

The **BAGGI BASE® Series Instrument** are suitable for measurements of many components in the industry market. It is the result of combining the latest, state-of-the-art technology with over 60 years of industry experience.



Features

- » PC Based Smart Electronics with touch screen technology
- » Industry interface from, the standard 4-20mA to the newest Modbus, Profibus, Ethernet or WIFI.
- » Principle of measurement based on different technology to meet customer needs
- » Stainless Steel 316L cabinet
- » Magnet push buttons to control the electronics without opening the cabinet
- » ATEX, IECEx Certified for zone 1 and 2
- » Available in Ex-p or EX-d versions
- » Available with cabinet conditioning for using in extreme environments

Advantages

- » Flexible design, add or remove output signal following your needs
- » Possibility to change the principle of measurement without change the instrument.
- » Fast Response time
- » Low maintenance required
- » Rugged construction
- » Atex, IECEx certified
- » CSA, UL on request
- » Designed for extreme environments

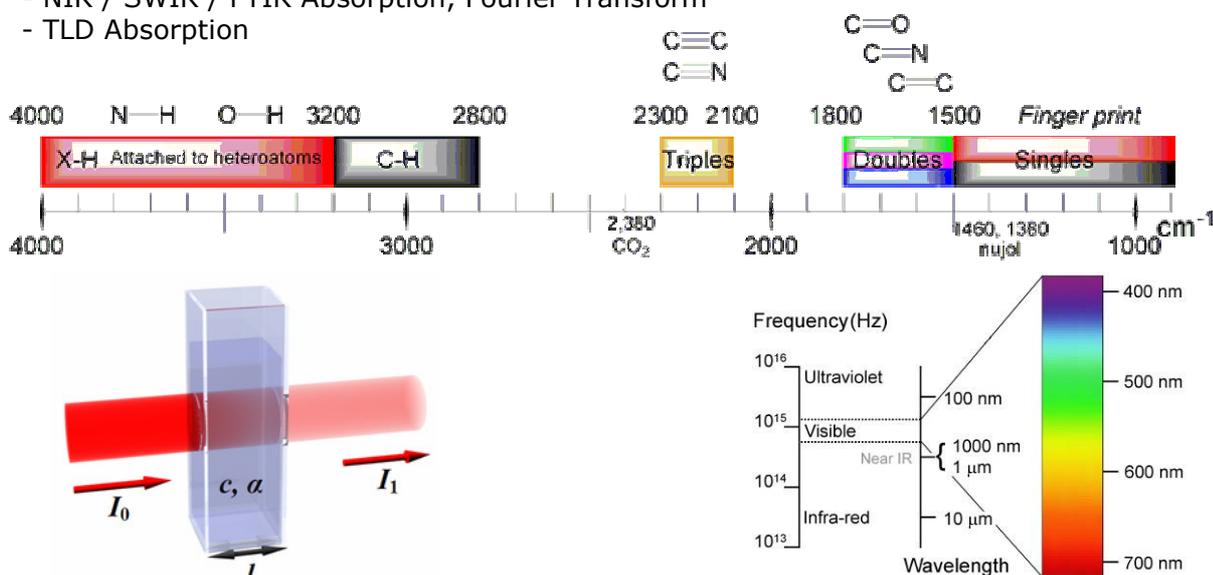
PRINCIPLE OF MEASUREMENT: SPECTROSCOPY

The BASE® Series Instrument can Handle many of the well know spectroscopy techniques.

Thanks to his modular design The BASE® Series Instrument is able to use a large area of the electromagnetic spectrum and different analytical techniques to measure many compounds.

This techniques can be summarised as:

- UV/VISIBLE Absorption and fluorescence
- NIR / SWIR / FTIR Absorption, Fourier Transform
- TLD Absorption



THE CORE : The Beer-Lambert law

The **Beer-Lambert law**, also known as **Beer's law** is a relationship that relates the absorption of light to the properties of the material through which the light is traveling.

In essence, the law states that there is a logarithmic dependence between the transmission of light through a substance and the concentration of the substance, and also between the transmission and the length of material that the light travels through. Thus if l and α are known, the concentration of a substance can be deduced from the amount of light transmitted by it.

The units of absorber concentration (c) and absorption coefficient (α) depend on the way that the concentration of the absorber is being expressed.

