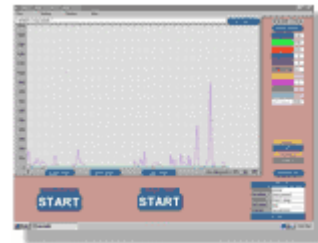


SMART 2000s – gasoline/LPG/CNG/diesel emissions measurement



The SMART 2000s analyzer is a fully computerized, NDIR gas analyzer and advanced optical opacity meter integrated into an automated and computerized engine emission analysis system, particularly suitable for diesel emissions. It is an accurate and repeatable system that complies to ISO standards, as well as to industry specific standards in Europe and North America. It is a portable and economical tool for automotive service stations, as well as for various field, laboratory, and environmental control or research applications.

The SMART 2000s utilizes an accurate and economical electrochemical sensor for NO_x measurement. The SMART 2000s uses the latest technology advances and industrial grade components for reliable operation and delivers continuous, fully automated testing performance anywhere time after time. ENVIRONMENT CANADA has tested and selected the SMART 2000 for their automotive emission field testing. The easy to use PC interface allows a new user to perform accurate emission tests within minutes. The SMART 2000s is equipped to perform the Snap Test (SME J1667) for diesel opacity and the Two Speed Idle Test for gasoline/natural gas/propane powered vehicles on the road, in the field or in a garage or service station.

SMART 2000s



SPECIFICATIONS - ANALYZER

Measuring Ranges	Accuracy/Performance
CO 0-1000/5000 PPM Optional for Diesel Exhaust	+/- 2.5 %
SO2 0-1000 PPM Optional for Diesel Exhaust	+/- 2.5 %
CO 0-10% vol.	0.06% Absolute or +/-2.5% of Reading Whichever is Greater
CO ₂ 0-20% vol.	0.3% Absolute or +/-2.5% of Reading Whichever is Greater
HC 0-2000 PPM 2000 – 20000	4 PPM or +/-2.5% of Reading Whichever is Greater +/-2.5% of Reading
HC as methane based 0-10000 PPM Optional for Diesel Exhaust	+/-2.5% Rel.
O ₂ 0-25% vol.	0.1% Absolute or +/-2.5% of Reading Whichever is Greater
NO _x 0-1000 PPM	32 PPM
1001-2000 PPM	60 PPM
2001-5000 PPM	120 PPM
N2O 0-500 PPM Optional for Diesel Exhaust	+/-2.5% Rel.
Temp. 0-200 Deg. C.	+/- 3% Relative
RPM 0-10000 RPM	+/- 3% Relative

Environment	
Temperature	10-50 Deg. C.
Pressure	75-105 kPa
Humidity	95%

General	
Response Time	12 Seconds for 95% of Full Value
Warm Up Time	4 min. Typical, 15 min. Max.
Repeatability	1/3 of Maximum Error
Sample Gas Flow	3 L/Min. – OPTIONAL INLINE SOOTH FILTERS FOR DIESEL
Zero/Electrical Calibration	Prior to Every Test
Control Computer	Intel Pentium Based Laptop Computer
Printer	CANNON BJC – 80 360 x 720 dpi INK JET COLOR PRINTER
Power	120/220 VAC 50/60 Hz, Max. 260 Watt

Dimensions/Weight	
NDIR Analyzer + host	56 x 48 x 25.4 cm 18" x 14" x 8" 9 kg (20 lb.)

International Standards	
ISO	3930
OIML	R 99 class I
BAR	97

SPECIFICATIONS – OPACITY METER

Measuring Ranges	Accuracy/Performance
Opacity 0-100%	+/- 2% Relative, +/- 0.5% Absolute
Soot Density 0 – 10 g/m ³	+/- 2% Relative, +/- 0.5% Absolute
Temp. 0-200 Deg. C.	+/- 3% Relative
RPM 0-10,000 RPM	+/- 3% Relative

Environment	
Temperature	10-45 Deg. C.
Pressure	0-100 kPa
Humidity	95%

Thermal Stability	
Detector Temperature	45 Deg. Celsius – Temperature Controlled
Sample Cell Temperature	75 Deg. Celsius – Temperature Controlled

General	
Response Time	1 ms
Warm Up Time	8 min. Typical, 10 min. Max.
Reliability	20,000 hours
Zero/Electrical Calibration	Prior to Every Test
Control Computer	Intel Pentium Based Laptop Computer
Power	120/220 VAC 50/60 Hz, Max. 200 Watt

Dimensions/Weight	
Opacity Meter	38 x 23.5 x 9 cm (15" x 9.25" x 3.5") 4.5 kg (10 lb.)

