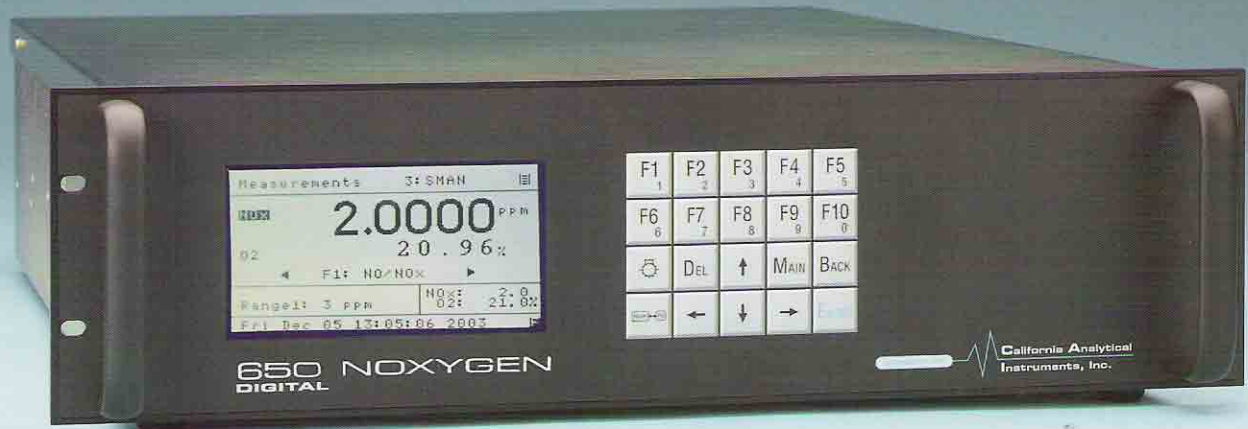


# 650

D I G I T A L

# NOxygen



## Chemiluminescent NO/NO<sub>x</sub> & Paramagnetic Oxygen Analyzer

### APPLICATIONS

- Stack Gases (CEM)
- Scrubber Efficiency
- Turbine/Generator Feedback Control
- Process Chemical Gas Analysis
- Personnel Safety
- Power Plant Stack De-Nitrification
- Vehicle Emissions

### OPTIONS

- Internal Zero/Span/Sample Valves
- 19" Rack Mount Slides
- Internal Sample Pump
- High Output Ozone Lamp
- *Other Custom Features available upon request*

### FEATURES

- Measures from ppb to 3,000 ppm Full Scale (NO/NO<sub>x</sub>)
- Four User Definable Ranges from 0-1 ppm to 0-3,000 ppm (NO/NO<sub>x</sub>)
- Oxygen Range: 0 - 25%
- Fast Response Time
- Auto Ranging
- Auto Calibration
- Output Options: Analog (User Scalable), (RS232) using AK Protocol & TCP/IP
- Displays & Outputs: NO/NO<sub>x</sub>/NO<sub>2</sub> & O<sub>2</sub> with Adjustable Time & Hold, Diagnostics, Alarms & Preventative Maintenance
- Remote Monitoring and Control
- Electronic Proportional Pressure Control for Sample & Ozone Flow



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# 650 CLD Paramagnetic Analyzer

## DESCRIPTION

The California Analytical Model 650 CLD NO/NO<sub>x</sub>/O<sub>2</sub> digital analyzer is designed around a state-of-the-art 16 bit microprocessor, with 16 digital inputs, 16 digital outputs, 16 analog inputs and 4 analog outputs. The analyzer can be manually operated from the keypad or remotely via TCP/IP, RS-232C communications and discrete inputs.

The analyzer display includes screen presentation of all analyzer alarms. Four levels of password protection are provided. For precision measurements, the analyzer's accuracy is increased by entering calibration curve fit polynomials. Automatic calibrations may be activated locally or remotely or at preset times. The analyzer may also display NO, NO<sub>x</sub>, NO<sub>2</sub> and O<sub>2</sub> via selectable time and hold commands.

