrochemical H2S sensor used in the H2S-725 is designed and manufactured under a strict quality system.

To understand how the H2S transmitter functions, it is important to understand a little bit of the sensor characteristics.

The active components in the precision electrochemical H2S sensor is the anode, cathode and aqueous electrolyte which is all housed in a cell body. The H2S molecules in the application pass through the front sensing membrane. A chemical reaction occurs and a raw electrical current is generated.

These analyzers do need to be calibrated under a known SPAN Calibration gas. It is important to calibrate the sensor to the same flow of your process. We recommend using 1.0 or 1.5 SCFH to calibrate the instrument and also to run your process gas.

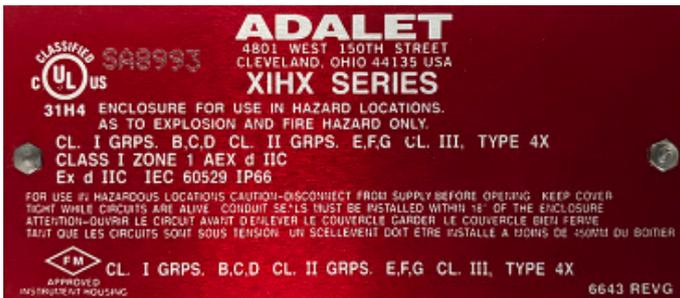
This electrical current is proportional to the amount of H2S in the application. The analyzer then processes this raw electronic signal, compensates for temperature and barometric pressure variations and converts the data into a parts-per-million H2S measurement value.

Once the data is displayed in real time on the full backlite display, the user can automate the control of their process using the standard 4 - 20mA or 1 - 5VDC analog output signal which can be run to a PLC or other type of DCS System.

# H2S-725 PPM H2S Analyzer



Designed for the Natural Gas Industry  
 Class 1, Div 1 Groups B,C,D  
 Full Scale Range of 0 - 200 or 0 - 2000 ppm  
 Precision Electrochemical H2S Sensor  
 Large Backlight Display  
 Intuitive User Friendly Interface  
 Cost Effective and Low Maintenance  
 2 Fully Configurable Alarm Relay Contacts



## Optional Configurations:

- Customizable Measurement Ranges
- Sample Conditioning Systems
- Bi-Directional RS485 Modbus (Pending)
- Heated Enclosure

## Applications:

- Natural Gas Extraction & Pipelines
- Natural Gas Processing
- Landfill Gas Monitoring
- Biogas before and after the H2S Scrubber
- And Many Other Industrial Applications

## Specifications:

Accuracy:	< +/-2% Full Scale Range*
Alarms:	2 Configurable Relay Contacts
Analyzer Range:	0 - 200 ppm or 0 - 2000 ppm
Area Classification:	Class 1, Div 1, Groups B,C,D
Dimensions:	15.25" x 12.5" x 5.25"
Flow:	1.00 - 1.50 SCFH
Gas Connections:	1/4" Swagelok Tube Fittings
Output:	Isolated 4 - 20mA
Power:	12 - 24 VDC
Pressure:	10 - 50 PSIG Inlet, vent to atm
Response Time:	T90 in 60 Seconds
Sample System:	Optional
Sensor:	Precision Electrochemical Cell
Temperature:	0 to 50 deg C
Warranty Sensor:	12 Months
Warranty Electronics:	12 Months
Weight:	18.5 lbs

\*Accuracy at constant conditions

"Inquiry for Application Expertise"

**SOUTHLAND SENSING**  
 MEASURE. ANALYZE. CONTROL.

Phone: 1-949-398-2879; Fax: 1-949-315-3622  
 E-mail: sales@sso2.com; Web: www.sso2.com  
 4045 E. Guasti Rd. #203 Ontario, CA 91761 USA

## H2S Analyzer:

The model H2S-725 Hydrogen Sulfide analyzer combines a rugged design with SSO2's precision H2S sensors. The result is a highly reliable and cost effective compact design with easy-to-use user interface designed specifically for the Natural Gas Industry.

The H2S analyzer is designed to meet the standards for Class 1, Div 1, Groups B,C,D.

The H2S analyzer is isolated both on the power input and analog output. This eliminates most electronic gremlins seen with existing competitive equipment in the field.

Gas connections are made with 1/4" Swagelok tube fittings. Sample Systems includes Sample / Span valve and flow meter.

## Cross Sensitivity:

Response to Methyl Mercaptan: 40% of actual concentration.

Response to Sulfur Dioxide: 18% of actual concentration.

## H2S Sensor Technology:

The H2S sensor used in the H2S-725 is based on the galvanic electrochemical fuel cell principal. All H2S sensors are manufactured under a strict quality program.

The sensors are self-contained and minimal maintenance is required - no need to clean electrodes or add electrolyte.

The Southland Sensing precision H2S sensors offer excellent performance, accuracy and stability while maximizing the expected life.

## Power Requirements:

Input Power: 12 - 24 V DC  
Current Draw: 50 mA

## H2S Sensors:

H2S-1x PPM H2S Sensor: 0 - 200 ppm Range  
H2S-2x PPM H2S Sensor: 0 - 2000 ppm Range

H2S sensors should be periodically calibrated. Factory recommendation is every 1 - 3 months or as the application dictates. Sensors offer excellent linearity when calibrated to a certified span gas.

