

Gas Concentration/Density Analyzer

Overview

Measure the density or concentration of a gas directly in the gas line or in the gas tank.

Principle

At the heart of the sensor is a microelectromechanical system (MEMS) with an oscillator in the form of a tuning fork. The natural frequency of the oscillator varies depending on the density of the gas surrounding it.

Application

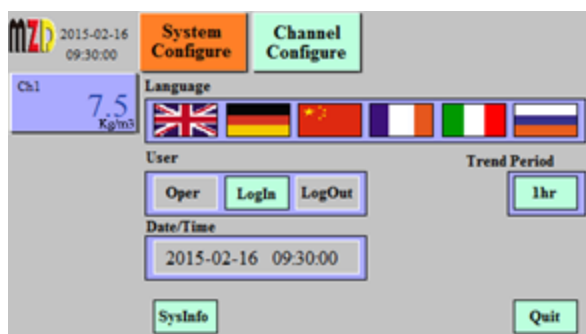
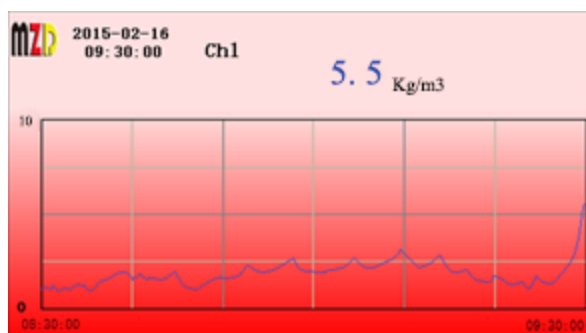
- Monitoring of welding gas mixtures.
- Monitoring of gas mixtures for food packages.
- Monitoring of clean gas.
- Concentration of binary gas mixtures, ideal volume percentages (=molar percentages) in % standard density.
- Permitted gases or mixtures of such gases:
 - Nitrogen (N₂)
 - Oxygen (O₂)
 - Air
 - Carbon dioxide (CO₂)
 - Neon (Ne)
 - Argon (Ar)
 - Krypton (Kr)
 - Xenon (Xe)
 - Hydrogen (H₂)
 - Methane (CH₄)
 - Natural gas (maximum permitted helium concentration: 50 ppm)
 - Ethyne (acetylene)(C₂H₂)
 - Ethene(C₂H₄)
 - Ethane (C₂H₆)
 - Propene (C₃H₆)
 - Propane (C₃H₈)
 - Butane (C₄H₁₀)
 - LPG (supplied as gas)
 - Other media may be used after individual clarification



Features

- ❖ **Built-in Multi-parameter measurement**
Measured variable:
Density in kg/m³
Temperature in °C
Pressure in bar absolute
- ❖ **Performance**
Accuracy of measurement:
Density: <0.1 kg/m³
Temperature: <0.8 °C
Pressure: <0.04 bar
With field calibration density: <0.05 kg/m³
Repeatability:
Density: <0.015 kg/m³
Temperature: <0.06 °C
Pressure: <0.005 bar
- ❖ **Optional mass flow measurement and controller**

Gas Concentration/Density Analyzer



Features

❖ Quick and convenient

The navigation menu contains 6 languages, which can be operated easily.

❖ Process safety

4.3" or 7" large size color LCD touch screen, convenient and safe touch operation and debugging

Large size screen with red flashing alarm, clearly visible from long distances and in dark areas

Alarm immediately, safe the process

❖ Alarm event record

Real-time data curve display

Record function for up to 6,000 alarms

❖ Expert calibration function

Multi-point calibration function up to 9 point

❖ Powerful self-diagnosis function

Built-in heartbeat monitoring function and watchdog

Monitor the status of analyzer and sensors, and promptly remind customers to take necessary maintenance

High-standard hardware and software security and password protection

❖ Powerful control function

High(low) limit control function

Optional: Timer control(automatic cleaning) function

Optional: analog PID control function

Optional: PWM control function

❖ Flexible fieldbus communication functions for IOT4.0

Optional fieldbus MODBUS, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, etc.