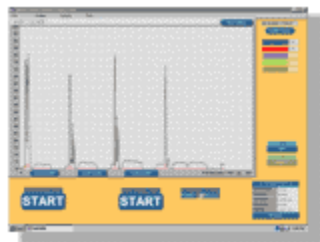
International Standards	
ISO	11614
IEC	801-1/-2/-3/-4
PTB EO	18--09
NF R (FRANCE)	10-025
TUV (GERMANY)	SAFETY
CE	REQUIREMENTS
SENSORS	9510-034

SMART 2000h- gasoline/LPG/CNG/diesel emissions measurement



The SMART 2000h analyzer is a fully computerized, 4 gas NDIR gas analyzer integrated with chemiluminescent NO/NOx analyzer and advanced optical opacity meter. It is an accurate and repeatable system that complies to ISO standards, as well as to industry specific standards in Europe and North America. It is a portable and sophisticated tool for automotive service stations, as well as for various field, laboratory, environmental control or research applications where fast response time and accuracy in ultra low PPM ranges is required.

The SMART 2000h uses the latest technology advances and industrial grade components for reliable operation and delivers continuous, fully automated testing performance anywhere time after time. ENVIRONMENT CANADA has tested and selected the SMART 2000 for their automotive emission field testing. The easy to use PC interface allows a new user to perform accurate emission tests within minutes. It is equipped to perform the Snap Test (SME J1667) for diesel opacity and the Two Speed Idle Test for gasoline/natural gas/propane powered vehicles on the road, in the field or in a garage or service station.



SMART 2000h

SPECIFICATIONS – ANALYZER

Measuring Ranges	Accuracy/Performance
CO 0-1.2% Vol.	0.06% vol.
1.2-2.0 % Vol.	0.12 % vol.
2.0-7.0 % Vol.	0.4 % vol.
7.0-10.0 % Vol.	3 % relative
CO 0-1000/5000 PPM Optional for Diesel Exhaust	+/- 2.5 %
SO2 0-1000 PPM Optional for Diesel Exhaust	+/- 2.5 %
CO ₂ 0-8,0% Vol.	0.6% vol.
8.0-15.0 % Vol.	0.8 % vol.
15.0-16.0 % Vol.	1.2 % vol.
16.0-20.0 % Vol.	3 % relative
HC 0-240 PPM	10 ppm
240-2000 PPM	12 ppm
2000-10000 PPM	5 % relative
HC as methane based 0-10000 PPM Optional for Diesel Exhaust	+/-2.5% Rel.
O ₂ 0-25% Vol.	0.1% Absolute or 3% of Reading Whichever
NO _x 0-30/100/300/ 1000/10000 PPM	less then +/- .5% of full scale
N2O 0-500 PPM Optional for Diesel Exhaust	+/-2.5% Rel.
Temp. 0-200 Deg. C.	3% Relative
RPM 0-10000 RPM	3% Relative

Environment	
Temperature	10-50 Deg. C.
Pressure	75-105 kPa
Humidity	95%

General	
Response Time	12 Seconds for 95% of Full Value
Warm Up Time	4 min. Typical, 15 min. Max.
Repeatability	1/3 of Maximum Error
Sample Gas Flow	6.0 L/Min.
Zero/Electrical Calibration	Prior to Every Test
Control Computer	Intel Pentium Based Laptop Computer
Printer	CANNON BJC – 80 360 x 720 dpi INK JET COLOR PRINTER
Power	120/220 VAC 50/60 Hz, Max. 260 Watt

Dimensions/Weight	
NO/Nox analyzer	13.25 x 48.25 x 50.8 cm 51/4" x 19" x 20" 17.1 kg (38 lb.)
NDIR Analyzer + host	56 x 48 x 25.4 cm 21" x 17" x 9" 9 kg (20 lb.)

International Standards	
ISO	3930
OIML	R 99 class I
BAR	97

SPECIFICATIONS – OPACITY METER

Measuring Ranges	Accuracy/Performance
Opacity 0-100%	+/- 2% Relative, +/- 0.5% Absolute
Soot Density 0 – 10 g/m ³	+/- 2% Relative, +/- 0.5% Absolute
Temp. 0-200 Deg. C.	+/- 3% Relative
RPM 0-10,000 RPM	+/- 3% Relative

Environment	
Temperature	10-45 Deg. C.
Pressure	0-100 kPa
Humidity	95%

Thermal Stability	
Detector Temperature	45 Deg. Celsius – Temperature Controlled
Sample Cell Temperature	75 Deg. Celsius – Temperature Controlled

General	
Response Time	1 ms
Warm Up Time	8 min. Typical, 10 min. Max.
Reliability	20,000 hours
Zero/Electrical Calibration	Prior to Every Test
Control Computer	Intel Pentium Based Laptop Computer
Power	120/220 VAC 50/60 Hz, Max. 200 Watt

Dimensions/Weight	
Opacity Meter	38 x 23.5 x 9 cm (15" x 9.25" x 3.5") 4.5 kg (10 lb.)

International Standards	
ISO	11614
IEC	801-1/-2/-3/-4
PTB EO	18--09
NF R (FRANCE)	10-025
TUV (GERMANY)	SAFETY
CE	REQUIREMENTS
SENSOR'S	9510-034