If the material is a liquid, it is usual to express the absorber concentration as a mole fraction i.e. a dimensionless fraction. The units of the absorption coefficient are thus reciprocal length (e.g. cm^{-1}). If the concentration is expressed in moles per unit volume, α is a molar absorptivity (usually given the symbol ϵ) in units of $\text{mol}^{-1} \text{cm}^{-2}$ or sometimes $\text{L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$.

In the case of a gas, the concentration may be expressed as a number density (e.g. cm^{-3}), in which case α is an absorption cross-section and has units of area (e.g. cm^2).

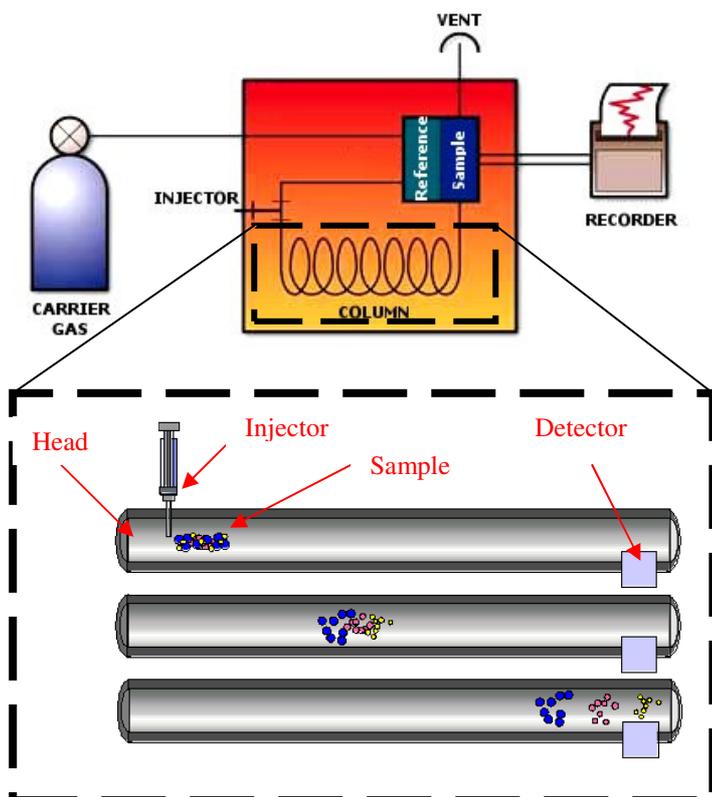
The value of the absorption coefficient α varies between different absorbing materials and also with wavelength for a particular material. It is usually determined by experiments.



PRINCIPLE OF MEASUREMENT: GAS CHROMATOGRAPHY

The BASE® Series Instrument can Handle gas chromatography to recognize many gas from a single sample.

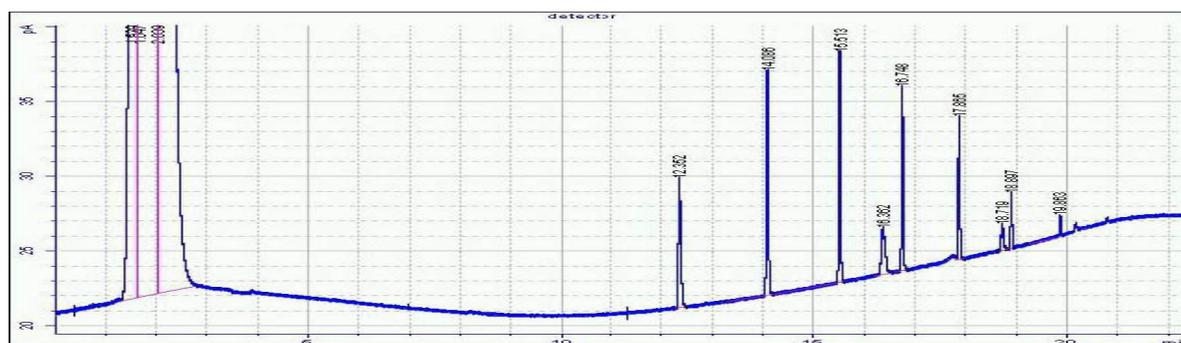
Thanks to his modular design The BASE® Series Instrument is able to detect many of the common gas actually produced in Today's process techniques.