## Order Information:

Record Part Number with selected options in Blank Indicated Area of Form

### Model Number:

H2S-725 H2S Analyzer

### Selected Range & Sensor:

- 1 0 - 200 PPM; H2S-1x PPM H2S Sensor
- 2 0 - 2000 PPM; H2S-2x PPM H2S Sensor

### Electronics Package:

- 2 12 - 12V DC Input Power

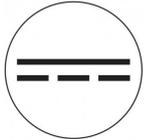
### Gas Connections:

- 4 1/4" Swagelok Tube Fittings with Sample / Span Valve & Flowmeter
- 8 Delete Sample / Span Valve & Flow Meter, 1/8" Swagelok Tube Fittings

H2S-725 - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Use This Part Number When Ordering

## 1.4 General Safety & Installation

This section summarizes the precautions applicable to the H2S-725 Hydrogen Sulfide Analyzer. Additional precautions specific to this analyzer are contained in the following sections of the manual. To operate the analyzer safely and to obtain the best performance, follow the basic guidelines outlined in this owner's manual.



**CAUTION:** This symbol is used throughout the owner's manual to Caution and alert the user that this device is operated on Direct Current Voltage (VDC)



**CAUTION:** This symbol is used throughout the owner's manual to Caution and alert the user to recommended safety and / or operating guidelines.



**WARNING:** This symbol is used throughout the owner's manual to warn and alert the user of the presence of electrostatic discharge.

**READ INSTRUCTIONS:** Before operating the H2S transmitter, read the instructions.

**RETAIN INSTRUCTIONS:** The safety precautions and operating instructions found in the owner's manual should be retained for future reference.

**FOLLOW INSTRUCTIONS:** Observe all precautions and operating instructions. Failure to do so may result in personal injury or damage to the transmitter.

### HYDROGEN SULFIDE ANALYZER



**H2S Transmitter**

Model Number: [H2S-725](#)  
Serial Number: [003510](#)

  Voltage: 12 - 28 VDC  
Max Current: 20 mA

4045 E. Guasti Rd. #203 Ontario, CA 91761 USA  
Ph: (949) 398-2879 / Web: [www.sso2.com](http://www.sso2.com)

**ADALET**  
4801 WEST 150TH STREET  
CLEVELAND, OHIO 44135 USA

**XIHX SERIES**

**CLASSIFIED**  
 

**31H4 ENCLOSURE FOR USE IN HAZARD LOCATIONS.  
AS TO EXPLOSION AND FIRE HAZARD ONLY.**

**CL. I GRPS. B,C,D CL. II GRPS. E,F,G CL. III, TYPE 4X  
CLASS I ZONE 1 AEX d IIC  
Ex d IIC IEC 60529 IP66**

FOR USE IN HAZARDOUS LOCATIONS CAUTION-DISCONNECT FROM SUPPLY BEFORE OPENING. KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE. CONDUIT SEALS MUST BE INSTALLED WITHIN 18" OF THE ENCLOSURE. ATTENTION-OUVRIRE LE CIRCUIT AVANT D'ENLEVER LE COUVERCLE. GARDER LE COUVERCLE BIEN FERMÉ. TANT QUE LES CIRCUITS SONT SOUS TENSION UN SCELLEMENT DOIT ÊTRE INSTALLÉ À MOINS DE 450MM DU BOITIER.

**FM** **CL. I GRPS. B,C,D CL. II GRPS. E,F,G CL. III, TYPE 4X**  
APPROVED INSTRUMENT HOUSING

6643 REV G

# Part 1 Introduction

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## 1.5 Location Installation Considerations

The Southland Sensing H2S-725 Hydrogen Sulfide Analyzer is designed to be mounted on a wall or on a pipe in a general purpose, Class 1 Division 1 or Class 1 Division 2 Group B, C, D area. When installed outdoors in cold areas an optional heater is recommended as well as a heavy duty enclosure. Consider also giving the analyzer a sun shield if it is going to be mounted in the direct sunlight.

**Seals are required on the power and signal conduit entries, whether the area classification is Division 1 or Division 2.** Reference your local electrical authority for the proper installation.

The analyzer is EMI / RFI protected, however it is good practice not to mount it too close to sources of electrical interference such as large transformers, motor start contactors, relays, large pumps, etc. Also, avoid subjecting the analyzer to significant vibration.

The analyzer has a local display, mount the unit at a suitable eye level for easy reading. Gas connections are located on the bottom of the analyzer, make sure there is room to hook up your gas lines.

## 1.6 Safety Considerations

The H2S analyzer is designed for installation into either a general purpose area, or a Class 1 Division 1 or a Class 1 Division 2 Group B, C, D area, but it is also designed so that a hazardous gas may be introduced into the main sensing compartment. This gas may be of any group B, C or D.

The analyzer consists of two enclosures mounted on a single back panel. The small round enclosure is explosion-proof and contains the electrical connections for the user - such as power, alarms and analog output. This explosion-proof enclosure also contains the power supply and safety components for the other enclosure. The larger square enclosure contains the analytical circuitry, the H2S sensor and the H2S sensor housing. This circuitry is designed for intrinsic safety and meets requirements for Class 1 Division 1 Group B, C, D.

When installing a Class 1 Division 1 or Class 1 Division 2 device, please follow your local electrical code should the area need to be declassified prior to installation.

# Part 2 Installation

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## 2.1 Receiving your New H2S Analyzer

As soon as you receive your new Hydrogen Sulfide Analyzer, carefully unpack the unit and accessories and inspect the electronics module, sensor housing for damage and also verify the H2S sensor is present. We normally ship the H2S Sensor inside the sensor housing, so check for it here first.

If damage to any portion of the new analyzer is present, stop and report damage to the shipping company as well as the factory.

The analyzer is shipped with all materials needed to install and prepare the system for operation. In some instances, added sample system components are necessary to condition the gas sample before entering the sensor housing. Southland Sensing offers free application consultation, and we encourage you to take advantage of our engineers and their expertise.

If installing into a Class 1 Div 1 or Class 1 Div 2 area, additional seals are needed for the power and signal conduit. These will need to be sourced locally and should meet your local electrical authority.

