

INSIDE THE AQM 65

GAS SAMPLING SYSTEM

The high performance of the AQM 65 near-reference station starts with the inert fluoropolymer and glass inlet system with 5µm PTFE filter and long-life pump. This provides reliable gas sampling with no analyte loss.

O₃ (GSS)

This Gas Sensitive Semiconductor (GSS) sensor is a tungsten oxide (WO₃) formulation which is particularly sensitive to O₃ when operated at elevated temperatures. The sensor is subjected to periodic zero flow conditions and temperature cycling. This compensates for sensor drift and cancels interferences from NO₂ and VOCs.

VOC (PID)

A long-life 10.6 eV deep UV lamp breaks VOCs down into positive and negative ions. The detector measures the current of the ionised gas. Current is proportional to detectable VOCs. Sensitive to a wide range of VOCs, including benzene and toluene, though not propane, formaldehyde or low mw alcohols.

AUXILIARY INPUT

By connecting third party sensors - weather, noise, solar, soil, vibration etc - the AQM 65 can be expanded to measure, log and report a host of environmental conditions. Supports digital and analog inputs and is pre-programmed to accept multiple communications protocols.

THERMAL MANAGEMENT SYSTEM (TMS)

The TMS cassette comprises a Danfoss compressor, IP55 cooling fan, ducting and control software. It is designed to maintain the entire enclosure at a constant temperature, within ±0.2°C. The internal temperature is tuned for optimal performance.

AIRCAL 8000

The AirCal 8000 is a fully integrated dilution calibrator with inbuilt zero air source that delivers gas automatically at user configured intervals. The user can then calibrate remotely. The AQM 65 can also be field calibrated using standard portable calibrators such as the AirCal 1000.

SHARP CUT CYCLONE

Precision PM₁₀, PM_{2.5} and PM₁ sharp cut cyclones tuned for 2.0 LPM flow allow the nephelometer particle monitor to physically select a target size fraction. The cyclones are machined from solid aluminium and are field-serviceable. Interchanging sharp cut cyclones allows users to measure multiple size fractions.

DUST / PARTICULATE

The nephelometer module uses forward scattered laser light to provide continuous mass measurement of particles in air. The profiler module uses a particle counter that counts particles and sorts them into different sizes. The counts are converted to PM₁₀, PM_{2.5}, PM₁, and TSP mass fractions via a proprietary algorithm.

SO₂ / H₂S (GSE)

These gases are sensed using next generation electrochemical cells with nano-catalyst coated working electrodes that provide higher sensitivities. Lowest possible detection limits are achieved by proprietary signal processing, adding a zero cycle scrubber, and maintaining the enclosure at a constant temperature.

NO₂ (GSS)

The NO₂ sensor is similar to the GSS O₃ but with a tuned microstructure for NO₂ detection. A thermal scrubber removes the effect of ambient ozone and a zero cycle compensates for sensor drift and interference effects from humidity and VOCs.

NO_x (GSS)

The NO_x module uses a similar design to the NO₂ system but with an integrated NO to NO₂ heated platinum converter that is >95% efficient.

WEATHERPROOF ENCLOSURE

The IP65 rated aluminium enclosure isolates the sensors from weather effects to ensure optimal performance and durability. A solar reflective outer layer combined with an internal 50 mm layer of cross-linked PE foam helps keep the internal environment stable in all climates - tropical to sub-arctic.

WIRELESS COMMUNICATIONS

WiFi is standard and can be configured either as an access point or as a network client. In access point mode the user connects directly to the AQM 65, whereas in client mode the AQM 65 joins the local network. Cellular and long range WiFi transmission is optional. Wired connection is made via Ethernet (LAN).

ON-BOARD COMPUTER

An embedded PC runs the AQM 65 system and stores and manages data. Users access the PC via wired or wireless communications. Proprietary data tools embedded on the computer ensure the data is optimised for post-processing. Users access the instrument via Connect or Cloud in their internet browser.

