Your optimal choice for Thermal Conductivity Analyzers

- Most complete product offering
- Superior performance
- Global approvals

2000 SERIES
Thermal Conductivity Analyzers
AIR SEPARATION
- Bulk gas purity monitoring
- Gas mixture blending
- Breathable diving gases
- Calibration gas blends
- Specialty gas cylinders for SF6, laser gas mixtures, etc.

PETROCHEMICAL AND REFINERY
- H2 purity monitoring in recycle gas streams
- Redesulfurization process
- H2 reformer process
- Tail gas treatment units
- HYCO Syngas monitoring
- UOP (CCR) N2 header, lift gas H2 / HC safety analysis

TURBINE GENERATORS
- Hydrogen purity analysis of purge cooling gas in the turbine generator housing to detect possible seal leaks

NUCLEAR POWER GENERATION
- Hydrogen detection in the Containment Building in the event of a loss of coolant accident (LOCA) or steam line break (SLB)

STEEL / HEAT TREATING
- Annealing furnace blanket gas monitoring
- Blast furnace monitoring
- Basic oxygen monitoring for process control purposes

The Series 2000 represents a complete line of Thermal Conductivity Detector (TCD) based analyzers which can be applied in a wide range of applications and industries. By using field proven filament-based and semiconductor based TC detectors, Teledyne is able to continuously monitor hydrogen and a variety of other gases of interest in either binary or multi-component sample gas streams.

SERIES 2000 PLATFORM
To contend with the numerous and varied analyzer requirements among industrial users, Teledyne has developed a feature-rich, user-friendly platform.

The Series 2000 comes with a standard software program incorporating such flexible features as (3) user-programmable ranges, automatic calibration, and customer selectable gas constituents.

For users who require a simple, low cost TCD device, Teledyne offers the Model 2000XTC 4-20 mA transmitter. The 2000XTC is an intrinsically safe monitor supplied with a galvanic isolator and power supply.

- Customer selectable gas constituents; 11 gases, 110 combinations
- Automatic linearization
- Auto-ranging with manual override to lock into specific range
- Alphanumeric display which prompts and informs operator
- Auto and remote initiated calibration capabilities
- Bi-directional RS-232 serial digital communication port
- Extensive self-diagnostic capabilities
- 2 x programmable concentration alarm and system failure alarm relays

Built for Reliability and Performance
**Sensor Operating Principle**

The thermal conductivity sensor measures the concentration of a specific gas between a hot surface resistor and an ambient temperature reference resistor using the thermal conductivity coefficient of the gas itself.

**Sensor Description**

The sensor structure consists of an integrated heater located on a thin electrical and thermal insulating membrane. Two thin film resistors are used for heating and measuring the temperature of the membrane. Two resistors are integrated on the silicon beside the membrane for the compensation of the ambient temperature changes.

Gases which have a lower density than air (CH4) cause a decrease on the surface membrane temperature. On the other hand, gases with densities heavier than air (CO2) increase the temperature of the measuring resistor.

**Features**

- Stable long-term operation
- Low power consumption
- Small dimensions
- Sealed reference
- Physical method for gas concentration measurement
## SPECIFICATIONS – 2000 Series

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<tr>
<td>Area classification:</td>
<td>General purpose, optional FM approved for Class I, Div 2. No Purge version available.</td>
<td>Analysis unit for explosion proof areas Class I, Div 1, Groups B, C &amp; D; control unit for non-hazardous areas</td>
<td>Fully explosion proof, FM approved for Class I, Div 1, Groups B, C &amp; D; CENELEC versions available</td>
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<td>Ranges:</td>
<td>Three ranges plus a cal range, field selectable within limits (application dependent) and auto ranging</td>
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<td>Display:</td>
<td>Backlit 2 line alphanumeric LCD; 5 digit LED display</td>
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| 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 10 seconds with a flow rate of 100 sccm |
| System operating temperature: | 32 to 122° F (0 to 50° C) |
| Sensor type:       | Standard TC cell (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 contact to detect power, calibration, zero / span and sensor failure. |
| Cell material:     | Nickel plated brass block with nickel alloy filaments and stainless steel piping and end plates |
| O/P Interface:     | Full duplex RS-232 |
| Max load impedance: | 1000 ohms |
| Reference gas:     | Sensor selection dependent. Semicon-based = sealed. Filament-based = flowing or sealed (app. dependent) |
| Tube connections:  | 1/4” compression fittings, 6 mm adapters optional |
| Wetted parts:      | Stainless steel, nickel, and gold (gold filament option); NACE compliant parts available as option |
| Sample gas flow rate: | Recommended 0.1 to 0.4 SCFH |
| Power requirements: | 110 VAC, 50-60 Hz (220 VAC optional) |
| Zero / Span drift: | ±1 % of FS |
| Pressure:          | 5-50 psig |

### OPTIONS
- **C** Integrially mounted auto-calibration valving
- **H** Stainless steel cell block with gold filaments (for gas streams with H2S)
- **K** 19” rack mount for 2000A
- **L** Gas selector panel for sample and cal gas selection and flow control
- **N** 220 VAC operation
- **R** Sealed reference (for filament-based TCD)

### 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.