THE CORE : GC Analysis

In a GC analysis, a known volume of gaseous sample is injected into the head of the column, usually using an Injector. As the carrier gas sweeps the sample molecules through the column, this motion is inhibited by the adsorption of the sample molecules either onto the column walls or onto packing materials in the column. The rate at which the molecules progress along the column depends on the strength of adsorption, which in turn depends on the type of molecule and on the stationary phase materials.

Since each type of molecule has a different rate of progression, the various components of the sample mixture are separated as they progress along the column and reach the end of the column at different times (retention time). A detector is used to monitor the outlet stream from the column; thus, the time at which each component reaches the outlet and the amount of that component can be determined.

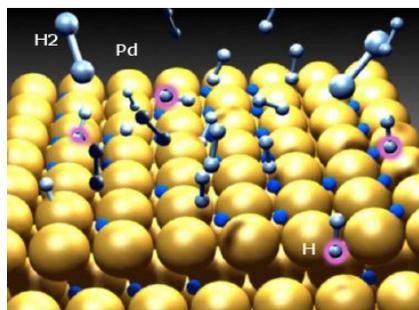


Typical GC plot

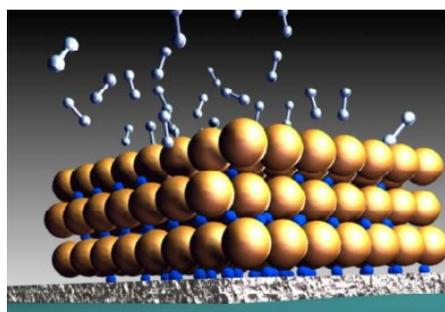


PRINCIPLE OF MEASUREMENT:

The unique interaction of hydrogen with palladium

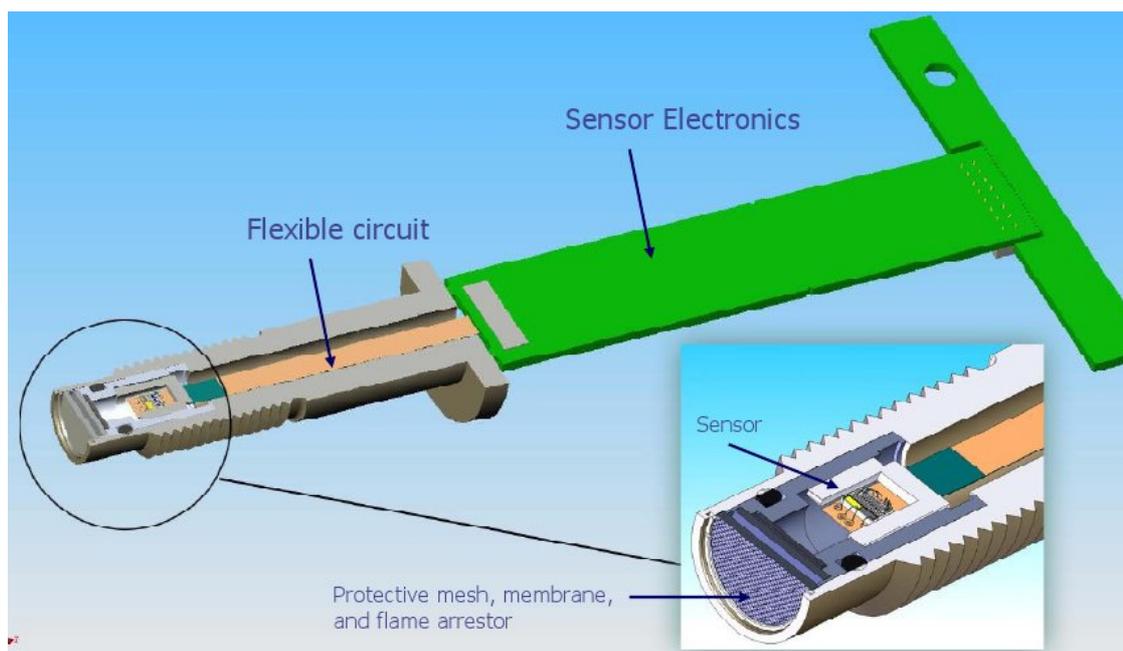
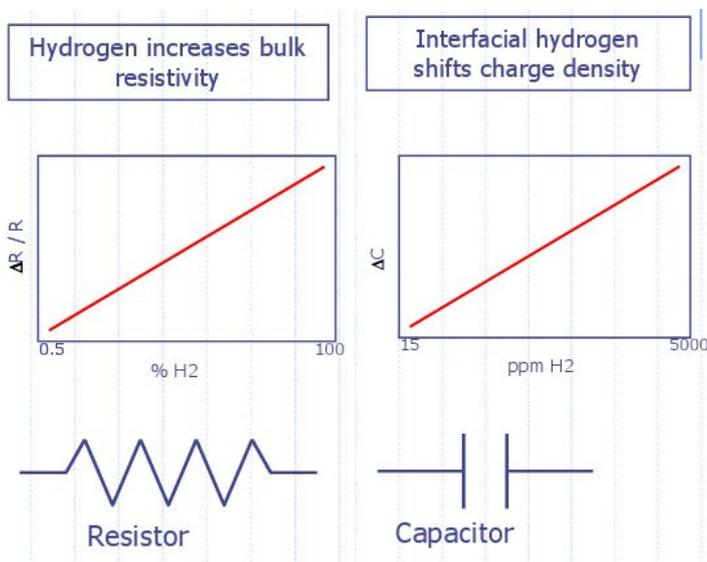