It is also important to be mindful of EMI / RFI noise interference. Protection from EMI / RFI noise is important for accurate readings.

# Part 2 Installation

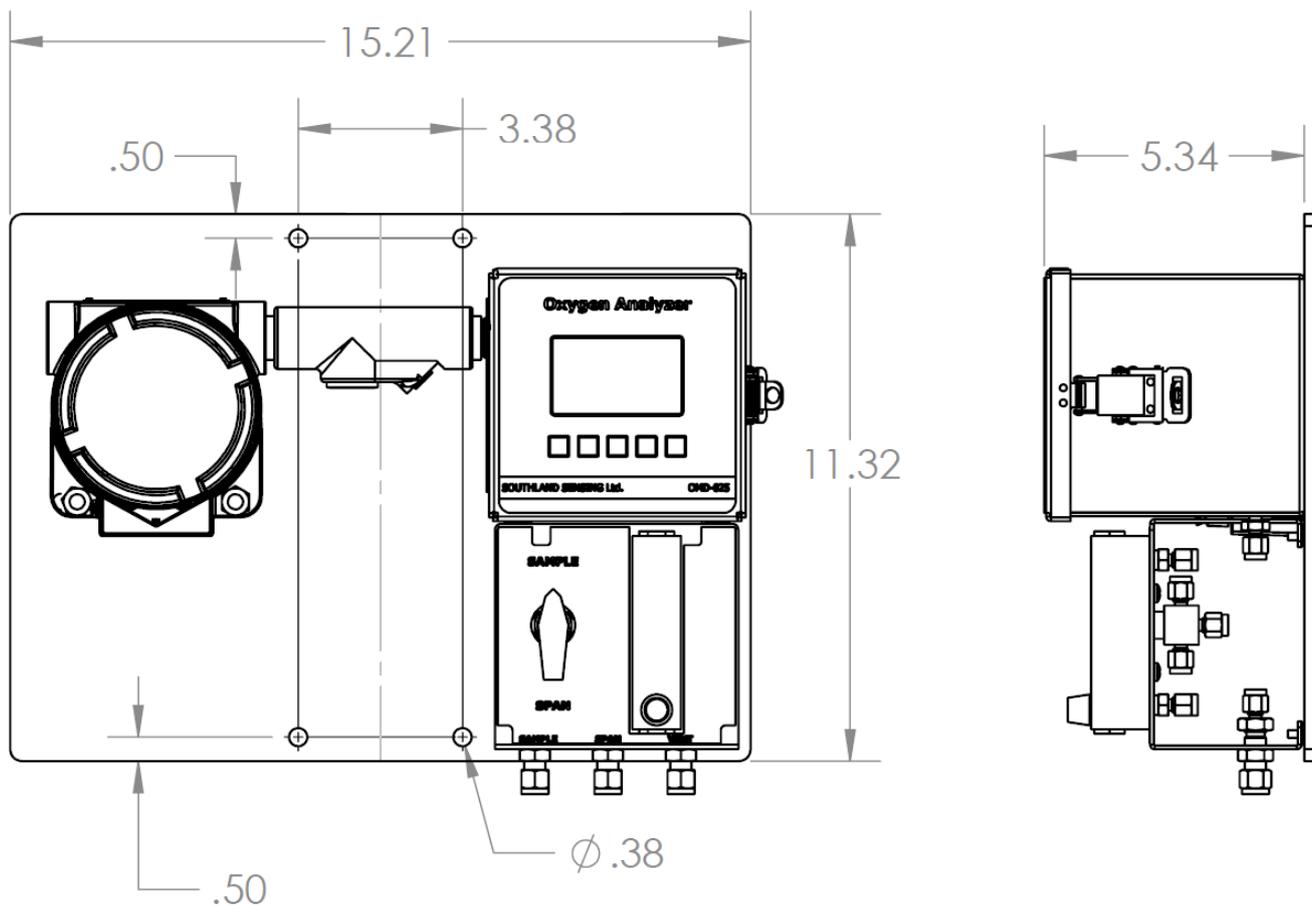
## 2.2 Mounting the Hydrogen Sulfide Analyzer

The H2S-725 is designed to be mounted on a wall or around a pipe. When installing outdoors in an extreme environment, consider an enclosure and heater if necessary. Consult the factory for recommendations.

Refer to part 3 operation section of this instruction manual for more information on how to operate the controls of this hydrogen sulfide analyzer

Refer to part 4 maintenance section for an overview on how to calibrate the device using a certified span gas; and remember to keep the span gas flow the same as the process gas for optimal accuracy.

A precision electrochemical H2S sensor is included as a separate item and must be installed prior to instrument use.



# Part 2 Installation

## 2.3 Electrical Connections

For the H2S-725 Hydrogen Sulfide Analyzer, power, alarms and analog output is housed in the round explosion proof enclosure on the left side of the panel. To access the circuit board, first determine if your area needs to be declassified and second remove the round enclosure top. Once removed you will have access to the J1 and J2 connectors which are the Power (J1) and Alarms / Analog output (J2).

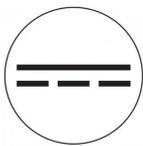


Incoming power/signal output connections are made to the orange terminal block located on the right side of the connectors, labeled J1

Do not supply voltage more than specified in this manual and noted on the analyzer label inside of the unit.

Shielded cable is recommended when connecting power and signal output.

Proper seals area recommended for the conduit when bringing power into or signal out of the explosion-proof portion of the analyzer.



Voltage: 12 - 24 VDC (Direct Current)  
Max Current: 100mA



Avoid electrostatic discharge



If the analyzer is being installed into a class 1 division 1 or class 1 division 2 area, the area will most likely need to be declassified prior to removing the round cap on the explosion proof portion of the analyzer. Follow your local electrical authority for proper procedure.

