Infrared photometry analyzer

Overview

Infrared photometry analyzer uses high-performance light emitting diodes (IR-LED) and thermal micro radiators which are suitable to gas measurement technology. It has high stability and a low detection limit. In the spectral range from 2 µm to 12 µm, carbon dioxide, carbon monoxide, hydrocarbons and nitrous oxide can be measured.

Principle

Infrared photometry analyzer uses broadband radiation sources (thermal emitters). This radiation immediately reaches the measuring cuvette. There, specific spectral ranges are absorbed from the broadband spectrum of the radiation source. The measuring detector which contains at least 2 separate channels, is located at the end of the measuring cuvette. In the simplest case the measuring channel has an interference filter placed in front of the detector. The reference detector also has an interference filter in front of the detector, but with a spectral transmission range (approx. 4 µm) where no absorption takes place. Afterwards a detector measures the specific radiation absorption. The evaluation electronics use the two signals to calculate the gas concentration in the measuring cuvette. Alternatively, a detector with several measuring channels can be placed at the end of the measuring cuvette, so that 3 components can be recorded simultaneously.

Application

- Environmental and Process Measurement Technology (CEM)
- Engine development
- Elemental analysis
- Industrial gas analysis
- Natural gas/biogas analysis
- Process measurement technology
- Biogas research

Features

- Linearity error: ±0.5%FS or 1 % F.S
- Sensor sample cell: aluminium/gold
- High dynamic range, 1:100
- Fast response time, t90 is about 3 s

Measurement components and ranges

- CO: 0 ~ 500ppm up to 100%(Vol)
- CO2: 0 ~ 50ppm up to 100%(Vol)
- HCs: 0 ~ 1000ppm up to 100%(Vol)
- CH4: 0 ~ 1000ppm up to 100%(Vol)
- N2O: 0 ~ 100ppm up to 100%(Vol)
- SF6: 0 ~ 50ppm up to 100%(Vol)
- CF4: 0 ~ 100%(Vol)

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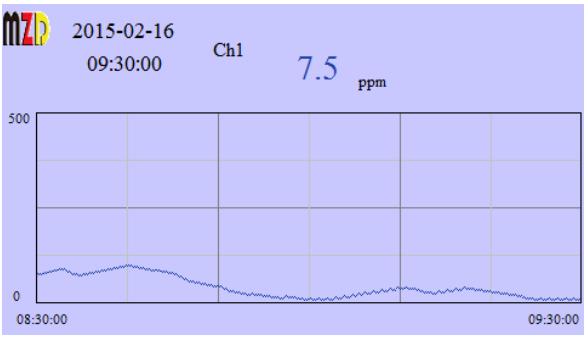

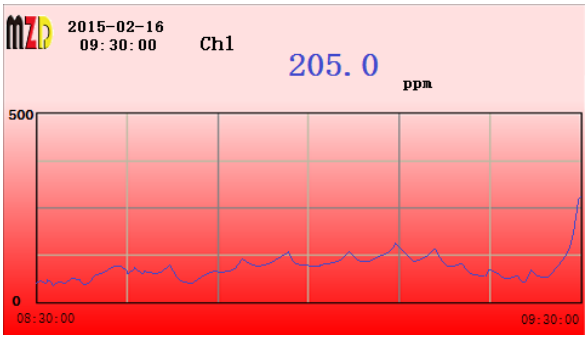

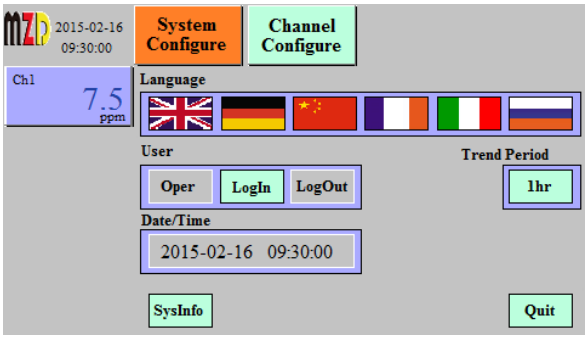

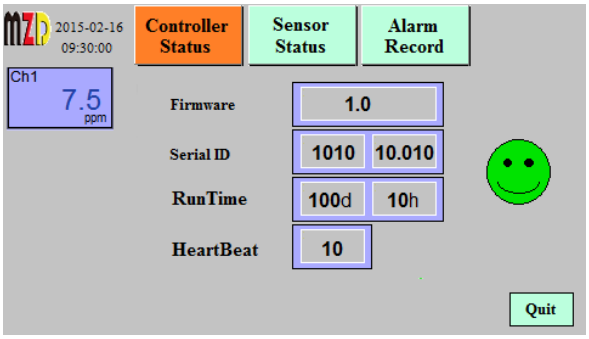

Features

❖ **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.

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Parameters

Measuring principle	NDIR(Non-dispersive IR method)		
Display	4.3” or 7" industrial color touch screen		
Language	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)		
Linearity error	< 0.5%FS or 1%F.S		
Sensitivity	0.1ppm or 0.01%		
Warmup time	1-30 Minutes		
Response Time	Less than 1 s		
Zero point stability	2% of span		
T90-time	<1sec at flow rate higher 60l/h		
Detection limit (4·STDW)	< 1% of span		
Lifetime of the UV Radiation source	> 40,000h		
Gas pressure	800-1200 hPa (mbar)		
max. Pressure	4bar		
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	5 ~ 50℃		
Storage and transport temperature	-20 ~ 70℃		
Process Connection	6mm Pipe		
Wall-mounted(1~2Channels)	ABS,Gray RAL7045	213x185x84mm	IP65
	Aluminum,Gray	230x200x157mm	IP65, Exd IICT4
Laboratory Desktop(1~2Channels)	Aluminum,Black	250x144x184mm	IP40
Portable(1~2Channels)	ABS,Yellow	420x325x180mm	IP67
19" Rack(1~6Channels)	Aluminu,natural-coloured	483x133x238mm	IP40
Explosion-proof	Exd IICT4 Controller optional		

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Note:

* Enhanced Version

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MZD Analytik GmbH
Enderstraße 94
01277 Dresden, Germany
Tel: +49-(0)351-850-710-10
Email: info@mzdd.de