NOx is a generic term for the nitrogen oxides NO and NO\textsubscript{2}. It reacts in our atmosphere to form a wide variety of toxic products, as well as supporting the formation of ground-level (tropospheric) ozone. Common methods for measuring NOx include sensor technologies based on chemiluminescence and electrochemical techniques. This requires conversion of NO\textsubscript{2} to NO for measurement or calculation of the NO\textsubscript{2} content based on an assumed NO : NO\textsubscript{2} ratio. In addition, NOx can be measured with IR and that can be affected by the content of H\textsubscript{2}O and CO\textsubscript{2} in the sample. Direct UV absorption measurement of both NO and NO\textsubscript{2} is the more precise way to measure total NOx for continuous emissions monitoring, and measurement in the UV-region avoids the influence of H\textsubscript{2}O and CO\textsubscript{2}.

However, system development based on UV Resonance Absorption Spectroscopy (UV-RAS) has been difficult in the past due to challenges in tuning the UV-lamp operation within its environment to optimize lifetime and intensity.

A NOx EDL (electrodeless discharge lamp) is a lamp with N\textsubscript{2}, O\textsubscript{2} gas fill that emits a spectrum in the wavelength range between 200 nm to 600 nm. Spectral lines in the 200 nm region can be used for the detection of NO and NO\textsubscript{2}, H\textsubscript{2}S, NH\textsubscript{3}, SO\textsubscript{2} and others. Heraeus Noblelight has developed a plug & play light solution for NOx Measurement. This NOx lamp module offers a pre-tuned UV-light source in a stable environment, for easy integration into OEM UV-RAS systems.

Plug & Play Light Solution for NOx measurement
Monitoring Environmental Pollution
Plug & Play Light Solution for NOx measurement

The Heraeus NOx lamp module has an integrated EDL and comes with the corresponding power supply combined in a box. The Nox-Module is designed for direct illumination of the measurement cell, so there is no additional optical connection needed.

**Technical Specifications**

- **Product name**: NOx Module N01
- **Ident. No.**: 80143476
- **Spectral distribution**: 200 – 800nm
- **Window material**: fused quartz
- **Lifetime**: > 8,000h
- **Light Output (irradiance 200-400 nm)**: 0.1 mW/cm² (typical)
- **Light Output Drift**: < 1*10⁻³/h (typical)
- **UV group**: 2
- **Light Output (diameter)**: 8 mm
- **Size (L x W x H)**: 105 x 80 x 57 mm
- **Power supply Voltage**: 12 ± 0.05 V
- **Power consumption (operation)**: 2 W
- **Power consumption (ignition)**: 4 W
- **Lamp ignition**: automatically
- **Ignition time**: < 5 min
- **Weight**: 550 g
- **Operating temperature**: 0 - 60°C
- **Relative Humidity**: < 90%, non-condensing
- **Cooling**: not required
- **Electrical connector**: Phoenix Buchse MVSTBU 2,5/2-GB-1,08

*Information supplied without guarantee*

**Applications for NOx Module**

Sources of NOx are predominantly man-made: burning fossil fuels for energy generation, such as coal-, oil- and gas-fired power stations, refuse incineration, some chemical processes and vehicle fuels, like modern diesel cars, used for land, water and air transportation.

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**Features and Benefits**

- **Plug & Play 12 V**
- **No frequency adjustment**
- **Simple integration and replacement**
- **Very accurate – direct analysis and measurement of NO and NO₂ possible**
- **No crossover of H₂O, CO and CO₂**
- **Long life time of the lamp (1 year plus) for continuous measurement**
- **Reduced design-in costs – complete plug & play-module for simple system integration**
- **No consumable costs per measurement**

**Application fields:**

- Environmental monitoring
- Smoke stack monitoring
- Emission control testing
- Marine exhaust monitoring