

## EVOLUTION SERIES

# CM2052

H<sub>2</sub>S /TRS /SO<sub>2</sub>

Air Quality



### Measurement Principle

The Casella Monitor CM2052 Hydrogen Sulphide (H<sub>2</sub>S) Analyzer is an advanced design analyzer which uses U.V. fluorescence technology to measure concentrations of Hydrogen Sulphide (H<sub>2</sub>S) and Total Reduced Sulphur (TRS) accurately and reliably, when combined with the MT1000 Thermal Oxidizer.

H<sub>2</sub>S is measured by first removing SO<sub>2</sub> from the sample by a scrubber then, converting residual H<sub>2</sub>S by thermal oxidation to Sulphur Dioxide, and measuring the resulting output with a CM2052 Analyzer. Total Reduced Sulphur can also be measured, by setting the oven to a higher temperature and again placing a SO<sub>2</sub> scrubber in front of the oxidizing oven.

The CM2052 Analyzer depends on the fluorescent radiation produced by the SO<sub>2</sub> molecules when excited by U.V. radiation. The excitation U.V. radiation is measured by the reference detector and the fluorescent radiation is measured by a photomultiplier tube (PMT). The two measurements are compared by ratio in a classical dual channel technique to

compensate against the effects of variation in source intensity, optical contamination, and common PMT drift characteristics.

Aromatic hydrocarbons are removed by a unique 'kicker' that uses differential partial pressure technique to selectively remove aromatics across the permeable membrane, without influencing the SO<sub>2</sub> sample. The final concentration of SO<sub>2</sub> is corrected for temperature and pressure changes and can be displayed in ppm or mg/m<sup>3</sup>.

The optimum measuring range is automatically selected for the display and RS 232 outputs for each parameter. Values are reported as floating point numbers avoiding range selection and reporting. Extended memory capacity is incorporated in all Evolution series analyzers providing recorded data to be downloaded on site or remotely utilizing MECOMM utility software or any computer terminal program.

The Thermal Oxidizer is easy to configure using the digital display and temperature controller on front of the panel. **A switching option to measure both H<sub>2</sub>S and SO<sub>2</sub> or TRS and SO<sub>2</sub> is available.**

### Features and Benefits:

- Full colour TFT Display.
- New Linux based processor circuitry.
- Large internal 2GB Data storage.
- Multi-drop RS232 allows connection of several analyzers to logger, or direct to remote P.C./Software via modem.
- Multi language operation and firmware.
- Drop down front panel for improved servicing access.
- Converter efficiency of 95-99%
- Highly efficient PWM controlled oven - minimal thermal noise during cycle times.

# CM2052

## Hydrogen Sulphide (H<sub>2</sub>S) and Total Reduced Sulphur (TRS)

**CASELLA**  
MONITOR

### CM2052 Specifications

Optional components	50 pin I/O PCA, sample pump, particulate filter, charcoal scrubber (not 9830), external zero span valves, rack slides.
Optional zero and span (i.z.s) modules	Type:- Internal Permeation Oven.Output:- Single span point based on permeation tube selected. Repeatability:- span is typical ±3% of previous reading.
Range	<ul style="list-style-type: none"> <li>Display &amp; digital output: Autoranging 0 to 20ppm. Display resolution = 0.001ppm Serial output resolution = 1ppt</li> <li>Analogue output: 0-full scale from 0-0.05 ppm to 0-20 ppm with 0, 5, and 10% offset (with optional 50-pin I/O board).</li> <li>Autoranging Analogue output: 2 user-specified 0-full scale range values.</li> <li>USEPA designated range: Any full scale range between 0-0.05 ppm and 0-1ppm.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Measurement process: 0.25 ppb or 0.1% of concentration reading, whichever is greater, with Kalman filter algorithm active.</li> <li>Analogue interface: 0.25 ppb or 0.1% of analogue output full scale, whichever is greater.</li> </ul>
Sensitivity. Lower detectable limit	<ul style="list-style-type: none"> <li>Measurement process: &lt;1.0 ppb or 0.2% of concentration reading, whichever is greater, with Kalman filter algorithm active.</li> <li>Analogue interface: &lt;1.0 ppb or 0.2% of analog output FS (whichever is greater).</li> </ul>
Zero Drift	Temperature dependent: <0.1ppb per °C Time dependent (fixed temperature): <1 ppb / 24hrs, <1 ppb / 30 days.
Span Drift	Temperature dependent: <0.1% per °C Time dependent (fixed temperature): <0.5% / 24hrs of concentration reading, <0.5% / 30 days of concentration reading. Lag time: <20 seconds. Rise/Fall time, T95: <120 seconds (Kalman filter algorithm active).
Linearity Error	± 1% of full scale (from best straight-line fit).
Precision	0.5 ppb or 1% of concentration reading (whichever is greater).
Sample Flow Rate	Approx. 0.6 l/min.
Ambient Temperature Range	TUEV: +5°C to +40°C (41°F to 104°F) USEPA designated range: +15°C to +35°C (59°F to 95°F).
Mains Power	99 to 132 VAC, or 198 to 264 VAC, 47 to 63 Hz
Weight	21.3 Kg.
Dimensions	43.2cm x 17.8cm x 64.8cm
User interface. Analogue Output	Menu selectable current output of 0-, 2- and 4- 20mA (on DB50 at back panel) Optional jumper selectable voltage output with 50 pin connector board of 100 mV, 1V, 5V, and 10V, with menu selectable zero offset of 0, 5%, or 10%.
User interface. Digital output	Multi-drop RS232 port shared between analysers for data, status, and control. DB50 with discrete status, user control and analogue output.
Extended memory	2GB USB based storage with over 1 years capacity.
CE MARK	All Evolution analysers have CE Mark approval.
Approvals	Performance approval No: US-EPA:EQSA-0193-092 TUV: RW-TUV3.5.1/554/92 MCERTS Certificate No: MC070104/00
Warranty	All Evolution analysers have a one year warranty. Extended warranty available.

### Specifications - Thermal Oxidizer

- Model 1000 H<sub>2</sub>S – Hydrogen Sulphide and Total Reduced Sulphur oxidizer
- Converter efficiency for H<sub>2</sub>S = 95-99%
- Converter temperature controller typically 625°C for H<sub>2</sub>S
- Temperature controller – Microprocessor based with proportional temperature controller from 50 – 900°C.
- Digital display for Oven temperature and settings
- Thermal oxidizer tube life span 5 years.
- SO<sub>x</sub> scrubber life span typically 500ppm hours.
- Dimensions: 43.2(W) x 13.3(H) x 38.1(D) cm
- Weight: 11.5Kg.



ISO 9001 / CE

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