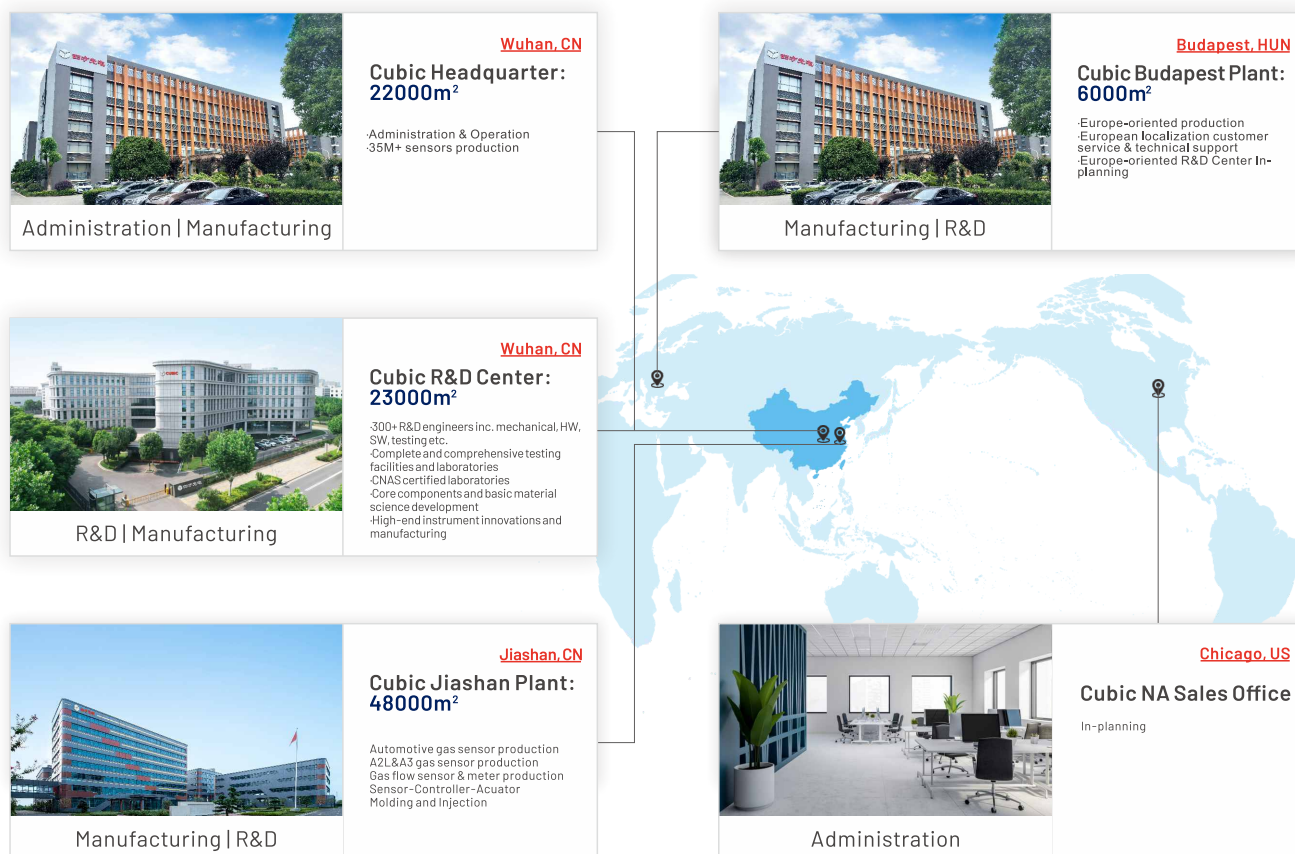# Cubic OEM&ODM Solutions for Medical and Healthcare

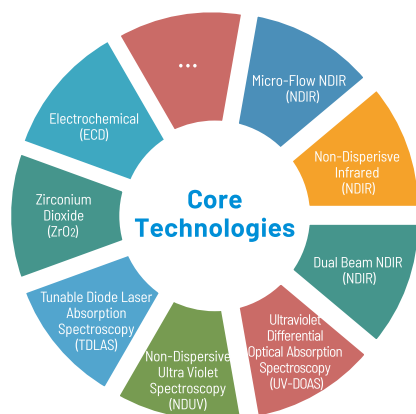Cubic Sensor and Instrument Co., Ltd.

📃 Cubic Introduction

Cubic Sensor and Instrument Co., Ltd. (hereinafter referred to as "Cubic") is a publicly listed company in SSE STAR Market (stock code:688665), specializing in smart gas sensors and superior gas analyzers. Set up in 2003, situated at "Optics Valley" of Wuhan, China, Cubic has established gas sensing technology platforms including optical technologies (NDIR, Ultraviolet, Light Scattering, Laser Raman), ultrasonic technology, MEMS metal oxide semiconductor (MOX) technology, electrochemical technology, ceramic thick-film technology based high temperature solid electrolyte technology and so on. At present, Cubic has obtained more than 233 patents at home and abroad, with abundant products widely used in various fields of HVAC, industrial safety, automotive electronics, medical & healthcare, smart metering, scientific instruments, low-carbon thermal engineering.

