

### 309A SERIES

#### PORTABLE ANALYZER FOR CARBON DIOXIDE & OXYGEN





#### **APPLICATIONS**

For checking carbon dioxide (CO<sub>2</sub>) and oxygen (O<sub>2</sub>) in controlled atmosphere (C/A) storage rooms, welding gas mixtures, and other process applications.

#### **FEATURES**

- Rugged design that is easy to operate and maintain
- · Fast warm-up and response
- Solid state infrared detector for CO<sub>2</sub>
- Long-life electrochemical sensor for O<sub>2</sub>
- Digital readout meter with backlight
- Rechargeable battery operation
- · Built-in sample pump, filter, and flowmeter
- Weatherproof (WP) cabinet with clear Lexan cover

#### **OPTIONS**

- Recorder outputs of 0-1V or 4-20mA
- Sample pre-cooler for hot samples
- · Stainless steel probe with sample hose
- Condensate removal for wet applications
- Suitcase (K) or bench top (BT) style cabinets available
- AC power only operation
- CO<sub>2</sub> and O<sub>2</sub> alarms with LED
- Detachable/portable datalogger

- Air for CO<sub>2</sub> zero and O<sub>2</sub> span.
- Analyzed calibration gas for CO<sub>2</sub> span and O<sub>2</sub> zero.



Weatherproof (WP) Enclosure



Bench Top (BT) Enclosure



Suitcase (K) Enclosure



Optional Precooler for hot or wet sample gases

The Model 309A Series Portable CO<sub>2</sub> and O<sub>2</sub> Analyzer is a rugged, fast-responding, and accurate instrument for conveniently monitoring the atmosphere in an apple storage C/A room. The standard range of the analyzer is 0-10% CO<sub>2</sub> and 0-25% O<sub>2</sub>. Other ranges are available. The Model 309A series utilizes a single cell infrared detector for CO<sub>2</sub> and a customer replaceable electrochemical sensor for O<sub>2</sub>. Neither sensor is affected by water vapor or other gas vapors in the sample gas. The O<sub>2</sub> sensor typically lasts 3-4 years.

In operation, a built-in sample pump draws in the gas sample through the sample hose, filter/condensate trap, secondary filter and flow meter then on to the CO<sub>2</sub> and O<sub>2</sub> detectors. The gas readings are then displayed on LCD digital meters which have switchable backlights for use in dark areas.

A rechargeable battery provides enough power for about 8 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger is included.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Method of Detection:	NDIR infrared detector for CO <sub>2</sub> ; electrochemical O <sub>2</sub> sensor
Ranges Available:	0-3000 PPM, 0-5000 PPM, 0-1%, 0-10%, 0-20%, 0-50% and 0-100% CO <sub>2</sub> 0-25% O <sub>2</sub> (other ranges available)
Resolution:	0.1 % on versions or 10 PPM on PPM versions
Accuracy and Repeatability:	Within ± 2% full scale
Drift:	Within 1% full scale per 8 hours of continuous operation
Response Time (T-90):	O <sub>2</sub> less than 10 seconds; CO <sub>2</sub> less than 30-40 seconds to T-90
Ambient Temperature Range:	40° to 120°F (4° to 49°C)
Linearity:	± 1.0% of full scale
Size and Weight:	WP style - approx. 11½" L x 8" W x 7¼" H @ 8 lbs (29 x 20 x 18 cm @ 3.6 kg) K style - approx. 14" L x 10½" W x 6" H @ 12 lbs (36 x 27 x 15 cm @ 5.5 kg) BT style - approx. 8" L x 9" H x 10" D @ 12 lbs (20 x 23 x 25 cm @ 5.5 kg)
Power:	AC/DC operation. 115VAC 60 Hz for recharging (other voltages available)
Output Options:	4-20 mA or 0-1 VDC

#### UNIQUE APPLICATIONS

All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA: 1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







# 313 SERIES PORTABLE FLUE GAS ANALYZER FOR OXIDES OF NITROGEN

#### **APPLICATIONS**

Analysis of oxides of nitrogen (NO<sub>x</sub>) such as nitric oxide (NO) and/or nitrogen dioxide (NO<sub>2</sub>). For boiler, furnace, or engine exhaust monitoring and analysis.

#### **FEATURES**

- NOx can be read as NO, NO2, or as total
- Rugged design that is easy to operate and maintain
- Disposable, long life electrochemical NO and NO<sub>2</sub> sensors
- · Digital meter readout with backlight
- Rechargable battery operation
- Built-in sample pump, filter, and flowmeter
- Active condensate removal.
- Rapid reading recovery after NOx 'overdose'
- · Weatherproof (WP) cabinet with clear Lexan cover
- Stainless steel probe with sample hose

#### **OPTIONS**

- Recorder output 4-20 mA
- Stack temperature readout (313T)
- Sample pre-cooler
- Suitcase (K) style cabinet available
- NO, NO<sub>2</sub> or NOx alarms with LED
- Detachable/portable data logger

- Air for zero.
- Analyzed calibration gas mixtures of PPM NO and PPM NO<sub>2</sub> in nitrogen for span.



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure



Optional Precooler for hot or wet sample gases

The Nova 313 Series Portable Flue Gas Analyzer for NO, NO<sub>2</sub>, or NOx utilizes reliable, stable NO and/or NO<sub>2</sub> sensors which respond quickly to the NO or NO<sub>2</sub> present in flue gases or engine exhaust. NO is the major component (90-95%) of the NOx found in flue gases or engine exhaust (except diesel).

In operation, a built-in sample pump draws in the gas sample through the S.S. probe, 12 ft sample hose, condensate removal filter, secondary filter and flowmeter, then on to both sensors. The output of each sensor is then amplified and displayed on a large LCD digital meter with backlight. A selector switch allows the two gases to be read individually or as a total (NOx).

The rechargeable battery provides enough power for about 20 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger plus a stainless steel probe with 12 ft. (4 m) hose is included.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Customer replaceable electrochemical nitric oxide and nitrogen dioxide sensors Expected life 2-3 year each	
Ranges Available:	0-2000 PPM NO; 0-800 PPM NO <sub>2</sub> ; 0-2000 PPM NO <sub>x</sub> (0-5000 PPM available) Ranges switch selectable	
Resolution:	1 PPM on 0-2000 PPM; 10 PPM on higher ranges	
Accuracy and Repeatability:	Better than 2% full scale	
Drift:	Within 1% of full scale per 8 hours of continuous operation	
Response Time (T-90):	20-30 seconds	
Ambient Temperature Range:	55° to 120°F (12° to 49°C)	
Linearity:	± 2% of full scale	
Size and Weight:	WP style - approx. 11½" L x 8" W x 7¼" H @ 8 lbs (29 x 20 x 18 cm @ 3.6 kg) K style - approx. 14" L x 10½" W x 6" H @ 12 lbs (36 x 27 x 15 cm @ 5.5 kg)	
Power:	AC/DC operation. 115VAC 60Hz for recharging (other voltages available)	
Output Options:	4-20 mA or 0-1 VDC	

#### UNIQUE APPLICATIONS

All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







# **335 SERIES**PORTABLE PROCESS HYDROGEN ANALYZER

#### **APPLICATIONS**

For analysis of hydrogen ( $H_2$ ) in a binary gas mixture in process gases such as  $H_2$  in air,  $H_2$  in nitrogen ( $N_2$ ),  $H_2$  in carbon dioxide ( $CO_2$ ),  $H_2$  in argon ( $A_1$ ),  $H_2$  in oxygen ( $O_2$ ), etc.

#### **FEATURES**

- · Rugged design that is easy to operate
- · Fast warm up and response
- Long life thermal conductivity cell that provides accurate and stable readings
- Digital meter readout with backlight
- · Modular layout that is easy to maintain
- · Rechargeable 'gel cell' battery operated
- · Built-in sample pump or flow regulator
- Weatherproof (WP) cabinet with clear Lexan cover

#### **OPTIONS**

- Recorder outputs of 0-1 V or 4-20 mA
- Sample pre-cooler for hot samples
- Condensate removal for wet applications
- Suitcase (K) style cabinet available
- AC only power operation
- H2 alarm with LED
- · Detachable/portable data logger

- · Ambient air for zero
- Gas cylinder of known H<sub>2</sub> for span



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure

The Nova 335 Portable Analyzer has been designed for the detection of hydrogen (H<sub>2</sub>) in a binary (two gas) mixture such as H<sub>2</sub> in N<sub>2</sub>. However, it can be used in some other applications with several background gases present. Consult Nova on these applications.

The thermal conductivity (T/C) cell provides a fast and accurate measurement of H<sub>2</sub>. It has an expected life of over 10 years unless contaminated.

In operation, a built-in sample pump draws in the gas sample through the sample tube, filter, and flow meter and then on to the T/C cell. The detected H2 is displayed on an LCD digital meter which has a switchable backlight for use in dark areas.

A rechargeable 'gel cell' battery provides enough power for approximately 8 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger is included.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Temperature compensated thermal conductivity (T/C) cell	
Ranges:	0-100.0% H <sub>2</sub> in a binary gas mixture	
Resolution:	0.1% of H <sub>2</sub>	
Accuracy and Repeatability:	± 2% of full scale	
Drift:	± 1% of full scale max. per day (after calibration)	
Response Time (T-90):	10-15 seconds to 90% step change - not including sample transport time	
Ambient Temperature Range:	55° to 120°F (12° to 50°C)	
Linearity:	± 2% of F.S.	
Size and Weight:	WP style - approx. 10" L x 7½" W x 6½" H @ 8 lbs (25.5 x 19 x 16.5 cm @ 3.6 kg) K style approx. 9½" L x 7" W x 6½" H @ 8 lbs (24 x 17 x 18 cm @ 3.6 kg)	
Power:	115VAC 60Hz for recharging (220VAC 50Hz available)	
Output Options:	4-20 mA or 0-1 VDC	
Alarms:	H2 alarm with LED (optional)	

#### UNIQUE APPLICATIONS

The Nova T/C cell will respond in the presence of many gases and may need to be compensated either directly in the analyzer or in the calibration gas. Consult Nova on these types of applications. All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







# 340 Series PORTABLE ANALYZER FOR OXYGEN & HYDROGEN

#### **APPLICATIONS**

Analysis of oxygen/hydrogen (O<sub>2</sub>/H<sub>2</sub>) in exothermic furnace atmospheres for copper, brass, or steel annealing, neutral heating, sintering, glass metal beds, or oxide coating of steel.

