



# Fourier Transform UV Ammonia Analyzer Model FTUV

**Emission monitoring  
(CEMS)  
&  
Engine exhaust gas**



## FTUV:

Ultra-fast NH<sub>3</sub> monitoring  
(response time < 2 seconds)



*FTUV analysis cabinet with built\_in  
heated sampling module  
(integration of other analyzers for NO<sub>x</sub>,  
THC or a FTIR for measurement of 1 up  
to 22 gases as an option)*

## Applications:

- Engine exhaust gas monitoring
- Emission monitoring (CEMS)
- Process control (DeNOX SCR and SNCR)
- ...

## Exclusive features:

- Very high selectivity and maximum stability thanks to the UV Fourier Transform principle
- Ultra-fast response time (< 2 sec)
- High speed DSP processor
- No risk of interferences or quenching effect due to CO, CO<sub>2</sub> or H<sub>2</sub>O
- No internal converter, ultra-low maintenance
- High lifetime of the lamp (> 1 year of continuous use)
- Heated chamber (190°C)
- Touch screen
- Multilingual software
- Automatic compensation of pressure and temperature variations



## Fourier Transform UV Ammonia Analyzer - Model FTUV

### Specifications:

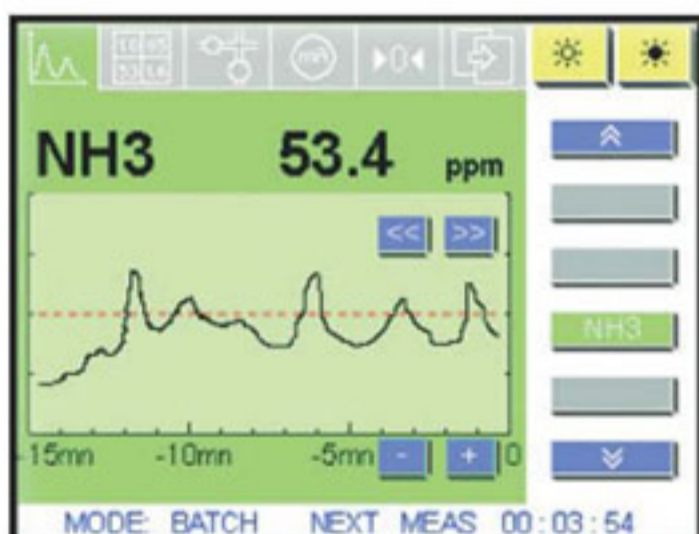
- Ranges: 0-100 / 0-500 ppm
- Zero noise: < 2% Full Scale (F.S.)
- Span point noise: < 2% F.S.
- Lower detectable limit: 0.4 ppm
- Response time: < 2 sec (T90)
- Zero drift: < 2% F.S. / 24 h
- Span drift: 2 % F.S. / 24 h
- Linearity: ± 1 % F.S.
- Interferences:
  - < 4% F.S. (sum of interferents)
  - < 2% F.S. (single interferent)
- Sample flow rate: 0.1 to 5 l/min
- Heated block temperature: 190°C
- Housing: Rack 19" – 3U
- Dim.: 435 x 560 x 132 mm (W x D x H)
- Weight: 10 kg
- Operating temperature: +5 to +45°C
- Communication: RS 232
- Protocol: AK and MODBUS

### Utilities:

- Power supply:
  - 90 to 264 VAC, 50-60 Hz
  - consumption 40VA
- Zero air

### Options:

- 4-20 mA isolated output
- Complete rack cabinet integration, with sampling system
- Additional analyzers (FTIR, CLD, IR GFC)



FTUV Touch Screen

### Operating principle:

The absorption spectrum of a UV radiation (180-320 nm) is measured by a spectrometer after crossing the FTUV optical chamber (22 cm absorption pathlength).

A first measurement, performed on zero air, gives the reference spectrum. Then the sample to be measured is injected into the UV irradiated optical chamber. The sample gas absorbs a part of this radiation in the 190-210 nm wavelength.

The difference between these two spectra corresponds to the NH<sub>3</sub> absorption spectrum.

The periodic structure of the absorption bands coming from the different levels of rotational energy of ammonia molecules is analyzed by performing a Fourier Transform on the absorption spectrum.

An absorption ray is obtained from the spectrum period, by applying a FFT signal processing (Fast Fourier Transform).

This absorption ray is then converted into NH<sub>3</sub> concentration thanks to the universal proportional relationship between absorbance and concentration (Beer-Lambert law).

The general Beer-Lambert law is usually written as:

$$A = \epsilon \times L \times C$$

With:

- A : radiation absorbance by the gas molecules through the optical pathlength
- L : optical pathlength
- C : gas concentration
- $\epsilon$  :  $(4\pi.k)/l$  and  $l$  = radiation wavelength
- k : extinction coefficient

The use of the UV range for the measurement of NH<sub>3</sub> has been specifically selected to avoid any interference with other major emission gases (CO, CO<sub>2</sub>, H<sub>2</sub>O etc..) that do not absorb in the UV.