- Establish: Year 2003, in Wuhan, Optical Valley
- Employees: 1400+, including 300+ R&D
- IPO on Shanghai Stock Exchange (Stock code:688665)

Wuhan, CN
Cubic Headquarter: 22000m²

·Administration & Operation
·35M+ sensors production

Administration | Manufacturing

Budapest, HUN
Cubic Budapest Plant: 6000m²

·Europe-oriented production
·European localization customer service & technical support
·Europe-oriented R&D Center In-planning

Manufacturing | R&D

Wuhan, CN
Cubic R&D Center: 23000m²

·300+ R&D engineers inc. mechanical, HW, SW, testing etc.
·Complete and comprehensive testing facilities and laboratories
·CNAS certified laboratories
·Core components and basic material science development
·High-end instrument innovations and manufacturing

R&D | Manufacturing

Jiashan, CN
Cubic Jiashan Plant: 48000m²

Automotive gas sensor production
A2L&A3 gas sensor production
Gas flow sensor & meter production
Sensor-Controller-Acuator
Molding and Injection

Manufacturing | R&D

Chicago, US
Cubic NA Sales Office

In-planning

Administration

Sensing Technology Platforms

Core Technologies

- Micro-Flow NDIR (NDIR)
- Non-Disperisve Infrared (NDIR)
- Dual Beam NDIR (NDIR)
- Ultraviolet Differential Optical Absorption Spectroscopy (UV-DOAS)
- Non-Dispersive Ultra Violet Spectroscopy (NDUV)
- Tunable Diode Laser Absorption Spectroscopy (TDLAS)
- Zirconium Dioxide (ZrO2)
- Electrochemical (ECD)
- ...

22 Years
22 years of development and application of NDIR technology

17 Years
17 years of development and application of Ultrasonic technology

15 Years
15 years of development and application of Light scattering technology

7 Years
7 years of development and application of TDLAS technology

Patents

Total **233** patents obtained
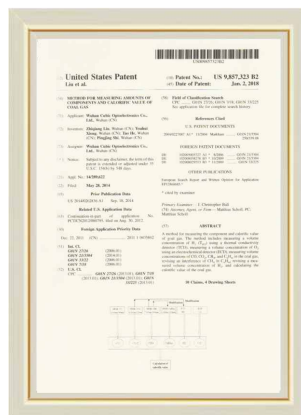
Quality Management

| ISO 9001:2015 | IATF 16949:2016 | ISO 14001:2015 | ISO 45001:2018 | A-SPICE Level 2 |

☆ Cubic OEM/ODM Solutions For Medical & Healthcare

PFT Testing Device

| Ultrasonic Spirometer | NDIR DLCO Sensor | Calibration Syringe |

CPET & Metabolism Solution

| TDLAS O2 Sensor | NDIR CO2 Sensor | Ultrasonic Flow Sensor |

EtCO2 Monitor

NDIR
CO2 Sensor

Spirometer

Ultrasonic
Flow Sensor

Gas Sensors

| Ultrasonic Flow & O2 Sensor | TDLAS O2 Sensor | Ultrasonic O2 Sensor |
| NDIR EtCO2 Sensor | Ultrasonic O2 Sensor | Anesthesic Gas Sensor |

☆ OEM/ODM Capability

- ✓ In-house Development and Manufacturing of Core Gas Sensors and Components

- ✓ Hardware/Structural Design

- ✓ Software Development

- ✓ Mold Development

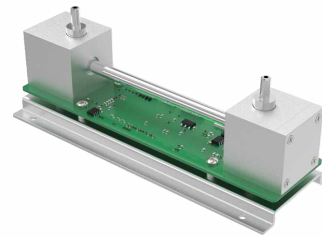- ✓ Prototype Testing/Validation

- ✓ Optimized Supply Chain Integration

Pulmonary Function Test Solutions

CO   CH4   CO2

MVV   FVC   VC

Spirometer

DLCO Gas Sensor

Calibration Syringe

Ultrasonic Spirometer

Applications

- Pulmonary Function Tests

Introduction

Handheld Pulmonary Function Spirometer adopts ultrasonic gas flow sensor to measure body's respiratory and inspiratory function. It can convert the patient breathing signal into electrical signal which is sent to corresponding signal processing circuit, to display real-time respiratory flow curve and then to calculate a variety of physiological and spirometric parameters. It can be used to monitor static vital capacity,forced vital capacity and maximum voluntary ventilation rate. And the matched software can automatically do BTPS correction and evaluate the pulmonary function.

Specifications

Detaction Principle	Ultrasonic Technology
Items Ranges Max error	VC (Vital Capacity) (0.5~8)L ±3% or ±0.050L whichever is larger FVC (Forced Vital Capacity) (0.5~8)L ±3% or ±0.050L whichever is larger MVV (Maximum Ventilatory Volume) 250L/min ±3% or ±4.5L/min whichever is larger
Relative Humidity	≤80% RH (non-condensing)
Atmosphere Pressure	80kPa~106kPa
Ambient Temperature	5°C~40°C
Power Supply	DC 4.75V~5.25V (supplied via USB port)

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Ultrasonic gas flow sensor adopted
- No maintenance, long lifespan
- Multiple parameters measurement available
- Real-time curve display, patient information management, printable, etc.
- Dedicated disposable mouthpiece, suitable for children and adults

Diffusion Pulmonary Function Tester

Product Components

Medical device (with sensor), breathing mask, ventilation tube accessories, Rafi tube accessories (Model: THR-3.0-600/P6), hose and airway accessories, Luer connector accessories.

