



# Nitrogen Dioxide (NO<sub>2</sub>) Monitor

- 0.2 ppbv detection limit
- Cavity-enhanced technology
- Direct measurement of NO<sub>2</sub>



## Nitrogen Dioxide Optical Absorption Sensor

Nitrogen dioxide Diode Laser Gas Sensor offers:

- In-situ, real-time ambient concentration measurements
- 1 ppbv sensitivity for a 1 s time constant
- Very low maintenance
- Negligible drift

The nitrogen dioxide (NO<sub>2</sub>) violet laser diode based sensor for ambient, airborne and vehicle mounted measurements from TDL Sensors Ltd.

### Features

- NO<sub>2</sub> direct cavity-enhanced absorption measurement at 404 nm
- Detection limit of 1 ppbv for a time constant of 1 s (0.2 ppbv for a time constant of 80 s)
- Absolute measurements
- Self-calibration
- No OZONE generator required
- No NO<sub>2</sub> to NO converter required
- No exhaust scrubber required
- No mechanical modulators required
- Rugged and reliable
- Low operating cost

### Applications

- Air quality monitoring
- Ambient nitrogen dioxide monitoring across cities
- Research of NO<sub>2</sub> reactions with other species

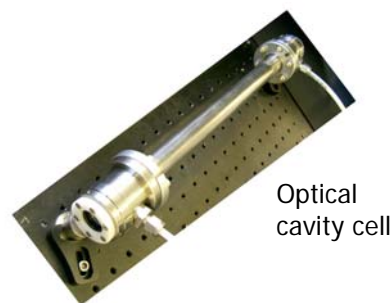
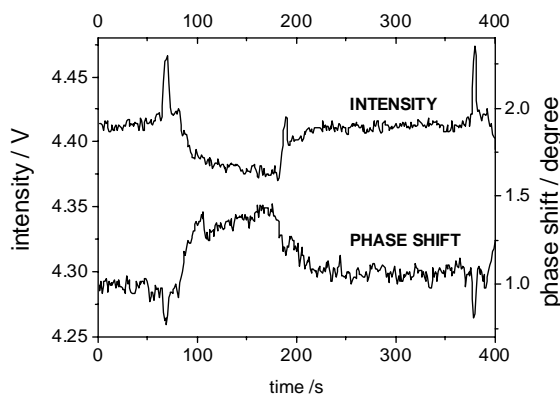
### Ordering Options

Data logger  
GPRS modem or Ethernet

# Specifications

Measurement	
<b>NO<sub>2</sub> detection limit*</b>	1 ppbv at 1 s time constant; 0.2 ppbv at 80 s time constant
<b>Accuracy</b>	2% of reading
<b>Linearity</b>	Better than 1%
<b>Resolution</b>	< detection limit values
<b>Response time (T<sub>90</sub>)</b>	<2s (depending on air flow rate and application conditions)
Input/Output	
<b>Analogue output</b>	4–20mA current loop (optional)
<b>Digital output</b>	RS232, RS485, modbus (optional), ethernet (optional)
<b>Relay output</b>	SPCO rated, 24VDC/280VAC 2A (optional) – maximum of 4
<b>Analogue input</b>	4–20mA process temperature and pressure reading (optional)
<b>Display</b>	Graphic back lit LCD
Power	
<b>Power supply</b>	85 - 254 VAC, 50/60 Hz @100VA or 24VDC (optional)
Maintenance	
<b>Interval</b>	Every 6–12 months is recommended
<b>Remote maintenance</b>	Engineer can check via (optional) GPRS modem or Ethernet (optional)
Certification	
<b>Laser class</b>	Class 1, laser wavelength of ~404 nm
<b>Warm up time</b>	Typically <10 minutes

\* Defined for mirror reflectivity of 0.999, separated by a distance of 43 cm at 296K and 1 bar. Limit depends on individual application.



Optical cavity cell

Typical raw cavity output intensity and phase shift signals observed at sampling of laboratory air at a flow rate of 500 sccm, a laser modulation frequency of 60 kHz, a lock-in amplifier time constant of 1 s. An average NO<sub>2</sub> concentration in laboratory air was  $24 \pm 1$  ppbv ( $48 \pm 2 \mu\text{g m}^{-3}$ ). Signal spikes were due to flow change between laboratory air and chemically scrubbed air.

## Contact Details:

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## Distributor: