



AIEQS

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Process Development

TDLAS GAS ANALYZER

GA9273

SO₂, NO₂, NO, O₂, H₂

19" Rack Mount



Highlights:

- Designed based on Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS) technology, Rack 19" base
- Utilizes a xenon lamp UV light source with long lifetime and excellent stability
- Optical bench with reflective gas chamber and fiber coupling, ensuring high sensitivity and strong absorption signals
- Spectrometer with high-precision slit, holographic concave grating and CMOS sensor for fast, accurate UV spectral response
- Enables highly accurate and selective measurement of SO₂, NO and NO₂ in low ppm ranges, Paramagnetic & EC/TCD
- Compact, simple structure with no mechanical moving parts in the optical path, ensuring high reliability
- High mechanical stability and fast response (T90 typically ≤ 30 s)
- Minimal maintenance required, suitable for long-term continuous operation
- Built-in temperature control of the optical bench for stable measurement performance
- Provides real-time, accurate monitoring of flue gas and process gas composition
- Supports combustion optimization, process control and energy savings
- Helps to reduce environmental emissions of SO₂ and NO_x
- RS-232/Modbus communication and 4–20 mA analog output for easy integration into industrial control systems

Product Details:

Gases	Full range	Type of Sensor
NO _x	0 – 2000 ppm	UV-DOAS ¹
SO ₂	0 – 1000 ppm	
H ₂	0-100 %Vol	TCD ²
O ₂	0-100 %Vol	Paramagnetic/EC ³

Notes:

1. Ultraviolet Differential Optical Absorption Spectroscopy
2. Thermal Conductivity Detector
3. Paramagnetic measuring cell or Electrochemical
4. Life time 1-2 years depends on sample condition and concentration

ویژگیها :

- طراحی شده بر پایه فناوری (UV-DOAS) ، بدنه 19" Rack
- استفاده از منبع نور لامپ زنونی فرابنفش با طول عمر بالا و پایداری بسیار خوب
- بهره‌گیری از محفظه گاز بازتابی با حساسیت بالا و سیگنال جذب قوی برای اندازه‌گیری غلظت‌های پایین
- استفاده از فیبر نوری برای انتقال نور و کاهش حساسیت سیستم به لرزش و شرایط محیطی
- بهره‌مندی از طیف سنخ برای پاسخ سریع و دقیق فرابنفش SO₂, NO_x
- امکان اندازه‌گیری دقیق و گزینشی گازهای H₂ TCD , PARA O₂
- ساختار اپتیکی فشرده، ساده و بدون قطعه متحرک در مسیر نور، با قابلیت اطمینان بالا
- پایداری مکانیکی بالا و زمان پاسخ سریع (T90 معمولاً ≥ 30 ثانیه)
- نیاز حداقلی به سرویس و نگهداری، مناسب برای کارکرد مداوم و طولانی‌مدت
- مجهز به کنترل دمایی بخش اپتیکی برای حفظ دقت اندازه‌گیری در شرایط محیطی متغیر
- امکان پایش برخط و دقیق ترکیب گازهای دودکش و فرآیندی
- نقش مؤثر در بهینه‌سازی احتراق و کاهش مصرف انرژی در بویلرها و کوره‌های صنعتی
- کمک به کاهش انتشار آلاینده‌های زیست محیطی به ویژه SO₂ و NO_x
- دارای ارتباط RS-232 با پروتکل Modbus و خروجی آنالوگ 4–20 mA
- برای یکپارچه‌سازی آسان با سیستم‌های کنترلی موجود

کاربردها :

- نصب در سیستم‌های آنالایزر برخط گاز در صنایع سیمان و فولاد
- صنایع سیمان و فولاد: پایش گازهای خروجی جهت بهینه‌سازی احتراق و مدیریت فرآیند در کوره و کلساینر.
- صنایع متالورژی: کنترل اتمسفر کوره‌های احیای مستقیم (DRI) و عملیات حرارتی جهت ارتقای کیفیت محصول.
- پایش گرم‌کن‌ها: پایش مستمر غلظت گازها در خروجی جهت بهبود راندمان حرارتی و عملیاتی.