Product Specifications

Ventilation Function	
VC (Vital Capacity) Accuracy	±3% or ±0.05L, take the maximum of the two Applicable under the following conditions: Ambient temperature: 5°C to 40°C Relative humidity: 30% RH to 75% RH Atmospheric pressure: 850 hPa to 1060 hPa
VC (Vital Capacity) Repeatability	Reading error ≤ 0.05 L or within 3% of the average reading
FVC Test	FVC Accuracy: ±3% or ±0.05L, take the maximum of the two Applicable under the following conditions: Ambient temperature: 0°C to 40°C Relative humidity: 30% RH to 75% RH Atmospheric pressure: 850 hPa to 1060 hPa

Diffusion Function	
DLCO Test	DLCO-SB Accuracy: Zero diffusion: ±0.05 ml/min/mmHg Non-zero diffusion: ≤5% DLCO-SB Repeatability: Best 2 consecutive tests: DLCO difference <3 mL/(min*mmHg) or within 10% of the maximum value VA Accuracy: ≤5% Total Alveolar Volume: VA Repeatability: Difference between two repeated tests ≤5%

Sensor Specifications

Ventilation Function	
Sampling frequency	>100 Hz
Frequency error	±1%

Flow Sensor	
Flow Range	±14L/s
Flow Accuracy	±10% or ±10L/min(±0.17L/s),take the maximum of the two
Flow Linearity	The average error difference between two consecutive flow tests must not exceed 5% of the larger flow value.
Flow Repeatability	±0.17 L/s or within 10% of the average reading,take the maximum of the two
Flow resistance	≤0.35kPa/(L/s)
Frequency Response	≤15L/min(0.25L/s) or 12%, take the maximum of the two
Volume Range	0-12L
Volume Accuracy	±3.0% or ±0.05L, take the maximum of the two
Working Conditions	Ambient Temperature: 5°C-40°C
Relative humidity	30%RH-75%RH Atmospheric pressure: 850hPa-1060hPa
Volume Linearity	≤3%
Volume Repeatability	The maximum difference should be within 0.05 L or 3% of the average reading, take the maximum of the two
Breathing Resistance	≤0.15kPa/(L/s) @14L/s

| Gas Analyzer	
Detection Range	CO: 0-3500ppm (0-0.35%) CH4: 0-3500ppm (0-0.35%)
Accuracy	CO/CH4: ±1%FS
Maximum nonlinear error	CO/CH4: ±1%FS
Response Time	CO/CH4: T90≤150ms@1L/min

NDIR DLCO Gas Sensor
Gasboard-2051

Applications

■ Pulmonary Function Test Systerm

Introduction

Gasboard-2051

Gasboard-2051 gas sensor for CO, CH4 and CO_2 concentration measurements which is based on non-dispersive infrared technology,it uses an ultra-fast modulation frequency and a special detection circuit to achieve the fast response, high accuracy, excellent stability and anti-interference abilities during lung diffusion function tests. With microcontroller processing, it offers gas sampling, signal processing, sensor calibration and measurement output, and realizes the fast and accurate measurement of the ultra-low range gas CH4, CO based on the ATS/ERS 2017 requirements. With small size and clean design, Gasboard-2051 is the best choice to be integrated with pulmonary function test systems.
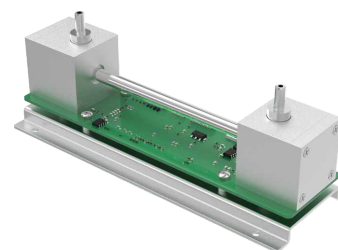
Specifications

Operating Principle	NDIR
Measuring Target	CO, CH4, CO_2
Measurement Range	CO: 0~3500ppm(0~0.35%vol) CH4: 0~3500ppm(0~0.35%vol) CO_2: 0~10%vol
Accuracy	CO: ±1%FS CH4: ±1%FS CO_2: ±1%FS
Resolution	CO: 1ppm CH4: 1ppm CO_2: 0.001%vol
Response Time	T_{90} < 150ms @ 1L/min
Data Output Frequency	100Hz
Digital output	Serial
Interface	UART (TTL and Rs232)
Dimensions	L155*H70*W76.3(mm)
Working Pressure	750mBar ~1150mBar
Working Condition	0~+45°C, 0-90%RH (non-condensing)
Power Supply	12V DC

﹡ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

■ Four-channel detector for CO, CH4, CO_2 and a reference channel

■ Fast response (T_{90} < 150 ms @ 1L/min flow rate)

■ Excellent stability, high accuracy (±1%FS)

■ Simple structure, easy maintenance

Lung Function Analyzer Calibration Syringe Gasboard-7050

CUBIC

Applications

- Routine Automatic Calibration and Inspection of Lung Function Analyzer

Introduction

The Syringe is mainly used for the routine calibration and inspection of the Lung Function Analyzer, which is easy to operate by driving the low traction piston with motor and shows high accuracy and sealing. The 3 liter calibration Syringe comply with quality standards which supports volume calibration and linear verification of three flow rates.

