

Series IR7000

Non-dispersive Infrared Gas Analyzers



Teledyne's Series IR7000 features excellent linearity and stability. Using advanced microprocessor technology, these instruments make monitoring a process gas stream quick and accurate.

Optical Bench

The optical bench consists of the IR source, sample cell, and patented detector. The source control circuit provides a current square wave to the infrared source. No mechanical chopper / motor is used, thereby avoiding moving parts. The closed sample path between source and detector eliminates interfering absorption from ambient air. Infrared energy from the source passes through the sample cell where energy at specific wavelengths is absorbed by the sample.

The patented detector consists of two chambers in optical series with a sensitive flow transducer to measure the relative infrared energy absorbed. The advantage of this detector over others is that the signals are balanced to improve sensitivity and selectivity, thereby minimizing background process gas interference.

Front Panel Ease

All operations are selected through the four front panel buttons. The operator can control calibration gas concentration, automatic calibration frequency, active chart well as manual zero and span calibrations. All operator settings are protected by battery backup.

Standard Features

- User selected auto-zero, auto-span calibration
- Linearized instrument range, eliminating need for separate instruments to achieve full scale span
- Closed sample path is not exposed to ambient air eliminating the need for periodic purging
- 4 selectable chart recorder ranges
- Modular design for easy maintenance
- Configured to accommodate an optional oxygen channel
- Low power requirements. No heat build up and therefore no premature failure of components.
- No moving parts associated with the optical bench.
- No "tuning" required with optics unlike competitive NDIR methods
- The signal from the detector is digitized making signal processing reliable and flexible
- Thorough self-diagnostics software package
- Easy set up and interface
- CE marked

Applications

- Chemical and petrochemical processes
- Combustion and flue gas processes
- Pulp and paper
- Vapor recovery systems
- Air separation
- Metals, ceramics and heat treating atmospheres
- Land fill gas power stations
- Carbon dioxide scrubber efficiency
- CO / CO₂ / C₂H₄ monitoring in oxyhydrochlorination process in EDC manufacturing
- Cement plant applications (CO, CO₂, O₂)
- CO / CO₂ measurement in medical gas, medical air

Model Designations

IR7000 - Panel / 19" rack mount, CE mark approved

IR7010 - Split architecture

(analysis unit - explosion proof)

IR7000P - Portable

IR7000T - Trace gas

IR7000D - Dual bench

IR7000B - Wall mount

IR7000DB - Wall mount dual bench

NOTE: Hazardous area configurations, X/Z purge for Div I & II, Zone 1, 2 CENELEC certified

Built for Reliability and Performance

Series IR7000 Non-dispersive Infrared Gas Analyzers

Specifications

Measuring method:	NDIR single beam
Gas measured:	User specified
Measuring range:	Per application
Response time:	3 seconds (application and flow dependent)
Display:	Vacuum fluorescent
Alarms:	High and low limit, user selectable, 1 A, 60 VDC, 30 VAC
Analog output:	Selectable 1,5, or 10 volts; optional isolated 4-20 mA current loop
Max. load impedance:	4-20 mA isolated output 500 ohms
Analog ranges:	4, each with adjustable full scale; selectable auto range
Cal valve actuation:	Isolated triac control. Rated maximum load: 0.6 amp at instrument voltage
Power source:	120 / 240 VAC, 50 / 60Hz (Portable model includes rechargeable batteries - minimum 6 hours continuous operation)
Max. power consumption:	110 VAC supply - 2 amps 230 VAC supply - 1 amp
Power consumption:	50 watts / channel
Materials in sample flow path:	Glass, gold, buna-n, lexan, epoxy, sapphire, 304 stainless steel
Sample flow:	0.2 to 2.0 liters / minute (Trace gas — 5.0 - 10.0 liters/minute) (Portable — internal sample pump)
Sample temp:	-10° to +50°C
Sample condition:	Non-condensing, particulate free
Warm-up time:	Usable in 60 minutes, optimum operation in 3 hours
Ambient conditions:	Operating: -10° to 50°C (non- condensing) Storage: -10° to 80°C (0° to 50°C for oxygen sensor)
Dimensions:	
Rack mounted and dual bench:	22.5" L x 17.1" W x 5.25" H 571mm L x 447mm W x 133mm H (suitable for 19" rack)
Portable:	20.0" L x 8.5" W x 5.25" H 508mm L x 216mm W x 133mm H
Wall mount:	24.0" L x 20.0" W x 6.0" D 609mm L x 508mm W x 152mm D

Weight:

Rack mounted:	38 lbs (17.2kg)
Portable:	19 lbs (8.6kg)
Wall mount:	43 lbs (19.5kg)

Standard Ranges - IR7000 / IR7000P

Gas*	Typical Low Range*	Typical Hi Range*
CO	0-100 to 0-1000 ppm	0-1% to 0-100%
CO ₂	0-30 to 0-300 ppm	0-1% to 0-100%
SO ₂	0-50 to 0-500 ppm	0-1% to 0-100%
CH ₄	0-300 to 0-3000 ppm	0-1% to 0-100%
Propane	0-100 to 0-1000 ppm	0-1% to 0-100%
NO	0-100 to 0-1000 ppm	0-1% to 0-100%

Resolution:	0.1% of full scale
Repeatability:	± 0.1% of full scale
Noise:	± 0.1% of full scale
Drift:	± 0.3% of full scale per week determined on maximum range only and is absolute for all other ranges

Linearity: ± 1% of full scale

High Sensitivity Ranges - IR7000T

Gas*	Range	Range
CO	0-5 to 0-50 ppm	0-20 to 0-200 ppm
CO ₂	0-2 to 0-20 ppm	0-20 to 0-200 ppm

For lower ranges of other gases, contact factory.

Resolution:	0.01 ppm
Repeatability:	± 0.25% of full scale
Noise:	± 0.1% of full scale
Drift:	± 1% of full scale per week determined on max range only; is absolute for all other ranges; auto zero per day recommended
Linearity:	± 2% of full scale

* Four outputs are available from minimum to maximum: Example CO offers 0-5, 0-10, 0-25, 0-50 ppm, all represented as 0-1 V output
* At maximum range and constant ambient conditions. Other gases available by request

Options

- 0-25% Electrochemical oxygen channel
- RS-232 interface

TELEDYNE ANALYTICAL INSTRUMENTS

A Teledyne Technologies Company

16830 Chestnut Street
City of Industry, California 91748, USA

TEL: 626-934-1500 FAX: 626-934-1651

TOLL FREE: 888-789-8168

Visit Our Web Site at:
www.teledyne-ai.com

Warranty: Instrument is warranted for 1 year against defects in material or workmanship

NOTE: Specifications and features will vary with application. The above are established and validated during design, but are not to be construed as test criteria for every product. All specifications and features are subject to change without notice.

CERTIFIED
ISO 9001:2000



Accredited by the Council
for Accreditation (RvA)



National Accreditation
Program