

MODEL 200EU NO/NO₂/NO_x ANALYZER

(Addendum to M200E Manual PN 04410)

ULTRA SENSITIVITY MODEL 200EU NO/NO₂/NO_x ANALYZER

(Addendum to M200E Manual PN 04410)

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1. OVERVIEW

The model 200EU is a close derivative of the Model 200E NOX Analyzer. The main differences are as follows.

- The 200EU is more sensitive at low NOX levels than a standard 200E. The instrument has a user selectable full scale range of 0-5 PPB to 0-2000 PPB of NOX.
- The reaction cell is gold plated. In addition, there is a pre-reactor, which allows the measurements of any hydrocarbon interferences in the sample stream.
- The sample flow is about 1000 cc/min.
- The 200EU is equipped with a high performance pump, capable of producing a reaction cell pressure of less than 5 “ Hg-A.

Because the 200EU is a close derivative of the M200E, the Model 200E instruction manual continues to be valid as the reference manual covering the details of the instrument's components.

2. SPECIFICATIONS, AGENCY APPROVALS, AND WARRANTY

Ranges	In 1ppb increments from 5ppb to 2000ppb independent ranges or autoranging
Measurement Units	ppb, ug/m ³
Noise at Zero ¹	<25 ppt RMS
Noise at Span ¹	<0.25% RMS of reading above 50 ppb
Lower Detectable Limit ¹	50 ppt RMS
Zero Drift ²	<0.1 ppb / 24 hours <0.2 ppb / 7 days
Span Drift ²	<0.5% of reading or 50 ppt RMS whichever is greater / 24 hrs <1% of reading or 100 ppt RMS whichever is greater / 7 days
Lag Time	20 sec
Rise Time ³	95% in <50 sec
Fall Time ³	95% in <50 sec
Sample Flow Rate	1000 cc/min. ± 10%
Linearity	1% of full scale or ± 0.1 ppb whichever is greater
Precision	0.5% of reading above 50 ppb
Hydrocarbon Interference	Propylene rejection ratio > 20,000:1 Ethylene rejection ratio > 40,000:1
Temperature Range	20-30°C within drift and noise specifications 5-35°C safe operating range
Temp Coefficient	< 0.1% per °C
Humidity	0-95% RH non-condensing
Voltage Coefficient	< 0.1% per V
Dimensions HxWxD	7" H x 17" W x 23.6" D (18cm x 43cm x 61cm)
Weight, Analyzer	40 lbs (18 kg)
Weight, Ext Pump Pack	21 lbs (9.5 kg)
Power, Analyzer	100V~ 50/60 Hz, 120V~ 60 Hz, 230V~ 50 Hz, 2.5A, 125 watts
Power, Analyzer ⁴	230V~ 50 Hz, 2.5A
Power, Ext Pump	110V~ 60 Hz, 220V~ 50 Hz, 240V~ 50Hz, 150 watts
Power, Ext Pump ⁴	230V~ 50 Hz, 2.2A
Environmental ⁴	Installation Category (Over-voltage Category) II Pollution Degree 2
Analog Outputs	4 user configurable outputs
Analog Output Ranges	All outputs: 100 mV, 1, 5, 10V Three outputs convertible to 4-20 mA isolated current loop All ranges with 5% under/over range
Analog Resolution	1 part in 4096 of selected full-scale voltage (12 bit)
Status Outputs	8 Status Outputs from opto-isolators
Control Inputs	6 Control Inputs
Serial I/O	1 x RS-232; 1 x RS-485 or RS-232 or Ethernet (optional) Communication Speed: 300-115200 baud (user selectable)
Certifications	CE: EN61326 (1997 w/A1:98) Class A, FCC Part 15 Subpart B Section 15.107 Class A, ICES-003 Class A (ANSI C63.4 1992) &

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AS/NZS 3548 (w/A1 &A2;97) Class A

- (1) As defined by the USEPA
- (2) At constant temperature and voltage
- (3) With adaptive filter, > 20 ppb change
- (4) Electrical rating for CE mark compliance

3. PNEUMATICS

Refer to the attached pneumatic diagram. It shows the internal pneumatics of the 200EU in its standard configuration, along with the optional Zero/Span valves. The sample flow is about 1000 cc/min. Also during Auto Zero mode, the sample gas is routed through a pre-reactor before the mixture goes through the reaction cell. Since the reaction rate constant between NO and ozone is several time faster than the reaction rate constant between hydrocarbons and ozone, this mechanism helps to eliminate the interference effects of hydrocarbons in NO_x measurements. In addition, the 200EU is equipped with a high performance pump, capable of producing a reaction cell pressure of less than 5 “ Hg-A.

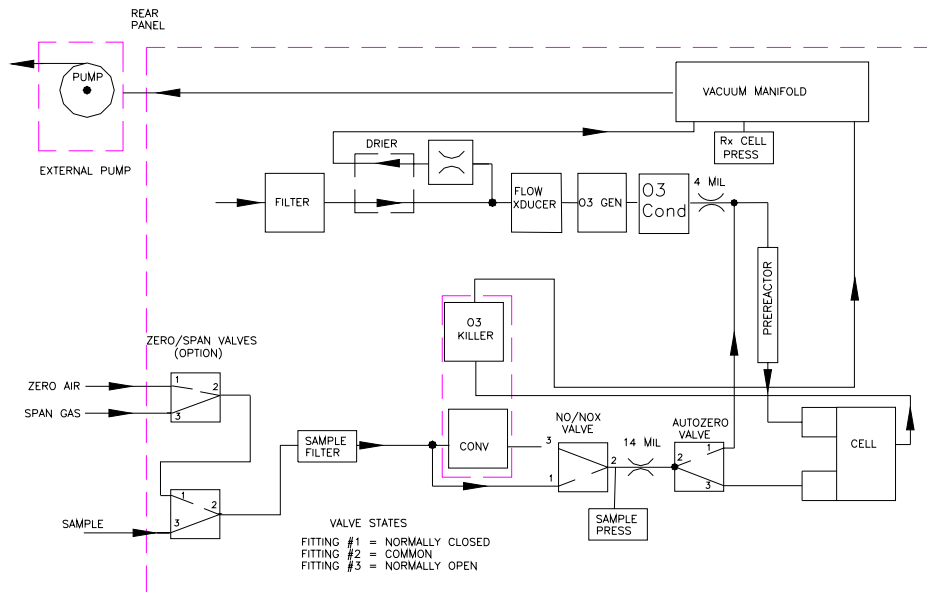


Figure 3-1: Pneumatic Diagram

4. SPARES PARTS LIST

Note: Only parts different from M200E are listed below. Refer to the M200E users manual for the common spare parts.

Part number	Description
011340800	Assy, Sensor,M200EU
024600100	Assy, Prereactor NO/NOX valve,M200EU
011420700	Assy, NOX cell, Gold plated, M200EU
011440200	Assy, PMT,M200AU
041800300	PCA,PMT Preamp, M200EU
001270001	Manifold, Gold Plated, NOX
001330001	Sleeve, Gold Plated, NOX
001350001	Nozzle, Outer,Gold Plated
014080200	Assy,HVPS,M200AU
022880000	Assy,HVPS,Low Leak Current,M200AU