It is also recommended to make sure you have the proper seals for your conduit to meet your required area classification. Check with your local electrical authority.



Analyzer ground terminal must be connected to a ground.

# Part 2 Installation

## 2.4 Gas Connections

Gas Connections are made via 1/4" Swagelok Tube Fittings. The gas connections are located below the sample system on the bottom right. Sample Connection is designed for your process gas. Span connection is designed for a certified bottle of calibration gas (Required). Vent is the outlet, typically designed to vent to atmosphere, a flare stack or per your local regulations.

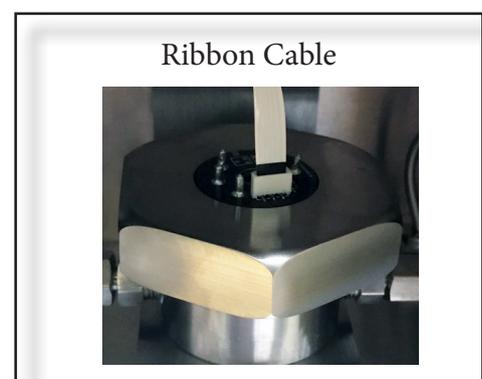
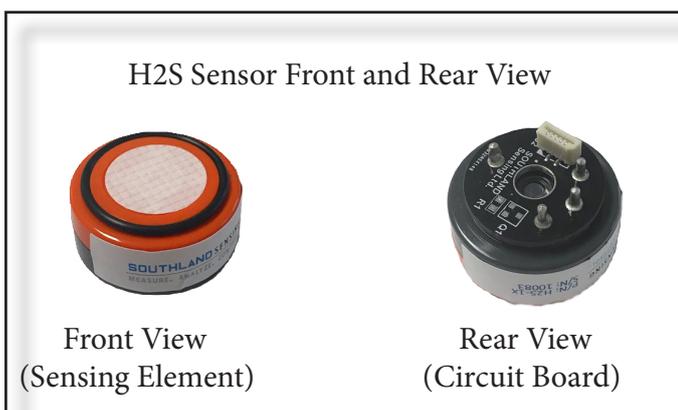
## 2.5 Installing the H2S Sensor in the Flow Through Sensor Housing

The H2S-725 can accept either a H2S-1x (0 - 200 ppm max) or H2S-2x (0 - 2000 ppm max) hydrogen sulfide sensor for trace H2S analysis. For help selecting a sensor, contact your local sales rep or the factory.

Prior to installing the sensor, it is important to make sure that the analyzer gas lines are hooked up and the unit is ready to purge. Connect the process gas line and set your flow between 1.00 - 1.5 SCFH; Ideally both the span connection and sample connection will have the same flow. We recommend 1.0 or 1.5 SCFH. It is necessary to match the flow rate of the SPAN bottle and process gas to maximize accuracy.

### To Install the Sensor:

- Open up the square enclosure which will give you access to the sensor housing.
- Remove the cell holder cap by unscrewing the stainless steel collar.
- Lift off the stainless steel collar and set to the side.
- Remove the sensor from its box and open up packaging.
- Visually inspect sensor for damage, if damaged notify the factory immediately.
- Inspect O'ring for cracking, replace if necessary. Always lube your Orings!
- Place the sensor inside the housing with the white sensing element facing down and the circuit board contacts facing up.
- Tighten collar. Hand tight is acceptable to create an airtight seal.
- Install flat ribbon cable to back of the sensor circuit board (See Photo Below)
- Tip: Make sure the contact pins on the ribbon cable align with the contact pins on the circuit board connector; the ribbon cable contact pins should be facing towards the center of the sensor.
- If the analyzer has not been calibrated, refer to section 4.1 for more information.
- Sensor / Analyzer should be calibrated every 1 - 3 months with a certified bottle of SPAN gas.

