

TILDAS H₂ Monitor

Ultra-fast, ultra-sensitive quantification of H₂ in ambient air



Features

- High precision: 5 parts per billion (100X below ambient)
- Fast time resolution: 5 seconds
- Continuous air measurement
- Automatic calibration measurements

Applications

- H₂ leak detection downwind of infrastructure (electrolyzers, steam reformers, storage & dispensing facilities)
- Fenceline monitoring
- Monitoring of ambient H₂ levels and variability
- Measurements of soil exchange using subsurface probes or surface chambers
- Deployment in mobile laboratories

Rugged, field-ready instruments

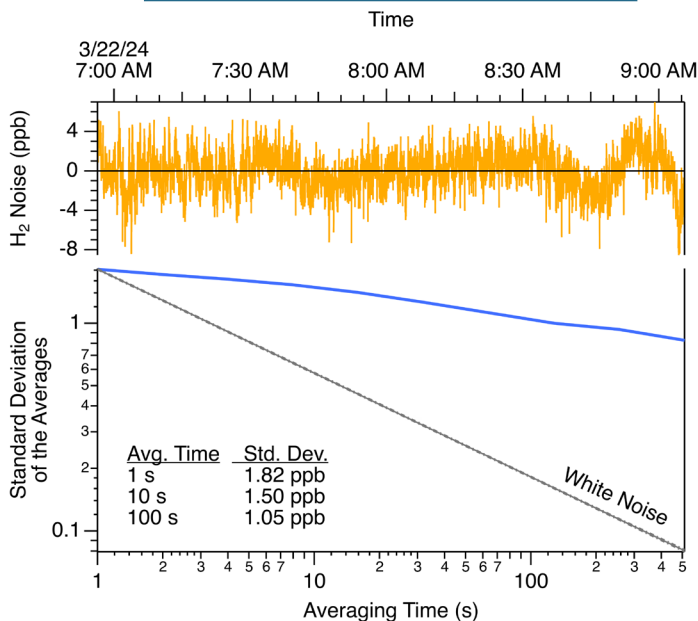
Direct absorption spectroscopy allows for highly specific and accurate gas detection

Mid-IR detection enables maximum measurement sensitivity

Advantages

- Unmatched combination of precision and speed
- Powerful software provides flexible instrument control and real-time data analysis
- Valve control capable of complex scheduling and automatic background and calibrations

Precision	< 5 ppb
Time Response	< 5 seconds

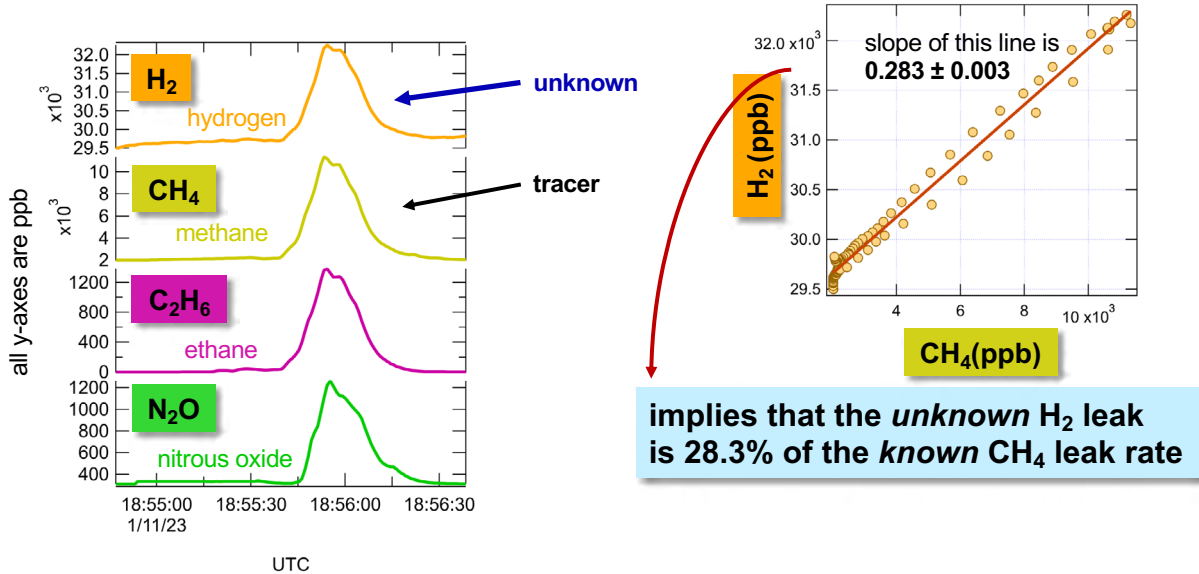


TILDAS TECHNOLOGY

Aerodyne instruments use **tunable infrared laser direct absorption spectroscopy (TILDAS)** at mid-IR wavelengths to probe molecules at their strongest “fingerprint” transition frequencies. We further enhance sensitivity by employing a patented multi-pass broad-band absorption cell that provides hundreds of meters of optical path length. As H₂ does not absorb in the infrared, our H₂ Monitor employs a patented catalytic inlet that converts the H₂ to H₂O. TILDAS instruments are relatively free of measurement interference from other molecular species, enabling extremely specific detection.

TILDAS H₂ Monitor

QUANTIFYING H₂ EMISSIONS USING TRACER RELEASE



Specifications

Performance

Precision: 5 ppb in 5 seconds

Range: 0 - 100 ppm

Operating Conditions

Temperature: 10 to 35 °C

Sample Flow Rate: 1 slpm

Size, Weight, Power

Dimensions: 430 mm x 650 mm x 400 mm
(W x D x H)

Weight: 50 kg (core instrument)

Power: 600 W, 120/240 V, 50/60 Hz
(incl. pump)

Instrument Components

Core TILDAS, Catalytic Inlet, Thermoelectric Chiller, Vacuum Pump, Dewar, Keyboard, Mouse, Monitor

Installation

- 19" rack mountable or benchtop

Data Outputs

- Digital RS232 serial port output of H₂ mole fraction
- Storage of mole fractions and spectra on local hard drive or USB drive
- Instrument status and data via ethernet or wireless network connection

Consumables

- Dry zero air (~10 standard liters per 10-hour workday)
- H₂ mixture (~2000 ppm H₂ in N₂ or air)
- Dry nitrogen (~240 L per 10-hour workday)
- Optional: Dry ice for cryogenic trapping of VOCs (cross sensitivity to VOCs is not yet fully evaluated)

Aerodyne specializes in collaboration and custom design. Please contact us if you would like to discuss additional measurement options and applications.