Gasboard-7050

Specifications

Volume	3000mL
Accuracy	±15mL
Interface	Outer diameter: Φ28mm
Working Temperature	15°C~40°C
Storage Temperature	0°C~50°C
Storage Relative Humidity	10%RH~95%RH
Size	L590*W113*H116.5 (mm)
Weight	2.5kg

Accuracy complied with standard JJF 1213-2008 for Lung Function Analyzer

＊ Please read product manual carefully or purchase and use under guidance of medical staff   ＊ Please refer to the manual for contraindications or precautions

＊ For details of technical parameters, please refer to the specification sheet. For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- High sealing performance

- Accuracy performance qualified by authoritative third party

- Easy to operate with the low traction piston

CPET & Metabolism Test Solutions

O₂ **CO₂** **Flow**

TDLAS O2 Sensor

NDIR CO2 Sensor

Ultrasonic Flow Sensor

Metabolism Analyzer

Introduction

The Cubic Metabolism Analyzer measures essential metrics such as metabolic rate, fat-burning rate, carbohydrate metabolism, and energy expenditure. By gaining insights into these key factors, individuals can better understand their nutritional intake and consumption patterns, empowering them to make more informed decisions about their diet and exercise routines. The Cubic Testing System includes an O2and CO2 concentration gas analyzer, a flow rate sensor, and a respiratory mask for comprehensive metabolic testing. It operates on a Microsoft Windows 7 SP1 platform and can be connected to a printer for generating detailed metabolic testing reports.

Specifications

Sensor Detection Range	O2	0-100%
	CO2	0-10%
	Flow	0-14L/s
Sensor Accuracy	O2	±0.1% vol
	CO2	±0.1% vol
	Flow	≤2%
Resolution	O2	±0.3%FS
	CO2	±0.1%Vol@0-5%Vol
	Flow	0.1L/min
Response Time(T10-T90)	O2 concentration	<130ms(@200±100ml/min)
	CO2 concentration	<130ms(@200±100ml/min)
	Flow	≤40ms(@≥6L/min)
Warm-up Time	5mins	
Detection Range	VO2/VCO2:10-1000ml/min	
Detection Accuracy	VO2/VCO2:±3%	
RQ Detection Range	0-2.0	
RQ Detection Accuracy	±5%	
REE Detection Range	0-7200kcal/day	
REE Detection Accuracy	±3%	
Working Conditions	Ambient Temperature	+5°C-+40°C
	Relative Humidity	10%-90%RH(No-Condensing)
	Atmospheric pressure	80kPa-106kPa
Storage Conditions	Ambient Temperature	−40°C-+70°C
	Relative Humidity	10%-90%RH(No-Condensing)
	Atmospheric pressure	60kPa-106kPa

TDLAS O2 and NDIR CO2 Sensor
Gasboard-2511

Applications

■ Cardiopulmonary exercise test	■ Anesthesia Machine
■ Ventilator	■ ICU monitor
■ Animal and plant monitoring and control	

Introduction

By leveraging Tunable Diode Laser Absorption Spectroscopy (TDLAS) technology for O2 concentration measurement, Non-Dispersive Infrared (NDIR) technology for CO2 concentration measurement, Gasboard-2511 achieves precise measurements of O2 and CO2 concentrations in real time. Gasboard-2511 could reach measurement range of 0%~100% level for O2, and 0%~10% for CO2 with resolutions up to 0.01% to realize high accuracy and excellent repeatability. It is also compatible for other gas measurements by changing the light sources. Gasboard-2511 oxygen sensor can be widely applied for anethesia, medical oxygen monitoring, cardio fitness test, etc.

Gasboard-2511

Specifications

Detection Principle	TDLAS & NDIR Technology
Detection Range	O2 Concentration: 0%~100% CO2 Concentration: 0%-10%
Accuracy	O2 Concentration: +0.3%FS; CO2 Concentration:+0.1%Vol @ 0~5%Vol; +3% Reading @5%-10% Vol
Response Time	170ms±15ms @ 150ml / min (T10%~90%) 100ms±15ms @ 350ml / min (T10%~90%)
Startup Time	<25s
Working Conditions	-10 ~ 50°C ; 0~95%RH (Non-condensing)
Storage Conditions	-30 ~ 70°C ; 0~95%RH (Non-condensing)
Outputs	RS232(default) / RS-485(reserved)
Analog Output	(0~1) V DC (reserved)
Working Voltage	12V±10%
Working Current	Max. 0.7A; Average 0.4A
Product Size	L180*W60*H30mm

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

■ TDLAS and NDIR technology, for both O2 and CO2 concentration measurement.

■ High selectivity: narrowband tunable laser emission targeting oxygen absorption band

■ Senstive and fast response(<170ms)

■ Automatic temperature and pressure compensation

■ No consumption and maintenance required

■ Long lifetime > 100,000 hrs

■ RS232 digital interface for easy integration and control, RS485 can be customized

NDIR CO2 Sensor

Applications

- Patient Monitor
- Anesthesia Machine
- Ventilator

Introduction

The sidestream ETCO$_2$ sensor adopts non-dispersive infrared (NDIR) technology for accurate carbon dioxide concentration measurement. Applicable for use in patient monitors, metabolism analyzers, cardiopulmonary exercise testing (CPET) systems, and other medical equipment. Key features include high measurement accuracy, excellent temperature stability, low power consumption, fast response time, compact structure, and easy installation.

