

PRODUCT OVERVIEW



PRODUCT OVERVIEW

COMPANY PROFILE

Company Introduction

- COSA+Xentaur (USA)
국내 독점 대리점
- COSA+Xentaur Hygrocontrol (Germany)
국내 독점 대리점
- MBW (Switzerland)
수분분석기 국내 대리점
- Advanced Instruments Inc. (USA)
국내 독점 대리점
- Analytical System Integration
- Control System Integration

Product Line

- Al₂O₃ Dewpoint Instruments
- Polymer Type Hygrometers
- Chilled Mirror Type Hygrometers
- TDLAS Moisture Analyzer
- Electrochemical Oxygen Analyzers
- Wobbe Index Calorimeter
- Hydrogen Analyzer
- H₂S Analyzers
- Total Sulfur Analyzers

Company History

- **1993. 05** 주식회사법에 근거 대한제어산업(주) 법인 설립 (서울 종로구 경운동 소재)
06 FA System 제어 부분 설계 제작 및 다양한 FA Project 참여 시작
- **1997. 03** Absorption Chiller Heat Controller 개발 참여
- **1998. 03** Mechanical Transfer Press Control System 개발
07 미국 Xentaur Corporation과 Al₂O₃ Dewpoint Instrument Agent 계약 및 국내 판매
- **1999. 02** 독일 Hygrocontrol사 Agent 계약 및 국내 판매
- **2001. 04** 스위스 MBW Reference Instrument 국내 판매
- **2002. 01** 수분 분석기 전문 회사로 조직 재정비 및 (주)젠코씨엔아이로 상호 변경
- **2004. 01** Control & Instrumentation System
- Compressed Air Systems
- Automobile Production
Machineries/Facilities
- **2005. 10** 서울 금천구 가산동으로 사무실 이전
- **2009. 05** COSA+Xentaur사의 아시아 교정 센터 오픈 (NIST 인증)
- **2012. 01** 미국 Advanced Instruments Inc.사 Agent 계약 및 국내 판매



XenKo

“
 창조적 혁신과
 도전으로
 미래를 향해 나아갑니다.
 ”

XenKo C&I



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HYDROGEN SULFIDE

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CALORIFIC VALUE

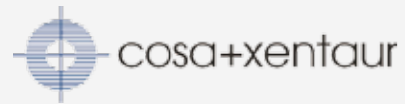
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Dewpoint Instruments

>> Aluminum Oxide Type



XTR-100



XTR-100P

XTR Sensor

- COSA+Xentaur사의 노점계 센서
- 첨단 Hyper-Thin-Film (HTF™) 산화알루미늄(Al₂O₃) 센서 기술
- High Degree of Uniformity로 뛰어난 센서간 호환성
- 온도, 전기적 노이즈 등에 대한 안정적 특성
- 높은 캐패시턴스 출력으로 인한 오차율 감소
- 현존하는 산화알루미늄(Al₂O₃) 센서 중 가장 빠른 응답속도
- 현장에서의 Field Calibration 가능

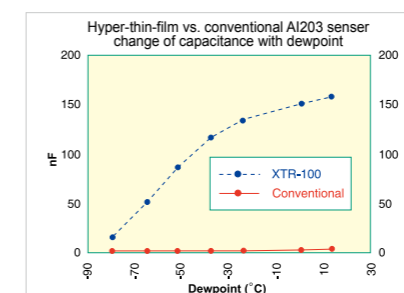
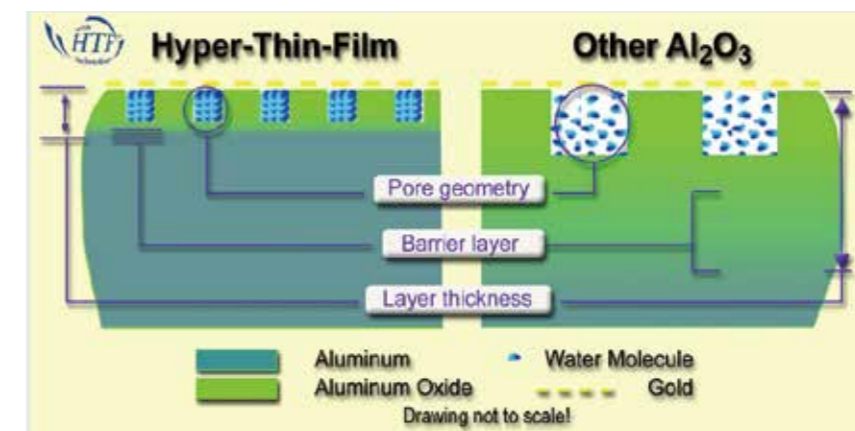
SPECIFICATIONS

Sensor Type	Al ₂ O ₃ HTF High Capacitance Sensor
Dewpoint Range	XTR-100 : -100 ~ +20°C (0.013 ~ 23,600ppm) XTR-65 : -65 ~ +20°C (5.36 ~ 23,600ppm)
Capacitance	15nF ~ 200nF
Accuracy	±3°C
Repeatability	±0.5°C
Response Time	-40°C to -60°C : 63% in 90 sec, 90% in 450 sec
Temperature Range	-10°C ~ +50°C
Storage Temperature	-40°C ~ +50°C
Sample Flow Range	Static to 100m/s
SpanCheck	Sensor Saturation at 20°C
Pressure Operating Range	Standard : 34bar (500psi) Optional : 340bar (5000psi)
Mechanical Connections	3/4" 16 Thread, 14mm x 1.25mm Thread
Electrical Connections	Female BNC Connector
Sensor Cable	Coxial Cable 750ohm Maximum Cable Length : 914 meter

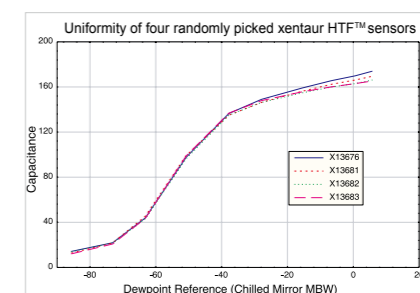
XTR Sensor

Hyper Thin Film Sensor Technology

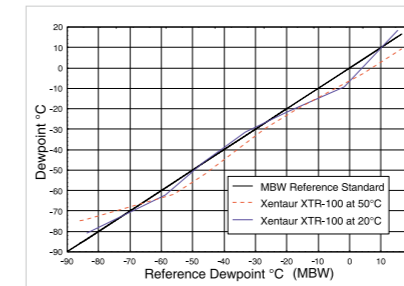
- Aluminum Oxide Layer와 Diffuse Layer를 초 박막으로 처리한 획기적 Aluminum Oxide Sensor Technology
- Aluminum Oxide와 Aluminum 사이의 Barrier Layer를 극단적으로 얇게 함으로써 큰 출력을 얻을 수 있음 (전극간 거리가 가까우므로 물 분자에 의한 Aluminum Oxide의 유전율 변화의 극대화)
- 두 층간의 금속 이동 확산(Metal Migration)을 최소화 함으로써 갱년 변화와 온도 Drift가 적음



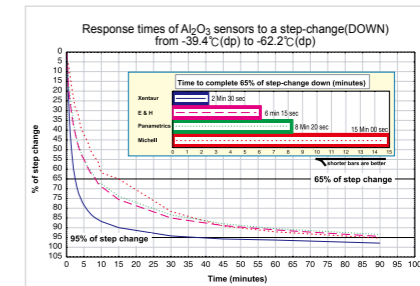
고출력, 고감도 및 직선성



센서특성 균일성



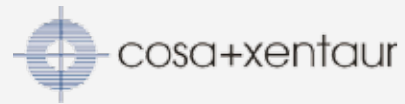
주위온도에 대한 안정적 특성



빠른 응답속도

Dewpoint Instruments

>> Aluminum Oxide Type



XDT Series

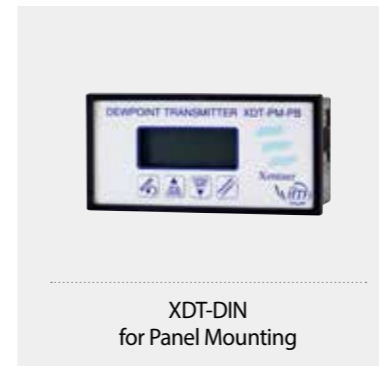
- XTR 센서와 함께 사용되는 노점 트랜스미터
- °C, °F, g/M³, Lbs/scf, ppmV 5개의 노점 단위 지원
- 2개의 측정 단위 표시 기능 (3초간 °C, 2초간 ppm으로 번갈아 가며 표시)
- 상시 Backlit LCD 화면으로 판독성이 우수함
- 2개의 독립된 Programmable Alarm Relay
- 4-20mA Analog Output Range Programmable (Ex. -80°C ~ -40°C/4-20mA)
- 900m까지 센서 Cable 연장 및 길이 자동 보상 기능
- 센서 압력 보상 기능 (압력하 혹은 대기압 설치 후 환산 가능)

SPECIFICATIONS

Application Sensor	HTF High Capacitance Sensor Model XTR-100, XTR-65
Input Resolution	0.1°C Dewpoint
Display	3.5 Digit Backlight LCD
Display Units	°C, °F, g/M ³ , Lbs/scf, ppmV
Control	4 Push Buttons
Analog Output	4-20mA or 0-24mA Selectable Optional : RS-232
Alarm Relay	2 Programmable Alarm Relay
Power Requirement	100-240VAC Free Voltage, 50/60Hz Optional : 24VDC
Connection	Plugable Screw Terminal Block
Enclosure	Polycarbonate, Panel Flashing Mounting DIN 43700, 8cm deep

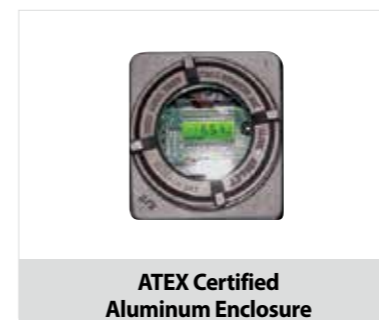
XDT Series

XDT Transmitter Options



- **XDT-DIN** 137 x 67mm (DIN 43700) 판넬 커팅에 설치
스냅온식 브라켓에 의해 고정
- **XDT-EXP** 방폭 노점계
- **XDT-NEMA** 벽부형으로 설치 또는 판넬 면에 설치
NEMA 4X (IP65) Enclosure

Explosion Proof Dewpoint Instruments



- 해외 방폭 지역 설치
- Explosion-Proof Housing (Aluminum)
with Zener Barrier
- ATEX EEx d IIB + H2
UL Class I, II, Group B, C, D, E, F, G



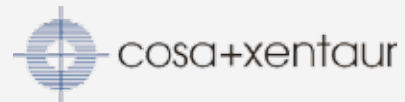
- Offshore/Marine 방폭지역 설치
- Explosion-Proof Housing (SS316L)
with Zener Barrier
- ATEX EEx d IIC T6



- 국내 방폭 지역 설치
- Explosion-Proof Housing (Aluminum)
with Zener Barrier
- KTL Test Report No. 1454-225-2007
Ex d IIB + H2 T6 IP66

Dewpoint Instruments

>> Aluminum Oxide Type / MOISTURE



LPDT Series

- 센서와 디스플레이 일체형 노점 트랜스미터
- 10-33VDC 외부 전원에 의해 2-wire Loop Power로 작동
- °C, °F, g/M³, Lbs/scf, ppmV 5개의 노점 단위 지원
- 2개의 측정 단위 표시 기능 (3초간 °C, 2초간 ppm으로 번갈아 가며 표시)
- 4-20mA Analog Output Range Programmable (Ex. -80°C ~ -40°C/4-20mA)
- 전면 Display 회전식으로 감시 방향 조절 가능
- Remote에 Alarm Relay Board 설치 가능 (Optional)
- Remote에 대형 LED Indicator 및 Alarm Setter 설치 가능 (Optional)

SPECIFICATIONS

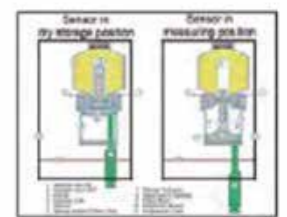
Application Sensor	HTF High Capacitance Sensor Model XTR-100, XTR-65
Input Resolution	0.1°C Dewpoint
Display	3.5 Digit LCD Display
Display Units	°C, °F, g/M ³ , Lbs/scf, ppmV
Control	3 Push Buttons
Analog Output	4-20mA
Power Requirement	10-33VDC
Housing	Stainless Steel
Electrical Connection	2.1mm Power Jack with Retainer
Cable	Two Conductor Cable

