

## ProTech D2 H<sub>2</sub>S/TS ANALYZER SELECTED SPECIFICATIONS

|                            |   |
|----------------------------|---|
| <b>Analysis</b>            | H <sub>2</sub> S or TS. H <sub>2</sub> S & TS analysis can be done on same analyzer.<br>NOTE: TS requires reaction furnace  |
| <b>Linearity</b>           | ±2.0% of full scale   |
| <b>Repeatability</b>       | ±2.0% of full scale for ranges 1 to 50 ppmv<br>±2.5% of full scale for range greater than 50 ppmv<br>±3.0% of full scale for ranges 0.5 to 1 ppmv<br>±5.0% of full scale for ranges less than 0.5 ppmv  |
| <b>Measurement Range</b>   | <b>H<sub>2</sub>S:</b> 0 to 300 ppmv, 0 to 5,000 ppmv, 0 to 10%<br><b>TS:</b> 0 to 5,000 ppmv, 0 to 10%   |
| <b>I/O Capabilities</b>    | 3 – Serial ports (USB/RS232 selectable, RS232 & RS485)  |
| <b>Output</b>              | 1 – Ethernet LAN<br>6 – SPDT 8A programmable relays (form C)<br>8 – Solenoid drivers 3A<br>6 – 4-20 mA loop-powered (user scalable & programmable)<br>10 – Quick view status indicators (LED)   |
| <b>Inputs</b>              | 1 – MMI intrinsically safe keypad with menu<br>2 – Isolated, universal analog inputs with programmable gain & excitation (RTD, 4-20 mA, pressure transducer, etc.)<br>4 – Wet inputs (user programmable)<br>4 – Dry contact (user programmable) |
| <b>Modbus Protocol</b>     | Modicon 16, Modicon 32, Enron/Daniel  |
| <b>Area Classification</b> | Class 1, Division 2, Groups B, C & D  |
| <b>Power Requirements</b>  | 10 Watt (24VDC), 250 Watt (120VAC – TS option)<br>10 to 36 VDC or 90-240 VAC 50/60 Hz (Optional)  |

## AccuChrome GC SELECTED SPECIFICATIONS

|                            |  |
|----------------------------|--|
| <b>Analysis</b>            | C6+ or C7+ configurations available  |
| <b>Repeatability</b>       | ±0.25 Btu/scf per 1,000 Btu (±0.0093 MJ/m <sup>3</sup> per 37.3 MJ/m <sup>3</sup> )  |
| <b>Measurement Range</b>   | 800 to 1,500 Btu/scf (29.8 MJ/m <sup>3</sup> to 55.9 MJ/m <sup>3</sup> )   |
| <b>I/O Capabilities</b>    | 3 – Modbus serial ports (two RS232, RS485; up to 8 serial ports optional)  |
| <b>Output</b>              | 2 – Ethernet (one for local GUI, one for Modbus TCP)<br>4 – Replaceable SPDT 8A relays (3 alarm, 1 fault)<br>4 – 4 to 20 ma loop- or self-powered (optional additional 32 isolated 4 to 20 ma)<br>1 – Single PID controller with PWM control |
| <b>Inputs</b>              | 1 – MMI external keypad<br>3 – Universal analog with programmable gain<br>2 – Isolated digital (wet)<br>2 – Digital (dry)  |
| <b>Modbus Protocol</b>     | Modicon 16, Modicon 32, Enron/Daniel   |
| <b>Area Classification</b> | Class 1, Division 1, Groups B, C & D<br>Class 1, Division 2, Groups B, C & D   |
| <b>Power Requirements</b>  | 100 Watts Start up, 50 watts continuous<br>24 VDC or 90-240 VAC 50/60 Hz (Optional)  |

Please note: we work continuously to improve the performance of our products – all specifications are subject to change without notice.

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APPLIED SCIENCES



ISO 9001-2008

## Application Insight: EPA 40 CFR 60 Subpart Ja Compliance

### Flare-Gas Monitoring

PETROCHEMICAL  
REFINERIES /  
CHEMICAL PLANTS  
#1

*It's final. EPA's new 40 CFR 60 Subpart Ja flare-gas regulations require emissions monitoring of refinery flares by November 11, 2015. Are you ready?*

**Galvanic Applied Sciences offers high-value, low cost-of-ownership solutions for analysis and monitoring of H<sub>2</sub>S, total sulfur (TS), and Btu (energy content) to optimize your processes and assure full compliance.**

### Background

Emissions from the refinery flare combustion process have been shown to have detrimental effects on the environment and human health. Accordingly, in November 2012, the US Environmental Protection Agency (EPA) posted updated regulations designed to reduce releases of carbon dioxide (CO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen-bearing compounds (NO<sub>x</sub>), volatile organic compounds (VOCs), carbon monoxide (CO), particulate matter (PM), and other emissions. Combustion inefficiencies can affect the volume of certain components released and are also of concern. EPA's 40 CFR 60 Subpart Ja outlines requirements and methods for compliance of H<sub>2</sub>S, TS, and Btu monitoring of refinery flares.

