

## BRIMSTONE SPECIFICATIONS

### PERFORMANCE

<b>Zero drift</b>	+/- 0.25% F.S. per day with auto-zero every 4 hours
<b>Span drift</b>	± 1 % of full scale for H <sub>2</sub> S and SO <sub>2</sub>
<b>Accuracy</b>	± 1 % of full scale for H <sub>2</sub> S and SO <sub>2</sub>
<b>Repeatability</b>	± 1 % of full scale for H <sub>2</sub> S and SO <sub>2</sub>
<b>Sensitivity</b>	1 % of full scale for H <sub>2</sub> S and SO <sub>2</sub>
<b>Linearity</b>	± 1 % of full scale for H <sub>2</sub> S and SO <sub>2</sub>
<b>Response time:</b>	T-90, 10 seconds

### ENVIRONMENT

<b>Ambient temperature</b>	0°C to +50°C (32°F to 122°F)
<b>Dimensions</b>	1100 mm H x 1448 mm W x 380 mm D (43.3" H x 57" W x 15" D)
<b>Weight</b>	125 kg (275 lbs)

### UTILITIES

<b>Power &amp; consumption</b>	100-240 VAC 50/60 Hz, 800 watts
<b>Sample flow</b>	2.3 L/min (5 SCFH)
<b>Air requirements</b>	5.5 to 8.3 barg, 623 L/min (80-120 psig 22 SCFM)
<b>Steam</b>	3.4 barg(50 psig) for probe heating > 10.3 barg (>150 psig) for oven (CSA units only)

### COMMUNICATIONS

<b>Digital Outputs</b>	Modbus RS 485, Modbus TCP/IP
<b>Digital Inputs</b>	1 wet (12-24 VDC)
<b>Analog Outputs</b>	4 x 4-20 mA, user scalable, loop powered
<b>Relays</b>	4 x SPDT relay, 8 amps @300 VAC/25 VDC

### APPROVALS & CERTIFICATIONS

CSA Class 1 Div 2, Groups CD, T3  
ATEX Zone 1

## About Galvanic

Galvanic Applied Sciences Inc. solves critical process-analysis and measurement problems for customers worldwide with our full line of rugged, fit-for-purpose gas- and liquid-measurement systems. We engineer all of our systems and components to deliver uncompromising accuracy, reliability, and long-term value to users, even in the most-challenging process environments. That's why multinationals and small companies alike turn to us again and again – they count on our attention to detail, applications know-how, and exacting quality standards. We work with customers to tailor each system to meet their site-specific process requirements and to provide unparalleled support through installation, training, and long-term product maintenance. A private company headquartered in Calgary, AB, Canada, with a facility in Lowell, MA, USA, Galvanic supports a global network of dedicated sales and service engineers, as well as value-added distributors to serve the needs of customers.

# GALVANIC

APPLIED SCIENCES



**Brimstone™**  
Sulfur-Recovery  
Analyzers



## Delivering all you need for fast, accurate analysis, process optimization, and compliance

Galvanic is well known as the leader in process analyzers used to optimize sulfur-recovery units. We put 25 years of applications know-how and engineering prowess into the rugged, user-friendly design of the UV-spectrophotometer-based Brimstone analyzer line.

The Brimstone family includes a full line of analyzers designed to assure quality, efficiency, and compliance throughout the entire sulfur-recovery process: an acid gas analyzer to assess the inlet stream, a tail-gas analyzer to control air demand during the Claus process, a pit-gas analyzer to optimize and monitor the captured sulfur during the process, and a continuous emissions monitor to assure that stack gas complies with environmental regulations. Enhanced CCD UV spectroscopy delivers extremely fast, accurate results. Engineered for low-maintenance performance with no moving parts, Galvanic's Brimstone analyzers free up operators to focus on other critical functions.

### Flexible, headache-free installation & operation

Galvanic analyzers are custom-configured at the factory to integrate seamlessly into your existing infrastructure. Galvanic's expert support team will calibrate one analyzer or dozens to your exact specifications, mimicking sample conditioning and outputs of your current system, as required.

