

Model 42C NO-NO₂-NO_x Analyzer

Chemiluminescent gas analyzer for ambient air monitoring and source emissions monitoring

The Model 42C combines the superior optical, mechanical, and chemical characteristics of its predecessor, the Model 42, with an enhanced electronics package and user interface. The outcome is a powerful, easy-to-use, chemiluminescence based analyzer capable of measuring oxides of nitrogen from sub parts per billion (ppb) to 100 parts per million (ppm). User programmable software capabilities allow individual measurement range settings to be stored in memory for subsequent recall and NO, NO₂, NO_x, hourly average storage for up to one month.

Extended troubleshooting diagnostics now provide instantaneous indication of instrument operating parameter status including: pressure flow, DC supply voltages, internal temperature, reaction chamber temperature, PMT operating voltage, and converter temperature.

Key Features

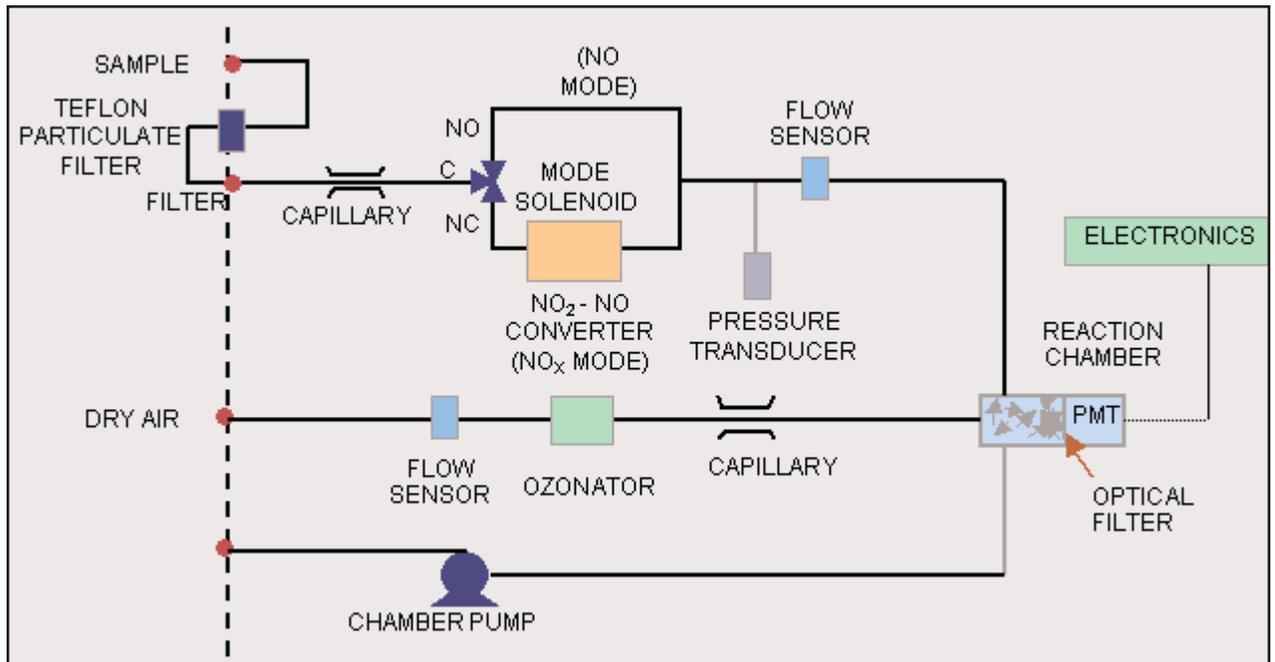
- ◆ Sub parts per billion (ppb) detection
- ◆ Electronic diagnostic transducers
- ◆ Multi-line alpha numeric display
- ◆ Dedicated communications processor
- ◆ Remote performance diagnostics
- ◆ U.S. EPA Designated Method (RFNA-1289-074)



Preset Ranges	0-0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50 and 100 ppm 0-0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100 and 150mg/m ³
Custom Ranges	0-0.05 to 100 ppm 0-0.1 to 150 mg/m ³
Zero Noise	0.20 ppb RMS (60 second averaging time)
Lower Detectable Limit	0.40 ppb (60 second averaging time)
Zero Drift (24 hour)	<0.40 ppb
Span Drift (24 hour)	+/-1% full scale
Response Time	40 seconds (10 second average time) 80 seconds (60 second average time) 300 seconds (300 second average time)
Precision	+/-0.4 ppb (500 ppb range)
Linearity	+/-1% full scale
Sample Flow Rate	0.6 liters/min.
Operating Temperature	15°C - 35°C
Power Requirements	90-110 VAC @ 50/60Hz 105-125 VAC @ 50/60Hz 210-250 VAC @ 50/60Hz 300 Watts
Size and Weight	16.75" (W) x 8.62" (H) x 23" (D), 53 lbs.
Outputs	Selectable voltages and RS-232 (standard) 4-20 mA isolated current RS-485 (optional)

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. Thermo Electron offers comprehensive, flexible support solutions for all phases of the product lifecycle. Through predictable, fixed-cost pricing, Thermo services help protect the return on investment (ROI) and total cost of ownership of your Thermo Electron air quality products.

Model 42C Flow Scheme



As illustrated in the diagram above, sample gas is drawn into the Model 42C through a particulate filter, a capillary, and then to a solenoid valve. The valve routes the sample either directly to the reaction chamber (NO Mode) or through the NO₂ to NO converter and then to the reaction chamber (NO_x Mode). There the NO reacts with ozone to produce a characteristic chemiluminescence.

The Model 42C is a single chamber, single photomultiplier tube design and automatically cycles between the NO and NO_x modes. Signals from the photomultiplier tube are conditioned and then sent to the microprocessor where a sophisticated mathematical algorithm is utilized to calculate three independent outputs: NO, NO₂ and NO_x. With this algorithm, more accurate NO/NO_x measurements are possible in varying NO/NO₂ samples.



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