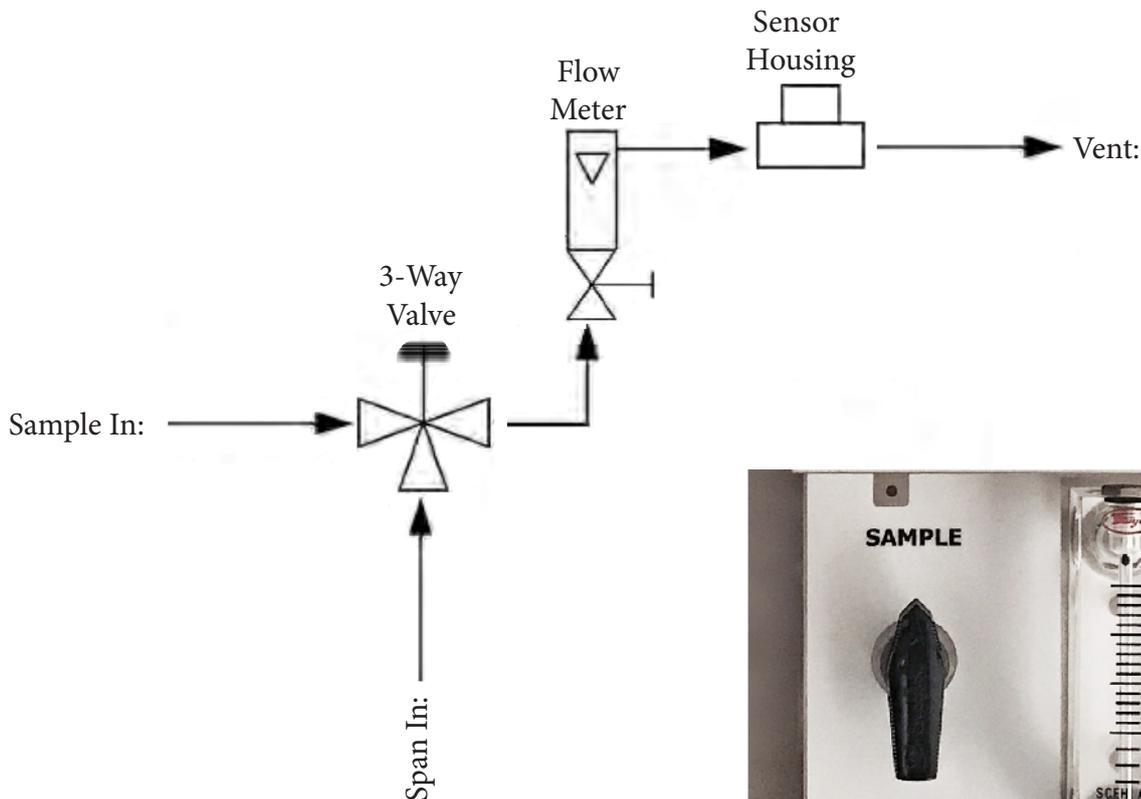


# Part 2 Installation

## 2.6 Integral Sample System Flow Diagram

Southland Sensing Ltd. strives to select the highest quality sample system components in the market. All gas connections are made via Swagelok branded compression tube fittings. Our valves are also sourced from Swagelok which again is one of the highest quality needle valve / bypass valve on the market. Our flow indicators / flow meters are from Dwyer, an industry recognized leader in flow control. When dealing with critical applications such as petrochemical processing and natural gas extraction, we want to make sure we can deliver a high quality sample system and we do so by partnering with some of the best brands in the market.

Along with our standard sample system as shown below, we can also custom design sample systems to meet unique applications including the additional of Moisture Filters, Pressure Regulators. For more information on a custom solution for your application, please contact your local distributor or the factor.



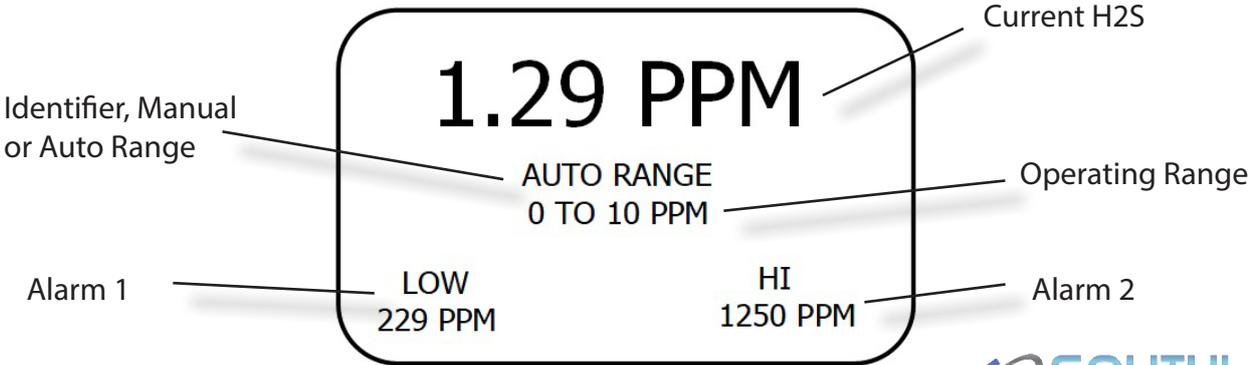
## 3.1 Understanding the Controls and their Operation

The H2S-725 Hydrogen Sulfide Analyzer is a feature packed unit with an easy to use menu interface. The key attributes within the menu are the ability to select a measurement range, both manually or set it to the auto-range mode. To calibrate the unit with a known gas, also referred to as a SPAN Calibration or SPAN CAL., to perform a zero calibration (If Necessary, most applications it is not required) and to set the alarm relays and their functionality.

A laptop or computer is NOT needed to configure and setup the analyzer for use.



All features are programmable / selectable through the MENU bottom. The UP / DOWN arrows will allow you to select your setpoints and the enter button saves the data. If you want to cancel your selection, or return to the previous screen the escape key ESC will allow you to do this. Once the unit starts up, the following HOME Screen will appear:



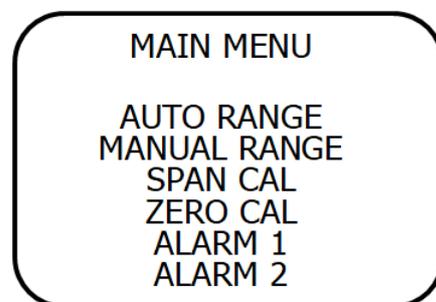
## 3.2 Measurement Range Overview

The H2S-725 Hydrogen Sulfide Analyzer allows the user to field select 4 available ranges - custom ranges are available upon request. These ranges can be selected in manual mode meaning they are locked into that range by the user - which locks in the analog output, or they can be set to auto-range so the analyzer will adjust to give you the best full scale resolution.

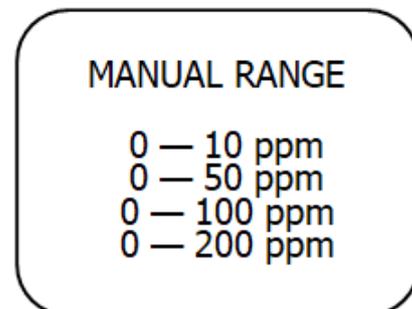
One feature to highlight when using the Manual-Range mode, while selecting the Manual Range, this is locking the 4 - 20mA output to a single range (or 1 - 5 VDC). The display will continue to operate in auto-range mode giving the user the full spectrum of analysis ranges.