XPDM

- 114W x 64H x 191D(mm), 1.7kgs의 초소형 초경량 휴대용 계측기
- Dry Storage System으로 인한 빠른 노점 측정 가능
- 9V Battery 사용으로 100시간 연속 사용
- Backlit LCD 화면으로 판독성이 우수함
- °C, °F, g/M³, Lbs/scf, ppmV 5개의 노점 단위 지원
- 2개의 측정 단위 표시 기능 (3초간 °C, 2초간 ppm으로 번갈아 가며 표시)
- 센서 압력 보상 기능 (압력하 혹은 대기압 설치 후 환산 가능)
- Filter, Pressure Regulator 등 다양한 액세서리 장착 가능 (Optional)
- 4-20mA Analog Output Range Programmable (Optional)

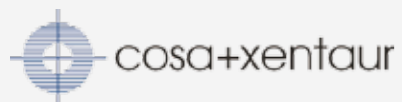
SPECIFICATIONS

Application Sensor	HTF High Capacitance Sensor Model XTR-100P
Input Resolution	0.1°C Dewpoint
Display	3.5 Digit Backlit LCD
Display Units	°C, °F, g/M ³ , Lbs/scf, ppmV
Control	5 Push Buttons
Power Requirement	9V Battery 220VAC w/ mA & RS232C (Optional)
Enclosure	Anodized Aluminum
Sampling Chamber	Electro-Polished 316 Stainless Steel
Pressure Operating Range	Standard : 2bar (28psi) Absolute Max : 6.9bar (100psi)
Gas Sample Connection	1/4" VCO Input and Output Ports



Dewpoint Instruments

>> Aluminum Oxide Type / MOISTURE



HDT Series

- 2-wire Loop Powered Hybrid 노점 트랜스미터
- 5-28VDC 외부 전원에 의해 2-wire Loop Power로 작동
- Digital Output (HART Protocol)
- IP65 rated Connector
- Ex ia IIC T6
- 국내방폭 인증 제품

SPECIFICATIONS

Application Sensor	HTF High Capacitance Sensor Model XTR-100, XTR-65
Input Resolution	0.1°C Dewpoint
Display	None
Display Units	Factory Programmed °C, °F, g/M ³ , Lbs/scf, ppmV
Control	HART Interface
Analog Output	4-20mA Analog Output / HART Communication
Power Requirement	5-28VDC
Housing	Stainless Steel, Weather Proof
Electrical Connection	Industrial Standard 9.4mm, 4 pin Connector, IP65
Cable	Two Conductor Cable, Min.#20AWG (Min.#24AWG for Length > 1500m)

HDT-LQ

- Hydrocarbon Liquid 샘플 내의 수분량 측정 온라인 분석기
- 2-wire Loop Powered Hybrid 노점 트랜스미터
- 5-28VDC 외부 전원에 의해 2-wire Loop Power로 작동
- Digital Output (HART Protocol)
- IP65 rated Connector
- Ex ia IIC T6
- 국내방폭 인증 제품

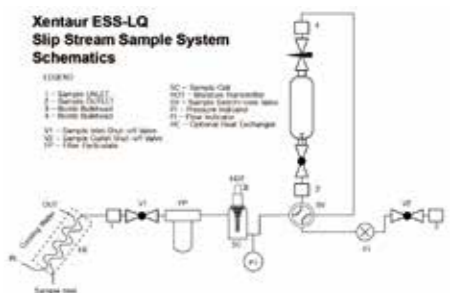
SPECIFICATIONS

Application Sensor	HTF High Capacitance Sensor Model XTR-LQ for Liquid Sample
Input Resolution	0.1°C Dewpoint
Display	None
Display Units	Factory Programmed ppmW, Vapor Pressure
Control	HART Interface
Analog Output	4-20mA Analog Output / HART Communication
Power Requirement	5-28VDC
Housing	Stainless Steel, Weather Proof
Electrical Connection	Industrial Standard 9.4mm, 4 pin Connector, IP65
Cable	Two Conductor Cable, Min.#20AWG (Min.#24AWG for Length > 1500m)



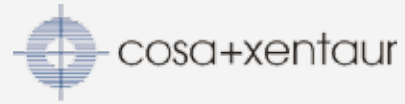
- ① Xentaur Dewpoint Transmitter (HDT) with XTR-LQ HTF™ Sensor
Measures Water Concentrations from <1ppmw to Saturation

- ② Xentaur ESS-LQ Slip Stream Sample System
Continuous Preparation of "Grab" Sample



Dewpoint Instruments

>> Aluminum Oxide Type / MOISTURE



Mission Critical Moisture Analyzer

- 현장에서 주기적으로 자동, 매뉴얼 Single Point 교정이 가능한 노점계
- 주로 불순물이 많은 Natural Gas Application에서 사용됨
- Maintenance 비용 절감
- Sensor Life Time을 연장시킬 수 있음
- 환경에 맞게 시스템 구성 가능
(Ex. Class I, Div 1, Group A,B,C,D, T4 Hazardous Area)
- UOP 954086-633

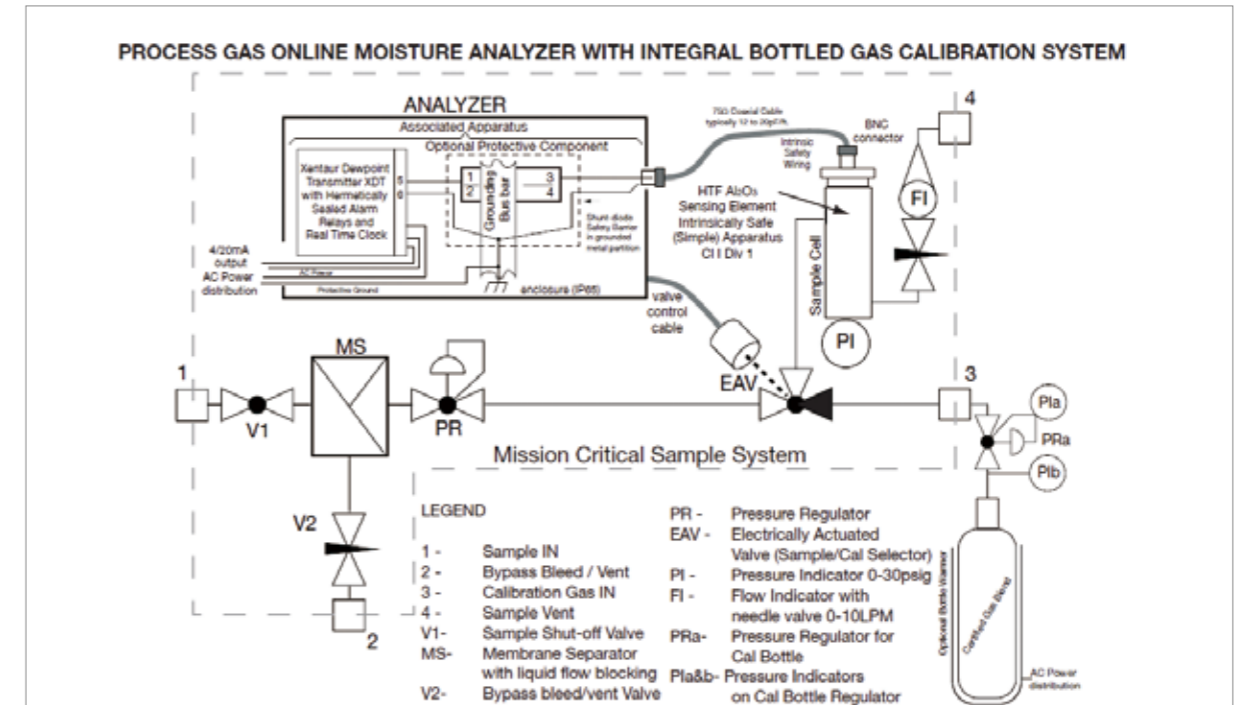
SPECIFICATIONS

Application Sensor	HTF High Capacitance Sensor Model XTR-100, XTR-65
Input Resolution	0.1°C Dewpoint
Display	3.5 Digit Backlight LCD
Display Units	°C, °F, g/M ³ , Lbs/scf, ppmV
Control	4 Push Buttons
Analog Output	4-20mA or 0-24mA Selectable Optional : RS-232
Alarm Relay	2 Programmable Alarm Relay
Power Requirement	100-240VAC Free Voltage, 50/60Hz Optional : 24VDC
Calibration Gas	Nitrogen/Water Blend NIST Certified 1ppmV to 140ppmV
Cal Gas Accuracy	Blending = ±10%, Analytical = ±2%
Gas Cylinder	152 Passivated Aluminum Cylinder

Mission Critical Moisture Analyzer

System Configuration

- Automatic Sensor Calibration using NIST Traceable Standard Gas at Site
- Automatically Adjusts for Observed Deviations
- H₂O in Nitrogen, 1-140ppm in #152 passivated aluminum cylinder (contains 4210NL) will last for approximately 70 calibrations over two (2) years.



ESS-SCVP DIV 1
System with Air Actuated Valve in Fiberglass Enclosure with Window and Sunshade
Certified for Class I Div 1 Gr. A, B, C, D, T4 Hazardous Areas



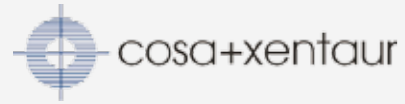
ESS-SCVP DIV 2
System with Electrically Actuated Calibration Valve in Stainless Steel Enclosure
Certified for Class I Div 2, Gr. A, B, C, D, T4 Hazardous Areas



ESS-MCVP DIV 2
System with Manually Actuated Calibration Valve for 19" Rack Mounting Certified for Class I Div 2 Gr. A, B, C, D, T4 Hazardous Areas.

Dewpoint Instruments

>> Aluminum Oxide Type / MOISTURE

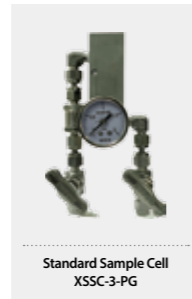


Sampling Systems

- Customizable Configuration
- High Quality Materials
- Reliable Dewpoint Measurement
- Long Sensor Life
- Low Installation Cost



Standard Sample Cell
XSSC-3



Standard Sample Cell
XSSC-3-PG



Standard Sample Cell
XSSC-3-FM



Standard Sample Cell
XSSC-3-PG-FM

- **Standard Sample Cell XSSC-3**
1/4" In/Out Port, All Stainless Steel 316
Needle Valve, 5 micron In-line Filter, Sensor Holder
- **Standard Sample Cell XSSC-3-PG**
1/4" In/Out Port, All Stainless Steel 316
Needle Valve, 5 micron In-line Filter, Sensor Holder
0-2bar Pressure Gauge on Sensor Holder
- **Standard Sample Cell XSSC-3-FM**
1/4" In/Out Port, All Stainless Steel 316
Needle Valve, 5 micron In-line Filter, Sensor Holder
Flow Meter No Valve on Outlet
- **Standard Sample Cell XSSC-3-PG-FM**
1/4" In/Out Port, All Stainless Steel 316
Needle Valve, 5 micron In-line Filter, Sensor Holder
0-2bar Pressure Gauge on Sensor Holder
Flow Meter No Valve on Outlet

Calibration Facility

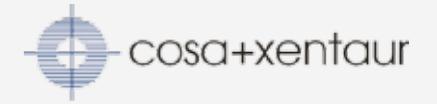
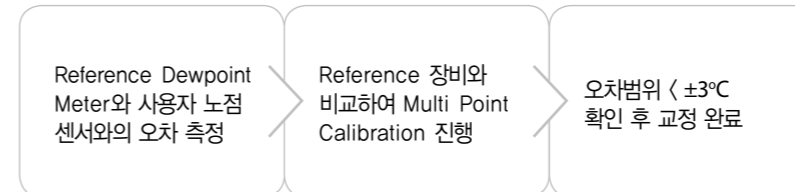
- 미국 COSA+Xentaur사의 아시아 지역 교정 센터 운영
- Reference Instrument : MBW 373LX Chilled Mirror Hygrometer
- 미국 표준과학연구소(NIST, National Institute of Standards and Technology)에서 인증 받은 표준 계측기 사용
- Standard Calibration, NIST Traceable Calibration 가능



