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## MODEL 420 NO<sub>x</sub> (NO<sub>2</sub> TO NO) CONVERTER SPECIFICATION

This compact 3 U high 19" rack enclosure houses both the NO<sub>x</sub> converter as well as a self contained heated filter and calibration gas selection valve. It is generally used with the Signal Model 7000 NDIR NO Analyser or to check converter efficiencies.

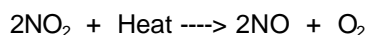
Range	:	0 -1,000 ppm
Efficiency	:	Better than 95%
Converter Material	:	Vitrified Carbon
Catalyst Temperature	:	Factory set for optimum performance 0 - 600 °C Nominal 400 °C
NO <sub>2</sub> Calibration Solenoid	:	
Temperature	:	200°C
Heated Filter	:	Quick release via rear panel. Hydrocarbon free fibre glass 0.1 micron. Heated to 200°C
Mains Voltage	:	220V/240V/50Hz 110V/120V/60Hz
Power	:	750 watts

## The NO<sub>2</sub> to NO Converter

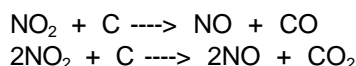
As only Nitric oxide (NO) can be detected by chemiluminescence a converter is incorporated within the Signal 4000 series analysers, to convert any Nitrogen dioxide to Nitric oxide.

Conversion of Nitrogen dioxide to nitric oxide is carried out by passing the gas through a heated tube containing a carbon material.

Part of the conversion is accomplished thermally:-



The remainder of the conversion is carried out by carbon chemically reducing Nitrogen dioxide:-



When gas is passing through the converter the analyser is said to be in NO<sub>x</sub> mode, when gas is by-passing the converter, the instrument is said to be in NO mode.

It is important, when designing a converter, that operating conditions and materials are chosen to prevent undesirable side reactions occurring which may destroy the Nitric oxide in the sample gas.

Carbon monoxide is known to cause problems in certain types of converters due to the reaction between Nitric oxide and Carbon monoxide:-



The reaction takes place in the absence of Oxygen and is catalysed by stainless steel. Also, some higher temperature converters, convert Ammonia to NO thus producing erroneous NO<sub>x</sub> reading.

The Model 4000 converter has been designed to overcome this undesirable side reaction.

Following prolonged use of the Carbon converter it will be necessary to replace the Carbon material as this is slowly eroded by Oxygen and Nitrogen dioxide. Replacement of this Carbon will therefore be necessary after about six months of continuous use. Replacement is a simple job and a spare charge of Carbon is available in a Spares Kit.