To select Auto-Range or Manual-Range Mode, From the HOME screen, press the MENU key and the display will indicate:

Use the UP / DOWN keys to move the cursor to allow the user select AUTO-RANGE which will allow the unit to cycle through all five ranges or MANUAL RANGE which will allow the user to select a key range.



Decide which option will work best for your application. Move the cursor button over the selection and press the ENTER key. If you have selected the AUTO RANGE option, it will blink for a second indicating this was selected. If you selected the MANUAL RANGE option, the following screen will be brought up:



Standard Ranges: 0 - 10ppm, 0 - 50ppm, 0 - 100ppm and 0 - 200ppm

Optional Ranges: 0 - 100ppm, 0 - 500ppm, 0 - 1000ppm and 0 - 2000ppm

Use the UP / DOWN keys and bring the \* besides the range to be selected and press the ENTER key. The selected range will blink for a second indicating the range has been selected.

Press the ESC key to move back to the previous screen.

## 3.3 Analog Output 4 - 20mA or 1 - 5 VDC

**\*\* Caution: Integral 4 - 20mA (or optional 1 - 5 VDC) converters are internally powered and do not require external power. DO NOT supply any voltage across these terminals as the output will be damaged. It is also important to assure proper grounding of the external recording device such as a PLC, DCS prior to connecting the analog output.**

The H2S-725 uses an isolated analog output that is user selectable for 4 - 20mA or 1 - 5 VDC. The user can enter the Menu -> System -> Output Type to select between a 1 - 5 V DC or 4 - 20mA analog output. Once selected, that is all that is needed to change between the 2 available analog outputs.

When connecting the 4 - 20mA output, refer to the circuit board pinout in section 2.3

To verify the signal output of the 4 - 20mA circuit is working properly, connect an ammeter across the (+) and (-) Pins. With no sensor connector, it should read approximately 4mA. If a sensor is installed you can verify the signal matches with the following formula:

$$\text{Signal Output (mA)} = [(\text{Reading} / \text{Full Scale Range}) \times 16] + 4$$

For example, if we are reading 500ppm on the 1000 ppm range:

$$\text{Signal Output (mA)} = [(500/1000) \times 16] + 4$$

$$\text{Signal Output (mA)} = 12\text{mA}$$

When connecting the 1 - 5 V DC output, refer to the circuit board pinout in section 2.3

To verify the signal output of the 1 - 5 V DC circuit is working properly, connect an ammeter across the (+) and (-) Pins. With no sensor connector, it should read approximately 1 VDC. If a sensor is installed you can verify the signal matches with the following formula:

$$\text{Signal Output (mA)} = [(\text{Reading} / \text{Full Scale Range}) \times 4] + 1$$

For example, if we are reading 500ppm on the 1000 ppm range:

$$\text{Signal Output (mA)} = [(500/1000) \times 4] + 1$$

$$\text{Signal Output (mA)} = 3 \text{ V DC}$$

If your PLC / DCS System requires Output Calibration, please refer to section 3.4 for additional information.

## 3.4 Calibrating Your Output to your PLC or DCS

The H2S-725 has a unique “Output Cal” feature built into the menu that allows users to calibrate their PLC by adjusting the analog output to various points. To output calibrate your analyzer, follow the following steps:

Enter the Menu; Select System; Select output cal.

If you are using the 4 - 20mA, you can now calibrate your PLC or DCS System to 5 setpoints: 4mA, 8mA, 12mA, 16mA or 20mA.

If you are using the 1 - 5 VDC, you can now calibrate your PLC or DCS System to 5 setpoints: 1VDC, 2 VDC, 3 VDC, 4 VDC, 5 VDC.

This is a unique feature that not every application needs, but if your PLC needs to be calibrated through an “output cal” it is available to use.

## 3.5 Alarm Configuration

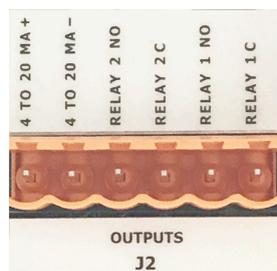
The H2S-725 is equipped with two programmable alarm relays, labeled as ALARM 1 and ALARM 2 in the menu. The two alarms set points are user adjustable and can be set either as Hi or Low, and can also be disabled through the menu.

To set the Alarm as on/off, Alarm Hi or Low simply select the Menu button on the overlay and scroll down to the feature you want to change. Hit the enter button and use the up / down arrows to make your next selection until the alarm is configured how you want it.

To set the alarm value; enter the menu and select adjust alarm. Use the Up / Down arrows until your set point is displayed. If the display is showing Percent values (%) simply use the Down button until the drop into the PPM Values.



To wire the alarms, open the Explosion Proof enclosure (Declassifying the area if necessary) and look at pin J2. Alarm Relay 1 and Alarm Relay 2 are labeled as no (normally open) and c (closed)



## 4.1 Span Calibration using a Certified Span Gas

Calibration involves using a known span gas to match and adjust the H2S sensor / analyzer combo to a known value. For an H2S Sensor, the only option to calibrate these units is to use a known certified span gas value. We find using a 25 - 50 ppm H2S / balance of N2 on the 0 - 200 ppm range sensor (H2S-1x) and 50 - 100 ppm H2S / balance N2 on the 0 - 2000 ppm H2S Sensor (H2S-2x). However, contact your local gas supply shop to see what values might be available.

Another very important factor is to calibrate your analyzer with the same flow rate as your process gas. Ideally this value will be between 1.0 SCFH and 1.5 SCFH. Calibrating at the same flow rate ensures accuracy.