Reference Instrument



Calibration Procedure



Temperature Humidity Hygrometers

>> Polymer Sensor Type

H Ygrocontrol COSA Xentaur GmbH

Type 81



Type 82



Type 81, 82

- 고정식 프로브타입 온습도계
- 마이크로프로세서에 의한 장비구동과 교정
- PT1000 온도 센서로 정확한 온도 측정
- 캐패시턴스 온습도 센서로 정확한 습도 측정
- IP65 Enclosure 사용으로 Outdoor 사용 가능

SPECIFICATIONS

Sensors	Humidity : SE-02 Temperature : PT-1000
Ranges	Humidity : 0 ~ 100% RH Temperature : -50 ~ +100°C
Accuracy	Humidity at 0 ~ 50°C : ±1.5 RH Humidity at 25 ~ 100°C : ±2.0 RH Humidity at -50 ~ +150°C : ±2.5 RH Temperature : ±0.3°C
Repeatability / Resolution	Humidity : <0.5% / 0.1% RH Temperature : <0.15 / 0.1°C
Operating Temperatures	Instrument : -20 ~ +60°C Probe : -50 ~ +150°C
Possible Humidity Unit	%RH, g/kg, g/m ³ , Dewpoint °C, °F
Power Supply / Output	85-264VAC or 12-24VDC Output : 0-2V, 0-10V, 4-20mA, 0-20mA, RS232
Material / Dimensions	Transmitter : 160 x 80 x 55mm / Polycarbonate Probe Tube : 12, 15, 25mm Diameter PP, PTFE, Stainless Steel Length : 100mm to 1000mm

Type 83

- 2-wire Loop Power 타입 온습도 트랜스미터
- 마이크로프로세서에 의한 장비구동과 교정
- PT1000 온도 센서로 정확한 온도 측정
- 캐패시턴스 온습도 센서로 정확한 습도 측정
- IP65 Enclosure 사용으로 Outdoor 사용 가능
- HART Communication

SPECIFICATIONS

Sensors	Humidity : SE-02 Temperature : PT-1000
Ranges	Humidity : 0 ~ 100% RH Temperature : -50 ~ +150°C
Accuracy	Humidity at 0 ~ 50°C : ±1.5% RH Humidity at 25 ~ 100°C : ±2.0% RH Humidity at -50 ~ +150°C : ±2.5% RH Temperature : ±0.3°C
Repeatability / Resolution	Humidity : <0.5% / 0.1% RH Temperature : <0.15 / 0.1°C
Operating Temperatures	Instrument : -20 ~ +60°C Probe : -50 ~ +150°C
Possible Humidity Unit	%RH
Power Supply / Output	9-36VDC Output : 4-20mA, 0-20mA, HART Communication
Material / Dimensions	Transmitter : 65 x 65 x 40mm / Aluminum Probe Tube : 12, 15, 25mm Diameter PP, PTFE, Stainless Steel Length : 100mm to 1000mm

H Ygrocontrol COSA Xentaur GmbH



Temperature Humidity Hygrometers

>> Polymer Sensor Type

H Ygrocontrol COSA Xentaur GmbH



Type 85

- 다양한 형태의 설치 조건에 맞는 제품 구성이 가능한 온습도계
- 센서 프로브의 쉬운 탈부착
- 마이크로프로세서에 의한 장비구동과 교정
- PT1000 온도 센서로 정확한 온도 측정
- 캐패시턴스 온습도 센서로 정확한 습도 측정
- IP65 Enclosure 사용으로 Outdoor 사용 가능

SPECIFICATIONS

Sensors	Humidity : SE-02 Temperature : PT-1000
Ranges	Humidity : 0 ~ 100% RH Temperature : -50~+100°C
Accuracy	Humidity at 0 ~ 50°C : ±1.5% RH Humidity at 25 ~ 100°C : ±2.0% RH Humidity at -50 ~ +150°C : ±2.5% RH Temperature : ±0.3°C
Repeatability / Resolution	Humidity : <0.5% / 0.1% RH Temperature : <0.15 / 0.1°C
Operating Temperatures	Instrument : -20 ~ +60°C Probe : -50 ~ +150°C
Possible Humidity Unit	%RH, g/kg, g/m ³ , Dewpoint °C, °F
Power Supply / Output	85-264VAC or 11-36VDC Output : 0-2V, 0-10V, 4-20mA, 0-20mA, RS232
Material / Dimensions	Transmitter : 160 x 80 x 55mm / Polycarbonate Probe Tube : 12, 15, 25mm Diameter PP, PTFE, Stainless Steel Length : 100mm to 1000mm Cable Length : 1meter to 50meter (max. 250meter)

Type 86 EX

- 방폭형 온습도 트랜스미터
- Class 1/2, Ex ia IICT4
- 마이크로프로세서에 의한 장비구동과 교정
- PT1000 온도 센서로 정확한 온도 측정
- 캐패시턴스 온습도 센서로 정확한 습도 측정

SPECIFICATIONS

Sensors	Humidity : SE-02 Temperature : PT-1000
Ranges	Humidity : 0 ~ 100% RH Temperature : -50~+100°C
Accuracy	Humidity at 0 ~ 50°C : ±1.5% RH Humidity at 25 ~ 100°C : ±2.0% RH Humidity at -50 ~ +150°C : ±2.5% RH Temperature : ±0.3°C
Repeatability / Resolution	Humidity : <0.5% / 0.1% RH Temperature : <0.15 / 0.1°C
Operating Temperatures	Instrument : -20 ~ +60°C Probe : -50 ~ +150°C
Possible Humidity Unit	%RH, g/kg, g/m ³ , Dewpoint °C, °F
Power Supply / Output	85-264VAC or 10-36VDC Output : 2-10V, 1-5V, 4-20mA
Material / Dimensions	Transmitter : 160 x 80 x 55mm / Polycarbonate Probe Electronics : 65 x 65 x 40mm / Aluminum Probe Tube : 25mm Diameter Stainless Steel Length : 100mm to 1000mm
Cable	Intrinsically Y Safe Cables 2 x 2 x 0.5mm ² in Length of up to 100meter

H Ygrocontrol COSA Xentaur GmbH



Dewpoint Mirror Hygrometers

>> Chilled Mirror Type

MBW calibration



MBW 373

- 냉각경 방식의 수분 측정기
- 냉각 거울에 맺힌 이슬을 직접 측정하는 초정밀 분석기
- 매우 빠른 응답속도
- 실험실 Reference 계기로 사용
- 넓은 범위의 Dew/Frost 측정 가능 (373LHX, -70°C ~ +95°C)
- 매우 낮은 Dew/Frost 측정 가능 (373LX, -95°C ~ +20°C)

SPECIFICATIONS

Measuring Range Dew / Frost Point	373S : -30 ~ +20°C 373H : -30 ~ +70°C 373HX : -20 ~ +95°C 373L : -70 ~ +20°C 373LX : -95 ~ +20°C 373LHX : -70 ~ +95°C
Accuracy	±0.1°C Dew/Frost Point
Reproducibility	±0.05°C Dew/Frost Point
Output	Analog Output : 4-20mA Digital Output : RS-232
Gas Coupling	Swagelok 6mm or 1/4"
Mirror Temperature Sensor	PRT-100
External Temperature Sensor	PRT-100 Measuring Range : -50 ~ +100°C
Power	100-120VAC or 200-240VAC
Size / Weight	Transmitter : 520 x 255 x 500mm, 45kgs (373LX) Polycarbonate Probe Tube : 15, 25mm Diameter PP, PTFE, Stainless Steel

MBW 473

- 냉각경 방식의 수분 측정기
- 외장형 센서 타입 휴대용 분석기
- 온도 센서, 압력 센서 추가 장착 가능
- 냉각 거울에 맺힌 이슬을 직접 측정하는 초정밀 분석기
- 매우 빠른 응답속도
- 실험실 Reference 계기로 사용

SPECIFICATIONS

Measuring Range	Dew/Frost Point : -20 ~ +70°C Relative Humidity : 2 ~ 100% RH Temperature : -20 ~ +80°C (Head Mount PRT) Temperature : -50 ~ +100°C (Cable Mount PRT)
Accuracy	Dew/Frost : ±0.1°C Temperature : ±0.07°C
Reproducibility	Dew/Frost : ±0.07°C Temperature : ±0.05°C
Output	Analog Output : 4-20mA (Optional) Digital Output : RS-232
Gas Coupling	Swagelok 6mm or 1/4"
Mirror Temperature Sensor	PRT-100
External Temperature Sensor	Ø2 x 100mm PRT Cable Measuring Range : -50 ~ +100°C
Internal Barometric Pressure Sensor	0.1% or 0.01% Accuracy, 700-1200mBar
Power	100-120VAC or 200-240VAC
Size / Weight	510 x 220 x 450mm, 12kgs, IP65

MBW calibration



Dewpoint Hygrometers

>> Chilled Mirror Type

MBW calibration



MBW 573

- 냉각경 방식의 산업용 수분 측정기
- 19" Rack Mounting Type
- +95°C까지의 높은 노점 측정 가능
- 냉각 거울에 맺힌 이슬을 직접 측정하는 초정밀 분석기
- 매우 빠른 응답속도
- 실험실 Reference 계기로 사용

SPECIFICATIONS

Measuring Range Dew / Frost Point	573S : -55 ~ +40°C 573H : -30 ~ +70°C 573HX : -30 ~ +95°C
Accuracy	Dew/Frost : ±0.1°C Temperature : ±0.1°C
Reproducibility	Dew/Frost : ±0.05°C Temperature : ±0.05°C
Output	Analog Output : 4-20mA (Optional) Digital Output : RS-232
Gas Coupling	Swagelok 6mm or 1/4"
Mirror Temperature Sensor	PRT-100
External Temperature Sensor	PRT-100 with 3meter Cable Measuring Range : -50 ~ +100°C
Power	100-120VAC or 200-240VAC
Size / Weight	485 x 147 x 370mm, 10kgs

MBW 973

- 냉각경 방식의 산업용 수분 측정기
- 내장형 센서 타입 휴대용 분석기
- 냉각 거울에 맺힌 이슬을 직접 측정하는 초정밀 분석기
- 매우 빠른 응답속도
- 실험실 Reference 계기로 사용

SPECIFICATIONS

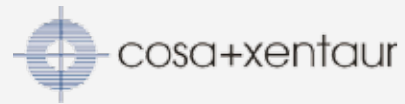
Measuring Range Dew / Frost Point	Dew / Frost Point : -50 ~ +20°C Relative Humidity : 5 ~ 100% RH Temperature : -50 ~ +150°C
Accuracy	Dew/Frost : ±0.1°C Temperature : ±0.1°C
Reproducibility	Dew/Frost : ±0.05°C Temperature : ±0.05°C
Output	Digital Output : RS-232
Gas Coupling	Swagelok 1/4"
Mirror Temperature Sensor	PRT-100
External Temperature Sensor	PRT-100 with 3meter Cable Measuring Range : -50 ~ +100°C
Power	100-240VAC
Size / Weight	440 x 155 x 410mm, 12kgs

MBW calibration



Optical Moisture Analyzer

» Tunable Diode Laser Type



XTDL-HT / XTDL-HR

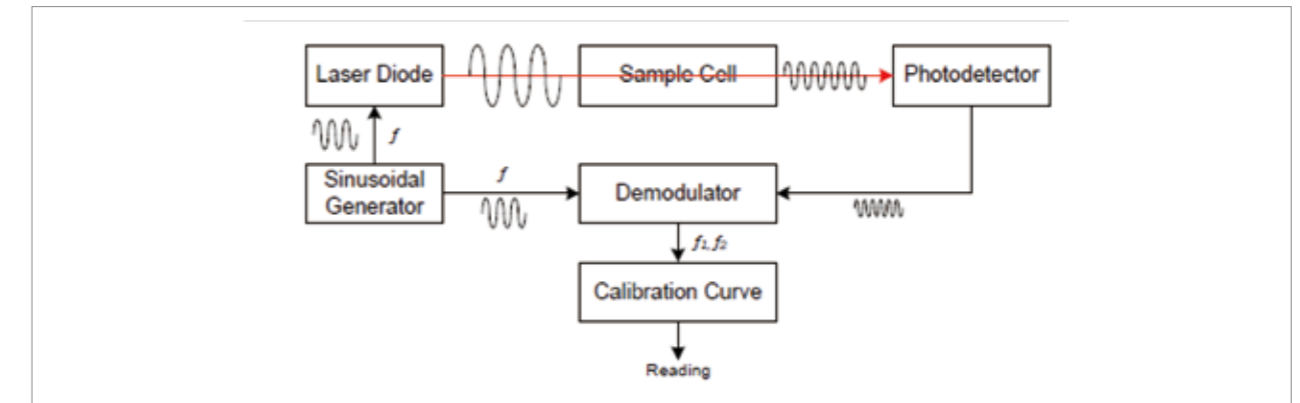
- Tunable Diode Laser (TDLAS) 수분 분석기
- **XTDL-HT**
 높은 노점 측정 (1,000-25,000ppmV H₂O)
 높은 온도, Dirty 환경의 샘플 측정 가능
 주로 철강 산업, 금속 산업에서 사용
- **XTDL-HR**
 CO₂ 내 수분 측정 (1-5,000ppmV H₂O)
 주로 음료, 식품 산업에서 사용

