

# BRINGING CERTAINTY TO AIR EMISSIONS MEASUREMENT



**DIRECTOPTICS**

High-Converter Efficiency - Defensible Data - Simple Installation - Patented

## PhoNO™ - PHOTOLYTIC NO<sub>2</sub> CONVERTER

Upgrade your existing NO<sub>x</sub> analyzer with Direct Optics' PhoNO™ Converter.

Regulating nitrogen dioxide (NO<sub>2</sub>) is vital for safeguarding public health and the environment. However, the challenge lies in the accuracy of measurements. Traditional analyzers employing Heated Metal Converters (HMC) frequently overestimate NO<sub>2</sub> levels, creating emissions control concerns.

The Global PhoNO is a game-changer in the field of NO<sub>2</sub> measurement using chemiluminescent technologies. PhoNO precisely measures True NO<sub>2</sub> concentrations and selectively separates them from other nitrates present in the air enabling existing analyzers to meet the accuracy needs of the compliance industry.

Its patented conversion process eradicates the problem of NO<sub>2</sub> overestimation.

Get accurate and fast measurements with Direct Optics PhoNO.

# INNOVATION IN NITROGEN DIOXIDE MEASUREMENT

## WHY CHOOSE DIRECT OPTICS?

Direct Optics PhoNO™ offers:

- Eliminate erroneous over reporting of NO<sub>2</sub> /NO<sub>x</sub> (can be >100%)
- Conversion rate independent of concentration
- Selective high conversion of NO<sub>2</sub> at reduced pressures
- Direct replacement for thermal converters typical of NO<sub>x</sub> analyzers
- Outputs for real-time converter performance monitoring
- Long service life (>4 years) with no memory effects on converter performance
- Cost effective long-term solution saving users >\$20,000 in new analyzer costs
- Simple installation
- Designed to scrub ozone prior to sample vent and eliminates the need for heaters
- User friendly



- ✓ Repeatability and High Conversion Rate of NO<sub>2</sub> to NO (>96%, <0.1% variance per month)
- ✓ Linear Conversion of NO<sub>2</sub> to NO over entire operating range ( $r^2 = 0.99998$ )
- ✓ Operating Range: < 0.5 ppb >200 ppm NO<sub>2</sub>
- ✓ Residence Time: 0.8 - 2 seconds
- ✓ Operating Flow Rate and Pressure:
  - 0.3 - 0.8 slpm at 100 - 220 mmHG
  - 0.3 - 0.45 slpm at 50 - 115 mmHG

- ✓ Size: 4.5"(w) x 6.5"(h) x 8.5"(d)
- ✓ Weight: 5 lb (2.0 kg)
- ✓ Power: 100-240 VAC (50-60 Hz), 35W

- ✓ US Patent #11,435,291 B2
- ✓ US Patent Pending (App #16/612,135)



## ABOUT US

Direct Optics is redefining how air emissions are measured. Backed by proven performance and specialized knowledge in engineering, air sciences, and environmental regulations, we deliver technologies that strive to exceed expectations. Our commitment goes further, providing long-term support that safeguards your investment and ensures lasting value. At our core, we aim to provide certainty in every measurement.