Specifications

Detection Principle	Non-Dispersive Infrared Technology (NDIR)
Data Output	CO2 Concentration (mmHg), ETCO2, Inspired CO2 and respiratory rate
Detection Range	0~150mmHg
Resolution	±0.1mmHg
Resolution	0.01%
Detection Accuracy	0~40mmHg: ±2mmHg; 41~70mmHg: True Value ±5%; 71~100mmHg: True Value ±8%; 100~150mmHg: True Value ±10%
Respiratory Frequency Range	0~150BPM
Respiratory Frequency Accuracy	±1 breath
Stability	Short-term Drift: No More Than 0.8mmHg (4H); Long-term Drift: Maintains accuracy specifications within 120 hours.
Input Voltage	5.00V(±5%)
Average Current	<100mA
Peak Current	<200mA
Initialization time	Displays within 15 seconds, full-scale accuracy within 2 minutes (25°C)
Compensation	AtmosphericPressure: 400mmHg~850mmHg
Operating Conditions	−20°C~55°C,10%-90%RH(No-Condensing)
Storage Conditions	−40°C~70°C,10%-90%RH(No-Condensing)
Communication	TTL
Lifespan	≥10 Years
Dimensions	57.5mm*23.7mm*24mm

TDLAS O2 Sensor
Gasboard-2512

Applications

- Exercise testing and respiratory gas monitoring

- Anesthesia physiological testing

- Plant and animal physiology

- Industrial processes
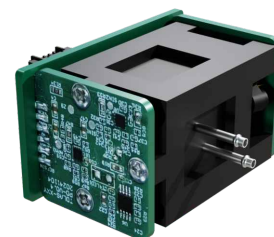
Gasboard-2512

Introduction

Gasboard-2512 series is a cutting-edge oxygen sensor independently developed by Cubic. Based on tunable diode laser absorption spectroscopy (TDLAS) technology, the sensor adopts a high-performance detector and a specialized process gas chamber, offering high sensitivity, long lifespan, and excellent stability. With temperature compensation algorithms, the sensor maintains stable performance even under harsh conditions and complex gas environments, free from ambient interference. The modular design ensures quick and easy installation and allows calibration via TTL communication interface. The low-power design enables easy integration and maintenance.

Specifications

Detection Gas	Oxygen (O2)
Detection Principle	Tunable Diode Laser Absorption Spectroscopy (TDLAS)
Detection Range	0-100% VOL
Detection Accuracy	±1% FS
Resolution	0.01%
Working Temperature	0-50°C
Storage Temperature	0-98°C (No-Condensing)
Response Time	200ms@250mL/min (T10-T90)
Power Supply Voltage	5V±5%
Power Consumption	≤150mA (typical 100mA)
Output Signal	TTL (3.3V)
Storage Conditions	−40°C-85°C, 0-98%RH(No-Condensing)
Dimensions	45*31*30.5 mm

Oxygen Concentrator Solutions

Ultrasonic O2 Sensor

Ultrasonic oxygen Sensor

Cooling Fan

PCBA

O2   Flow

Ultrasonic O$_2$ Sensor
Gasboard-7500H Series

Applications

- Family and Medical Oxygen Concentrator/Generator

- Flow Measurement of Clean Air

- For the measurement of oxygen concentration in binary gases including oxygen

Gasboard-7500H Series

Introduction

Gasboard-7500H series are a type of ultrasonic oxygen gas sensors, which can realize accurate and stable measurements for oxygen concentration and flow rate. Gasboard-7500H series provide a new, economical, durable option for system designers who is seeking for medical oxygen sensor for PSA oxygen generator, medical ventilator, respiratory device, anesthetic machine and vaporizer. By adopting ultrasonic detecting technology and principle of TOF (time of flight) measurement, Gasboard-7500H series have great performances: excellent stability, high accuracy, fast response, continuous monitoring, no drift, no need routine calibration, maintenance-free, etc.

Specifications

Detection Principle	Ultrasonic Technology
Detection Range	O$_2$ Concentration: 0%~100% O$_2$ Flow Rate: 0~10L/min
Detection Accuracy	O$_2$ Concentration: ±1.5%FS@ (5~45)$^{\circ}$C O$_2$ Flow Rate: ±0.2L/min@ (5~45)$^{\circ}$C
Resolution	O$_2$ Concentration: 0.1% O$_2$ Flow Rate: 0.1L/min
Response Time	O$_2$ Concentration: <1.5s O$_2$ Flow Rate <0.3s
Work Condition	5°C~50°C; 0~95%RH (Non-condensing)
Work Voltage	DC 4.75~12.6V, Ripple Wave <50mV
Product Size	W80*H22*D25 (mm)

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Ultrasonic measurement technology, for both oxygen concentration and flow rate

- Based on principle of TOF (time of flight) measurement, continuous monitoring, no drift, no need routine calibration, maintenance-free.

- Small size, flexible installation

- Full scale matrix temperature compensation(humidity is also available)

- No-consuming parts, long Lifespan

- RoHS, REACH, CMC, CE certificated

Ultrasonic oxygen Sensor
Gasboard-6500HM

CUBIC

Applications

- Home and medical oxygen concentrators, Oxygen generators, and portable pulse oxygen concentrators
- Concentration detection of clean gases
- Binary gas detection involving oxygen-containing mixtures

Gasboard-6500HM

Introduction

Gasboard-6500HM Ultrasonic oxygen Sensor is a cost-effective and realiable solution for measuring oxygen concentration in binary gas mixtures. Flow measurement functionality is available upon requestFeaturing a compact design, rapid response, and high accuracy, the sensor delivers excellent long-term stability. Based on the Gasboard-7500H series, Gasboard-6500HM is optimized for more wide applications, making it an ideal choice for replacements and expansions.

Specifications

Detect Principle	Ultrasonic Technology
Detection Range	O2 Concentration:0%~100%
Detection Accuracy	O2 Concentration: ±2.0%FS@ (5~50)℃
Resolution	O2 Concentration: 0.1%
Response Time	O2 Concentration:≤1.5S
Work Condition	5~50℃ ;0~95%RH （Non-condensing）
Storage Condition	−20~60℃ ;0~95%RH （Non-condensing）
Work Voltage	DC 4.75-5.25V, Ripple Wave ≤50mV
Average Work Current	≤35mV
Communication Interface	UART_TTL (3.3V)
Product Size	W50*H22*D31 mm
Life Span	≥15 years

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Cooling Fan
4020

Applications

- Medical devices
- Communication equipment
- Household appliances
- Computers
- Energy storage power supplies

4020

Introduction

The 4020 cooling fan is a DC axial fan independently developed by Cubic. By delivering airflow, the fan effectively removes internal heat from equipment, providing efficient cooling for high-density devices with limited ventilation. It has undergone rigorous quality testing, ensuring high reliability. Key advantages include fast heat dissipation, low power consumption, low noise, and long lifespan.

Specifications

Rated Voltage	12V DC
Operation Voltage	10.8~13.2V DC
Rated Current	0.04A (0.08Max)A
Rated Power	0.48(0.96Max)W
Rated Speed	5800±15% RPM
Start Voltage	7 VDC (ON/OFF)
Connector Type	XH-2.54-2P or Equivalent
Max. Airflow	7.42 CFM
Max. Air pressure	5.14mm H2O
Noise Level	26.2dBA at 1m
Motor Level	4
Rotation Direction	CCW From Blade
Lifespan	50,000Hrs@40°C

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Max. Airflow 7.42 CFM, Max. Air pressure 5.14 mmH_2O, remove heat quickly
- Low Noise: Max. noise level of 26.2 dB(A)
- Compact size, can be built into small devices
- Low power consumption, reted power 0.48W

12V DC Cooling Fan for O2 Concentrator 9733

Applications

- Oxygen Generator

Introduction

Cubic 12V DC Cooling Fan 9733 is specially designed for portable oxygen concentrators, medical ventilators, and other medical devices. With a brushless DC motor and high-strength polymer materials, this fan provides stable airflow up to 23.82 CFM and a pressure rating of 24.57 mm H_2O to support the normal operation of medical equipment. Operating quietly, safely, and with low power consumption, the fan ensures optimal cooling in oxygen concentrators and other medical devices.

9733

Specifications

Bearings Type	ball bearings
Rated Voltage	12Volt DC
Starting Voltage	6Volt DC
Power	4.8Watt
Speed	3200±15%RPM
Connector Type	JWT A2501-2P
Max Airflow	23.82CFM
Max Pressure	24.57mmH2O
Noise Level	45.32dB(A)
Dimensions	L94.3*W33*H97.2mm
Operating Temperature	-10°C~70°C
Storage Temperature	-40°C~70°C
Life Expectancy	50,000 hours

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Effective cooling performance for oxygen concentrator

- Locked rotor protection and auto-restart functionality, ensuring optimal safety and reliability

- Simplified installation by including 2-Pinwire leads for straightforward setup

- 4.8Watt Low voltage startup, wide operating voltage range

- Support flexible customization

Ventilator & Anesthesia Gas Sensing Solutions

Ultrasonic O2 Sensor
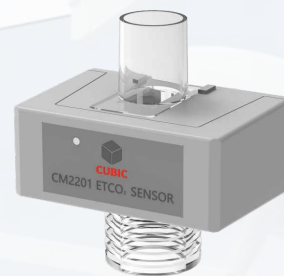
NDIR EtCO2 Sensor

Ultrasonic Flow & O2 Sensor

TDLAS O2 & NDIR CO2 Sensor

Ultrasonic Flow & O2 Sensor

Anesthetic Gas Sensor

Ultrasonic O$_2$ Sensor
Gasboard-8500V-RH

CUBIC

Applications

- Ventilator
- High-flow asal cannula oxygen therapy
- Other devices to measure oxygen concentration in binary gas (include oxygen)

Introduction

Gasboard-8500V series ultrasonic oxygen sensors are economical gas sensors used to detect oxygen concentration in binary gases. By adopting ultrasonic detecting technology and principle of TOF (time of flight) measurement, these sensors are very stable, high accuracy, maintenance-free, no drift, no need routine calibration and no-consuming parts, can continuousmonitor with long life span. Gasboard 8500V series sensors are small size and easy to be integrated to medical ventilator and other equipment.The series has been granted global and European patent protection.

Gasboard-8500V-RH

Specifications

Detection Principle	Ultrasonic Technology
Detection Range O$_2$ Concentration	0~100%
Resolution O$_2$ Concentration	0.1%
Response Time	≤5s (T$_{90}$)
Work Condition	0~50°C; 0~95%RH below (Non-condensing)
Storage Condition	-20°C~70°C; 0~95%RH below (Non-condensing)
Work Voltage	DC 4.75~12.6V, Ripple Wave≤50mV
Average Work Current	≤40mA
Communication Interface	UART_TTL (3.3V)
Product Size	Φ30*46 (mm)

* For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Patented ultrasonic technology adopted to oxygen concentration measurement
- Based on principle of TOF (time of flight) measurement, continuous monitoring, no drift, no need routine calibration, maintenance-free
- No-consuming parts, long life span
- Full temperature range compensation
- Easy to be integrated to medical ventilator, small size

Ultrasonic Flow and O2 Sensor Gasboard-8500FS Series

Applications

- Medical Ventilator

- High-flow Oxygen Therapy Device

- Gas Detection in Binary Gas (Including O2)

Gasboard-8500FS Series

Introduction

Gasboard-8500FS Series is Cubic's ultrasonic technology 5-in-1 combined sensor solution to measure flow rate, oxygen concentration,temperature, pressure and humidity. It is suitable in binary gases for medical ventilators to support the global pandemic situation due to Corona virus outbreak. Benefit from ultrasonic technology and principle of TOF (time of flight) measurement, Gasboard-8500FS Series has excellent performances with advantages of high accuracy, fast response, no drift, no need for routine calibration and maintenance-free, etc.. Gasboard-8500FS Series can be widely used in high-flow nasal cannula oxygen therapy ventilation, positive airway pressure ventilation, anesthetic ventilator and other medical equipment related to breath.

Specifications

Model	Gasboard-8500FS-L40	Gasboard-8500FS-L240 Series
Detect Principle	Ultrasonic Technology	Ultrasonic Technology
Detection Range	O2 Concentration: 0%~100% vol Flow Rate: 0~40L/min	O2 Concentration: 0%~100% vol Flow Rate: 0~240L/min
Detection Accuracy	O2 Concentration: ±2.5%FS@ (10~40)°C; 0~40%RH ±3%FS@ (5~45)°C; 0~95%RH (non-condensing) Flow Rate: ±0.10L/min (<5L/min); ±2.0% reading (≥5L/min)	O2 Concentration: Typically, ±2.5%FS, Maximum ±3%FS Flow Rate: ±0.2L/min (<10L/min); ±2.0% reading (≥10L/min)
Resolution	O2 Concentration: 0.1% vol Flow Rate: 0.01L/min	O2 Concentration: 0.1% vol Flow Rate: 0.01L/min
Data Update Time	O2 Concentration: 10ms Flow Rate: 10ms	O2 Concentration: < 2ms Flow Rate: < 2ms
Working Condition	5°C~50°C; 0~95%RH (Non-condensing)	5°C~60°C; 0~95%RH (Non-condensing)
Communication	UART_TTL (3.3V)	UART_TTL (3.3V) / I^2C (available on request)

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- Ultrasonic measurement technology adopted, maintenance-free, no drift

- Simultaneous measurement of oxygen concentration and gas flow

- 2ms fast response to meet flow regulation requirements

- Full range temperature and humidity compensation

- More than 15 years of life span

Anesthetic Gas Sensor
MED-MZ001

CUBIC

Applications

- Anesthesia machine
- Respiratory monitor
- Portable anesthesia equipment

MED-MZ001

Introduction

The MED-MZ001 anesthesia gas sensor is based on NDIR (Non-Dispersive Infrared) technology and can accurately and continuously monitor the concentration of anesthetic gases (Sevoflurane, Desflurane, Isoflurane, N2O) and CO2 concentration inhaled and exhaled by patients. The sampling performance of the MED-MZ001 anesthesia gas sensor is stable, with pressure and temperature correction functions, and the built-in intelligent algorithm can achieve a fast response within 0.6S. The sensor has no moving parts, is stable and reliable in the long term, has strong anti-cross gas interference ability, and meets the requirements of medical equipment integration.

Specifications

Detecting principle	NDIR (non-dispersive infrared) technology
Measurement gas	Sevoflurane($C_4H_3F_7O$), Desflurane($C_3H_2F_6O$), Isoflurane($C_3H_2ClF_5O$),CO2, N2O
Measurement range	Sevoflurane: 0 - 8 %Vol Desflurane: 0 - 18 %Vol Isoflurane: 0 - 5 %Vol CO2: 0 - 15 %Vol N2O: 0 - 100 %Vol
Accuracy	Sevoflurane,Desflurane,Isoflurane: ±(0.15% Vol + 5% of reading) CO2: ±(0.2% Vol + 2% of reading) N2O: ±(2 %Vol+ 2% of reading) @ N2O≤85%Vol
Resolution	Sevoflurane,Desflurane,Isoflurane: 0.15% Vol CO2, N2O: 0.1% Vol
Sampling frequency	100Hz
Startup Time	≤30s
Response time	Sevoflurane,Desflurane,Isoflurane: T90< 600ms CO2,N2O: T90< 250ms
Sampling method	①Suction ②Air pump
Protection level	IP65
Output	RS232
Dimensions	45.5mm*32.0mm*29.5mm
Lifetime	≥10years
Shell material	Photosensitive resin
Working temperature	10 ~40°C (50 - 104℉)
Storage temperature	−25 ~ 60°C(-13 - 140℉)
Working humidity	10-98%RH (non-condensing)
Storage humidity	10-90%RH (non-condensing)
Working pressure	660~1060mbar (with pressure compensation)
Storage pressure	500~1060mbar
Power supply	5V±5% DC
Average Working Current	＜300mA (@25°C,5V)

NDIR Mainstream EtCO2 Sensor
CM2201

Applications

- Medical Monitors
- Anesthesia Machines
- Ventilator
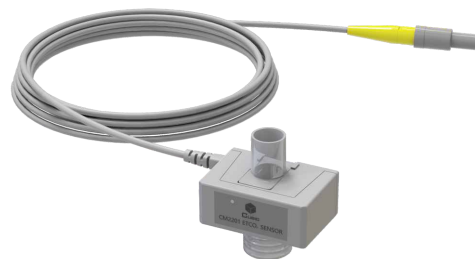
CM2201

Introduction

Metabolic carbon dioxide (CO_2) in the blood is carried to the lungs and exhaled, and $EtCO_2$ levels can reflect the somatic status. Cubic medical mainstream $EtCO_2$ sensor module CM2201 is designed with advanced dual beam non-dispersive infrared technology, and widely used in monitoring the respiratory end tidal CO_2 concentration and respiration rate. it can be easily integrated to monitors or anesthesia machines with an 8-pin socket and the preparation of the corresponding display/control software.