SPECIFICATIONS

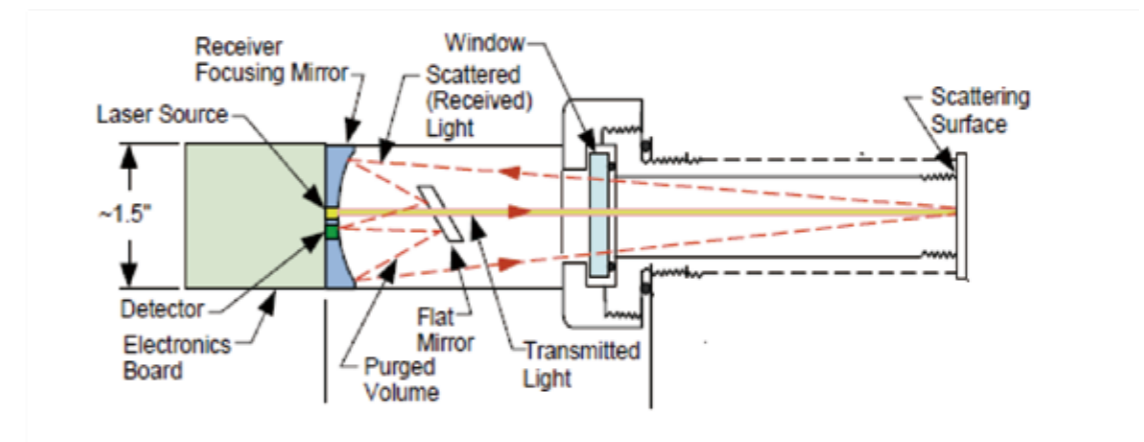
Measurement Principle	Tunable Diode Laser with Backscatter Cell
Measurement Range	HT Model : 1,000 - 25,000ppmV H ₂ O -20.2 ~ +20.9°C Dewpoint HR Model : 1 - 5000ppmV H ₂ O -76.2 to -2.3°C Dewpoint
Accuracy	±2%
Sample Pressure Range	0 ~ 30 psiA
Temperature Range	-20°C ~ 65°C
Inputs & Outputs	Touch Keys Operation for User Interface, Modbus RTU and Modbus/TCP Support RS-232, RS-485 Serial Communication Isolated Interface Option Ethernet Communication Power over Ethernet Support 1 Analog Output High Resolution (16-bit) 4-20mA, 0-20mA, 0-24mA, 0-5V, 0-10V, ±5V, ±10V Options 2 Relay Outputs for Status and Fault Monitoring Hermetically-Sealed Relays Option
Display	Ultra High Contrast Graphical
Power Requirement	Supply Voltage : 90-264VAC 50-60Hz, 10.5-60VDC
Enclosure	Wall Mounting
Dimension	426(w) x 508(h) x 223(d)mm
Weight	Approximately 20kgs

XTDL-HT / XTDL-HR

Principle



Backscatter Cell



Applications

- Annealing
- Sintering
- Brazing
- Hardening
- Beverage
- Food
- Plastics
- Medicine



OXYGEN ANALYZERS

» Electrochemical Micro Fuel Cell » ppb Oxygen Analyzers



ULTRA HIGH PURITY O₂ ANALYZER

Based on the stable and long-life Pico-Ion oxygen sensors, the PI2 range of trace oxygen analyzers provides accurate and stable measurements of oxygen down to low parts per trillion. Low cost of ownership through minimal maintenance of this high-performance oxygen analyzer make measurement of oxygen down to ppt level easy and affordable for customers with limited budgets.

Highlights

- Measuring trace O₂ in ultra-pure Ar, H₂, He and N₂
- LDL to less than 100 ppt
- Low cost of ownership
- User friendly and easy to operate and maintain
- Fast recovery from process upsets
- Integrated bypass sample system as standard
- Optional auto calibration system with true zero feature via O₂ scrubber

Application

- Quality checking of ultra-high purity gases produced by cryogenic air separation
- Validating high purity gases used in electronics and semi-conductor manufacture
- Commissioning UHP gas lines and processes

Recovery time

	O ₂ Level	Duration	O ₂ Target	Recovery on N ₂
PI2-MS 1000	9 ppm	2 minutes	10 ppb	10 minutes
PI2-MS 500	Air	30 seconds	1 ppm	45 minutes
PI2-UHP-100	9 ppm	1 minute	10 ppb	15 minutes
PI2-UHP-50	9 ppm	1 minute	1 ppb	60 minutes

Low Detection Limit

	PI2-UHP-50	PI2-UHP-100	PI2-MS-500	PI2-MS-1000
Min. Measuring Range	0-50 ppb	0-100 ppb	0-0.5 ppm	0-1 ppm
LDL	< 100 ppt	< 250 ppt	< 2.5 ppb	< 5 ppb

ULTRA HIGH PURITY O₂ ANALYZER

Second generation, no maintenance Pico-Ion sensor technology

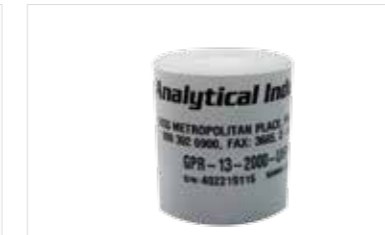
A high-performance, low ppb oxygen sensor with stable output requiring no maintenance or frequent electrolyte additions. The innovative design of the gas chamber maximizes the rate of oxygen reaction while the refined proprietary sensor design provides a high signal output per unit area to enhance sensitivity as well as a significantly higher output. Further advantages are:

- Lower detectable limit (LDL) of less than 100ppt
- High signal to noise ratio
- Excellent stability
- Response time of less than 15 seconds
- Minimizes the temperature dependence
- Fast recovery from higher oxygen levels during process upset conditions
- Approximately 12 months of continuous use

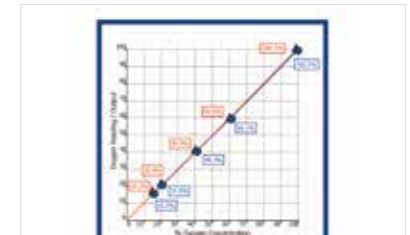
New Pico-Ion Sensor Technology



Sensor Construction

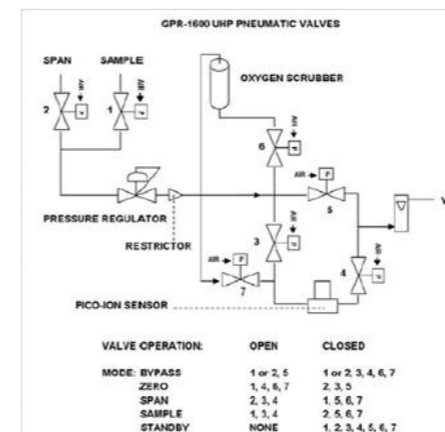


PICO Ion Sensor



Typical sensor output

State of the Analyzer



OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppb Oxygen Analyzers

Analytical Industries Inc



PI2-UHP-50 / PI2-UHP-100

- 최소 100/250 ppt까지 측정 가능한 Bench-top ppb 산소분석기
- 진보된 Pico-Ion 센서
- 분석기 내 Zero Scrubber 장착으로 완벽한 Zero Calibration이 가능함
- VCR Fitting 구성으로 Low ppb Level 측정 가능
- 자동으로 제로, 스판 교정 가능
- RS-232 Communication

SPECIFICATIONS

Measurement Range	0-50, 0-100 ppb, 0-1, 0-10 ppm (UHP-50) 0-100 ppb, 0-1, 0-10, 0-100 ppm (UHP-100)
Accuracy	±3% of reading or ±0.5 ppb (whichever is greater)
Response Time	T90 < 15 seconds
Sensitivity (LDL)	< 100 ppt (UHP-50) < 250 ppt (UHP-100)
Sensor Model	GPR-13-2000 UHP-2E (UHP-50) GPR-13-2000 UHP-2 (UHP-100)
Sensor Life	12 months at 25°C, 1 atm
Calibration Interval	30 days
Inlet Pressure	1.4-3.4 barg (20-50 psig) with atmospheric vent, max 10.3 barg (150 psig)
Flow Rate	0.5 - 1.0 NI/m (1-2 SCFH)
Gas Connection	Inlets: 1/4" face seal fittings; Vent and pneumatic valves: 1/4" compression tube fittings
Enclosure	Bench top, painted sheet metal (35 x 25 x 34cm)
Compensation	Barometric pressure and temperature; heated sample system and sensor housing
Signal Output	4-20mA isolated and 0-1V, 0-5V
Range ID	1-5V DC or 4-20mA, optional relay contacts
Communications	Choice of USB, RS232
Alarms	2 user-adjustable alarms
Power	100-240VAC

PI2-MS-500 / PI2-MS-1000

- 최소 2.5/5 ppb까지 측정 가능한 Bench-top ppb 산소분석기
- 진보된 Pico-Ion 센서
- 분석기 내 Zero Scrubber 장착으로 완벽한 Zero Calibration이 가능함 (Optional)
- 자동으로 제로, 스판 교정 가능 (Optional)
- RS-232 Communication

SPECIFICATIONS

Measurement Range	0-0.5, 0-1, 0-10, 0-100, 0-1000 ppm (MS-500) 0-1, 0-10, 0-100, 0-1000 ppm (MS-1000)
Accuracy	±3% of reading or ±0.5 ppb (whichever is greater)
Response Time	T90 < 15 seconds
Sensitivity (LDL)	< 2.5 ppb (MS-500) < 5 ppb (MS-1000)
Sensor Model	GPR-12-2000 MS-2E (MS-500) GPR-12-2000 MS-2 (MS-1000)
Sensor Life	12 months at 25°C, 1 atm
Calibration Interval	30 days
Inlet Pressure	1.4-3.4 barg (20-50 psig) with atmospheric vent, max 10.3 barg (150 psig)
Flow Rate	0.5 - 1.0 NI/m (1-2 SCFH)
Gas Connection	1/4" compression tube fittings
Enclosure	Bench top, painted sheet metal (35 x 25 x 34cm)
Compensation	Barometric pressure and temperature; heated sample system and sensor housing
Signal Output	4-20mA isolated and 0-1V, 0-5V
Range ID	1-5V DC or 4-20mA, optional relay contacts
Communications	Choice of USB, RS232
Alarms	2 user-adjustable alarms
Power	100-240VAC

Analytical Industries Inc



OXYGEN ANALYZERS

» Electrochemical Micro Fuel Cell » ppb Oxygen Analyzers

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GPR-18 MS ATEX

- 최소 5ppb까지 측정 가능한 방폭타입 ppb 산소분석기
- Ex d IIB+H2 T6
- Class 1, Division 1, Group B, C, D Hazardous Area, NEMA 4/7
- 수명을 연장한 센서 기술
- 빠른 응답속도
- 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-1, 0-10, 0-100, 0-1000ppm Auto-Ranging or Manually Lock on Single Range																
Accuracy	< 2% of FS Range																
Sensitivity	< 0.5% of FS Range																
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams																
Compensation	Temperature																
Alarms	2 User Adjustable Alarm Relay Contacts Non-Latching, Sensor / Power Failure																
Resolution	0.001ppm																
Enclosure	Painted Aluminum 406(w) x 457(h) x 279(d)mm, 32kgs																
Power	Specify 100/120 or 220/240 VAC																
Signal Output	4-20mA Isolated and 0-1V																
Sensor Model	GPR-12-2000MS (General)																
Sensor Life	24 month at 25°C, 1 atm																
Recovery Time	<table border="1"> <thead> <tr> <th>O₂ Level</th> <th>Duration</th> <th>O₂ Target</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>Air</td> <td>30 seconds</td> <td>1 ppm</td> <td>45 minutes</td> </tr> <tr> <td>9 ppm</td> <td>2 minutes</td> <td>1 ppm</td> <td>10 minutes</td> </tr> <tr> <td>1 ppm</td> <td>5 minutes</td> <td>100 ppb</td> <td>15 minutes</td> </tr> </tbody> </table>	O ₂ Level	Duration	O ₂ Target	Recovery	Air	30 seconds	1 ppm	45 minutes	9 ppm	2 minutes	1 ppm	10 minutes	1 ppm	5 minutes	100 ppb	15 minutes
O ₂ Level	Duration	O ₂ Target	Recovery														
Air	30 seconds	1 ppm	45 minutes														
9 ppm	2 minutes	1 ppm	10 minutes														
1 ppm	5 minutes	100 ppb	15 minutes														
Response Time	90% of Final FS Reading < 20 seconds																
Optional	Temperature Controlled Heater System																

