

# TRACE TECHNOLOGY

## FEATURES

Interference Free Detection

Digital Electronics

ASTM Method References

Temperature Compensation

Operator Keypad

LED Light Source

Push-Button Calibration

Dual Processor Power

18-Bit A/D Conversion

Status Report Log

Graphic Data Displays

Swept Volume Humidifier

4-20 output

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## EASE OF INSTALLATION AND OPERATION

Compact Size

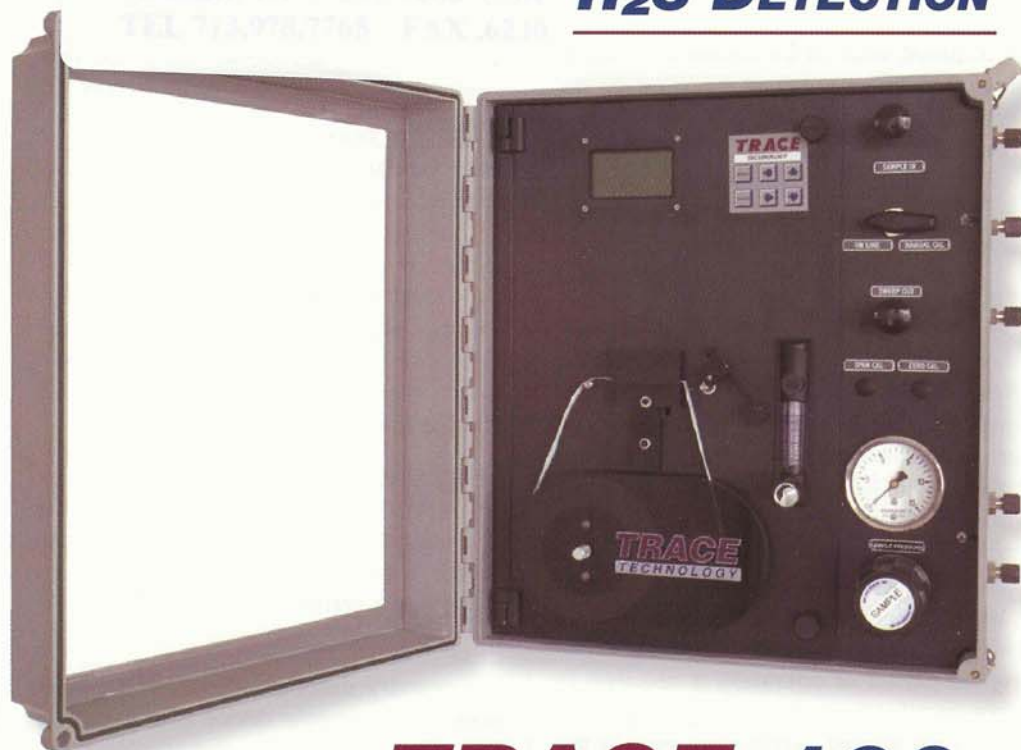
Hinged-door Access

Light Weight

Word Menu Displays

Flow-through Filter

Latch Block open to  
Change Tape



# TRACE 100

Portable On-Line Analysis

## PUSH BUTTON CALIBRATION

The power and flexibility of the Trace micro-processor-based analysis system are available at the touch of a button to help operators with one of their most important responsibilities . . . Calibration. The microprocessor, when requested, selects references, performs calculation adjustments, and verifies faster and more precisely than even the most experienced operators. The unique Trace internal calibrator permits push button selection to quickly and easily verify operation.

## ASTM REFERENCE METHODS

The field proven Trace microprocessor technology has been combined with ASTM approved analytical methods. The reference methods are:

ASTM D4084-82  
ASTM D4468-85  
ASTM D4045-81

The detection technology is based on chemically specific density changes. Optical illumination and detection are integrated for maximum resolution accuracy. Microprocessor technology is combined with statistical software algorithms to calculate precision analysis results.

## WORD MENU DISPLAYS

Plain language displays with descriptions of operation status support easy use. The 128 x 64 pixel LCD display allows selections to be displayed in plain language: English, Spanish and other languages. The operator can make selections and entries from available menu choices.

## DUAL MICROPROCESSORS

Two independently functioning micro-processor systems are embedded in the Trace analyzer architecture. This dual processor structure allows one processor to have uninterrupted dedicated execution of the analysis algorithms. The second processor is dedicated to user friendly interaction and display. Dual processor design ensures continuous precision analysis and dedicated responsive communication with interactive displays. Embedding two microprocessors in the system electronics allows each processor to have a single first priority. One is dedicated to easy, clear, and responsive information display and operator interaction; the other processor is dedicated to precision analysis calculation without interruption for communication requests.



### **DIGITAL ELECTRONICS**

Digital electronics takes full advantage of microprocessor calculation precision. Data is acquired with 18 bit conversion resolution. Signal over sampling is applied for statistical detection processing and accuracy correlation. An extensive set of mathematical algorithms are executed with full floating point precision to calculate the concentration analysis.

