AMETEK®
PROCESS INSTRUMENTS

MEASURES: H_2, CO, CO_2, CH_4, NHMC

PRODUCT DATA SHEET

ta7000 UHP Gas Purity Monitors

Designed for today's ultra-high-purity (UHP) applications

The ta7000 platform includes a dedicated sample processing system, a single high-sensitivity detector and on-board data analysis electronics. Two distinct models are available and each is equipped to detect a wide range of common gas impurities:

ta7000R - Hydrogen (H_2) and carbon monoxide (CO) reduction gas detector (RGD):
- Detection limit below 500 parts per trillion (ppt)

ta7000F - Carbon dioxide (CO_2), methane (CH_4) and non-methane hydrocarbons flame ionization detector (FID):
- Detection limit below 500 ppt

Over time, gas distribution systems are susceptible to upsets due to expiration of flow components, component outgassing, and accidental purifier overload. It is crucial to detect contamination before it spreads through the vast network of gas piping runs. Continuous monitoring of UHP gas identifies an upset before it becomes a crisis. ta7000 monitors will selectively and automatically measure these impurities in UHP bulk gases.

Quality control tool

A ta7000 system provides assurance that your house gases comply with specifications where it matters most – at the source of the UHP gas distribution system. By monitoring this point of reference, you can continuously validate and defend the quality of purified gas at this critical juncture.

Advanced detection technology

The EDL integration mode is one of the many enhancements that give the ta7000 analyzers their unparalleled sensitivity during continuous operation. EDL employs an advanced algorithm to isolate measurement signals while filtering out random electronic noise. This results in an accurate and highly precise profile of the quality of your bulk gas.



KEY BENEFITS

- High sensitivity
- Broad detection range
- Cost-efficient maintenance and operation
- Best value and performance
- On-board gas regulation
- Carrier gas purifier
- Rotorless valves
- Proven chromatograph
- Internal calibration system
- Preconfigured for use on specific types of gas

APPLICATIONS

- Purifier outlet monitoring
- Air separation
- Gas purity monitoring

KEY MARKETS

- Semiconductor manufacturing
- LCD/OLED display manufacturing

PERFORMANCE SPECIFICATIONS

ta7000R Specifications:

Sample gas	Model	H_2 parts per billion (ppb)	CO ppb
Nitrogen (N_2)	ta7000R-N_2	< 0.5	< 0.5
Argon (Ar)	ta7000R-Ar	< 0.5	< 0.5
Helium (He)	ta7000-He	< 0.5	< 0.5
Oxygen (O_2)	ta7000-O_2	< 0.5	< 0.5
Carbon dioxide (CO_2)	ta7000-CO_2	< 0.5	< 0.5
Performance specifications			
Accuracy, EDL mode		Greater of ±0.25 ppb H_2; ±0.25 ppb CO; ±10% of reading	
Range		0 to 199.9 ppb	
Response time		Five minutes to 99% response; 30 minutes to 75% response in EDL mode Response time is independent of sample concentration	
Ambient operating temperature		16 to 32°C (60 to 90°F)	
Sample compatibility		Specific models available for N_2, Ar, He, or O_2 analysis	
Resolution/display		0.1 ppb	
Resolution/communication ports		0.01 ppb	
Sample gas supplies			
Inlet pressure range		70 to 90 psig (4.8 to 6.2 bar)	
Inlet pressure stability		±2%, regulator required	
Return pressure		Atmospheric vent is optimal; ±0.5 psig max	
Flow rate		300 sccm minimum; sample bypass at 50 sccm	
Temperature		16 to 38°C (60 to 100°F), optimum when temperature maintained ±2°C	
Maximum impurity levels		200 ppb moisture, CO_2, hydrocarbons	
Chassis			
Dimensions (W x H x D)		430 x 180 x 670 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	
Gas ports			
Carrier/sample inlet		1/4-inch face seal fitting	
Actuator air		1/8-inch VICI compression	
Sample outlet		1/16-inch VICI compression	
Aux (calibration)		1/16-inch VICI compression	
Outputs			
Display		LCD graphics, backlit, 100mm x 150mm	
Printer port		Concentration, chromatogram, and diagnostic reports	
Serial PLC port		Concentration data and alarms via RS-232	
4-20mA (optional)		Concentration signals and status relay contacts	

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AMETEK® PROCESS INSTRUMENTS

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PERFORMANCE SPECIFICATIONS

ta7000F Specifications:

Sample gas	Model	CH_4 ppb	CO_2 ppb	NMHC ppb
N_2	ta7000F-N_2	< 0.5	< 1.0	< 2.0
Ar	ta7000F-Ar	< 0.5	< 1.0	< 2.0
He	ta7000F-He	< 0.5	< 1.0	< 2.0
O_2	ta7000F-O_2	< 1.0	< 2.0	< 2.0
Hydrogen (H_2)	ta7000F-H_2	< 1.0	< 1.0	< 2.0
CO_2	ta7000F-CO_2	< 1.0		< 2.0
Performance				
Accuracy, EDL mode		Greater of ±0.25 ppb CH; ±0.5 ppb CO_2; ±1.0 ppb NMHC; ±10% of reading; ±1.0 ppb CO		
Range		0 to 199.9 ppb		
Response time		10 minutes to 99% response. 60 minutes to 75% response in EDL mode Response time is independent of sample concentration		
Ambient operating temperature		16 to 32°C (60 to 90°F)		
Sample compatibility		Specific models available for N_2, Ar, He, O_2, or H_2 analysis		
Resolution/display		0.1 ppb		
Resolution/communication ports		0.01 ppb		
Sample gas supplies				
Inlet pressure range		70 to 90 psig (4.8 to 6.1 bar)		
Inlet pressure stability		±2%, regulator required		
Return pressure		Atmospheric vent is optimal, ±0.5 psig maximum		
Flow rate		300 sccm minimum, sample at 50 sccm		
Temperature		16 to 38°C (60 to 100°F), optimum when temperature maintained +2°C		
Maximum impurity levels		200 ppb moisture, CO_2, hydrocarbons		
Chassis				
Dimensions (W x H x D)		430 x 180 x 70 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		
Gas ports				
Carrier/sample inlet		1/4-inch face seal fitting		
Sample inlet		1/4-inch face seal fitting (H_2 and O_2 models only)		
FID air		1/16-inch VICI compression		
FID H_2		1/16-inch VICI compression		
Aux (calibration)		1/16-inch VICI compression		
Sample outlet		1/16-inch VICI compression		
FID H_2 shut-off		1/8-inch VICI compression – supplied at 57 psi (3.9 bar)		
Actuator gas		1/8-inch VICI compression		
Outputs				
Display		LCD graphics, backlit, 100mm x 150mm		
Printer port		Concentration, chromatogram, and diagnostic reports		
Serial PLC port		Concentration data and alarms via RS-232		
4-20mA (optional)		Concentration signals and status relay contacts		

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