Molecular hydrogen (H₂) adsorbs on palladium and dissociates into atomic hydrogen (2H)



Atomic hydrogen is reversibly absorbed into palladium proportional to H₂ partial pressure

- Both resistor and capacitor circuits for hydrogen measurement capability from 15ppm to 100% v/v
- Palladium – Nickel alloy provides stable operation in pure hydrogen at multiple atmospheres)
- On die temperature sensor and heater compensates for variations in gas flow, gas composition and gas temperature.
- Unique semi-permeable coatings enable continuous operation in a wide range of gas mixtures including harsh environments



Technical Specifications

Instrument Specification

Power:

- Standard: 90-264 VAC, 47-63 Hz; 6A max

Environment:

- 0° to 40°C (32° to 104°F)
- 0° to 55°C (32° to 131°F), with vortex cooler

Dimensions (without sample system):

- Wall-Mount: 500mm H x 400mm W x 250mm D
(19,68" H x 15,74" W x 9,84" D)

Mounting:

- wall (standard)

Approximate Weight (without sample system):

- 15 Kg

Detector:

- PDA Spectrophotometer (UV/VIS or NIR or SWIR)
- TCD Micro Gaschromatograph
- TLD Tunable Laser Diode
- Palladium Thin Film Detector

Analogue Inputs:

- Four inputs filtered with transient protection, user
- scalable and assignable (optional)

Analogue Outputs:

- Three isolated analogue outputs, 4 – 20 mA (standard);
- Three additional isolated analogue outputs (optional)

Digital Inputs:

- Six digital inputs; user assignable (optional)

Digital Outputs:

- Four isolated relay output signal: Fault, operation, Calibration, lamp replacement
- Four additional relay output (optional)

Enclosure Protection:

- IP66

Compliances:

- EN61326, EN 61010-1, EN60079-2
- ATEX, IECEx (optional)
 - II 2 G Ex px II T6
 - II 3 G Ex pz II T6

Integrated Computer Specification

Display:

- 7" touchscreen 262K colour display
- Resolution:800*480
- Brightness(cd/m2):220
- Contrast Ratio 400:1
- Pixel Pitch (mm) 0.1905(H) x 0.1905(V)
- Viewing Angle (H-V) 140/100

**Storage:**

- 1GB CFII

Serial Communication Ports:

- One serial ports with RS-232
- (optional) One serial ports with RS-232, RS-422 and RS 485 standard is available with: Modbus, Profibus and FieldbusFoundation Protocol

Parallel Printer Port:

- One parallel port available for printed reports(optional)

Modem:

- Field-configurable; 300 to 33.6k baud rate (optional)

Ethernet Card :

- Two 10/100 mbps with RJ-45 port

WIFI Card :

- One Integrated WIFI card 11Mbit/s

Cooling system :

- Passive Heatsink (Fanless)

Operative System :

- Microsoft Windows XP Embedded

Software specification

Compound detection :

- Real-Time concentrations measuring

Calibrations Events :

- Automatic For 0
- Manual for Spam

Gating Options:

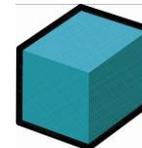
- Fixed-Time, Slope and Automatic gating of peaks

Password protection :

- 2 Levels: User, Maintenance

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BASE