### **FIELD PROVEN**

Operator confidence has been earned through exceptional on-line performance. Reliable operation is an absolute requirement for acceptable performance. Field proven performance is your assurance that reliability is built into Trace Technology products at every level from initial design to final calibration. Performance is your assurance of hassle-free compliance certification. Documented verification of accurate, stable results over an extended, uninterrupted period of operation is required to earn certification. Trace Technology systems have earned certification even in the most aggressive environments.

### **TANGENT SAMPLE FLOW**

Sample flow is tangent to the Trace Tape to eliminate effects from porosity variations when sample is passed through the tape. Signal generation is based on H<sub>2</sub>S concentration only. Therefore, the sample's volumetric flow rate does not affect accuracy.

### **LEAD ACETATE DETECTOR**

The only detection method that is absolutely specific to hydrogen sulfide. Based on the formation of lead sulfide when lead acetate tape is exposed to the H<sub>2</sub>S sample through an aperture in the sample flow system. This system is totally specific to sulfur. It is unaffected by the composition of the carrier or sample gas. Since the product of the reaction of lead acetate and H<sub>2</sub>S is colored and the reactants are not, the progress of the reaction is easily monitored. The rate of formation of lead sulfide may be determined by measuring the rate of the tape darkening. Rate of tape darkening is linear with respect to H<sub>2</sub>S concentration.

### **EASY INSTALLATION**

User friendly starts with easy installation. Gas line connections on the outside of the analyzers are labeled for easy setup. Straight-forward ease of installation allows

operators to start recording accurate readings almost immediately. Easily accessible sub-assemblies and components support user configuration changes, trouble shooting analysis and validation checks.

### **FAULT TOLERANT OPERATIONS**

Fault tolerant diagnostics are your assurance of low stress operation. The Trace Technology system architecture provides extended maintenance tools, such as fault code logging, calibration records and analysis logs, status displays, and many other selections of data. Even after a total power failure, the analysis is fully operational as soon as power is returned to the unit.

### **SPEED LOOP**

The analyzer system includes the valving and bulkhead connections to reduce the sample transport time. This can greatly improve the system response time.

### **PHOTO DETECTOR**

The primary detection sensor is a silicon based photo voltaic device that does not have the performance decay associated with photo resistive detection devices.

### **STATUS REPORT LOG**

At any point in time the operator can select to view current operation status on the analyzer status page.

### **MANUAL CALIBRATION PORT**

The system provides bulkhead connection tubing and valving that allow connection of calibration gas sources without disconnecting the on-line streams being analyzed.

### **LED LIGHT SOURCE**

The analysis illumination light source is a high efficiency LED which does not have the stability and aging problems associated with incandescent light sources.

### **TEMPERATURE COMPENSATION**

Trace information processing algorithms completely eliminate the effect of parameter offsets commonly referred to as drift. Any effect of temperature on the system amplifier gain is compensated by the use of internal reference measurements made at the beginning of each tape advance cycle. These reference measurements are used to normalize signal processing.

### **SWEEP VOLUME HUMIDIFIER**

The humidification contact chamber is a 1/8" tube path that is continuously swept as the sample flows. This eliminates any

dead volume which would affect reading accuracy and system response.

### **OPERATOR KEYPAD**

A directly accessible six-function operator keypad allows configuration selection, maintenance control, and operation setup to be quickly and easily executed.

### **18 BIT A/D CONVERSION**

Allows the detection and resolution of smaller signal values. This means that lower levels of H<sub>2</sub>S can be detected. The greater dynamic range of counts up to 262,144 means a wider range of H<sub>2</sub>S concentration can be measured without recalibration.

### **STATUS DISPLAY PAGES**

Menu selection that displays current operating status of the unit.

### **POWER SWITCH**

Convenient on/off control for the analyzer.

## **SPECIFICATIONS**

### **DISPLAY**

- Alpha Numeric LCD
- 128 x 64 pixels

### **TEMPERATURE RANGES**

- -10°C to 50°C (operating)
- 0°C to 70°C (storage)

### **ANALOG - Isolated 4-20mA**

### **ANALYTICAL PERFORMANCE**

- Resolution: 1ppb
- Accuracy: ±2%
- Repeatability: ±1%
- Linearity: ±1%
- Drift: Nil
- Temp. Coefficient: 0.01% / °C
- Analysis Time: 0.75 Second
- Detection Ranges:
  - 0-1 ppm
  - 0-50ppm
  - 0-500ppm

### **AREA CLASSIFICATION**

- General Purpose

### **WEIGHT - Approx. 20 lbs; 9 kg**

### **DIMENSIONS**

- 14" x 16" x 8"
- 35.5 cm x 41.9 cm x 20.3 cm

### **POWER REQUIRED**

- 110VAC, 60 Hz, or
- 220VAC, 50Hz, or
- 12VDC, or
- 24VDC

**TRACE**  
TECHNOLOGY

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