Specifications

Detection Principle	NDIR Technology
Measure range	0~150mmHg
Resolution	0~150mmHg: 0.1mmHg
Accuracy	0~40mmHg: ±2mmHg; 41~70mmHg: ±5% of reading; 71~100mmHg: ±8% of reading; 100~150mmHg: ±10% of reading
Respiration rate range	0 to 150 Breaths Per Minute (BPM)
Respiration Rate Accuracy	±1 breath
Data interface	RS232, TTL (customized)
Working condition	0~45°C; 10%~90%RH (non-condensing)
Storage condition	-40°C~70°C; ≤90%RH (non-condensing)

＊ For details of technical parameters, please refer to the specification sheet.For more technical information, please contact: 86 27-8162 8827 or sales@gassensor.com.cn

Features

- NDIR technology with independent intellectual property rights
- 100Hz high frequency sampling, fast response
- Using black body light source, long lifespan and good stability
- With an 8-pin socket that protocol compatible with most of the major monitorsin the market
- Designed to meet EN IEC 55014-1:2021,EN IEC 61000-3-2:2019 standards

ETCO2 (end-tidal carbon dioxide) Monitor

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Applications

- Ventilation monitoring
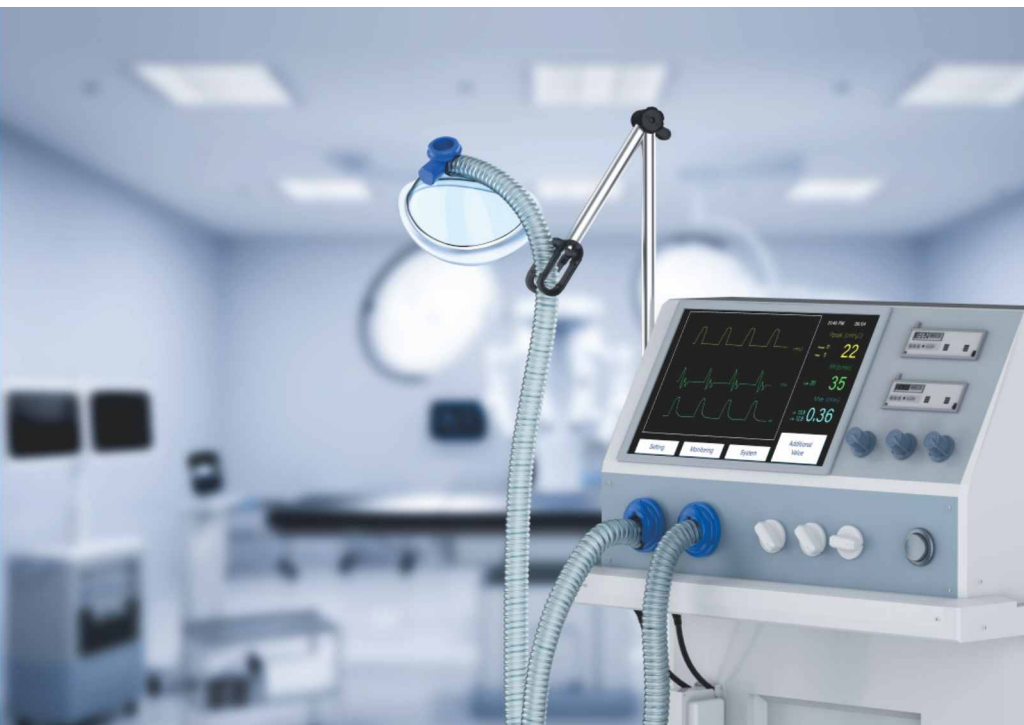- Ventilation & CPR assessment
- Auxiliary diagnosis

Introduction

ETCO2 (end-tidal carbon dioxide) Monitor is a non-invasive, simple, real-time, and continuous clinical technique used to assess ventilation, cardiac output, V/Q status, and metabolism by measuring CO_2 in exhaled breath. It works by detecting the absorption of specific infrared wavelengths by CO_2 molecules, calculating real-time CO_2 levels, plotting concentration curves, and determining key values like $ETCO_2$ and respiratory rate.

Specifications

Measurement Parameters	End-tidal CO2, Respiratory rate
End-tidal CO2 measurement range	0–152 mmHg
End-tidal CO2 accuracy	0–40 mmHg: ±2 mmHg 41–70 mmHg: ±5% 71–100 mmHg: ±8% 101–152 mmHg: ±10%
End-tidal CO2 resolution	≤1 mmHg
Respiratory rate range	3–150 times/min
Heart rate accuracy	±1 BPM
Sampling rate	Constant flow rate of 220 ml/min

All products are in continuous development and therefore specifications
may be subject to change without prior notice.