#### **FEATURES**

- Rugged design that is easy to operate and maintain
- · Fast warm-up and response
- Long life electrochemical O<sub>2</sub> sensor easily detects air infiltration into furnace gas
- Long-life thermal conductivity cell that provides accurate & stable readings of H<sub>2</sub>
- Separate digital meters with backlight
- Rechargeable battery operation
- · Built-in sample pump, filter, & flow meter
- Weatherproof (WP) cabinet with clear Lexan cover

#### **OPTIONS**

- Recorder outputs of 0-1 VDC or 4-20 mA
- Sample pre-cooler for hot samples
- Condensate removal for wet applications
- Suitcase (K) style cabinet Available
- O<sub>2</sub> & H<sub>2</sub> alarms with LED
- Detachable/portable data logger
- Dual range O2 (0-25.0% & 0-2.00%) (Model 341WP)
- Special PPM O2 sensor (100 to 9,999 PPM) (Model 340L)

- On air for H<sub>2</sub> zero and % O<sub>2</sub> span
- On analyzed mixture of % H<sub>2</sub> in N<sub>2</sub> for H<sub>2</sub> span and O<sub>2</sub> zero
- On analyzed mixture of PPM O<sub>2</sub> in N<sub>2</sub> for PPM O<sub>2</sub> span



340WP - Weatherproof Enclosure



341K - Suitcase Enclosure



Optional Precooler for hot or wet sample gases

The Nova 340 Series Portable Analyzer has been designed for the dual measurement of O<sub>2</sub> and H<sub>2</sub> in furnace atmosphere gases. A built-in sample pump draws in a sample of atmosphere gas where it is detected for oxygen by a long-life oxygen sensor. At the same time, H<sub>2</sub> is detected by a long-life thermal conductivity cell.

The Model 341 is a dual range O<sub>2</sub> version that can be switched between the standard range (0-25.0%) and a lower range (0-2.0%) using the same sensor. For applications requiring a PPM O<sub>2</sub> measurement, a special low range version is available (Model 340L). The Models 340 & 341 have rechargeable battery operation, a flow meter, filter, sample hose, and dual digital readouts. A recharger is included. Recorder outputs of 4-20mA or 0-1VDC are optional.

#### MODELS

- 340WP % O<sub>2</sub> / % H<sub>2</sub> (WP weather-proof)
- 340K % O<sub>2</sub> / % H<sub>2</sub>; (K suitcase-style)
- 340L(K or BT bench top) % H<sub>2</sub> & PPM O<sub>2</sub> version (340L not available in WP enclosure)
- 341(K or WP) % H2 & Dual Range O2

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Long-life electrochemical $O_2$ sensor, temperature-compensated thermal conductivity (T/C) $H_2$ cell, cannot be burned out due to loss of flow or changing gases	
Ranges Available:	0-25.0% O <sub>2</sub> , 0-40.0% H <sub>2</sub> (Model 340) 0-2.0% and 0-25.0% O <sub>2</sub> , 0-40.0% H <sub>2</sub> (Model 341) 0-100 to 0-9,999 PPM O <sub>2</sub> , 0-40% H <sub>2</sub> (Model 340L)	
Resolution:	0.1 % on % ranges; 1 PPM on PPM O <sub>2</sub> range	
Accuracy and Repeatability:	± 2% of full scale for O2 & H2	
Drift:	± 1% of full scale per day	
Response Time (T-90):	Less than 10 seconds to 90% step change	
Ambient Temperature Range:	55° to 120°F (12° to 50°C)	
Linearity:	± 2% of full scale	
Size and Weight:	WP style - approx. 11½" L x 8" W x 7¼" H @ 8 lbs (29 x 20 x 18 cm @ 3.6 kg) K style - approx. 14" L x 10½" W x 6" H @ 8 lbs (36 x 27 x 15 cm @ 3.6 kg)	
Power:	115VAC 60Hz for recharging (220VAC 50Hz available)	
Output Options:	4-20 mA or 0-1 VDC	
Alarms:	O <sub>2</sub> and H <sub>2</sub> alarms with LED (optional)	

#### UNIQUE APPLICATIONS

All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA:

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905 545 2003 • Fay: 905 545 4248

Tel: 905.545.2003 • Fax: 905.545.4248 email: sales@nova-gas.com

websales@nova-gas.com







### 350 SERIES PORTABLE FLUE GAS

### PORTABLE FLUE GAS ANALYZER FOR OXYGEN & COMBUSTIBLES

#### **APPLICATIONS**

Analysis of oxygen (O<sub>2</sub>) and combustibles. For checking the combustion efficiency, and burner & control performance of furnaces, heaters, and boilers. May be used in commercial, industrial, and residential settings.