GPR-1900 MS

- 최소 5ppb까지 측정 가능한 팬넬마운팅 타입 ppb 산소분석기
- 트랜스미터와 센서 분리 모델
- 수명을 연장한 센서 기술
- 빠른 응답속도
- 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-1, 0-10, 0-100, 0-1000ppm Auto-Ranging or Manually Lock on Single Range																
Accuracy	< 2% of FS Range																
Sensitivity	< 0.5% of FS Range																
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams																
Compensation	Temperature, Barometric Pressure																
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure																
Data Acquisition	Selectable Data Point Intervals																
Resolution	0.001ppm																
Enclosure	Painted Aluminum 177(w) x 101(h) x 114(d)mm																
Power	Universal																
Signal Output	4-20mA Isolated and 0-1V																
Sensor Model	GPR-12-2000MS (General)																
Sensor Life	24 month at 25°C, 1 atm																
Recovery Time	<table border="1"> <thead> <tr> <th>O₂ Level</th> <th>Duration</th> <th>O₂ Target</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>Air</td> <td>30 seconds</td> <td>1 ppm</td> <td>45 minutes</td> </tr> <tr> <td>9 ppm</td> <td>2 minutes</td> <td>10 ppm</td> <td>10 minutes</td> </tr> <tr> <td>1 ppm</td> <td>5 minutes</td> <td>10 ppm</td> <td>15 minutes</td> </tr> </tbody> </table>	O ₂ Level	Duration	O ₂ Target	Recovery	Air	30 seconds	1 ppm	45 minutes	9 ppm	2 minutes	10 ppm	10 minutes	1 ppm	5 minutes	10 ppm	15 minutes
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Air	30 seconds	1 ppm	45 minutes														
9 ppm	2 minutes	10 ppm	10 minutes														
1 ppm	5 minutes	10 ppm	15 minutes														
Response Time	90% of Final FS Reading < 20 seconds																

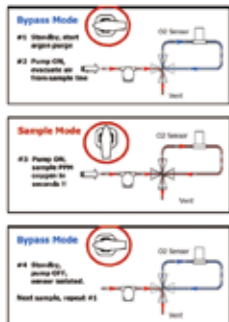
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OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppm Oxygen Analyzers

Analytical Industries Inc



Integral Bypass Sample System

GPR-1000 GP / GPR-1000 ATEX

- 용접 가스용 휴대용 ppm 산소분석기
- 선박회사 등에서 Argon 용접 작업 시 산소 허용 농도를 확인하기 위한 장비
- 구성품 : GPR-1000 휴대용 산소분석기, 내장형 펌프, 고무튜브, 필터, 스테인레스스틸 가스 프로브
- 충전식 배터리 사용 (펌프 사용 시 8시간 지속)으로 현장에서 전원연결 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measurement Range	0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Resolution	1ppm on 0-1000ppm Range
Enclosure	Painted Aluminum NEMA 4X 215(w) x 215(h) x 90(d)mm, 4.0kgs
Power	Rechargeable 9V Battery
Signal Output	0-1V FS
Sensor Model	GPR-12-100-M (General) XLT-12-100-M Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 100ppm in 15 min on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Model	GPR-1100 GP : General Purpose GPR-1100 ATEX : Ex ib IIB T4
Optional	Integral Sampling Pump, Carrying Case

GPR-1100 GP / GPR-1100 ATEX

- 최소 0.05ppm까지 측정 가능한 휴대용 ppm 산소분석기
- Quick Connector 장착으로 분석기 미사용 시 외기로부터 산소를 완벽히 차단시킴
- 유량계, 밸브 등을 추가로 장착 가능
- 충전식 배터리 사용으로 현장에서 전원연결이 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Painted Aluminum NEMA 4X 118(w) x 215(h) x 90(d)mm, 3.6kgs
Power	Rechargeable 9V Battery
Signal Output	0-1V FS
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 100ppm in 15 min on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Model	GPR-1100 GP : General Purpose GPR-1100 ATEX : Ex ib IIB T4
Optional	Integral Sampling Pump, Carrying Case

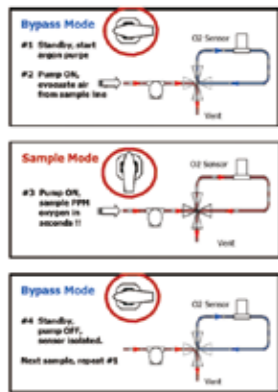
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OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppm Oxygen Analyzers

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Integral Bypass Sample System

GPR-1200 GP / GPR-1200 ATEX

- 최소 0.05ppm까지 측정 가능한 휴대용 ppm 산소분석기
- 분석기 내 Sample/Bypass Valve로 분석기 미사용 시 외기로부터 산소를 완벽히 차단시킴
- 유량계와 유량 콘트롤 밸브가 함께 장착되어 있으므로 추가 샘플 시스템이 불필요
- 충전식 배터리 사용으로 현장에서 전원연결이 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Painted Aluminum NEMA 4X 230(w) x 205(h) x 110(d)mm, 5.5kgs
Sample System	Flow Control Valve, Sample/Bypass Valve, Flow Indicator
Power	Rechargeable 9V Battery
Signal Output	0-1V FS
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 100ppm in 15 min on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Model	GPR-1200 GP : General Purpose GPR-1200 ATEX : Ex ib IIB T4
Optional	Integral Sampling Pump, Carrying Case

GPR-1500 GP / GPR-1500 ATEX

- 2-wire Loop Powered ppm 산소 트랜스미터
- 빠른 응답속도
- 수명을 연장한 센서 기술
- 안정적인 데이터 측정
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Painted Aluminum NEMA 4X 118(w) x 215(h) x 90(d)mm, 3.6kgs
Power	12-24VDC
Signal Output	4-20mA FS
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 100ppm in 15 min on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Model	GPR-1500 GP : General Purpose GPR-1500 ATEX : Ex ia IIB T4 GPR-1500 D : Min Measuring Range 0-100ppm GPR-1500 D ATEX : Ex ia IIB T4

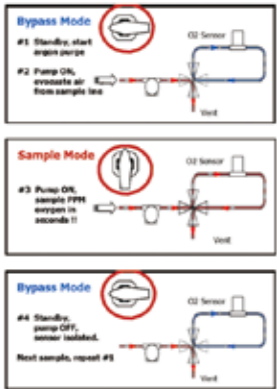
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OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppm Oxygen Analyzers

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Integral Bypass Sample System

GPR-1600

- 패널 마운팅 타입 ppm 산소분석기
- Wall Mounting, Rack Mounting 옵션으로 구성 가능
- 분석기 내 Sample/Bypass Valve로 분석기 미사용 시 외기로부터 산소를 완벽히 차단시킴
- 유량계가 함께 장착되어 있음
- 자동으로 제로, 스파 교정 가능
- RS-232 Communication

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure Optional Temperature Controlled Heated Sample System
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure
Data Acquisition	Selectable Data Point Intervals
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Painted Aluminum 190(w) x 274(h) x 311(d)mm
Power	Universal
Signal Output	4-20mA Isolated and 0-1V
Range ID	1-5V
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 100ppm in 15 min on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Optional	19" Rack Mount Bazel Wall Mount Enclosure Temperature Controlled Heater System

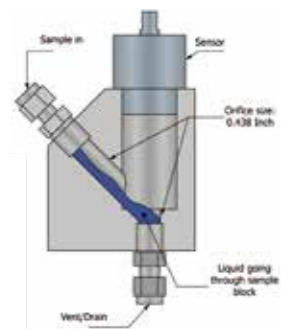
GPR-1800 AIS

- 본질안전 방폭 ppm 산소분석기
- Ex d [ib] ib IIB T4
- Class 1, Division 1, Group C,D Hazardous Area
- 수명을 연장한 센서 기술
- 빠른 응답속도와 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Alarms	2 User Configurable Alarms
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Aluminum Ex-Proof, Fiberglass NEMA 4X 406(w) x 228(h) x 152(d)mm, 9kgs
Power	12-24VDC or 100/230VAC
Signal Output	4-20mA
Range ID	1-5V
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	90% of Final Reading in 10 seconds
Optional	Unique Liquid Drain System with Flow Indicator

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OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppm Oxygen Analyzers



GPR-18 ATEX

- 내압방폭 ppm 산소분석기
- Ex d IIB+H2T5
- Class 1, Division 1, Group B, C, D Hazardous Area, NEMA 4/7
- 수명을 연장한 센서 기술
- 빠른 응답속도와 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range												
Accuracy	< 2% of FS Range												
Sensitivity	< 0.5% of FS Range												
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams												
Compensation	Temperature												
Alarms	2 User Adjustable Alarm Relay Contacts Non-Latching, Sensor / Power Failure												
Resolution	0.01ppm on 0-10ppm Range												
Enclosure	Painted Aluminum 406(w) x 457(h) x 279(d)mm, 32kgs												
Power	Specify 100/120 or 220/240VAC												
Signal Output	4-20mA Isolated and 0-1V												
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂												
Sensor Life	24 month at 25°C, 1 atm												
Recovery Time	<table border="1"> <thead> <tr> <th>O₂ Level</th> <th>Duration</th> <th>O₂ Target</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>Air</td> <td>2 min</td> <td>10 ppm</td> <td>20 min</td> </tr> <tr> <td>Air</td> <td>2 min</td> <td>1 ppm</td> <td>60 min</td> </tr> </tbody> </table>	O ₂ Level	Duration	O ₂ Target	Recovery	Air	2 min	10 ppm	20 min	Air	2 min	1 ppm	60 min
O ₂ Level	Duration	O ₂ Target	Recovery										
Air	2 min	10 ppm	20 min										
Air	2 min	1 ppm	60 min										
Response Time	90% of Final FS Reading < 10 seconds												
Optional	Temperature Controlled Heater System												

GPR-1900

- 패널 마운팅 타입 ppm 산소분석기
- 트랜스미터와 센서 분리 모델
- 수명을 연장한 센서 기술
- 빠른 응답속도
- 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-10, 0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure
Resolution	0.01ppm on 0-10ppm Range
Enclosure	Painted Aluminum 177(w) x 101(h) x 114(d)mm
Power	Universal
Signal Output	4-20mA Isolated
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 10ppm in < 1hr on N ₂ Purge
Response Time	90% of Final FS Reading < 10 seconds
Model	GPR-1900 : General GPR-1900 D : Min. Measuring Range 0-100ppm
Optional	19" Rack Mount Bezel Wall Mount Enclosure Temperature Controlled Heater System



OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> ppm Oxygen Analyzers



SAMPLING MODE



CALIBRATION MODE

GPR-1500 GB / GPR-1500 GB ATEX

- 글로브박스 내 산소 농도 모니터링
- 글로브박스 내부 장착 모델
- 글로브 박스 내에서 분석기를 교정할 수 있도록 Calibration Module 설치 가능

SPECIFICATIONS

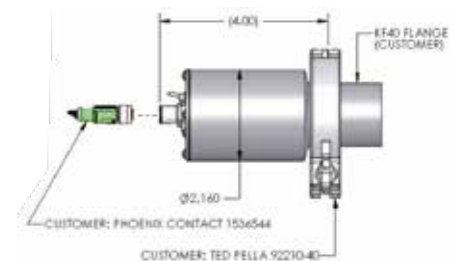
Measurement Range	0-100, 0-1000ppm, 0-1%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure
Resolution	0.1ppm on 0-10ppm Range
Enclosure	Painted Aluminum 76(w) x 101(h) x 50(d)mm, 1kg
Power	12-24VDC 2-wire Loop Power
Signal Output	4-20mA
Sensor Model	GPR-12-100-M (General) XLT-12-100-M Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 10 ppm in < 1 hour on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Model	GPR-1500 GB : General GPR-1500 GB ATEX : Ex ib IIB T4
Optional	Sample Calibration Module

GPR-KF40-12

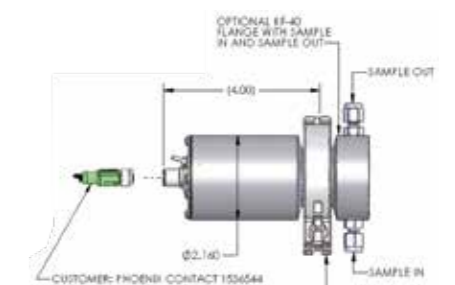
- 글로브박스 내 산소 농도 모니터링
- 글로브박스 NW40 포트 장착 모델
- 펌프 사용하여 샘플링 타입으로 사용 가능

SPECIFICATIONS

Measurement Range	0-100ppm, 0-25% or 0-1000ppm, 0-25%
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Power	12-28VDC 2-wire Loop Power
Signal Output	4-20mA
Sensor Model	GPR-12-333 (General) XLT-12-333 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	60 seconds in Air to < 10 ppm in < 1 hour on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Optional	Flow Through Housing



KF-40 Transmitter shown with
KF-40 customer provided flange



KF-40 Transmitter shown with
optional KF-40 flange with sample
and vent tube fitting connections

OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> Percent Oxygen Analyzers



GPR-2000 GP / GPR-2000 ATEX

- 휴대용 percent 산소분석기
- 유량계, 밸브 등을 추가로 장착 가능
- 충전식 배터리 사용으로 현장에서 전원연결이 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Resolution	0.001%
Enclosure	Painted Aluminum NEMA 4X, 218(w) x 228(h) x 76(d)mm, 5.5kgs
Power	Rechargeable 9V Battery
Signal Output	0-1V
Sensor Model	GPR-11-32-RT (0.05%, 500ppm Offset) GPR-11-21-RT (0.01%, 100ppm Offset) XLT-11-24-RT Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	36 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading in 10 seconds
Model	GPR-2000 GP : General Purpose GPR-2000 ATEX : Ex ib IIB T4
Optional	Integral Sampling Pump, Carrying Case

GPR-2500 GP / GPR-2500 ATEX

- 2-wire Loop Powered percent 산소 트랜스미터
- 빠른 응답속도
- 수명을 연장한 센서 기술
- 안정적인 데이터 측정
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure



SPECIFICATIONS

Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	<1% of FS Range
Sensitivity	<0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Resolution	0.001%
Enclosure	Painted Aluminum NEMA 4X, 101(w) x 228(h) x 76(d)mm, 3.6kgs
Power	12-24VDC
Signal Output	4-20mA
Sensor Model	GPR-11-32-4 (General) XLT-11-24-4 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	36 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading in 10 seconds
Model	GPR-2500 GP : General Purpose GPR-2500 ATEX : Ex ia IIB T4

OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> Percent Oxygen Analyzers



GPR-2600

- 패널 마운팅 타입 percent 산소분석기
- Wall Mounting, Rack Mounting 옵션으로 구성 가능
- 유량계가 함께 장착되어 있음
- 자동으로 제로, 스판 교정 가능
- RS-232 Communication

SPECIFICATIONS

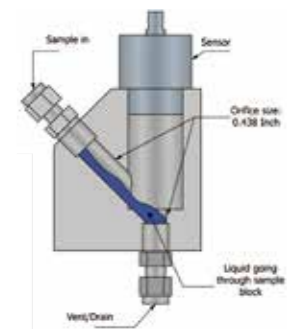
Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 1% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure Optional Temperature Controlled Heated Sample System
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure
Data Acquisition	Selectable Data Point Intervals
Resolution	0.001%
Enclosure	Painted Aluminum 190(w) x 274(h) x 311(d)mm
Sample System	Wetted Parts: Corrosion Resistant Materials Stainless Steel Optional Flow Meter
Power	Universal
Signal Output	4-20mA Isolated and 0-1V
Range ID	1-5V
Sensor Model	GPR-11-32-4 (General) XLT-11-24-4 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	36 month at 25°C, 1 atm
Recovery Time	Air to < 0.1% in < 30 seconds on N ₂ Purge
Response Time	90% of Final FS Reading in 10 seconds
Optional	19" Rack Mount Bezel Wall Mount Enclosure Temperature Controlled Heater System

GPR-2800 AIS

- 본질안전 방폭 percent 산소분석기
- Ex d [ib] ib IIB T4
- Class 1, Division 1, Group C,D Hazardous Area
- 수명을 연장한 센서 기술
- 빠른 응답속도와 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Optional, Pressure
Alarms	2 User Configurable Alarm Field Programmable Alarm Time Delays, Alarm Bypass for Calibration and System Fail Alarm
Resolution	0.001%
Enclosure	Aluminum Ex-Proof, Fiberglass NEMA 4X, 406(w) x 228(h) x 152(d)mm, 9kgs
Power	12-24VDC or 100/230VAC
Signal Output	4-20mA
Sensor Model	GPR-11-32 (General) XLT-11-24 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	36 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading in 10 seconds
Optional	GPR-2800 AIS ATEX : 2 Alarms GPR-2800 IS ATEX : No Alarms



OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> Percent Oxygen Analyzers

Analytical Industries Inc



GPR-28 ATEX

- 내압방폭 percent 산소분석기
- Ex d IIB+H2T5
- Class 1, Division 1, Group B, C, D Hazardous Area, NEMA 4/7
- 수명을 연장한 센서 기술
- 빠른 응답속도와 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature
Alarms	2 User Adjustable Alarm Relay Contacts Non-Latching, Sensor / Power Failure
Resolution	0.001%
Enclosure	Painted Aluminum 406(w) x 457(h) x 279(d)mm, 32kgs
Power	Specify 100/120 or 220/240VAC
Signal Output	4-20mA Isolated and 0-1V
Sensor Model	GPR-11-32 (General) XLT-11-24 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	36 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading < 10 seconds
Optional	Temperature Controlled Heater System

GPR-2900

- 패널 마운팅 타입 percent 산소분석기
- 트랜스미터와 센서 분리 모델
- 수명을 연장한 센서 기술
- 빠른 응답속도
- 안정적인 데이터 측정

SPECIFICATIONS

Measurement Range	0-1%, 0-5%, 0-10%, 0-25% Auto-Ranging or Manually Lock on Single Range
Accuracy	< 1% of FS Range
Sensitivity	< 0.5% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure Optional Heated Sample System and Sensor Housing
Alarms	2 User Configurable Alarm Field Programmable Alarm Time Delays, Alarm Bypass for Calibration and System Fail Alarm
Resolution	0.001%
Enclosure	Painted Aluminum 177(w) x 101(h) x 114(d)mm, Panel Mount
Power	Universal
Signal Output	4-20mA Isolated and 0-1V
Range ID	4-20mA
Sensor Model	GPR-11-60-4 (General) XLT-11-24-4 Sensor for Analysis of a Gas Mixture with > 0.5% CO ₂
Sensor Life	60 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading < 10 seconds

Analytical Industries Inc



OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> Purity Oxygen Analyzers



GPR-3100

- 패널 마운팅 타입 purity 산소분석기
- Wall Mounting, Rack Mounting 옵션으로 구성 가능
- 유량계가 함께 장착되어 있음
- 자동으로 제로, 스팬 교정 가능
- RS-232 Communication

SPECIFICATIONS

Measuring Range	0-100% Full Range 50-100%, 80-100%, 90-100% Suppressed Ranges
Accuracy	< 1% of FS Range
Sensitivity	< 1% Oxygen
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure Temperature Controlled Heated Sample System, Sensor Housing
Alarms	2 User Adjustable Alarm "Weak Sensor" Indicator, Power Failure, System Failure
Data Acquisition	Selectable Data Point Intervals
Resolution	0.01%
Enclosure	Painted Aluminum 190(w) x 274(h) x 311(d)mm, Panel Mount
Sample System	Flow Control and Indicator, Special Integral Sample Temperature Equalization System
Power	100/120/220/240VAC
Signal Output	4-20mA Isolated and 0-1V
Sensor Model	GPR-11-120-OP (General)
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading < 13 seconds
Optional	Bezel for 19" Rack Mounting, Wall Mount NEMA4, 4X Enclosure

GPR-3500 MO

- 휴대용 purity 산소분석기
- 유량계 기본 장착
- 충전식 배터리 사용으로 현장에서 전원연결 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure

SPECIFICATIONS

Measuring Range	0-100%
Accuracy	< 2% of FS Range
Sensitivity	< 1% of FS Range
Application	Inert, Helium, Hydrogen, Mixed and Acid(CO ₂) Gas Streams
Compensation	Temperature, Pressure
Resolution	0.01%
Enclosure	Painted Aluminum NEMA 4X 218(w) x 228(h) x 76(d)mm, 5.5kgs
Sample System	Flow Meter
Power	Rechargeable 9V Battery
Signal Output	0-1V FS
Sensor Model	GPR-11-120-4 (General)
Sensor Life	24 month at 25°C, 1 atm
Recovery Time	90% of Final FS Reading in 10 seconds
Optional	Integral Sampling Pump, Carrying Case



OXYGEN ANALYZERS

>> Electrochemical Micro Fuel Cell >> Percent Oxygen Analyzers



AII-3000 Series

- 초경량 휴대용 percent 산소분석기

Application

- Personnel Safety
- Area Monitoring
- O₂ Deficiency in Confined Spaces
- Checking Breathing Air Tanks
- Checking Tanks intended for Scuba Diving
- Confirming O₂ Levels prior to Welding

SPECIFICATIONS

Measuring Range	0-100% Oxygen
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Calibration	Air or Certified 100% O ₂ every 8 hours
Compensation	Temperature
Alarm	A models : None M models : User Adjustable HI 1-100%, LO 0-99% Alarms 120 second Alarm Silence for Calibration Purposes HI Alarm Defeat for 100% O ₂ Analysis
Connections	A/M models : 1x16mm Thread + Optional Adaptor HC models : Tubing 1/4"
Dimensions	9.1 x 15 x 14.1mm, 280grams
Power	2 AA Alkaline Batteries, 1,200 hours Continuous Use
Sensor Model	A/M Models : AII-11-60 HC Models : AII-11-60-HC
Sensor Life	60 months in Air at 25°C, 1 atm
Response Time	90% of Final FS Reading in 9 seconds
Model	AII-3000 A : No Alarm, External Sensor AII-3000 AHC : No Alarm, Internal Sensor AII-3000 M : Alarm, External Sensor AII-3000 MHC : Alarm, Internal Sensor

Palm O2 / AII-4001

- 초경량 휴대용 percent 산소분석기

Application

- Personnel Safety
- Area Monitoring
- O₂ Deficiency in Confined Spaces
- Checking Breathing Air Tanks
- Confirming O₂ Levels prior to Welding

SPECIFICATIONS

Measuring Range	0-100% Oxygen
Accuracy	< 2% of FS Range
Sensitivity	< 0.5% of FS Range
Calibration	Certified Dry 100% Oxygen or Air after 8 hours of Use
Compensation	Temperature
Connections	1x16mm Thread + Optional Adaptor
Dimensions	6.9 x 10.4 x 3.4mm, 196grams
Power	2 AA Alkaline Batteries, 13,000 hours Continuous Use
Sensor Model	AII-11-75-PO2
Sensor Life	32 months in Air at 25°C, 1 atm
Response Time	90% of Final FS Reading in 10 seconds
Model	Palm O2 D : Diving Palm O2 IW : Confined Space Palm O2 M : Medical AII-4001 Trumix : N ₂ , O ₂ , He Mixed Gas



HYDROGEN SULFIDE ANALYZERS

>> Electrochemical Micro Fuel Cell

Analytical Industries Inc



GPR-7100 ATEX

- 휴대용 H₂S Analyzer
- 샘플 가스 내 미량의 H₂S 측정
- 최소 측정 범위 0-20ppm
- Electrochemical 타입 센서
- 유량계와 유량 콘트롤 밸브 (샘플용, Air용) 장착
- Air 주입용 내장형 펌프 장착
- 충전식 배터리 사용으로 현장에서 전원연결이 불필요
- 견고하고 수분, 먼지로부터 보호되는 NEMA 4X Enclosure
- 방폭형 ATEX Ex ib IIB T4

