



## NOXGEN III NO<sub>x</sub> Converter Efficiency Tester

- Straightforward and easy to use
- Accurate comparative efficiency testing
- Remote control available
- Reliable

### Overview

Chemiluminescent NO<sub>x</sub> analysers, such as the Signal 4000 series, rely upon the efficiency of the NO<sub>2</sub> converter in the analyser. The converter enables a measurement to be made of the total oxides of nitrogen in the sample stream.

The 1979 Heavy Duty Register of the US Environmental Protection Agency stipulates that such converters must be checked before the analyser is initially used, and thereafter at weekly intervals, to ensure that they have an efficiency of at least 90%. The Signal NOXGEN III provides known, accurate amounts of NO<sub>2</sub> for converter efficiency testing and fully meets the EPA requirements.

The instrument is compact, inexpensive and provides a precision of control and repeatability of results that were unobtainable with the previous generation of converter testers. Ozone is generated by a high energy lamp using an electronic pulse, which can be varied to adjust the ozone level. The NOXGEN III provides no Nitric Oxide (NO) from air, which is in contrast to the high voltage corona discharge technique.

Stability against mains power variations, and the consequent effects on NO<sub>2</sub> concentrations, is ensured by the incorporation of a voltage stabilized electronic circuit feeding pulses to a high voltage transformer.

### Operation

The instrument is fed with nitric oxide and oxygen, the latter being subjected to a high energy lamp that partially converts the oxygen to ozone. The oxygen/ozone mixture is passed to the nitric oxide flow and the nitric oxide is instantly converted by the ozone to give nitrogen dioxide. The reaction between the remaining oxygen and nitric oxide again produces nitrogen dioxide, but this reaction is so slow that it does not need to be taken into account for test purposes.

It is used with NO gas to first calibrate the analyser. Then a converter is switched on inside the NOXGEN which oxidises the NO to NO<sub>2</sub>. As the power to this is increased the NO value decreases on the analyser and the NO<sub>2</sub> value increases. There is no NO<sub>x</sub> created or destroyed during this process, it is only converted from one form to the other so by taking a comparison between the drop in NO value and the increase in NO<sub>2</sub> value a value for converter efficiency can be obtained. As the reading is comparative, any uncertainty in the original gas bottle value is allowing you to derive the converter efficiency with accuracy.

### Specifications

The NOXGEN III output is simply and effectively controlled by a two decade thumbwheel switch adjustable from 00 to 99 and a three position ozone level switch for low, medium and high settings. The electronic circuitry is so designed that there is a non-linear relationship between the NO<sub>2</sub> output and the thumbwheel setting, thus allowing very fine adjustments of ozone outputs to be made at low levels.

The Signal NOXGEN is suitable for regular use with all types of chemiluminescent analysers.

|                                   |   |
|-----------------------------------|---|
| Gas supply requirements           | Nitric oxide in nitrogen, oxygen or dry air                         |
| Span gas flow rate                | 6 L/min   |
| Power supply                      | 230V 50Hz   |
| Fittings                          | 1/4" stainless steel  |
| Weight                            | 6.6Kg   |
| Dimensions                        | 280mmW x 175mmH x 245mmD<br>3U high, suitable for 19" rack mounting |
| Additional NO from N <sub>2</sub> | Less than 0.5ppm when air is used for oxygen supply                 |

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