

420 - NO_x (NO₂ TO NO) converter

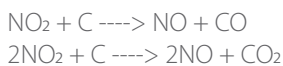
This compact 3 U high 19" rack enclosure houses both the NO_x converter as well as a self contained heated filter and calibration gas selection valve. It is generally used with the Signal Group S4 PULSAR multi-gas analyser or to check converter efficiencies.

As only Nitric oxide (NO) can be detected by chemiluminescence a converter is incorporated within the Signal Group S4 QUASAR analyser, 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:
 $2\text{NO}_2 + \text{Heat} \rightarrow 2\text{NO} + \text{O}_2$

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_x 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:
 $2\text{NO} + \text{CO} \rightarrow \text{CO}_2 + \text{N}_2$

The reaction takes place in the absence of Oxygen and is catalysed by stainless steel.

Also, some higher temperatures converters, convert Ammonia to NO thus producing erroneous NO_x 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.

SPECIFICATION

RANGE:

0-1,000ppm

EFFICIENCY:

>95%

CONVERTER MATERIAL:

Vitrified Carbon

CATALYST TEMPERATURE:

Factory set for optimum performance
0 - 600°C
Nominal 400°C

NO₂ CALIBRATION SOLENOID TEMPERATURE:

200°C

HEATED FILTER TYPE:

Quick release via rear panel.
Hydrocarbon free. Fibreglass 0.1 micron.
Heated to 200°C

MAINS VOLTAGE:

220V/240V/50Hz 110V/120V/60Hz

POWER:

750 watts

Authorised Representative:



www.signal-group.com

Signal Group Ltd

Standards House, Doman Road, Camberley, Surrey GU15 3DF
United Kingdom

Tel: +44 (0)1276 682841 Email: sales@signal-group.com



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