Note: Breathing H2S at levels above 100 ppm can be fatal. Please use extreme caution when dealing with high levels of H2S gas.

### Calibration using Certified Span Gas:

It is recommended to read through the calibration prior to performing an a span calibration. Consult the factory if any questions arise.

When installing a new sensor, after connecting the ribbon cable let it sit for a couple minutes and make sure it reads < 0.05 ppm before calibration.

Connect the certified SPAN gas line to the SPAN inlet valve and set the pressure / flow per section 2.4 of the users manual.

Note: Sample Flow Rate and Calibration Flow rate should be the same for optimal accuracy; 1.0 - 1.5 SCFH are ideal.

Once the gas is flowing, let the reading stabilize for about 3 - 5 minutes and then proceed (consider longer if sensor is still trending).

SPAN CALIBRATION: To calibrate the indicator, press MENU key Use UP/DOWN keys to bring cursor besides the option SPAN CALIBRATION and press the ENTER key.

Use the UP / DOWN key until the reading on the display matches the value of your SPAN Gas. For example if your SPAN gas is 27.5 ppm adjust the display UP or DOWN until it reads 27.5 ppm.

Once ENTER has been pressed, the display will show "PASSED" or "FAILED". If passed, you can promptly put the sensor into service measuring your sample gas.

Calibrations should occur every 1 - 3 months at a minimum.

MAIN MENU

AUTO RANGE  
MANUAL RANGE  
SPAN CAL  
ZERO CAL  
ALARM 1  
ALARM 2

24.0 PPM

UP—INCREASE  
DOWN—DECREASE  
ENTER TO CAL  
ESC TO EXIT

## 4.2 Procedure for Replacing the Hydrogen Sulfide Sensor

### H2S Sensor Replacement:

The characteristics of a precision electrochemical fuel cell are similar to those of a battery. They both provide an output that is nearly constant throughout their useful life and simply fall off sharply towards zero at the end. With the H2S Sensor, you should get about 1 - 3 years of life depending on your application.

Typically with an H2S sensor, if you are measuring near zero, a periodic calibration is needed to verify the sensor is working properly. When the sensor fails to calibrate during a calibration session, that is the main indicator it is time to replace the sensor. Calibrations should occur every 1 - 3 months or as your application needs them. Check section 4.1 for more comments on calibration procedure.

No tools are required to replace the sensor. Simply unscrew (Counter-Clockwise) the collar (flow through sensor housing). Once free, remove the old H2S sensor, disposing like you would a lead-acid battery in accordance with your local regulations.

Remove the new sensor from its package. Check the O'ring on the front of the sensor to verify it is lubricated and has no cracks. Place the sensor sensing side down in the sensor housing with the circuit board pointed up. Proceed to re-engage the stainless steel collar making sure it is hand tight -> No tools are needed, hand tight with a good O'ring will create a leak free seal. Once the collar is re-engaged, insert the ribbon cable to the back of the sensor into its connector. Please note that the metal contacts should be facing in towards the center of the sensor making contact with the mating connector.

After the sensor has been replaced, proceed to the Span Calibration section.

## 4.3 Troubleshooting

For troubleshooting and advanced maintenance techniques, please contact your factory representative for assistance.

Email: [sales@sso2.com](mailto:sales@sso2.com)  
Ph: 1-949-398-2879

### Spare Parts List - H2S-725

#### Replacement H2S Sensor:

H2S-1x	0 - 200 ppm max range
H2S-2x	0 - 2000 ppm max range

#### Replacement Parts:

PCB-725-DC-Main	Circuit Board for H2S-725 12 - 24 VDC
PCB-725-PWR	Power Board, DC H2S-725
DISP-725	Display for H2S-725
ORING-1001	Sensor Housing O'ring
FUSE-1001	Replacement Fuse H2S-725

For additional troubleshooting or replacement parts, please contact the factory:  
sales@sso2.com; Ph: 1-949-398-2879

## H2S Analyzer / Sensor Warranty

The design and manufacture of our analyzers and precision electrochemical H<sub>2</sub>S sensors conforms to established standards and incorporates state of the art materials and components for superior performance while still maintaining minimal cost of ownership. Prior to shipment, every analyzer / sensor is thoroughly tested by the manufacturer. When operated and maintained in accordance with the Owner's Manual, the units will provide many months of reliable service.

### **Coverage**

Under normal operating conditions the analyzer / sensor's are warranted to be free of defects in materials and workmanship for the period specified in accordance with the most recent published specifications, said period begins with the date of shipment by the manufacturer. The manufacturer information and serial number of this analyzer / sensor are located visibly on the unit. Southland Sensing Ltd. reserves the right in its sole discretion to invalidate this warranty if the serial number does not appear.

### **Limitations**

Southland Sensing Ltd. will not pay for: loss of time, inconvenience, loss of use, or property damage caused by the oxygen analyzer / sensor or its failure to work.

### **Exclusions**

This warranty does not cover installation, defects resulting from accidents, damage while in transit to our service location, damage resulting from alterations, misuse or abuse, lack of proper maintenance, unauthorized repair or modification of the analyzer, affixing of any label or attachment not provided with the analyzer, fire or flood.

### **Service**

Call Southland Sensing Ltd. at 1-949-398-2879 (or e-mail [sales@sso2.com](mailto:sales@sso2.com)). Trained technicians will assist you in diagnosing the problem.

## 5.3 Material Safety Data Sheet (MSDS)

### Product Identification

Product Name	Oxygen Sensor Series – PO2, TO2 series
Synonyms	Precision Electrochemical Sensor
Manufacturer	Southland Sensing Ltd, 848 North Rainbow Blvd. Las Vegas, NV 89107 USA
Emergency Phone Number	1-949-398-2879
Preparation / Revision Date	April 23rd, 2012
Notes	Oxygen sensors are sealed, contain protective coverings and, in normal conditions, do not present a health hazard. Information applies to electrolyte unless otherwise noted.

### Specific Generic Ingredients

Carcinogens at levels > 0.1%	None
Others at levels > 1.0%	Potassium Hydroxide or Acetic Acid, Lead
CAS Number	Potassium Hydroxide = KOH 1310-58-3 or Acetic Acid = 64-19-7, Lead = Pb 7439-92-1

### General Requirements

Use	Potassium Hydroxide or Acetic Acid - electrolyte, Lead - anode
Handling	Rubber or latex gloves, safety glasses
Storage	Indefinitely

### Physical Properties

Boiling Point Range	KOH = 100 to 115 C or Acetic Acid = 100 to 117 C
Melting Point Range	KOH -10 to 0 C or Acetic Acid – NA, Lead 327 C
Freezing Point	KOH = -40 to -10 C or Acetic Acid = -40 to -10 C
Molecular Weight	KOH = 56 or Acetic Acid – NA, Lead = 207
Specific Gravity	KOH = 1.09 @ 20 C, Acetic Acid = 1.05 @ 20 C
Vapor Pressure	KOH = NA or Acetic Acid = 11.4 @ 20 C
Vapor Density	KOH – NA or Acetic Acid = 2.07
pH	KOH > 14 or Acetic Acid = 2-3
Solubility in H2O	Complete
% Volatiles by Volume	None
Evaporation Rate	Similar to water
Appearance and Odor	Aqueous solutions: KOH = Colorless, odorless or Acetic Acid = Colorless, vinegar-like odor

### Fire and Explosion Data

Flash and Fire Points	Not applicable
Flammable Limits	Not flammable
Extinguishing Method	Not applicable
Special Fire Fighting Procedures	Not applicable
Unusual Fire and Explosion Hazards	Not applicable

## 5.3 Cont. Material Safety Data Sheet (MSDS)

### Reactivity Data

Stability	Stable
Conditions Contributing to Instability	None
Incompatibility	KOH = Avoid contact with strong acids or Acetic Acid = Avoid contact with strong bases
Hazardous Decomposition Products	KOH = None or Acetic Acid = Emits toxic fumes when heated
Conditions to Avoid	KOH = None or Acetic Acid = Heat

### Spill or Leak

Steps if material is released

Sensor is packaged in a sealed plastic bag, check the sensor inside for electrolyte leakage. If the sensor leaks inside the plastic bag or inside an analyzer sensor housing, do not remove it without rubber or latex gloves and safety glasses and a source of water. Flush or wipe all surfaces repeatedly with water or wet paper towel (fresh each time).

### Disposal

In accordance with federal, state and local regulations.

### Health Hazard Information

Primary Route(s) of Entry	Ingestion, eye and skin contact
Exposure Limits	Potassium Hydroxide - ACGIH TLV 2 mg/cubic meter or Acetic Acid - ACGIH TLV / OSHA PEL 10 ppm (TWA), Lead - OSHA PEL .05 mg/cubic meter
Ingestion	Electrolyte could be harmful or fatal if swallowed. KOH = Oral LD50 (RAT) = 2433 mg/kg or Acetic Acid = Oral LD50 (RAT) = 6620 mg/kg
Eye	Electrolyte is corrosive and eye contact could result in permanent loss of vision.
Skin	Electrolyte is corrosive and skin contact could result in a chemical burn.
Inhalation	Liquid inhalation is unlikely.
Symptoms	Eye contact - burning sensation. Skin contact - soapy slick feeling.
Medical Conditions Aggravated	None
Carcinogenic Reference Data	KOH and Acetic Acid = NTP Annual Report on Carcinogens - not listed; LARC Monographs - not listed; OSHA - not listed
Other	Lead is listed as a chemical known to the State of California to cause birth defects or other reproductive harm.

### Special Protection

Ventilation Requirements	None
Eye	Safety glasses
Hand	Rubber or latex gloves
Respirator Type	Not applicable
Other Special Protection	None

### Special Precautions

Precautions

Do not remove the sensor's protective Teflon and PCB coverings. Do not probe the sensor with sharp objects. Wash hands thoroughly after handling. Avoid contact with eyes, skin and clothing.

Empty sensor body may contain hazardous residue.

### Transportation

Not applicable

## 5.4 Certificate of Conformance

Model Number: H2S-725 Hydrogen Sulfide Analyzer  
Serial Number: \_\_\_\_\_

Sensor Selection: ( ) H2S-1x; 0 - 200 max H2S Sensor  
( ) H2S-2x; 0 - 2000 max H2S Sensor

Serial Number: \_\_\_\_\_

Sensor Housing Selection: ( ) H3 Flow Through Sensor Housing 1/8" Swagelok

Sample System: ( ) Sample / Span valve, Flow Meter, 1/4" Swagelok  
( ) Delete Sample System, 1/8" Swagelok

Configuration:

Ranges: ( ) 0 - 10 ppm, 0 - 50 ppm, 0 - 100 ppm, 0 - 200 ppm  
( ) 0 - 100 ppm, 0 - 500 ppm, 0 - 1000 ppm & 0 - 2000 ppm

Power: ( ) 12 - 24 V DC

Analog Output: 4 - 20mA / 1 - 5 VDC Isolated

Display: Backlight

Calibration Gas: ( ) 50 PPM H2S Balance N2, 1.25 SCFH Flow

We certify that the parts shipped to you are manufactured in the USA and conform to all requirements of the Purchase Order. These parts have been manufactured and tested to the highest quality standards and in accordance with all required specifications, instructions and technical drawings.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_