Gas Concentration/Density Analyzer

Parameters

Measuring principle	Coriolis force			
Display	4.3" or 7" industrial color touch screen			
Language	Multi-Language (English, German, Chinese, French, Italian, Russian or Customized)			
Range	0~19Kg/m ³			
Linearity	Density: <0.1 kg/m ³ , Temperature: <0.8 °C, Pressure: <0.04 bar With field calibration density: <0.05 kg/m ³			
Repeatability	Density: <0.015 kg/m ³ , Temperature: <0.06 °C, Pressure: <0.005 bar			
Sensitivity	Density: <0.001 kg/m ³			
Response Time	<1sec			
T90-time	<1sec (at flow rate 20l/h)			
Gas pressure	0~9 bar			
Sample gas temperature	-20 ~ 60°C			
Built-in filter	Copper sintered filter 50 µm			
Analog Output(Galvanic)	4~20mA, maximum load 500Ω			
Relay Output(Galvanic)	Relay(2A, 230V AC freely set alarm), System alarm			
Diagnosis function	Flow monitoring, Sensor and analyzer self-diagnosis, Heartbeat monitoring			
Event Logger	Internal Flash, up to 6,000 alarm records			
Control function	Optional Timer control function, PID, PWM			
Calibration	Expert calibration function, Multi-point calibration function up to 9 point			
Communication	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc			
Power	80~264V AC, 1A or 19~28V DC, 3A			
Electrical protection	EMI / RFI CEI-EN55011 – 05/99			
Ambient Temperature	-15 ~ 50°C			
Storage and transport temperature	-25 ~ 70°C			
Process Connection	6mm Pipe			
Wall-mounted	4.3" touchscreen	Steel, Gray	300*300*220mm	IP65
	1.8" color LCD	Aluminum, Gray	300*280*195 mm*	IP65, Exd IICT4
Laboratory Desktop	7" touchscreen	Aluminum, Black	250*144*184mm	IP40
Portable	7" touchscreen	ABS, Yellow	420*325*180mm	IP67
19" Rack(1~6Channels)	7" touchscreen	Aluminum, natural-coloured	483*133*238mm	IP40

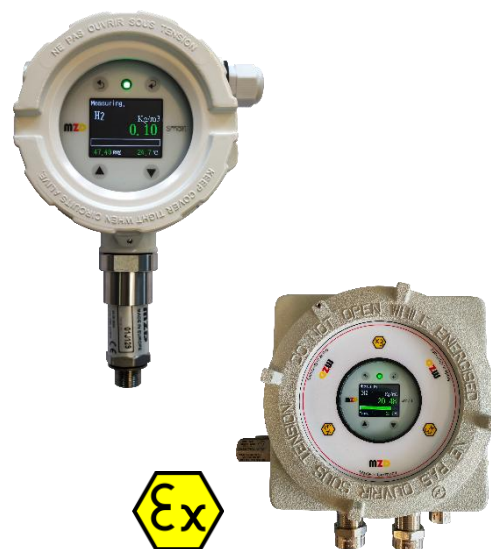
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Overview

Gas concentration/density analyzer is cost-effective and suitable for stable and continuous measurement of the density or concentration of a gas directly in the gas line or in the gas tank.

Application

- Microelectronics(OLED/capacitor/HID)
- Lithium battery
- University and research
- Glove Boxes
- Metal heat treatment/welding
- Chemicals/Pharmaceuticals
- Air Separation Unit



Parameters

Measuring principle	Coriolis force
Display	1.8" industrial color LCD, 160*128Pixel
Language	English Menu
LED Light	Status LED Light(NAMUR NE107)
Keypad	Magnetic keypad
Range	0~19Kg/m3
Linearity	Density: <0.1 kg/m3, Temperature: <0.8 °C, Pressure: <0.04 bar With field calibration density: <0.05 kg/m3
Repeatability	Density: <0.015 kg/m3, Temperature: <0.06 °C, Pressure:<0.005 bar
Sensitivity	Density: <0.001 kg/m3
Response Time	<1sec
T90-time	<1sec (at flow rate 20l/h)
Diagnosis function	Self-diagnosis, heart beat monitoring
Analog Output	4~20mA
Relay Output	3 Relays, NO, 5A 250VAC/30VDC
Communication	RS485, MODBUS RTU
Power	19 ~ 28V DC Power,1A
Built-in filter	Copper sintered filter 50 µm
Gas pressure	0~9 bar
Sample gas temperature	-20 ~ 60°C
Process Connection	NPT1/2" thread or KF40 flange
Ambient Temperature	-15 ~ 50°C
Ambient Humidity	0~80%RH
Electrical protection	EMI / RFI CEI-EN55011 – 05/99
Housing Material	Aluminum and Stainless steel
Explosion-proof	Ex d IIC4 optional (300*280*195 mm, 14Kg)

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Note:

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