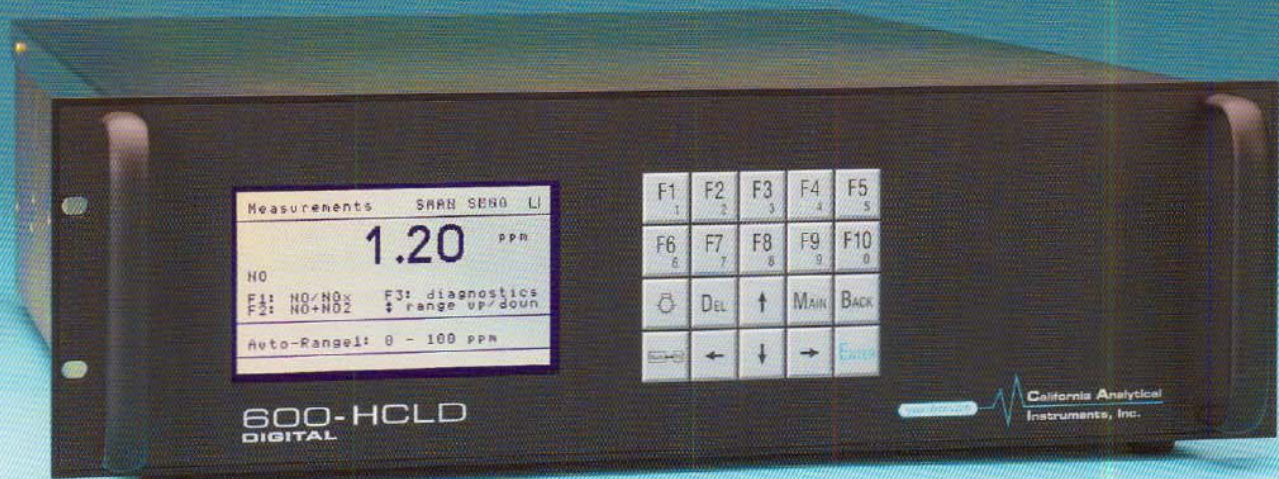


# 600 HCLD

D I G I T A L



## Heated Chemiluminescent NO/NO<sub>x</sub> 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 Valves
- 19" Rack Mount Slides
- Internal Heated Sample Pump
- Rear Mounted Dryer for Dry Measurement
- High Temperature Oven @100°C
- 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 Programmable Ranges from 0-1 ppm to 0-3,000 ppm
- Fast Response Time
- Auto Ranging
- Auto Calibration
- Output Options: Analog (User Scalable), Digital (RS232) including AK Protocol & TCP/IP
- Displays & Outputs: NO/NO<sub>x</sub>/NO<sub>2</sub> with Adjustable Time & Hold, Diagnostics, Alarms & Preventative Maintenance
- Remote Monitoring and Control
- Electronic Sample & Ozone Flow Control
- Heated Oven for High Moisture Measurements



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# Heated Chemiluminescent NO/NO<sub>x</sub> Analyzer

## DESCRIPTION

The California Analytical Instruments Model 600 HCLD NO/NO<sub>x</sub> digital analyzer is designed around a state-of-the-art 16 bit microprocessor. The 16 bit microprocessor control board consists of the MSR-Card 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 calibration may be activated local or remote and includes auto cal via preset times. The analyzer may also display NO, NO<sub>x</sub> and NO<sub>2</sub> via selectable time and hold commands.

## METHOD OF OPERATION

The California Analytical Instruments Model 600 HCLD Analyzer utilizes the principle of chemiluminescence for analyzing the NO or NO<sub>x</sub> concentration within a gaseous sample. In the NO mode, the method is based upon the chemiluminescent reaction 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<sub>2</sub> into the reaction chamber. The light is measured by means of 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 concentration of NO<sub>x</sub>. Sample enters the analyzer directly into a heated chamber and is maintained at an elevated temperature. The moisture will remain in the vapor state, thus ensuring no loss of the NO<sub>2</sub>. Local operation is simplified using the 20 button alphanumeric keypad with data presented on a back lit LCD display. All local operations may be performed remote via RS-232 and/or TCP/IP.

# 600 HCLD

## SPECIFICATIONS

**DETECTOR:** Chemiluminescence (CLD) Photodiode (thermally stabilized with Peltier Cooler)

**NO/NO<sub>x</sub> RANGES:** 0-1\* to 3,000 ppm NO or NO<sub>x</sub> (Four user programmable ranges) (Higher ranges available upon request)

**RESPONSE TIME:** T90 < 2 Seconds to 60 Seconds Adjustable

**RESOLUTION:** 10 ppb NO/NO<sub>x</sub> (Displays 5 significant digits)

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

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

**NOISE\*:** Less than 1% of Full Scale (\*1.5% @ 0-1 ppm 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

**NH<sub>3</sub>, HCN & SO<sub>2</sub> EFFECT:** Not detectable with 100 ppm

**CO<sub>2</sub> EFFECT:** Less than 1% with 10% CO<sub>2</sub>

**H<sub>2</sub>O EFFECT:** Less than 1% with 1% H<sub>2</sub>O

**FLOW CONTROL:** Electronic Proportional Pressure Controller

**SAMPLE FLOW RATE:** 1.5 to 3.0 LPM (Consult factory for other flow rates)

**CONVERTER:** Vitreous Carbon Material @ 205°C > 98% efficiency

**OZONATOR:** Ultraviolet Lamp

**AIR OR O<sub>2</sub> REQUIREMENTS:** Less than 0.01 ppm

NO<sub>x</sub> at 350 cc/Min. @ 25 psig (Dew Point < -35°C)

**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 0-10 V/4-20 mA

**DISCRETE ALARMS:** (Local & Remote Adjustable)

General Fault/ TTL Logic (Ground True)

Calibration Failure/ TTL Logic (Ground True)

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

**DIGITAL DIAGNOSTICS:** Control Voltages, Temperatures, Pressures, Flow Parameters

**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> derived from NO<sub>x</sub> converter efficiency, Auto Ranging, Auto Calibration (adjustable through internal clock) Less than 3 cc Gold Plated Reaction Chamber

**DISPLAY:** 3" x 5" Back lit LCD

**SAMPLE TEMPERATURE:** Up to 75°C Noncondensing-Standard (Higher temperature available upon request)

**AMBIENT TEMPERATURE:** 5 to 40°C

**AMBIENT HUMIDITY:** Less than 90% RH Noncondensing

**WARM-UP TIME:** 1 Hour (Typical)

**FITTINGS:** 1/4 Inch Tube

**POWER REQUIREMENTS:** 115/230 (±10%) VAC; 50/60 Hz; 200 Watts (350 watts with pump)

**DIMENSIONS:** 5 ¼ H x 19 W x 23 D (Inches)

**WEIGHT:** 55 Pounds

*Specifications are subject to change without notice.*

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