#### **FEATURES**

- Rugged design that is easy to operate and maintain
- · Fast warm-up and response
- Long-life catalytic combustibles sensor
- Long-life electrochemical O<sub>2</sub> sensor
- Digital readout meter with backlight
- Rechargeable battery operation
- Built-in sample pump, filter and flowmeter
- Active condensate removal
- Stainless steel probe with sample hose
- Use on flue gas from any fuel
- Pays for itself in months through fuel savings

#### **OPTIONS**

- Recorder output of 0-1V or 4-20 mA
- Stack temperature readout (Model 350T)
- Sample pre-cooler
- Suitcase (K) style cabinet available
- Detachable/portable data logger

#### **CALIBRATION**

- On air for O<sub>2</sub> span and combustibles zero.
- On analyzed mixture of carbon monoxide (CO), methane (CH<sub>4</sub>), or hydrogen (H<sub>2</sub>) in nitrogen for combustibles span and O<sub>2</sub> zero.



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure



Optional Ice Bath Precooler

The Nova 350 Series Portable Flue Gas Analyzer has been designed for accuracy, reliability, ease of use and ease of service. It uses customer replaceable sensors which respond quickly to the oxygen (O<sub>2</sub>) and combustibles present in the flue gas sample. The sensor life expectancy is between 2 and 3 years.

In operation, a built-in sample pump draws in the flue gas sample through the stainless steel probe, 12 ft. (4 m) sample hose, condensate removal filter, secondary filter, flowmeter, then on to the oxygen and combustibles sensors. The detected O<sub>2</sub> and combustibles are displayed on LCD digital meters which have a switchable backlight for use in dark areas. A built-in air makeup system ensures that the combustibles detector will always have sufficient O<sub>2</sub> for proper operation regardless of sample O<sub>2</sub> content.

A rechargeable battery provides enough power for about 6 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger is included.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Customer replaceable electrochemical $O_2$ sensor. Catalytic oxidation detector for combustibles. Expected life is 2-3 years for each.	
Ranges Available:	0-25.0% O <sub>2</sub> 0-5.0% or 0-10.0% combustibles 0-1800°F or 0-1000°C stack temperature (Model 350T)	
Resolution:	0.1 %	
Accuracy and Repeatability:	$\pm$ 1% full scale, based on 20.9% $O_2; \pm$ 2% of full scale combustibles	
Drift:	<2% of full scale per 8 hours of continuous operation	
Response Time:	5-8 seconds for O <sub>2</sub> ; 20-30 seconds for combustibles	
Ambient Temperature Range:	32° to 105°F (0°- 40.5°C)	
Linearity:	$\pm$ 1% full scale, based on 20.9% $O_2; \pm$ 2% of full scale combustibles	
Size and Weight:	WP style - approx. 11½" L x 8" W x 7¼" H @ 8 lbs (29 x 20 x 18 cm @ 3.6 kg) K style - approx. 14" L x 10½" W x 6" H @ 12 lbs (36 x 27 x 15 cm @ 5.5 kg)	
Power:	AC/DC operation, 115VAC 60Hz for recharging (Other voltages available)	
Output Options:	4-20 mA or 0-1 VDC	

#### UNIQUE APPLICATIONS

The 350 Series should not be used for detecting these gases in ambient atmospheres for personnel safety purposes. All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA:

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







### 352 SERIES

## PORTABLE FLUE GAS ANALYZER FOR OXYGEN, CARBON MONOXIDE & COMBUSTIBLES

#### **APPLICATIONS**

Analysis of oxygen (O<sub>2</sub>), carbon monoxide (CO), and combustibles. For checking the combustion efficiency, and burner & control performance of furnaces, heaters, and boilers. May be used in commercial, industrial, and residential settings.

#### **FEATURES**

- Rugged design that is easy to operate and maintain
- Fast warm-up and response
- · Long-life catalytic combustibles sensor
- Long-life electrochemical O<sub>2</sub> & CO sensors
- · Digital readout meters with backlight
- Rechargeable battery operation
- · Built-in sample pump, filter and flow meter
- · Includes stainless steel probe with sample hose
- · Use on flue gas from any fuel
- Pays for itself in months through fuel savings
- Weatherproof cabinet is standard

#### **OPTIONS**

- Recorder output of 0-1V or 4-20 mA
- Stack temperature readout (Model 352T)
- Sample pre-cooler
- Suitcase (K) style cabinet available
- Detachable/portable data logger

- On air for O<sub>2</sub> span and CO & combustibles zero.
- On analyzed mixture of carbon monoxide (CO) and methane (CH<sub>4</sub>) in nitrogen for combustibles and CO span and O<sub>2</sub> zero.