SPECIFICATIONS

Measurement Range	0-20, 0-50, 0-100ppm 0-500, 0-1000, 0-2000ppm (Optional) Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Approvals	ATEX II 2 G Ex ib IIB T4
Area Classification	Meets Intrinsic Safety Standards for use in CSA/UL Class 1, Division 1, Group C, D Hazardous Areas
Alarms	None
Calibration	Span Gas 50-80ppm H ₂ S Balance Air, Air to Cal Gas Flow Ratio 1:1 SCFH
Compensation	Temperature
Enclosure	Painted Aluminum NEMA 4X 230(w) x 205(h) x 110(d)mm, 5.5kgs
Power	Rechargeable Battery, 8 hours Day Duty Cycle
Response Time	90% of Final Reading in 35 seconds
Sample System	Coalescing Filter and Flow Meters Air to Sample Gas Flow Ratio 1:1 SCFH
Sensor Model:	OSV-72-7HH-LM (Standard Ranges) OSV-72-7H-LM (Optional)
Sensor Life	24 months at 25°C, 1 atm
Signal Output	0-1V

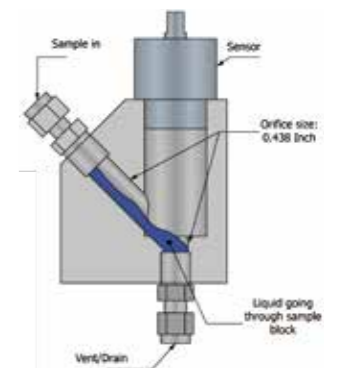
GPR-7500 AIS

- 설치형 H₂S Analyzer
- 샘플 가스 내 미량의 H₂S 측정
- 최소 측정 범위 0-20ppm
- Electrochemical 타입 센서
- Air 주입용 내장형 펌프 장착
- 방폭형 ATEX Ex d [ib] ib IIB T4

SPECIFICATIONS

Measurement Range	0-20, 0-50, 0-100ppm 0-500, 0-1000, 0-2000ppm (Optional) Auto-Ranging or Manually Lock on Single Range
Accuracy	< 2% of FS Range
Approvals	ATEX II 2 G Ex d [ib] ib IIB T4
Area Classification	Meets Intrinsic Safety Standards for use in CSA/UL Class 1, Division 1, Group C, D Hazardous Areas
Alarms	Two User Configurable Alarms
Calibration	Span Gas 50-100ppm H ₂ S Balance Air
Compensation	Barometric Pressure
Enclosure	Painted Aluminum NEMA Type 3R
Power	12-28 VDC (UL or ATEX Certified) 110-220 VAC (ATEX Certified)
Response Time	90% of Final Reading in 90 seconds
Sample System	Coalescing Filter, Flow Meters, Sample/Span Valve, Pump for Air
Sensor Model	OSV-72-7HH-LM (Standard Ranges) OSV-72-7H-LM (Optional)
Sensor Life	24 months at 25°C, 1 atm
Signal Output	4-20mA Modbus RTU Communication (Optional)

Analytical Industries Inc



Calorimeters

>> O2 Residual Type



CALORIFIC VALUE



Residual Oxygen Measurement

- 샘플가스와 Air가 반응 후 남아있는 산소의 양으로 Calorific Value 측정
- Wobbe Index, CARI, Calorific Value 측정 가능
- 빠른 응답속도 (응답속도 : 5초 이내)
- Flameless로 안전하게 사용 가능
- X-Purge 또는 Z-Purge 구성으로 방폭지역 설치 가능

Application

- Waste Fuel Gases
- Bio-gas
- Flare stack monitoring
- Turbine Control
- Combustion optimization
- Gas blending
- Steel Industry

Features

- High Precision ($\pm 0.4\%$ of reading)
- Fast Response (T90 < 5 sec for WI and CV)
- Large Measurement Range
- Residual Oxygen Method (No Flame) with optional measurement of oxygen in sample stream
- High Temperature Furnace (1050°C)
- Low Maintenance
- Small Dimensions
- Outdoor Installation without further enclosure

Same Heating Value but Different Quality!!

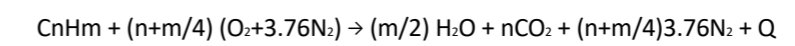
- Equation

$$\text{Wobbe Index} = \frac{\text{Calorific Value}}{\sqrt{SG}}$$

Residual Oxygen Measurement

System Configuration

- Fuel Gas가 Air와 반응 후 남아있는 산소의 양을 체크하여 Wobbe Index, Calorific Value를 계산하는 방식

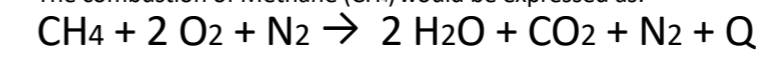


C_nH_m : Fuel (n : number of carbon atoms, m : number of hydrogen atoms) $O_2 + 3.76$

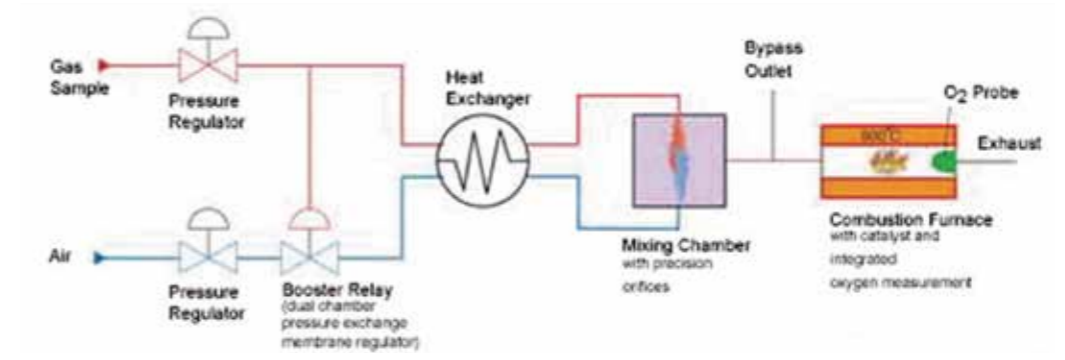
N_2 : Air which is used as the source of oxygen

Q : Heat released from the combustion process

The combustion of Methane (CH_4) would be expressed as:



Sample Gas + Oxygen + Nitrogen \rightarrow Water + Carbon Dioxide + Nitrogen + Heat

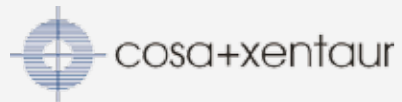


Analyzer Construction

- **Gas Mixing Compartment**
샘플 가스와 Air가 Mix되는 부분
- **Electronics Compartment**
분석기를 컨트롤 하는 컨트롤러
Wobbe Index Value, Calorific Heating Value(Optional), Relative Density(Optional) 등을 표시
- **Combustion Furnace Compartment**
Zirconia Oxygen Sensor가 장착되어 있는 Combustion Furnace 부분
연료 가스와 산소가 반응 후 남은 산소의 농도 측정
- **Purge Panel**
퍼지 방폭 (설치 장소에 따라 Non-Purge, Z-Purge, X-Purge로 구성)

Calorimeters

>> O2 Residual Type



COSA 9610



COSA 9700



COSA 9610 / COSA 9700

- Fuel Gas와 Air가 연소 반응 후 남아있는 산소량을 측정하여 Wobbe Index 측정
- Specific Gravity Cell을 추가함으로써 Calorific Value 측정 가능
- 빠른 응답 속도 (응답속도 : 5초 이내)
- Flameless Type으로 안전하게 사용
- 다양한 옵션 추가 가능 (Dual Range, High Temperature, GC, etc.)
- X-Purge 또는 Z-Purge 구성으로 방폭지역 설치 가능
- 국내 방폭 Ex ib px [ic] IIC T6

Application

- Turbine Control • Flare Stack Monitoring • Combustion Optimization
- Waste Fuel Gases • Bio Gas • Gas Blending • Custody Transfer • Steel Industry

SPECIFICATIONS

Sample Gas	Natural Gas, Fuel Gas, Refinery Gas, Biogas, etc.
Ranges	Wobbe Index : 0-3000 BTU/SCF Span : 1200 BTU/SCF (Selectable) CARI Index : 0-20 Span : 0-10
Accuracy (Wobbe)	±0.4% of Reading for Natural Gas ±2.0% of Reading for Refinery Gas with Large Variations of Constituents and BTU Values
Repeatability	±0.7 BTU/SCF
Drift	0.4 BTU/SCF
Response Time	T90 ≤ 5 seconds (Wobbe CV)
Ambient Temperature	Standard : 10-40°C, 50-104°F
Outputs	2x isolated 4-20mA
Specific Gravity	Range : 0-3rD (Optional) Accuracy : ±0.1% of reading
Power Supply	110VAC, 50/60Hz, 220VAC 50Hz
Instrument Air	20SCFH (Analyzer) at 42 PSIG 40SCFH (Z-purge) at 80 PSIG
Sample	25CFH at 28 PSIG
Dimensions	1000(w) x 1000(h) x 400(d)mm (9610) 496(w) x 1083(h) x 459(d)mm (9700)

COSA 9610 / COSA 9700

Wobbe Index Measurement

- 9610 or 9700 Calorimeter
- X-Purge or Z-Purge System

Calorific Value Measurement

- 9610 or 9700 Calorimeter
- X-Purge or Z-Purge System
- Specific Gravity Cell

Optional Parts

- Dual Range Option
- Dual Coalescing Filters
- Low Temperature Option (Heater)
- High Temperature Option (Cooler)
- 2 Additional Analog Output
- RS 485 Modbus



MONITOR



SAMPLE SYSTEM

Installations



Z-Purge System w/3-side Shelter



X-Purge System Indoor Installation

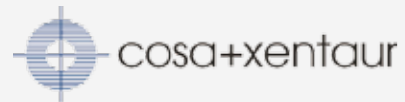


GC Option w/Outdoor Installation

Calorimeters

>> Interferometry + Acoustic Sensor

>> Interferometry + Acoustic Sensor

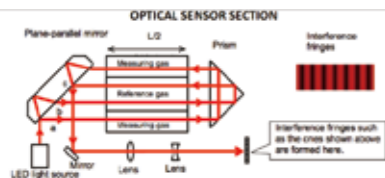


CV Sonic PRO

- Calorific Value와 Relative Density 측정 분석기
- Frameproof Ex d IIB+H2 T4
- 빠른 응답속도 (< 5 seconds)
- 캐리어 가스 불필요
- Air 교정 가능
- 측정단위 : BTU/cf, Kcal/m³, MJ/m³, Wobbe Index

SPECIFICATIONS

Detection Principle	Interferometry + Acoustic using Speed of Sound
Measuring Gas	Natural Gas, LNG or NG + LPG (N ₂ , O ₂ , CO ₂ & CO Less than 20%)
Measurement Ranges	CV : 25-55MJ/NM ³ (670-1475BTU/CF) RD : 0.500-1.500 (Air=1.000)
Repeatability	CV : ±0.02MJ/NM ³ (0.5BTU/CF) RD : ±0.002
Drifting	CV: 0.1MJ/NM ³ (0.3BTU/CF) Max Temp Fluctuation of 20°C in 24 hrs
Response Time	5 sec to 90% Response
Flow Rates	Sample Gas : 1LPM (Natural Gas or NG+LPG) Reference Gas : 0.5LPM (Instrument Air)
Inlet Pressure	80-110 kPa (0.8-1.1bar) for Gas & Reference Gas
Gas Temperature	-20 ~ +57°C
Ambient Temperature	-20 ~ +57°C, 95%RH (Non-Condensing)
Output	4-20mA Analog Output RS-485 Modbus Proprietary Interface IrDA Communication Output for Maintenance
Alarms	2 x System Condition Relays 2A, 30VDC (Resistance Load) 1 x Maintenance Relay 20W, 240VAC (Resistance Load)
Area Classifications	Class 1, Division 1, Gr C,D or Class 1, Division 2, Gr C,D (Optional)
Power	100-240VAC, 50/60Hz or 24VDC
Dimension	286(w) x 450(h) x 145(d)mm, 21kgs

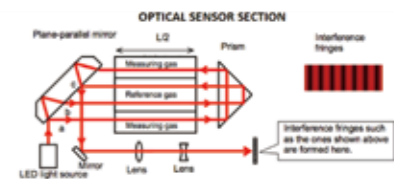


CV PRO

- 휴대용 Calorific Value 측정 분석기
- General Purpose
- 빠른 응답속도 (< 15 seconds)
- 캐리어 가스 불필요
- Air 교정 가능
- 20시간 지속 배터리 사용으로 현장에서 전원연결 불필요
- 측정단위 : BTU/cf, Kcal/m³, MJ/m³

