



## **CMM AutoQAL**

Gasmeter CMM AutoQAL is a fully automated EN 15267 certified solution for continuous mercury monitoring including automatic QAL3 validation tool for  $\text{HgCl}_2$  span check according to EN14181

## System specifications

<b>Measuring principle</b>	Cold vapor atomic fluorescence (CVAF) with extractive filtration, dilution and thermal conversion
<b>Measuring range</b>	Minimum certified range 0 - 5 µg/m <sup>3</sup> Maximum certified range 0 - 1000 µg/m <sup>3</sup>
<b>Sample conversion</b>	Integrated high temperature thermal converter
<b>Source</b>	Low pressure mercury vapor lamp
<b>Minimum detection limit for total mercury</b>	0.02 µg/m <sup>3</sup> , total Hg (complete system, with dilution)
<b>Operation wavelength</b>	253.7 nm
<b>Power supply</b>	Standard version: 400 VAC, 3 x L+N+PE Power consumption ~ 8kW (the full CMM with heated lines, 25 m) US version: 200 VAC, 3 x L+N+PE
<b>Response time</b>	Typically < 120 s, depending on the sample line length and measurement time
<b>Dilution probe</b>	Operating principle: Ejector with critical orifice Material: SS 316, glass coated sample wetted parts Operating temperature: Maximum setting 250 °C (filter housing temperature) Filter element: Glass coated SS 316, 2 µm Dust load: < 2 g/m <sup>3</sup> Flow alarm: Yes <b>Heated probe tube:</b> Material: SS 316, glass coated sample wetted parts Temperature: Maximum setting 250 °C Length: 122 cm 60 cm (optional) Mounting flange: DP100PN16
<b>Air conditioning</b>	Cooling capacity: A35 °C / A35 °C 1500 W Internal circulation: 500 m <sup>3</sup> /h
<b>Test Gas Generator for Hg<sup>0</sup></b>	Vapor generation from saturated source and dilution Span gas flow control: MFC 0 – 20 ml/min Hg source temperature: 1 – 10 °C Calibration concentration ranges converted to Hg <sup>0</sup> : Saturated Hg source: 5 µg/m <sup>3</sup>
<b>CMM AutoQAL for HgCl<sub>2</sub> gas generator</b>	Operation principle: Liquid HgCl <sub>2</sub> solution sprayed and vaporized to dilution gas Automatic HgCl <sub>2</sub> test gas generator. Validation interval 4 weeks. HgCl <sub>2</sub> span target value is 70 – 90% of system measuring range
<b>Detector</b>	Photon detection unit with photon counting
<b>Heated sample line</b>	Standard 230 V version: 2 - 47 m (according to site) US 115 V version: 2 – 23.5 m (according to site) Tube size: 2 * 6/8 mm

	<p>Core material: PFA Teflon core          Temperature: Maximum 200 °C          Fittings: 8 mm Swagelok          Power density: 200 watts/meter          Dilution and blowback air: Unheated 2 * 4/6 mm Teflon core, 6 mm Swagelok</p> <p>Analyzer and test gas generator are connected to dilution probe with combined heated line which divides into two parts on both ends.</p>
<b>Instrument air preparation</b>	<p>Instrument air inlet: 6 – 10 bars, 60 l/min, oil free, dew point -40°C, 8 mm Swagelok fittings</p> <p>Instrument air filtration: 3-stage filter unit</p> <p>Nitrogen generator: Capacity 99 % N2, 8 l/min, 5-6 bars, efficiency ratio 20 %</p> <p>Calibration gas drying: Absorption dryer, capacity -30 °C</p> <p>Mercury scrubber: Absorption scrubber</p> <p>Vacuum pump: WOB-L piston twin headed</p>
<b>Input signals</b>	External standby control
<b>Output signals</b>	<p><b>5 device status contacts:</b> System alarm, service request, maintenance status, result valid and concentration alarm</p> <p>4 analog signals (4 - 20 mA) for measurement data</p> <p><b>Concentration alarm:</b>          Concentration alarm is a user defined concentration alarm signal. It can be defined from MAUI Program settings menu (Concentration alarm limits, Low and High). The alarm is only connected to a digital output signal in the CMM cabinet, and is not visible in MAUI display or measurement data.</p> <p><b>Bus Output:</b>          Output format: Modbus TCP/IP</p>
<b>Measuring data outputs</b>	<p>The CMM system is equipped with 4 analog outputs representing the result total Hg concentration with different ranges.</p> <p>Analog output range: 4 – 20 mA. Active, load 350 Ω max.</p>
<b>Enclosure</b>	<p>Dimensions (H x W x D):</p> <p>Control unit: 212 x 61 x 70 cm (cooling unit on top)          Material: Bake painted steel          IP class: IP54</p>
<b>Weight</b>	<p>Sampling probe: approximately 27 kg (dilution probe + probe tube)</p> <p>Cabinet: approximately 230 kg (the full CMM cabinet)</p>
<b>Product compliance</b>	CE, UKCA
<b>Operating system</b>	Microsoft Windows CE
<b>Application software</b>	MAUI

## Performance specifications

<b>Zero-point calibration</b>	24 hours
<b>Span calibration</b>	24 hours
<b>Zero-point drift</b>	< 2% of measuring range per calibration interval
<b>Sensitivity drift</b>	< 2% of measuring range per calibration interval
<b>Linearity deviation</b>	< 2% of measuring range

## Sample gas conditions

<b>Sample gas temperature</b>	Up to 400 °C (max in stack)
<b>Sample gas pressure</b>	0.9 – 1.2 bars (in stack)
<b>Sample gas dust content</b>	0 – 2 g/m <sup>3</sup>

## Operating and storage conditions

<b>Control unit ambient temperature</b>	5 – 40 °C
<b>Sampling probe ambient temperature</b>	-20 – 50 °C
<b>Storage temperature</b>	-20 – 60 °C, non-condensing