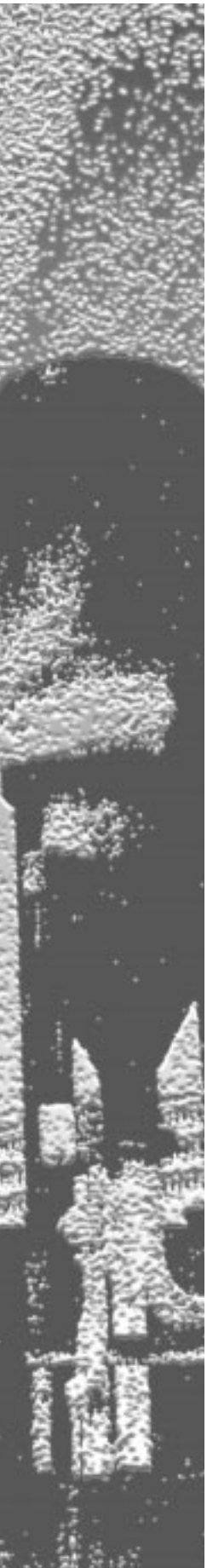
Teledyne Analytical Instruments



2000A

Thermal Conductivity Analyzer

Thermal conductivity is a basic property of gases that relates their ability to conduct heat. Teledyne Analytical Instrument's *Model 2000A Thermal Conductivity Analyzer* is a versatile microprocessor-based instrument for measuring binary mixtures of gases. Model 2000A responds to the differences in thermal conductivity between various gases by continuously comparing the sample gas with a reference gas of known thermal conductivity.

The 2000 can:

- measure the concentration of one gas in a mixture of two gases
- measure the concentration of a gas in a specific mixture of background gases
- measure the purity of a sample stream containing a single impurity or a mixture of impurities

Thermal conductivity is inherently non-linear in certain applications. To compensate for this phenomena, Teledyne has programmed the 2000A to automatically linearize the signal over the ranges and gases desired for analysis. In addition, the unit is programmed to provide 110 customer selectable gas combinations for easy use.

ACCURACY AND FLEXIBILITY

These units utilize one of Teledyne's standard TC sensors to assure a high degree of accuracy. Teledyne has even provided a system failure alarm contact to detect power, zero / span calibration and sensor failure, taking the worry and work out of the end-user's hands. Three field programmable ranges are standard on Model 2000A plus a calibration range. Optional ranges for use with different background gases are available.

Although Model 2000A is primarily used to analyze binary mixtures, this instrument is also well suited to monitor one component in a more complex mixture when the other gases have the same ratio to each other, or have similar values of thermal conductivity.

2000A ADVANTAGES

- *Three user-programmable ranges with 110 combinations possible*
- *Auto linearization*
- *Auto Ranging capabilities*
- *Digital interface allows monitoring from a remote station*
- *Comprehensive self-testing function*

STANDARD FEATURES

- Customer selectable gas constituents; 11 gases, 110 combinations
- 6 gas concentration alarm set points
- Automatic linearization
- Auto Ranging automatically selects the proper preset range for a given measurement. Manual override allows the user to lock onto a specific range of interest.
- A 2-line alphanumeric display screen (VFD), driven by microprocessor electronics that continuously prompt and inform the operator
- Proven sensor cell design
- Auto and remote zero cal capabilities
- ndependent zero and span correction
- Two programmable alarm relays and a system failure alarm
- Two way RS-232 serial digital port for use with a computer or other digital communication device
- Four analog outputs: two for measurement (0-1VDC and isolated 4-20mADC) and two for range identification
- Extensive self-diagnostic testing at start-up and on demand with continuous power supply monitoring

MODEL 2000A THERMAL CONDUCTIVITY ANALYZER

APPLICATIONS

Air Liquefaction Plants - Monitor purity of argon, oxygen, hydrogen, nitrogen, helium, carbon dioxide, and neon

Ammonia Plants - Determine hydrogen in nitrogen, ammonia, or argon; ammonia in hydrogen or air

Power Generating Plants - Monitors purity of H_2 (used to cool turbine) in air; same unit can also be used for CO_2 and air analysis during maintenance cycles

Chemical Plants - Control contamination; hydrogen purity; monitor purging operations

Petroleum Refineries - Measure hydrogen in gaseous hydrocarbons; recycle gas streams

Gas Proportioning Control - Determine proportion of nitrogen to hydrogen, nitrogen to argon, and other mixtures

Heat Treating - Measure hydrogen in nitrogen and other contaminants in blanketing gases

Refrigeration and Storage - Detect ammonia, freon or carbon dioxide in air

SPECIFICATIONS

Ranges: Three ranges plus a cal range, field selectable within limits (application dependent) and Auto Ranging

Display: 2-line by 20 alphanumeric VFD accompanied by 5 digit LED display

Accuracy: +/-1% of full scale for most binary mixtures at constant temperature

+/-5% of full scale over operating temperature range once temperature equilibrium has been reached

Response Time: 90% in less than 50 seconds

System Operating Temperature: 32˚F to 122˚F (0˚-50˚C)

Sensor Type: Standard TCD (4-filament detector)

Signal Output: Two 0-1 VDC (concentration and range ID)
Two 4-20 mADC isolated (concentration and range ID)

Alarm: Two fully programmable concentration alarm set points and corresponding Form C, 3 amp contacts.
One system failure alarm contact to detect power, calibration, zero / span and sensor failure.

System Power Requirements: 100-240 vAC, 50-60Hz (specify)

Dimensions: 7.5" H x 10.8" W x 13.7" D

Cell Material: Nickel plated brass block with nickel alloy filaments and stainless steel piping and end plates

O/P Interface: Full duplex RS-232, implement a subset of Tracs Command

Mounting:

Standard: General purpose flush panel mounting
Optional: General purpose relay rack mounted to contain either one or two in a 19" relay rack mountable plate
** Other configurations, including a totally explosion-proof version, are available.*

OPTIONS

- C Separate ports for zero and span gases and built-in control valves electronically controlled to provide synchronization with the analyzer's operations

- G Stainless steel cell block and nickel filaments

- H Stainless steel cell block with **gold** filaments

- K 19" Rack Mount available with either one or two analyzer Control Units installed and ready to mount in a standard rack

- L Gas selector panel consisting of sample / ref flow meters and control valves for metering input of sample / calibrations support gases

- R Sealed reference cell

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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

Accredited by the Council for Accreditation (RvA)

INTERTEK CERTIFICATION

ANSI-RAB QMS ACCREDITED

National Accreditation Program