AMETEK®
PROCESS INSTRUMENTS

MEASURES: H_2, CO, CO_2, CH_4, NMHC

PRODUCT DATA SHEET

ta3000 Gas Analyzers

Trace level gas monitoring for bulk gas, environmental and research laboratory applications

The ta3000 is a family of instruments designed to monitor trace levels of specific impurities in bulk gases, environmental applications and research applications. All ta3000 instruments include a dedicated sample processing system, a single high sensitivity detector, and on-board analysis electronics.

There are two models of the ta3000:

ta3000R – Reduction gas detector

- Detects hydrogen (H_2), carbon monoxide (CO), and unsaturated hydrocarbons

ta3000F – Flame ionization detector

- Detects carbon dioxide (CO_2), methane (CH_4), and non-methane hydrocarbons

Advanced detector technology
The ta3000 gas analyzer is an isothermal gas chromatograph configured with either a reduction gas detector or flame ionization detector. The chromatographic hardware of the ta3000 is available in several configurations, each of which enables the instrument to perform a highly specialized task.

Unique system combination
The primary strengths of the ta3000 detectors are extreme sensitivity from parts-per-million (ppm) down to low parts-per-billion (ppb) levels and negligible matrix effects from permanent gases. This sensitivity, combined with the separating power of gas chromatography, makes for a truly unique system.

Effective monitoring technology
The ta3000 is designed for continuous operation. Configured for a traditional 19-inch industrial rack installation, its sturdy construction also makes it suitable for transport to the field for surveys and spot tests. When interfaced with the Sigma4000 multipoint stream selector, the ta3000 can monitor several sampling points. The on-board microprocessor controls the stream selector, stored calibration parameters and processes data in a variety of formats. Trace viewer software formats data, reports, alarm status, and stores chromatograms on a local PC. The MGB1000 micro gas blender is a complementary accessory for low concentrations and analyzer performance validation.

KEY BENEFITS

- High sensitivity
- Broad detection range
- Cost-efficient maintenance and operation
- Best value and performance
- Expandable with multipoint stream selector

APPLICATIONS

- Reduction gas detector
- Trace level detection of CO in the atmosphere
- Measurement of dissolved H_2 in water
- Bulk gas certification
- Monitoring of ethylene in ambient air
- Measuring safe levels of ethylene oxide in air
- Certification of gas purifier efficiency
- Flame ionization detector
- Trace CH_4, CO_2 and non-methane hydrocarbons in inert gas streams
- Measurement of hydrocarbons in air
- Hydrocarbons in water headspace
- Monitoring hydrocarbon impurities in oxygen or clean dry air

KEY MARKETS

- Air separation
- Semiconductor
- Environmental
- LCD/LED display manufacturing
- Polyethylene/polypropylene

PERFORMANCE SPECIFICATIONS

ta3000R Specifications	Applications	Lower detection limit	Analysis time
	Dissolved H_2 in water headspace	50 ppb H_2	2 mins.
	CO in air	10 ppb CO	2.5 mins.
	Ethylene in air	10 ppb C_2H_4	5 mins.
	Ethylene oxide in air	30 ppb EtO	10 mins.
	CO in ethylene/propylene/propane	10 ppb CO	7.2 mins.
	CO + H_2 in methane	10 ppb CO; 25 ppb H_2	2 mins.
	H_2 and CO in bulk gas: oxygen, inerts and air	10 ppb CO; 25 ppb H_2*	6 mins.
ta3000F Specifications	**Applications**	**Lower detection limit**	**Analysis time**
	Bulk gas: Inerts	10 ppb CO_2; 10 ppb CH_4; 25 ppb NMHC	10 mins.
	Bulk gas: Oxygen, inerts, or air	10 ppb CO_2; 10 ppb CH_4; 25 ppb NMHC	10 mins.
	Bulk gas: Hydrogen	10 ppb CO_2; 10 ppb CH_4; 25 ppb NMHC	10 mins.
	Water headspace	CH_4, C_2H_2, C_2H_4, C_2H_6, CO_2: Range 0.25 to 200 ppm	4 mins.
	Air sampling	CH_4, NMHC: Range 0.25 to 200 ppm	5 mins.
	Hydrogen (CO only)	10 ppb CO	10 mins.
Performance			
Precision	±1 x LDL or ±10% of reading, whichever is greater		
Accuracy	±1 x LDL or ±10% of reading, whichever is greater		
Range	0 to 3 ppmv (ta3000R); 0 to 5 ppmv (ta3000F) (higher is available as an option)		
Response time	2 to 10 minutes to 99% response (varies with application). Response time is independent of sample concentration		
Ambient operating temperature	16 to 32°C (50 to 90°F)		
Sample compatibility	Specific models available for various applications		
Resolution/display	0.1 ppb		
Resolution/communication parts	0.01 ppb		
Carrier gas inlet pressure range	70 to 90 psig (4.8 to 6.2 bar)		
Carrier gas inlet pressure stability	±2%, regulator required		
Carrier gas return pressure	Atmospheric vent is optimal, ±0.5 psig (±0.035 bar) max.		
Carrier gas flow consumption	50 sccm minimum, bypass at 50 sccm		
Temperature	16 to 38°C (60 to 100°F), optimum when maintained ±2°C (±3.6°F)		
Carrier gas maximum impurity levels	<1 ppb, all impurities		
Carrier gas	N_2 (typical)		
Carrier gas purity	99.99999% (external purifier may be required)		
FID air purity	<1 ppm hydrocarbons, dewpoint <-40°C (-40°F)		
FID H_2 fuel purity	Hydrocarbons, CO, CO_2 <1 ppm		
Sample inlet	1/16-inch VICI compression		
Carrier	1/16-inch VICI compression		
FID H_2	1/16-inch VICI compression		
FID air	1/16-inch VICI compression		
Sample vent	1/16-inch VICI compression		
Aux	1/16-inch VICI compression		
FID shut-off	1/8-inch VICI compression		
Sample gas flow rate	20-100 sccm minimum		
Sample gas inlet pressure stability	±2%, UHP regulator required		
Sample gas vent pressure	Atmospheric pressure vent is optimal, ±0.5 psig (±0.035 bar) max.		
Calibration gas inlet fitting	Sample gas inlet (1/16-inch VICI compression fitting)		
Calibration gas cylinder concentration	Depends on application		
Calibration gas blender recommendation	AMETEK's Trace Analytical MGB1000 micro gas blender		
Dimensions (W x H x D)	426.7 x 177.8 x 673 mm (16.8 x 7 x 26.5 in.)		
Weight	15.9 kg (35 lb.)		
Power	100-120 VAC, 50/60 Hz; 200-240 VAC, 50/60 Hz		

*** A factory certified LDL of 25 ppb H2 in helium sample gas can be provided using a helium carrier gas.**

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AMETEK® PROCESS INSTRUMENTS

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