

## 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  $\mu\text{m}$  to 12  $\mu\text{m}$ , 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  $\mu\text{m}$ ) 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



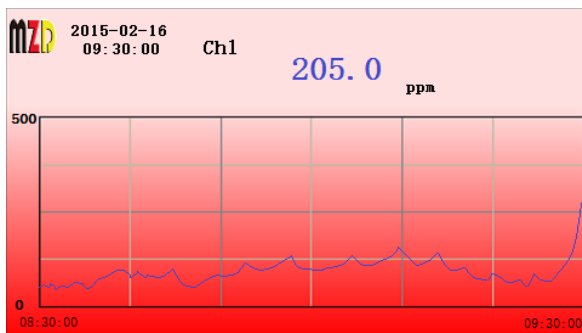
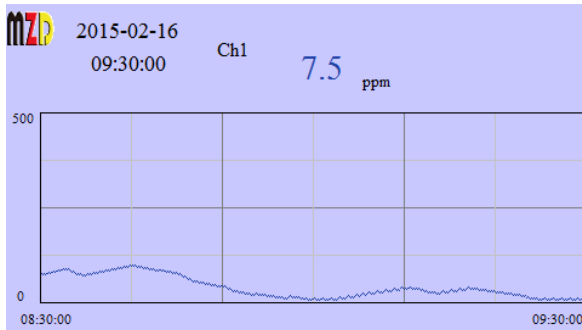
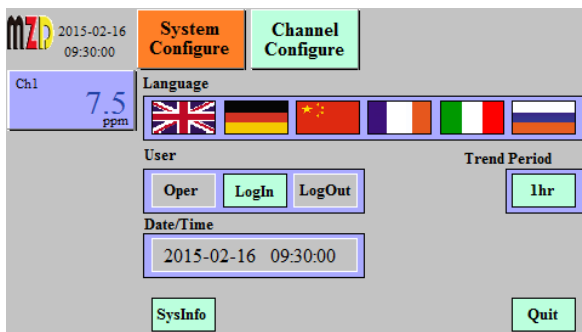
### Features

- ❖ Linearity error:  $\pm 0.5\%$ FS or 1 % F.S
- ❖ Sensor sample cell: aluminium/gold
- ❖ High dynamic range, 1:100
- ❖ Fast response time,  $t_{90}$  is about 3 s

### Measurement components and ranges

- ❖ CO: 0 ~ 500ppm up to 100%(Vol)
- ❖ CO<sub>2</sub>: 0 ~ 50ppm up to 100%(Vol)
- ❖ HCs: 0 ~ 1000ppm up to 100%(Vol)
- ❖ CH<sub>4</sub>: 0 ~ 1000ppm up to 100%(Vol)
- ❖ N<sub>2</sub>O: 0 ~ 100ppm up to 100%(Vol)
- ❖ SF<sub>6</sub>: 0 ~ 50ppm up to 100%(Vol)
- ❖ CF<sub>4</sub>: 0 ~ 100%(Vol)

## Infrared photometry analyzer

2015-02-16  
09:30:00 Ch1  
7.5 ppm

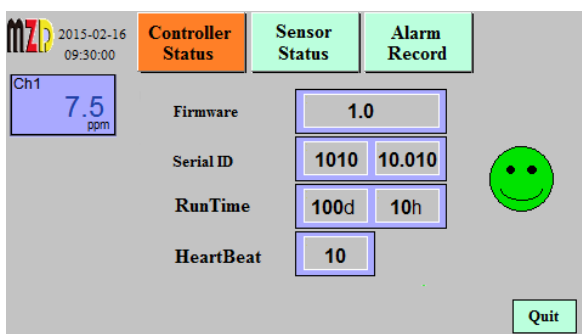
System Configure Channel Configure

Language

User Oper Login Logout Trend Period 1hr

Date/Time 2015-02-16 09:30:00

SysInfo Quit



2015-02-16  
09:30:00 Ch1  
7.5 ppm

Controller Status Sensor Status Alarm Record

Firmware 1.0

Serial ID 1010 10.010

RunTime 100d 10h

HeartBeat 10

Quit

### 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

<b>Measuring principle</b>	NDIR(Non-dispersive IR method)		
<b>Display</b>	4.3" or 7" industrial color touch screen		
<b>Language</b>	Multi-Language (English, German, Chinese, French,Italian, Russian or Customized)		
<b>Linearity error</b>	< 0.5%FS or 1%F.S		
<b>Sensitivity</b>	0.1ppm or 0.01%		
<b>Warmup time</b>	1-30 Minutes		
<b>Response Time</b>	Less than 1 s		
<b>Zero point stability</b>	2% of span		
<b>T90-time</b>	<1sec at flow rate higher 60l/h		
<b>Detection limit (4·STDW)</b>	< 1% of span		
<b>Lifetime of the UV Radiation source</b>	> 20,000h		
<b>Gas pressure</b>	800-1200 hPa (mbar)		
<b>max. Pressure</b>	4bar		
<b>Analog Output(Galvanic)</b>	4~20mA, maximum load 500Ω		
<b>Relay Output(Galvanic)</b>	Relay(2A, 230V AC freely set alarm), System alarm		
<b>Diagnosis function</b>	Flow monitoring, Sensor and analyzer self-diagnosis,Heartbeat monitoring		
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records		
<b>Control function</b>	Optional Timer control function,PID,PWM		
<b>Calibration</b>	Expert calibration function,Multi-point calibration function up to 9 point		
<b>Communication</b>	RS485 MODBUS RTU, HART, Foundation Fieldbus FF, PROFIBUS PA, PROFIBUS DP, MODBUS TCP/IP, etc		
<b>Power</b>	80~264V AC,1A or 19~28V DC,3A		
<b>Electrical protection</b>	EMI / RFI CEI-EN55011 – 05/99		
<b>Ambient Temperature</b>	5 ~ 50°C		
<b>Storage and transport temperature</b>	-20 ~ 70°C		
<b>Process Connection</b>	6mm Pipe		
<b>Wall-mounted(1~2Channels)</b>	ABS,Gray RAL7045	213x185x84mm	IP65
	Aluminum,Gray	230x200x157mm	IP65, Exd IICT4
<b>Laboratory Desktop(1~2Channels)</b>	Aluminum,Black	250x144x184mm	IP40
<b>Portable(1~2Channels)</b>	ABS, Yellow	420x325x180mm	IP67
<b>19" Rack(1~6Channels)</b>	Aluminu,natural-coloured	483x133x238mm	IP40

Note:

\* Enhanced Version

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