SPECIFICATIONS

Detection Principle	Interferometry
Measuring Gas	Natural Gas, LNG or NG + LPG (N ₂ , O ₂ , CO ₂ & CO Less than 20%)
Measurement Ranges	25-55MJ/NM ³ (670-1475BTU/CF)
Accuracy	±0.1MJ/NM ³ (2.7BTU/CF)
Repeatability	±0.03MJ/NM ³ (0.8BTU/CF)
Drifting	0.22MJ/NM ³ (0.3BTU/CF)
Response Time	15 sec to 90% Response
Flow Rates	0.2 LPM
Inlet Pressure	ATM to 15 kPa
Ambient Temperature	-10 ~ +40°C, 95%RH (Non-Condensing)
Power Source	4 x C size Alkaline Battery or AC Adaptor
Battery Life	Approx. 20 hours (Continuous Power On)
Internal Data Logging	100 Measurements
PC External Output	Recorder Output (RS-232)
Dimension	340(w) x 235(h) x 180(d)mm, 5.5kgs

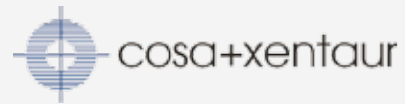


Calorimeters

>> Gas Chromatograph



CALORIFIC VALUE



HGC-303 Gas Chromatograph

- Natural Gas의 Calorific Value 측정 가스 크로마토그래피
- 초소형, 초경량 디자인
- 손쉬운 설치, Analyzer Shelter 불필요
- 간편한 유지보수
- 11개의 Components 300초 이내 측정
- Approved for Use in Class 1, Division 1, Group C, D

SPECIFICATIONS

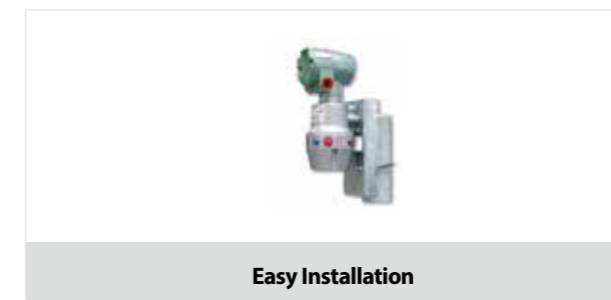
Principle	Gas Chromatograph
Measured Gas Streams	Up to 4 Streams
Analyzed Components	11 Sum of C ₆ +, C ₃ H ₈ , i-C ₄ H ₁₀ , n-C ₄ H ₁₀ , neo-C ₅ H ₁₂ , i-C ₅ H ₁₂ , n-C ₅ H ₁₂ , N ₂ , CH ₄ , CO ₂ , C ₂ H ₆
Analysis Time	300 sec
Detector	Micro TCD
Chromatographic Methods	ISO 6974, Part 4
Heat Value Calculation Method	GPA 2172
Type of Protection	FM Approvals, NEMA 4X, IP65
Output	Foundation Fieldbus, RS-232, RS-485, RS-422 4-20mA Analog Output
Power	24VDC
Carrier Gas	99.99% Helium

HGC-303 Gas Chromatograph

Ranges and Detection Limits

Components	Range (mol %)	Minimum Detection (mol %)
Sum of C ₆ +	0 - 0.3	0.01
C ₃ H ₈ (propane)	0 - 3	0.05
i-C ₄ H ₁₀ (i-butane)	0 - 1	0.01
n-C ₄ H ₁₀ (n-butane)	0 - 1	0.01
neo-C ₅ H ₁₂ (neo-pentane)	0 - 0.5	0.01
i-C ₅ H ₁₂ (i-pentane)	0 - 0.5	0.01
n-C ₅ H ₁₂ (n-pentane)	0 - 0.5	0.01
N ₂ (nitrogen)	0 - 20	0.1
CH ₄ (methane)	50 - 100	-
CO ₂ (carbon dioxide)	0 - 10	0.05
C ₂ H ₆ (ethane)	0 - 15	0.05

Features



Total Sulfur Analyzer

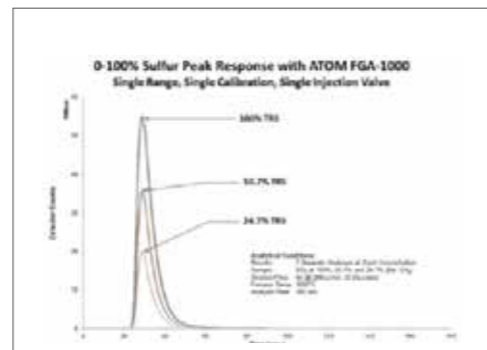
>> UV Fluorescence



EUVF Total Sulfur Analyzer

Online Process Analyzer

- SGA-1000
 - Sulfur in Gas Analyzer
 - Total Sulfur Analysis per ASTM D5453
- LGA-1000
 - Sulfur in Liquid Analyzer
 - Correlates to ASTM D5453
- FGA-1000
 - Flare Gas Analyzer for Total Sulfur
 - Correlates to EPA Rule 40 CFR 60



SGA-1000

Analytical Performance

Measurement Method	Total Sulfur by Excimer UV Fluorescence (EUVF)
Measurement Range	1 ppm- 100% (As required for specific Gas Application)
Repeatability	100ppb SD or $\pm 2\%$ of measured value, whichever is greater 50ppb SD with 5-min. averaging or $\pm 2\%$ of measured value, whichever is greater 25ppb SD with 15-min. averaging or $\pm 2\%$ of measured value, whichever is greater
Linearity	$\pm 2\%$ of full scale (Dynamic Range Dependent)
Response Time	99% (+) in one cycle (60-100 secs typical)
Calibration	Automatic or manual

Analog/Discrete Data Communications

Analog Outputs	Single 4-20 mA DC (optional)
Alarm Outputs	One global dry contact triggered by one or more of the following: Power Failure, Loss of Purge, Low Oxidizer Pressure, AutoCal Fault, Analyzer in Calibration, Analyzer not running.
Digital Data Communications	RS-485 or RS-422 Modbus (RS-232 or TCP/IP Ethernet Optional)
Local MMI (GUI)	12" Touchscreen Computer with Embedded Windows 7 allows complete operation and control of all analyzer functions
Remote Interface	ATOM ACCESS allows complete control of SGA-1000, including monitoring of analysis parameters and digital data values

Utility Requirements

Ambient Temperature	-20°C to +40°C (-4°F to +104°F)
Power	120 VAC, 50/60 Hz at 2200 watts
Instrument Air	70 psig (4.8 bar), 5 SCFM, Oil Free, -40°C (-40°F) dew point
Zero Grade Air	70 psig (4.8 bar), 200 SCCM

Physical Parameters

Dimensions	965.2(h) x 660.4(w) x 304.8(d) mm
Mounting	Wall or Unistrut Stand
Certifications	Built to NEC Class1, Div2, Group B,C,D / CSA (optional)

Total Sulfur Analyzer

>> UV Fluorescence



SLA-1000

Analytical Performance

Measurement Method	Total Sulfur by Excimer UV Fluorescence (EUVF)
Measurement Range	500ppb - 10% (Application dependent)
Repeatability	200ppb SD or $\pm 2\%$ of measured value, whichever is greater 100ppb SD with 5-min. averaging or $\pm 2\%$ of measured value, whichever is greater
Linearity	$\pm 2\%$ of full scale (Dynamic Range Dependent)
Response Time	99% (+) in one cycle (60-100 secs typical)
Calibration	Automatic or manual

Analog/Discrete Data Communications

Analog Outputs	Single 4-20 mA DC (optional)
Alarm Outputs	One global dry contact triggered by one or more of the following: Power Failure, Loss of Purge, Low Oxidizer Pressure, AutoCal Fault, Analyzer in Calibration, Analyzer not running.
Digital Data Communications	RS-485 or RS-422 Modbus (RS-232 or TCP/IP Ethernet Optional)
Local MMI (GUI)	12" Touchscreen Computer with Embedded Windows 7 allows complete operation and control of all analyzer functions
Remote Interface	ATOM ACCESS allows complete control of SLA-1000, including monitoring of analysis parameters and digital data values

Utility Requirements

Ambient Temperature	-20°C to +40°C (-4°F to +104°F)
Power	120 VAC, 50/60 Hz at 2200 watts
Instrument Air	70 psig (4.8 bar), 5 SCFM, Oil Free, -40°C (-40°F) dew point
Zero Grade Air	70 psig (4.8 bar), 200 SCCM

Physical Parameters

Dimensions	965.2(h) x 660.4(w) x 304.8(d) mm
Mounting	Wall or Unistrut Stand
Certifications	Built to NEC Class1, Div2, Group B,C,D / CSA (optional)

FGA-1000

Analytical Performance

Measurement Method	Total Sulfur by Excimer UV Fluorescence (EUVF)
Measurement Range	0 - 100% (As required for specific Flare Application)
Repeatability	50ppm SD or $\pm 2\%$ of measured value, whichever is greater 25ppm SD with 5-min. averaging or $\pm 2\%$ of measured value, whichever is greater
Linearity	$\pm 2\%$ of full scale (Dynamic Range Dependent)
Response Time	100sec. To 99% of new value
Calibration	Automatic or manual

Analog/Discrete Data Communications

Analog Outputs	Two 4-20 mA DC (optional)
Alarm Outputs	One global dry contact triggered by one or more of the following: Power Failure, Loss of Purge, Low Oxidizer Pressure, AutoCal Fault, Analyzer in Calibration, Analyzer not running.
Digital Data Communications	RS-485 or RS-422 Modbus (RS-232 or TCP/IP Ethernet Optional)
Local MMI (GUI)	12" Touchscreen Computer with Embedded Windows 7 allows complete operation and control of all analyzer functions
Remote Interface	ATOM ACCESS allows complete control of FGA-1000, including monitoring of analysis parameters and digital data values

Utility Requirements

Ambient Temperature	-20°C to +40°C (-4°F to +104°F)
Power	120 VAC, 50/60 Hz at 2200 watts
Instrument Air	70 psig (4.8 bar), 7 SCFM, Oil Free, -40°C (-40°F) dew point
Zero Grade Air	70 psig (4.8 bar), 200 SCCM

Physical Parameters

Dimensions	965.2(h) x 660.4(w) x 304.8(d) mm
Mounting	Wall or Unistrut Stand
Certifications	Built to NEC Class1, Div2, Group B,C,D / CSA (optional)



Total Sulfur Analyzer

>> UV Fluorescence



XT SERIES

Laboratory Analyzer

- XT 2000
 - Total Sulfur & Total Nitrogen
 - Complies with ASTM D5453, D6667 & D4629
- EIM-1000
 - External Injection Module
 - Meets ASTM D6667 & D4629
- LAS-1000
 - Liquid Autosampler
 - Meets ASTM D5453 & D4629

Analytical Performance

Measurement Method	Total Sulfur : Excimer UV Fluorescence (EUVF) Total Nitrogen : Chemiluminescence
ASTM Methods	Total Sulfur : D5453, D6667, D7551 Total Nitrogen : D4629
Measurement Range	Total Sulfur : 0-10% Total Nitrogen : 0-10%
Repeatability	Total Sulfur : 30 ppb or 2% whichever is greater Total Nitrogen : 30 ppb or 2% whichever is greater
Analysis Time	3 minutes (Typical)
Typical Sample Size	Autosampler Liquid 5-20 μ L, EIM LPG 10 μ L EIM Gas 2.5mL

Utility Requirements

Power	100-240VAC, 50/60Hz
Gases (Sulfur >1 ppm)	Zero Grade Air 450sccm, 3bar
Gases (Nitrogen & Sulfur <1 ppm)	Ultra High Purity Oxygen 350sccm, 3bar Ultra High Purity Argon 150sccm, 3bar

Physical Parameters

Dimensions	457(w) x 508(d) x 414(h)mm
Weight	35 kg

EIM-1000

External Injection Module

ASTM Method	Total Sulfur : D6667, D7551 Total Nitrogen : D4629
Typical Sample Size	10 μ L for LPG, 2.5mL for Gas

Utility Requirements

Power	90-240VAC, 50/60Hz
Gases	Carrier at 20 SCCM, 3 bar (40psig)

Physical Parameters

Dimensions	304(w) x 381(d) x 414(h)mm
Weight	9 kg

LAS-1000

Liquid Auto Sampler

ASTM Method	Total Sulfur : D5453 Total Nitrogen : D4629
Typical Sample Size	5 - 20 μ L

Utility Requirements

Power	90-240VAC, 50/60Hz
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Physical Parameters

Dimensions	533(w) x 686(d) x 724(h)mm
Weight	27 kg



MEMO

A large, empty rectangular box with rounded corners, intended for writing a memo. The box is white and occupies most of the page area below the 'MEMO' header.

MEMO

PRODUCT OVERVIEW



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