## METHOD OF OPERATION

The California Analytical Inc. Model 650 CLD Analyzer utilizes the principle of chemiluminescence for analyzing the NO or NO<sub>x</sub> occurs between ozone and nitric oxide (NO) yielding nitrogen dioxide (NO<sub>2</sub>\*) and oxygen. This reaction produces light which has an intensity proportional to the mass flow rate of NO into the reaction chamber. The light is measured with a photodiode and associated amplification electronics. In the NO<sub>x</sub> mode, NO plus NO<sub>2</sub> is determined as above, however, the sample is first routed through the internal NO<sub>2</sub> to NO converter which converts the NO<sub>2</sub> in the sample to NO. The resultant reaction is then directly proportional to the total NO<sub>x</sub> concentration. Local operation is simplified using the 20-button alphanumeric keypad with data presented on a backlit LCD display. All local operations may be performed remotely via RS-232 and/or TCP/IP.

## METHOD OF OPERATION - O<sub>2</sub>

The California Analytical oxygen analyzer section utilizes the paramagnetic method to determine the percent level of oxygen contained in the sample gas. The oxygen level is displayed on the LCD panel in engineering units.

# 650 NOxygen

## SPECIFICATIONS

**Detectors:** Chemiluminescence (CLD) Photodiode / Paramagnetic (O<sub>2</sub>)

**NO/NO<sub>x</sub> Ranges:** 0-1 to 3,000 ppm NO or NO<sub>x</sub> (Four user definable ranges) (Higher ranges available)

**Oxygen Range:** 0 - 25%

**Response Time (IR):** T90 <2 Seconds to 60 Seconds Adjustable (Depending on configuration)

**Resolution Detection Limit:** 30 ppb NO/NO<sub>x</sub> (Displays 5 Significant Digits)

**Repeatability:** Better than 0.5% of Full Scale

**Linearity:** Better than 1% of Full Scale

**Noise:** Less than 0.5% of Full Scale

**Zero & Span Drift:** Less than 1% of Full Scale per 24 Hours

**Zero & Span Adjustment:** Via front panel, TCP/IP or RS-232

**CO<sub>2</sub> Effect:** Less than 0.5% with 10% CO<sub>2</sub>

**Converter:** Carbon Material @ 205°C; 98 to 100% Efficiency

**Ozonizer:** Ultraviolet Lamp

**Air or O<sub>2</sub> Requirements:** Dry Air less than 1 ppm NO<sub>x</sub> at 250 cc/Min. @ 25 PSIG

**NO/NO<sub>x</sub> Control:** Manual/Remote/Auto Cycle (Remote NO<sub>x</sub> mode by dry contact closure)

**Outputs available:** TCP/IP, RS232, Four Scalable Analog 0-10V / 4-20mA (Allows Offset & Expandable Range DC Analog Outputs)

**Discrete Alarms:** General Fault/TTL Logic (Ground True)

Calibration Failure/ TTL Logic (Ground True)

High Concentration (2 each)/TTL Logic (Ground True)

**Digital Diagnostics:** Converter Temperature, Cell Temperature, Photodiode Temperature, Air Pressure, Flow Rate & EPC Control Voltage, Sample Pressure, Flow Rate & EPC Control Voltage

**Keypad Displays:** Factory Settings, TCP/IP address, Passwords(4), Scalable Analog Output Voltages, Full Scale Range Select, Auto Cal Times

**Special Features:** Calculated NO<sub>2</sub> values from empirically derived NO<sub>x</sub> converter efficiencies, Data Streaming, Auto Ranging, Auto Calibration (Adjustable through internal clock)

**Display:** Back lit LCD

**Sample Temperature:** 50°C, Non-condensing

**Chamber Temperature:** 85°C

**Ambient Temperature:** 5 to 45°C

**Ambient Humidity:** Less than 90% RH(Non-condensing)

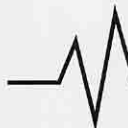
**Fittings:** 1/4 inch Tube

**Power Requirements:** 115/230 (±10%) VAC; 50/60Hz, 560 Watts

**Dimensions:** 5-1/4"H x 19"W x 23"D

**Weight:** 48 lbs.

Specifications subject to change without notice.



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