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure



Optional Ice Bath Precooler

The Nova 352 Series Portable Flue Gas Analyzer has been designed for accuracy, reliability, ease of use and ease of service. It uses customer replaceable sensors which respond quickly to the oxygen (O<sub>2</sub>), carbon monoxide (CO), and combustibles present in the flue gas sample. The sensor life expectancy is between 3 and 4 years.

In operation, a built-in sample pump draws in the flue gas sample through the stainless steel probe, 12 ft. (4 m) sample hose, condensate removal filter, secondary filter, PTFE liquid blocker, flowmeter, then on to the  $O_2$ , CO, and combustibles sensors. The detected gases are displayed on LCD digital meters which have a switchable backlight for use in dark areas. A built-in air makeup system ensures that the combustibles detector will always have sufficient  $O_2$  for proper operation regardless of sample  $O_2$  content.

A rechargeable battery provides enough power for about 6 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger is included.

The Nova 352T version indicates stack temperature for doing fuel efficiency calculations. The temperature sensor is built into the sampling probe. Efficiency charts for each fuel are provided.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Customer replaceable electrochemical $O_2$ & CO sensors Catalytic oxidation detector for combustibles; expected life is 3-4 years for each	
Ranges Available:	$0-25.0\%~O_2$ 0-2000~PPM~and~0-4.00%~CO~(switch~selectable) 0-5.0%~or~0-10.0%~combustibles 0-1800°F~or~0-1000°C~stack~temperature~(Model~352T)	
Resolution:	0.1%	
Accuracy and Repeatability:	± 1% full scale, based on 20.9% O <sub>2</sub> ; ± 2% of full scale combustibles	
Drift:	<2% of full scale per 8 hours of continuous operation	
Response Time:	5-8 seconds for O <sub>2</sub> ; 20-30 seconds for combustibles	
Ambient Temperature Range:	32° to 105°F (0°- 40.5°C)	
Linearity:	± 1% full scale O <sub>2</sub> & CO; ± 2% of full scale combustibles	
Size and Weight:	WP style - approx. 11½" L x 8" W x 7¼" H @ 8 lbs (29 x 20 x 18 cm @ 3.6 kg) K style - approx. 14" L x 10½" W x 6" H @ 12 lbs (36 x 27 x 15 cm @ 5.5 kg)	
Power:	AC/DC operation, 115VAC 60Hz for recharging (Other voltages available)	
Output Options:	4-20 mA or 0-1 VDC	

#### UNIQUE APPLICATIONS

The 352 Series should not be used for detecting these gases in ambient atmospheres for personnel safety purposes. All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







# PORTABLE FLUE GAS ANALYZERS FOR OXYGEN AND CARBON MONOXIDE

#### **APPLICATIONS**

Analysis of oxygen (O<sub>2</sub>) and carbon monoxide (CO). For checking combustion efficiency, air infiltration, and burner & control performance of furnaces, heaters and, boilers. May be used in commercial, industrial and residential settings.

#### **FEATURES**

- Rugged design that is easy to operate and maintain
- · Fast warm-up and response
- · Digital readout meter with backlight
- Rechargeable battery operation
- · Built-in pump, filter, flow meter, and condensate removal
- · Weatherproof (WP) cabinet with clear Lexan cover
- Stainless steel probe with sample hose
- For use on any fuel
- Long life detector cells for O<sub>2</sub> and CO (customer replaceable)
- Dual CO range: 0-2000 PPM and 0-4.00% CO
- Rapid CO reading recovery on CO 'overdose'
- · Pays for itself in months through fuel savings

#### **OPTIONS**

- Recorder outputs of 0-1V or 4-20 mA
- Stack temperature readout (360T)
- · Sample pre-cooler
- · Suitcase (K) style cabinet available
- · AC only power operation, with HD sample pump
- High CO alarm with LED
- · Detachable/portable data logger

#### CALIBRATION

- Air for O<sub>2</sub> span and CO zero
- Analyzed mixture of CO in nitrogen for CO span and O<sub>2</sub> zero



360WP Weather Proof Enlcosure



360K Suit Case Enlcosure



Optional Sample Precooler

**NOVA ANALYTICAL SYSTEMS** 

The Nova 360 Series are portable analyzers that can provide a detailed analysis of flue gas composition. They have been designed to be accurate, reliable, and easy to use and maintain. The sensors respond quickly to the oxygen and CO present in the flue gas sample. The typical sensor life expectancy is between 3-4 years and are customer-replaceable.

In operation, a built-in sample pump draws in the flue gas sample through the S.S. probe, 12 ft. sample hose, condensate removal filter, secondary filter and flow meter, then on to the three sensors. The detected O<sub>2</sub> and CO are displayed on separate LCD digital meters, which have a switchable backlight for use in dark areas. A special water separating filter and separate drain pump continuously remove condensate from the sample so the analyzer can be operated for long periods unattended.

The Nova 360T also indicates net stack temperature for doing fuel efficiency calculations. The temperature sensor is built into the sampling probe. Efficiency charts for each fuel are provided.

