

OEM Components for Gas Monitoring & Control

Solving your gas measurement challenges with innovative, easy-to-integrate OEM sub-systems and components with Swiss Made quality and precision.

Gas monitoring and control plays an important role in making our environment cleaner and our lives safer. Many Original Equipment Manufacturers (OEM's) have specialized in providing systems for emission & environmental monitoring, analytical instrumentation and safety installations. Axetris provides innovative sub-systems and components to make these instruments better. We increase performance, reliability and cost effectiveness - or simply enable new applications for our OEM customers.

Our product range includes ultra-compact, high-accuracy and fast response mass-flow meter and controller modules, rugged infrared light sources for advanced gas sensing applications in the mid-infrared, and highly selective laser gas detector modules based on tunable diode laser spectrometry.

Mass Flow Meters & Controllers

Stable and accurately controlled gas flows are vital for analytical instruments because they directly influence overall performance. Good examples are the carrier gas flow control in Gas Chromatographs (GC) and the inert or reactive gas control in Thermo-gravimetric Analysis (TGA).

The need for high repeatability is a common requirement for most analytical instruments. Further demanding requirements from instrument manufacturers include: high turn down ratio, multi-gas capability (e.g. He, H₂, N₂ in one device), small size and fast control. Last but not least, minimum temperature drift as well as excellent long term stability is expected.

Axetris's modular range of MEMS (Micro Electro Mechanical System) based mass flow meters and controllers, exactly addresses these needs and is being integrated by an increasing number of major analytical instrument manufacturers.

Ultra-compact match box-sized meter- and controller-modules, designed for system integration, as well as complete stand-alone mass flow meters and controllers

are offered, whereas modular component design allows for simplified OEM product customization.



"In analytical instrumentation applications, Axetris's Mass Flow Controllers provide unsurpassed value in terms of precision and response time"

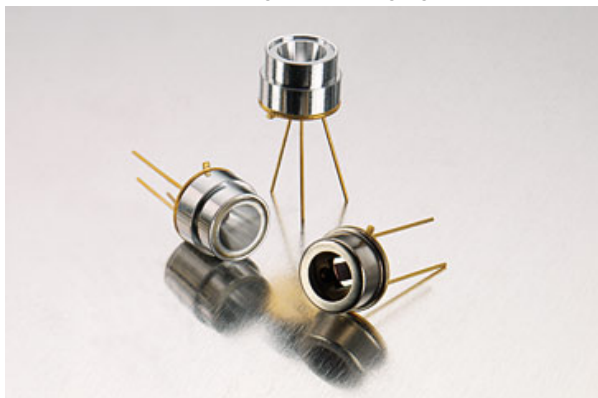
All types are multi-gas and multi-range capable. Market-leading repeatability and fast reaction time of our in-house fabricated MEMS based sensing element allows for fast and precise gas flow control, even when disturbance variables are present (for example pressure pulses). The unsurpassed high turn down ratio of 1:2'000 allows measuring and controlling a broad range of flows and gases with one single unit. The products are available for Air, N₂, O₂, Ar, CO₂, He, H₂ and for flow rates from 10 to 3'000 sccm (full scale, N₂ equivalent).

Infrared sources for gas detection

Axetris's Infrared source is a preferred component for optical infrared analysers used in life saving medical instruments, automotive emission control devices and in demanding, safety-relevant applications in the oil & gas industry. Further applications include water analysis, breath alcohol testing and refrigerant monitoring. Integration into optical gas detection systems using non-dispersive infrared absorption (NDIR), photo acoustic (PAS) or attenuated total reflection (ATR) techniques allow

the monitoring of gases such as CO₂, CO, CH₄, C₂H₄, NH₃, H₂S, SF₆, NO_x, SO_x, CS₂, VOC's, H₂O, N₂O and many others. The IR source is a hip-based black body emitter with broadband emission (2 to 14µm), high mechanical stability, high emissivity, low power consumption and long lifetime (>10 years). The exceptional modulation speed of up to 100 Hz and high modulation depth is a result of the low thermal mass of the heated micromechanical ceramic membrane.

Axetris offers a wide range of packaging options such as



protective caps or reflectors combined with either sapphire or CaF₂, BaF₂ or Germanium windows. Custom beam shaping solutions and support from Axetris' optical- and application engineering team enables system solutions, which are superior in terms of signal-to-noise, power efficiency and lifetime of the device.

Laser Diode Gas Detectors

Laser gas detection, based on Tunable Diode Laser Spectrometry or TDLS, provides a solution to many challenges in environmental gas monitoring and process control. Axetris uses proprietary technology-enhanced TDLS for gas detection, where a 0.1 nm narrow bandwidth diode laser beam is scanned across an absorption band of the target gas, thus performing a high-resolution near-infrared absorption measurement. The technology is an innovative alternative to sub-optimal traditional detection technologies and offers unique advantages like precise optical, contact-less laser-based measurements, excellent target gas selectivity and ppm-level detectivity for gases such as CH₄, NH₃, H₂O and CO₂. The LGD is a perfect tool and cost effective solution for OEM integrators active in emission control and environmental monitoring and allows for simple integration due to its self-contained and stand-alone system design. It also offers hot-gas measurements up to 190°C, which is particularly important in de-NO_x

installations where selective catalytic reduction (SCR) is used to monitor environmentally harmful NH₃ slip.

The LGD covers further gas monitoring & detection applications in combustion control, leak detection, greenhouse gas monitoring (CH₄), safety and many more.

"Axetris allows system integrators to access innovative



laser gas detection technology"

About Axetris AG

Axetris AG is serving OEM customers with micro technology based infrared light sources, laser gas sensors, flow sensors & controllers and micro-optical components used in industrial, telecom, environmental, medical and automotive applications.

Our engineering and manufacturing teams combine broad experience in design, manufacturing and metrology from microchip to advanced electronic modules. Axetris supports its customers in many industries with in-depth application know-how. Customers benefit from excellent product value, consistent high product quality and outstanding customer support. OEMs rely on Axetris as a competent partner for customer specific solutions from concept to volume production. Axetris is ISO 9001:2008 certified and ISO TS 16949 compliant and operates its own 6" to 8" wafer MEMS foundry for its own products and external customers. Axetris AG is a company of the Leister Group.

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