Retire old analyzers individually as necessary, or start an entire new line in the most cost-effective way possible – Galvanic makes it easy to standardize your training protocols, operating procedures, and service processes at all your facilities worldwide.

#### Features

- Simple modular and rugged design with no optical filters and no moving parts delivers reliable, low-maintenance operation with minimal downtime
- Intuitive graphic display and automatic performance with auto calibration interval timing enables completely hands-off operation
- Advanced internal startup and operational diagnostics
- Web-based password-protected user interface allows full operational & diagnostic control from remote locations
- Near-instantaneous analysis-response times with total system response of < 10 seconds enables fast process control
- UV absorption method with enhanced 2048 pixel CCD delivers the utmost in accurate determinations

## Look Inside ...

Galvanic continues to lead the way in innovative, cost-effective systems for tail-gas analysis



**Closed-Coupled Process Connection**

Eliminates the need for heated sample lines.



**Proprietary Sample Probe**

Galvanic's proprietary probe design offers superior sulfur vapor control, eliminating plugging problems associated with heated transfer lines.

#### External-Keypad-Driven Display

An intrinsically safe external keypad – a feature unique to Galvanic systems – provides full menu access for the high-resolution display, enabling at-a-glance status and results. View analysis results, previous calibration information, and alarms on the spot, without opening the enclosure. The analyzer can also be controlled remotely via Ethernet and a Web-based graphical user interface.



**Fiber Optics Coupling**

The Brimstone's precision fiber optics coupling links the measurement cell and detector, eliminating alignment issues.



**Enhanced 2048 Pixel CCD Array & Stable, Broadband Deuterium Light Source**

The Brimstone's 2048 pixel CCD array measures absorbance over a wide range of wavelengths, eliminating the inaccuracies associated with bandpass filters. The broadband deuterium light source provides unparalleled stability.



Choose the Brimstone analyzer that's right for your specific application needs – or cover the analysis requirements for the entire process from feed gas through emissions monitoring

BRIMSTONE MODEL	BENEFITS
Acid Gas Analyzer	<ul style="list-style-type: none"> <li>• Monitors the concentration of H<sub>2</sub>S in the acid gas feed to the sulfur-recovery unit</li> <li>• Provides information for feed-forward control of main air valve</li> </ul>
Tail Gas Analyzer	<ul style="list-style-type: none"> <li>• Monitors the H<sub>2</sub>S and SO<sub>2</sub> concentration in the sulfur-recovery unit's tail gas</li> <li>• Provides information for feed-back control of the trim air valve</li> </ul>
Sulfur Pit Gas Analyzer	<ul style="list-style-type: none"> <li>• Monitors the H<sub>2</sub>S and SO<sub>2</sub> concentration in the vapor head space of the sulfur pit</li> <li>• Assures that H<sub>2</sub>S concentration does not exceed the lower explosive limit for H<sub>2</sub>S</li> <li>• Provides early warning of potential smoldering fires</li> </ul>
CEM (Continuous Emissions Monitor)	<ul style="list-style-type: none"> <li>• Monitors the SO<sub>2</sub> concentration in the incinerator stack</li> <li>• Ensures compliance with SO<sub>2</sub> emission regulations and permits</li> </ul>

## Selected Industries & Applications

- Natural Gas Processing
  - Claus process
  - NG sweetening
  - Stack emission
  - Sulfur recovery – H<sub>2</sub>S in acid gas feed
  - Sulfur Recovery – H<sub>2</sub>S/SO<sub>2</sub> ratio - air demand
  - Sulfur Recovery – H<sub>2</sub>S/SO<sub>2</sub> in sulfur pit vapor head space
  - Sulfur Recovery – SO<sub>2</sub> in stack
- Oil & Refining / Petrochemical
  - Claus process
  - Sulfur recovery – H<sub>2</sub>S in acid gas feed
  - Sulfur Recovery – H<sub>2</sub>S/SO<sub>2</sub> in sulfur pit head-space
  - Sulfur Recovery – SO<sub>2</sub> in stack