A rechargeable 'gel cell' battery provides enough power for about 16 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED indicates when to recharge and a green LED verifies that it is receiving recharging power. The charger is included with the analyzer. The rugged dust-tight and water resistant case is suitable for use in harsh environments.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Customer replaceable electrochemical O <sub>2</sub> and CO sensor.	
Ranges Available:	0-25.0% O <sub>2</sub> , 0-2000 PPM to 0-4.00% CO (switch selectable), 0-1800°F (0-1000°C) net stack temperature (360T)	
Resolution:	0.1 % O <sub>2</sub> , 1 PPM on CO	
Accuracy and Repeatability:	± 1%	
Drift:	± 1% of full scale per 8 hours of continuous operation	
Response Time (T-90):	10-15 seconds for O <sub>2</sub> and CO	
Ambient Temperature Range:	32° to 105°F (0°-40°C)	
Linearity:	± 1% of full scale of each gas measured	
Size and Weight:	WP style - approx. 10" L x 7½" H x 6½" D @ 8 lbs (25 x 19 x 16 cm @ 3.6 kg) K style - approx. 14" L x 6" H x 10½" D @ 8 lbs (35 x 15 x 26 cm @ 5.5 kg)	
Power:	AC/DC operation, 115VAC 60Hz for recharging (other voltages available)	
Output Options:	4-20 mA or 0-1 VDC	

#### UNIQUE APPLICATIONS

All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA:

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248







## 362 SERIES PORTABLE FLUE GAS A

PORTABLE FLUE GAS ANALYZER FOR OXYGEN, CARBON MONOXIDE, AND NOx

#### **APPLICATIONS**

Analysis of oxygen (O<sub>2</sub>), carbon monoxide (CO), and oxides of nitrogen (NOx as NO). For checking combustion efficiency, air infiltration, NOx emissions, and burner & control performance of furnaces, heaters, and boilers. May be used in commercial, industrial and residential applications.

#### **FEATURES**

- · Long life electrochemical sensors for each gas
- Rugged design that is easy to operate and maintain
- · Fast warm-up and response
- Digital readout meter with backlight
- Rechargeable battery operation
- Built-in sample pump, filter, flow meter, and continuous condensate removal
- · Weatherproof (WP) cabinet with clear Lexan cover
- Stainless steel probe with sample hose
- · For use on any fuel
- Dual CO range: 0-2000 PPM and 0-4.00% CO
- · Rapid CO & NOx reading recovery on 'overdose'
- · Pays for itself in months through fuel savings

#### **OPTIONS**

- Recorder outputs of 0-1V or 4-20 mA
- Stack temperature readout (362T)
- Sample pre-cooler
- Suitcase (K) style cabinet available
- NOx as NO + NO<sub>2</sub>
- Detachable/portable data logger

#### **CALIBRATION**

- Air for O2 span, CO zero and NOx zero
- Analyzed mixture of CO and NO in nitrogen for CO and NO span, and O<sub>2</sub> zero



362WP Weather Proof Enclosure



362K Suitcase Enclosure



**NOVA ANALYTICAL SYSTEMS** 

The Nova 362 Series are portable analyzers that can provide a detailed analysis of flue gas composition. They have been designed to be accurate, reliable, and easy to use and maintain. The Model 362 has customer-replaceable sensors, which respond quickly to the O<sub>2</sub>, CO, and NOx present in the flue gas sample. The sensor life expectancy is between 3-4 years.

In operation, a built-in sample pump draws in the flue gas sample through the S.S. probe, 12 ft. sample hose, condensate removal filter, secondary filter, flow meter, and then on to the three sensors. The detected O2, CO, and NO are displayed on separate LCD digital meters, which have a switchable backlight for use in dark areas. The analyzer can be operated for long periods unattended.

The Nova 362 can also optionally indicate net stack temperature for doing fuel efficiency calculations (362T). The temperature sensor is built into the sampling probe. Efficiency charts for each fuel are provided.

The rechargeable battery provides enough power for about 16 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED indicates when to recharge and a green LED verifies that it is receiving recharging power. The battery recharger is included with the analyzer. The rugged dust-tight and water resistant case is ideal for use in harsh environments.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description			
Method of Detection:	Customer replaceable electrochemical O <sub>2</sub> , CO and NO sensor.		
Ranges Available:	0-25.0% O <sub>2</sub> ; 0-2000 PPM and 0-4.00% CO (switch selectable), 0-200 to 0-2000 PPM NOx (as NO); 0-1800°F (0-1000°C) net stack temp (362T)		
Resolution:	0.1 % O <sub>2</sub> ; 1 PPM on CO and NOx		
Accuracy and Repeatability:	< 1% of O <sub>2</sub> ; ± 10 PPM CO; ± 3 PPM NOx		
Drift:	± 2% of full scale per 8 hours of continuous operation		
Response Time (T-90):	10-12 seconds for O <sub>2</sub> ; 20-30 seconds for CO and NOx		
Ambient Temperature Range:	32° to 105°F (0°-40°C)		
Linearity:	± 1% of full scale of each gas measured		
Size and Weight:	WP style - approx. 18" W x 12" L x 5½" H @ 13 lbs (45 x 30 x 13 cm @ 6 kg) K style - approx. 10 1/2" W x 14" L x 6" H @ 13 lbs (27 x 35 x 15 cm @ 6 kg)		
Power:	AC/DC operation, 115VAC 60Hz for recharging (Other voltages available)		
Output Options:	4-20 mA or 0-1 VDC		

#### UNIQUE APPLICATIONS

All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.