Applications:

- Suitable to install in gas analyzer system of Cement, Steel plants
- Combustion & Process Control: Exhaust gas monitoring for kiln and calciner optimization.
- Metallurgical Processes: Precise control of DRI furnace atmospheres and heat treatment lines.
- Efficiency Management: Process gas monitoring in preheater systems. Any other application by request

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Technical Information for GA9273

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Technical Data of TDLAS sensor

measuring principle	Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS)	Warm Up Time	30 min
Range	Nox: 0-2000 PPM SO2: 0-1000 PPM	Communication	RS-232
Resolution	0.1ppm	Analog Output	4-20 mA
Precision	±2%F.S.	Working Temperature	0-50 °C
Drift	≤±2%F.S./24h	Relatively Humidity	≤85%
Inlet Flow	0.7-1.2 L/min	Power Supply	12VDC/ 2A
Inlet Pressure	(2-50) KPa		
Sample Gas Requirement	No Condensation, Dust Particles < 1um		
Response Time T90	≤ 30s		

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Technical Data of Other Sensors



Cubic

Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS) for measure of gases SO₂, NO_x

Manufacturer
Cubic Instruments (Wuhan) Ltd.



Angst Pfister

Paramagnetic Sensor Oxygen PAROX 1200

Measuring Range
0-100 %Vol, 0-25%Vol, other ranges on request

min Range
0-50 % O₂

Repeatability
< ± 0,03 % O₂

Manufacturer
Angst Pfister

optional



Cubic

TCD Sensor H₂

Measuring Range
0-100%Vol (Can be customized)

Sensor life Span
> 5 years

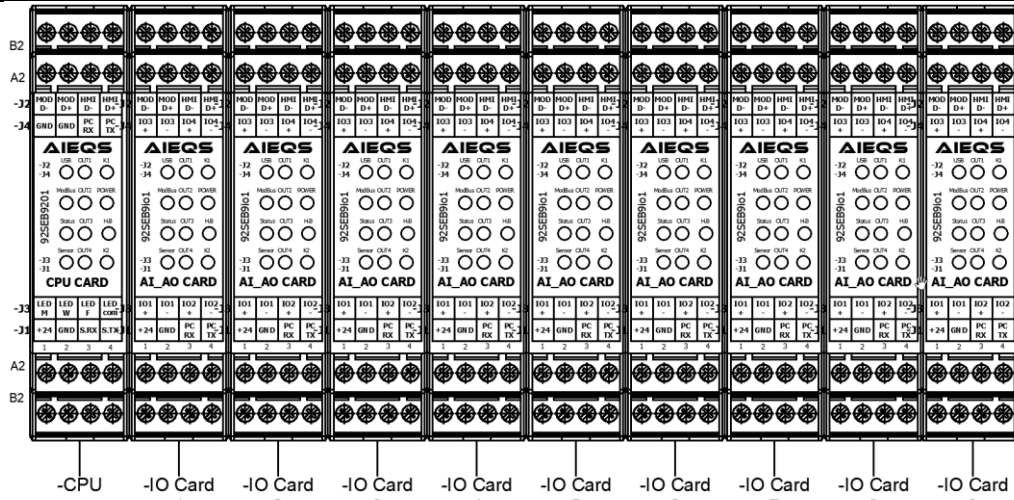
Manufacturer
Cubic Instruments (Wuhan) Ltd.

optional





3 Power & I/O card Details



Standard IO Block configuration:

- CPU Card1
- CPU Card2
- CPU Card3

Depends on the gas measuring add

- IO Card 1: 1st, 4...20 mA output
- IO Card 2: 2nd, 4...20 mA output

Maximum IO Block configuration (as order):

- CPU Card
- IO Card 1: 1st, 4...20 mA output
- IO Card 2: 2nd, 4...20 mA output
- IO Card 3: 1st, Relay Card
- IO Card 4: 2nd, Relay Card
- IO Card 5: 1st, Opto-coupler output
- IO Card 6: 2nd, Opto-coupler output
- IO Card 7: 1st, Opto-coupler input
- IO Card 8: 2nd, Opto-coupler input
- IO Card 9: 1st, 4...20 mA input

Analyzer Supply Voltage
90 to 260 VAC (+10 %, -15 %),
switchable, 48 ... 62 Hz

Ambient temperature
+5 ... +45 °C

Storage temperature
-20 ... +70 °C

interface
RS-485 for Modbus
USB

CPU Card

Power Supply: 24 VDC
Serial Port 1: RS232 / 485 to sensor
Serial Port 2: 485 to HMI
Serial Port 3: USB to Laptop
LED indicators