### Who Must Comply with 40 CFR 60 Subpart Ja?

*Most refinery flares constructed, modified, or re-constructed after June 28, 2008, must install emissions-monitoring equipment to comply with 40 CFR 60 Subpart Ja. However, not all flares require installation of emissions-monitoring equipment. Exceptions include facilities that have flare-gas recovery systems, flares that are used infrequently, have low concentrations of sulfur, and flares that have not been modified since June 28, 2008. Other requirements may still apply, such as creating and implementing a flare-management plan, or root-cause analysis if an upset occurs.*

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## 40 CFR 60 Subpart Ja Analysis Requirements

- **H<sub>2</sub>S Analysis** – *If the fuel gas feeding the flare has a continuous H<sub>2</sub>S monitor at a common point in the feed system, then the H<sub>2</sub>S levels from the fuel gas monitor can be used for reporting the flare H<sub>2</sub>S levels and an analyzer is not required.\* However, if the fuel gas is not monitored at a common point, the feed to the flare must be monitored for H<sub>2</sub>S compliance.*

**Standard** H<sub>2</sub>S must not exceed 162 ppmv on a three-hour rolling average

**Analyzer Measurement Range** 0 to 300 ppmv; analyzer must be able to deliver accurate measure concentrations between 20 to 300 ppmv

- **Total Reduced Sulfur (TRS)/Total Sulfur (TS) Analysis** – *For Subpart Ja compliance, TS measurement is equivalent to a TRS measurement. This is because one of the analytical methods cited for the TRS method, (Method 15A) is a combustion method with an analytical result that is the TS. Accordingly, the operator can choose to make either a TS or a TRS measurement. The ruling also allows, under specific guidelines, for a H<sub>2</sub>S measurement to be used in place of a TRS/TS measurement. See protocol below.*

**Standard** The flare must be monitored for TS with a span of 1.1 to 1.3 times the maximum anticipated sulfur concentration, but no less than 5,000 ppmv for an upper analysis span limit. A single, dual-range analyzer may be used if it meets the span requirements.

**Measurement Protocol** To use a H<sub>2</sub>S measurement for the TS monitoring, the owner or operator must take manual samples over a 10-day operating period to establish a H<sub>2</sub>S to TS ratio. Once established, samples must be taken every 10 days to confirm the ratio. If the ratio has changed a new H<sub>2</sub>S to TS ratio must be established over a 10-day sampling period

- **BTU (Energy Content) Analysis** – *If the flare is steam- or air-assisted, the net heating value of the gas being combusted must be 11.2 MJ/scm (300 Btu/scf) or greater. If it is a non-assisted flare, the net heating value of the gas being combusted must be 7.45 MJ/scm (200 Btu/scf).*

For more information on EPA 40 CFR 60 Subpart Ja requirements, visit [www.epa.gov](http://www.epa.gov).

### Galvanic assures flexible, headache-free installation and operation

Galvanic Applied Sciences' expert support team will work with you to determine the best, most cost-effective way for your facility to meet 40 CFR 60 Subpart Ja requirements. Galvanic's high-performance analyzers are calibrated to your exact specifications and custom-configured at the factory to integrate seamlessly into your existing infrastructure. Galvanic can also supply other key components and services to deliver a total integrated solution – from custom designs and field commissioning for your systems – to analyzer shelters and sample-conditioning panels.

\*Galvanic's ProTech-H<sub>2</sub>S/TS W analyzer is an ideal solution for economical and highly accurate continuous fuel-gas monitoring of H<sub>2</sub>S as per EPA 40 CFR 60 Subpart J

Galvanic offers a range of analyzers to suit your 40 CFR 60 Subpart Ja compliance needs. Designed and built to optimize performance in the harshest monitoring environments, all of our analyzers deliver the utmost in ease-of-operation, precise measurements, consistent, field-proven performance – and value.



### ProTech™ D2 H<sub>2</sub>S/TS Analyzer

Galvanic's ProTech D2 H<sub>2</sub>S/TS analyzer (formerly 903) delivers fast, accurate, interference-free results using the most widely accepted analytical method in use today – lead-acetate-tape detection. Rugged and reliable, the analyzer has an exceptionally wide measurement range to meet all the EPA monitoring requirements. It meets or exceeds performance standards of GCs, other lead acetate analyzers and a wide variety of other detection technologies, but its economical cost of operation make it one of the highest-value H<sub>2</sub>S analyzers on the market.

With the ProTech analyzer's unique ability to analyze both H<sub>2</sub>S and TS, operators can use the same analyzer throughout their facility, reducing spare parts inventory and lowering costs.

Galvanic's proprietary Tape Assurance System assures smooth, trouble-free tape operation, with six to 14 weeks of tape life depending on analyzer settings. The analyzer's extensive self-diagnostics coupled with full featured remote diagnostics enable operators to determine and address the cause of any issue quickly and easily. The user-friendly Windows®-based software with graphical interface can be used directly or remotely via serial link, USB or Ethernet.

### AccuChrome™ GC Btu & Hydrocarbon Analyzer

When it comes to Btu measurement for compliance, accuracy and reliability are key. Galvanic's recently released AccuChrome GC offers superior accuracy in a rugged, robust package. The analyzer uses industry-leading injection valves and time-proven TCD detectors. Maximum oven temperature stability and built-in algorithms minimize problems related to retention-time drift. We designed the analyzer for easy access to all serviceable components.

The AccuChrome GC's built in Ethernet port can be used for Modbus TCP/IP as well as remote GUI access for troubleshooting. Make up to 16 connections simultaneously. Integration into existing infrastructure simple with the programmable Modbus list. The analyzer can house up to 32 Modbus maps, providing maximum flexibility. The system comes standard with three serial ports; up to eight are available.



Less susceptible to fouling than micro-machined technology, the AccuChrome GC's thermal-conductivity detector withstands corrosive compounds such as H<sub>2</sub>S. Plus, Galvanic's detector will not burn out on loss of carrier gas!