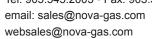




NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248









### 375 SERIES

## PORTABLE FLUE GAS ANALYZER FOR OXYGEN, CARBON MONOXIDE, & CARBON DIOXIDE

#### **APPLICATIONS**

Analysis of oxygen (O<sub>2</sub>), carbon monoxide (CO), and carbon dioxide (CO<sub>2</sub>). For checking the combustion efficiency, and burner & control performance of furnaces, heaters, and boilers. May be used in commercial, industrial, and residential applications.

#### **FEATURES**

- CO<sub>2</sub> actually measured by infrared detector, not calculated
- · Rugged design that is easy to operate
- · Fast warm up and response
- Dual CO range: 0-2000 PPM & 0-4.00%
- · Rapid reading recovery after CO 'overdose'
- · Digital readout meters with backlight
- · Modular design that is easy to maintain
- · Rechargeable battery operation
- Built-in sample pump, filter and flow meter
- Continuous condensate removal
- · Weatherproof (WP) cabinet with clear Lexan cover
- · Stainless steel probe with sample hose
- Use on any fuel
- Pays for itself in months through fuel savings

#### **OPTIONS**

- Outputs of 0-1V or 4-20mA
- Stack temperature readout (375T)
- Suitcase (K) style cabinet available
- Detachable/portable data logger

- Air for O<sub>2</sub> span and CO/CO<sub>2</sub> zero
- Analyzed gas mixture of CO2 and CO in nitrogen for span



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure



Optional Ice-Bath Precooler

The Nova 375 Series Portable Flue Gas Analyzers have been designed for accuracy, reliability, ease of use and ease of service, providing a detailed analysis of flue gas composition. The sensors respond quickly to oxygen,  $CO_2$ , and CO present in the flue gas sample. The  $O_2$  and CO sensor life expectancy is between 3 and 4 years. The  $CO_2$  detector life is infinite under normal conditions of use, unless contaminated. The  $O_2$  and CO sensors are customer-replaceable. The infra red  $CO_2$  sensor should not need to be replaced.

In operation, a built-in sample pump draws in the flue gas sample through the S.S. probe, 12 ft. (4 m) sample hose, condensate removal filter, secondary filter and flow meter and then on to the three sensors. The detected O<sub>2</sub>, CO<sub>2</sub>, and CO are displayed on digital meters which have a switchable backlight for use in dark areas. A special water separating filter and separate drain pump continuously remove condensate from the sample so the analyzer can be operated for long periods unattended.

The Nova 375T version also indicates stack temperature for doing fuel efficiency calculations. The temperature sensor is built into the sampling probe. Efficiency charts for each fuel are provided.

A rechargeable 'gel cell' battery provides enough power for about 16 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power. The recharger is included.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description		
Method of Detection:	Customer replaceable electrochemical oxygen and CO sensors Solid state infra red detector for CO <sub>2</sub>	
Ranges:	0-25.0% Oxygen 0-20.0% CO <sub>2</sub> (other CO <sub>2</sub> ranges available)	0-1800°F (0-1000°C) stack temperature (Model 375T) 0-2000 PPM and 0-4.00% CO - switch selectable (lower PPM ranges available without switch-selectable percent display)
Accuracy and Repeatability:	2% full scale for O <sub>2</sub> and CO <sub>2</sub> ; ± 10 PPM CO	
Drift:	< 2% full scale per 8 hours of continuous operation	
Response Time (T-90):	10-15 seconds for O <sub>2</sub> ; 20-30 seconds for CO and CO <sub>2</sub>	
Ambient Temperature Range:	32° to 105°F (0-40°C)	
Linearity:	± 1.0% of full scale for each gas measured	
Size and Weight:	WP style approx. 16" L x 4 1/2" H x 8" D @ 13 lbs (40.6 x 20.3 x 10.8 cm @ 5.6 kg) K style - approx. 18" L x 7" H x 12" D @ 15 lbs (45.7 x 30.5 x 17.8 cm @ 6.8 kg)	
Power:	AC/DC operation. 115VAC 60Hz for recharging (other voltages available)	
Output Options:	4-20 mA or 0-1 VDC	

#### **UNIQUE APPLICATIONS**

The 375 Series should not be used for detecting these gases in ambient atmospheres for personnel safety purposes. All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS
A UNIT OF TENOVA GOODFELLOW INC.

IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA:

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248

email: sales@nova-gas.com

websales@nova-gas.com







### 376 SERIES

PORTABLE FLUE GAS ANALYZER FOR OXYGEN, CARBON MONOXIDE, CARBON DIOXIDE, & OXIDES OF NITROGEN (NOx)

#### **APPLICATIONS**

For the analysis of oxygen  $(O_2)$ , carbon monoxide (CO), carbon dioxide  $(CO_2)$  and oxides of nitrogen (NOx as NO) in flue gas from furnaces, heaters, and boilers. May be used on commercial, industrial, and residential combustion equipment.

#### **FEATURES**

- CO<sub>2</sub> actually measured by infrared detector, not calculated
- Rugged design that is easy to operate and maintain
- · Fast warm up and response
- Dual CO range: 0-2000 PPM & 0-4.00%
- Rapid reading recovery after CO or NO 'overdose'
- · Digital readout meters with backlight
- Rechargeable battery operation
- · Built-in sample pump, filter and flow meter
- · Active condensate removal
- Weatherproof (WP) cabinet with clear Lexan cover
- · Stainless steel probe with sample hose
- Use on flue gas from any fuel
- · Pays for itself in months through fuel savings

#### **OPTIONS**

- Outputs of 0-1V or 4-20 mA
- Stack temperature readout (376T)
- Suitcase (K) style cabinet available
- · Gas alarms with LED warning
- Detachable/portable data logger

- Air for O2 span and CO/CO2 zero
- Analyzed gas mixtures of CO<sub>2</sub>, CO, and NO in nitrogen for span



Weatherproof (WP) Enclosure



Suitcase (K) Enclosure



Optional Precooler for hot or wet sample gases

The Nova 376 Series Portable Analyzers provide a detailed analysis of flue gas composition. They have been designed for accuracy, reliability, ease of use and service. The sensors respond quickly to the gases of interest present in the flue gas sample. Under normal conditions of use, the O<sub>2</sub>, CO, and NO<sub>x</sub> sensors each have a life expectancy of between 3 and 4 years, and are customer-replaceable. The CO<sub>2</sub> sensor should not need to be replaced.

In operation, a built-in sample pump draws in the flue gas sample through the S.S. probe, 12 ft. (4 m) sample hose, condensate removal filter, secondary filter and flowmeter, and then on to the four sensors. The detected O<sub>2</sub>, CO<sub>2</sub>, CO, and NO<sub>x</sub> are displayed on digital meters which have a switchable backlight for use in dark areas. The sensors do not require special SO<sub>2</sub> scrubbing chemicals as do some types of analyzers.

The Nova 376T version also indicates stack temperature for doing fuel efficiency calculations. The temperature sensor is built into the sampling probe. A rechargeable 'gel cell' battery provides enough power for about 8 hours of continuous operation and the analyzer can be used while it is being recharged. A red LED tells when to recharge and a green LED verifies that it is receiving recharging power.

#### **SPECIFICATIONS**

Nova reserves the right to specification changes which may occur with advances in design without prior notice.

Description			
Method of Detection:	Customer replaceable electrochemical O <sub>2</sub> , CO, and NO sensors. Solid state infra red detector for CO <sub>2</sub> .		
Ranges: (Other ranges available)	0-25.0% O <sub>2</sub> 0-20.0% CO <sub>2</sub>	0-2000 PPM and 0-4.00% CO - Switch selectable 0-200 to 0-2000 PPM NOx (as NO) ranges available 0-1800°F (0-1000°C) stack temperature (Model 376T)	
Accuracy and Repeatability:	Within ± 0.1% O <sub>2</sub> and CO <sub>2</sub> ; ± 2 PPM CO and NO		
Drift:	2% full scale per 8 hours of continuous operation		
Response Time (T-90):	10-15 seconds for O <sub>2</sub> ; 20-30 seconds for CO, NO, and CO <sub>2</sub>		
Ambient Temperature Range:	32° to 105°F (0-40°C)		
Linearity:	± 1.0% of full scale for each gas measured		
Size and Weight:	WP style approx. 16" L x 8" W x 71/4" H @ 13 lbs (41 x 20 x 18 cm @ 5.6 kg) K style - approx. 18" L x 12" W x 7" H @ 15 lbs (46 x 30.5 x 18 cm @ 6.8 kg)		
Power:	115VAC 60Hz for recharging (other voltages available)		
Output Options:	4-20 mA or 0-1 VDC		

#### UNIQUE APPLICATIONS

The 376 Series should not be used for detecting these gases in ambient atmospheres for personnel safety monitoring. All Nova analyzers are built using proven technologies and techniques. If this product does not suit your application, please contact Nova at 1-800-295-3771. In many cases, we are able to build an analyzer specific to your needs.





NOVA ANALYTICAL SYSTEMS A UNIT OF TENOVA GOODFELLOW INC. IN USA:

1925 Pine Avenue • Niagara Falls, NY • 14301 Tel: 1-800-295-3771 • 716.285.0418 • Fax: 716.282.2937 IN CANADA:

270 Sherman Avenue North • Hamilton, ON • L8L 6N5 Tel: 905.545.2003 • Fax: 905.545.4248