2nd, 4...20 mA output Card

4 channels mA output 4 ... 20 mA, 500 Ω
Potential-free (electrically isolated)
Signal range: 0 ... 24 mA
Resolution/precision: 0.1 % (20 µA)

2nd, Relay output Card

4 relay outputs: 30 V AC/48 V DC
0,5 A; 1-pole changeover switch
3 connections
Max. switching current: 30 W (at 48 V DC/500 mA)

2nd, Opto-coupler output Card

4 Opto-coupler input
Switching range: 14 ... 42 V
Highest allowable voltage: ±50 V DC
2nd, Opto-coupler input
4 Opto-coupler input
Switching range: 14 ... 42 V
Highest allowable voltage: ±50 V DC

Gas connection

Swagelok 6 mm
Swagelok ¼"

Purge Gas connection

Swagelok 8 mm

1st, 4...20 mA output Card

4 channels mA output 4 ... 20 mA, 500 Ω
Live Zero 0/2/4 mA Configurable
Potential-free (electrically isolated)
Signal range: 0 ... 24 mA
Resolution/precision: 0.1 % (20 µA)

1st Relay output Card

4 relay outputs: 30 V AC/48 V DC
0,5 A; 1-pole changeover switch
3 connections
Max. switching current: 30 W (at 48 V DC/500 mA)

1st, Opto-coupler output Card

4 Opto-coupler input
Switching range: 14 ... 42 V
Highest allowable voltage: ±50 V DC

1st, Opto-coupler input Card

4 Opto-coupler input
Switching range: 14 ... 42 V
Highest allowable voltage: ±50 V DC

4...20 mA input

4 channels mA input 4 ... 20 mA
Potential-free (electrically isolated)
Highest allowable input signal 30 mA
Overload protection ±1000 mA
Input load 50 Ω

19" Rack mount enclosure Dimension
420x 420 x 170 mm, 4 unit of rack

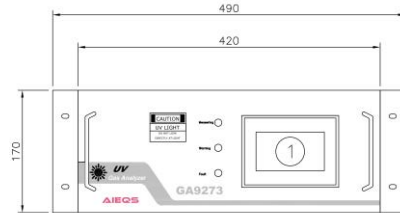
19" Rack mount enclosure weight
15-25 Kg



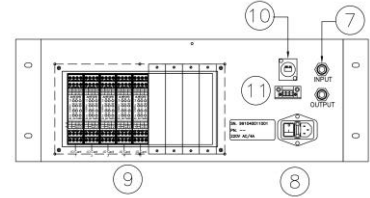


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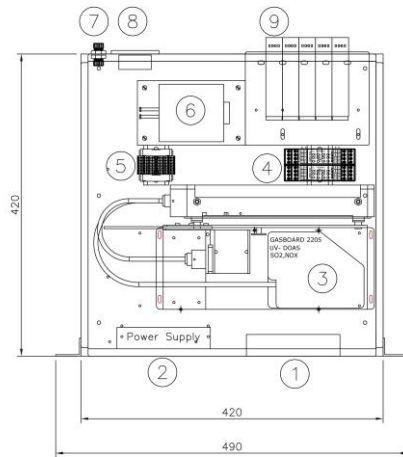
Dimensions



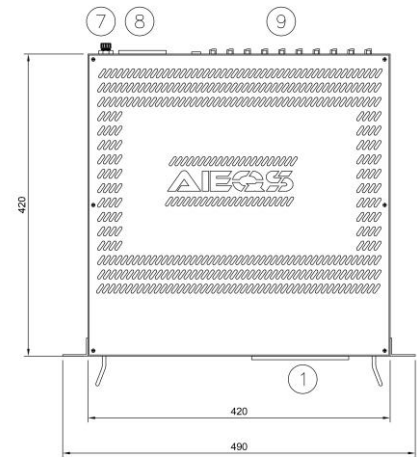
FRONT VIEW



BACK VIEW



INSIDE VIEW



TOP VIEW

- 1 Touch screen Display and LEDs for Status
- 2 Power Supply
- 3 UV-DOAS sensor
- 4 CPU Cards
- 5 Terminals
- 6 Paramagnetic sensor(optional)
- 7 Gas inlet / outlet connections
- 8 Power Cable & Fuse
- 9 I/O cards Block
- 10 USB connection
- 11 Signal socket

