

## DewPoint Transmitter and Controller

### Overview

Dewpoint transmitter is suitable for continuous measurement of moisture in industrial process gas or liquids and convert it to dew point, or ppm(v).

### Principle

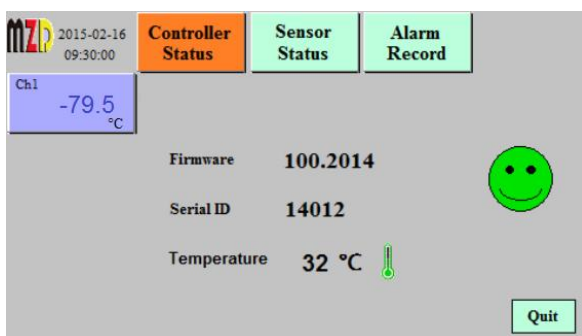
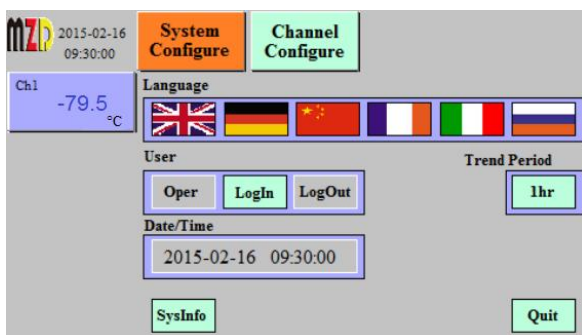
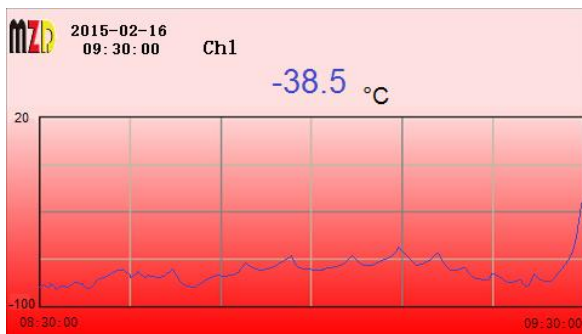
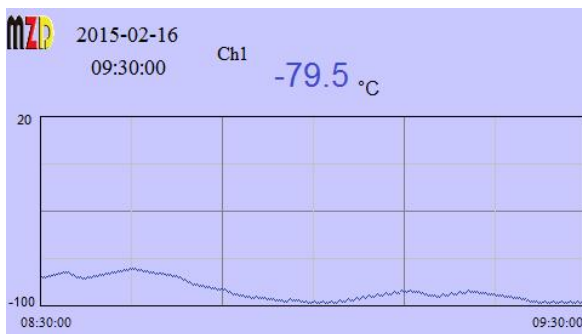
MZD dew point analyzer uses a dual ceramic film capacitive sensor based on nanotechnology. The sensor is composed of two specially developed Low Temperature Cofired Ceramics (LTCC), the isolation layer and the moisture absorption layer. Its characteristic is that the response is very fast and very stable. The ceramic isolation layer is 10 nanometers thick and the DC impedance exceeds 2 megohms, forming an electrical isolation layer, which can effectively prevent the sensor from short-circuiting. The ultra-thin ceramic hygroscopic layer is only 24nm thick and sintered with the ceramic isolation layer. It has strong hygroscopicity and quickly responds to changes in the partial pressure of water vapor, and reacts to changes in its capacitance. The use of ceramic isolation layer allows us to minimize the thickness of the response layer, thereby obtaining a faster response speed than similar products.

### Advantages

- Fast response
- Nano-based dual ceramic film capacitive sensor
- Wide pressure range (vacuum to 300 bar)
- Not sensitive to flow rate
- Built-in self-diagnostic system
- Robust mechanical construction
- Automatic calibration system, according to international standards (NPL)



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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

<b>Measuring range</b>	DewPoint -100 to +20°C, 0-23000 ppm(v)			
<b>Accuracy</b>	±2°C (DewPoint)			
<b>Repeatability</b>	0.5°C (DewPoint)			
<b>Sensor Calibration</b>	Traceable 7 point calibration certificate			
<b>Response Time(T95)</b>	1minute (From dry to wet)			
<b>Gas Flow</b>	0 to 10 m/s(Pipe), 0.2 to 5 l/M(Measuring Cell)			
<b>Process Pressure(Max.)</b>	300Bar			
<b>Sample gas temperature</b>	-40~60°C (Temperature compensated)			
<b>Process Connection</b>	5/8"~18 UNF Thread			
<b>Filter</b>	Optional stainless steel sintering 5µm			
<b>Transmitter Power</b>	8 - 36 VDC			
<b>Analog Output</b>	2Wire, 4~20mA, maximum load 500Ω			
<b>Ingress Protection</b>	IP65			
<b>Explosion-proof</b>	Option Ex ia			
<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>Diagnosis function</b>	Sensor and controller self-diagnosis,Heartbeat monitoring			
<b>Event Logger</b>	Internal Flash,up to 6,000 alarm records			
<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>Control function</b>	Optional Timer controller,PID analog controller,PWM controller			
<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>Storage and transport temperature</b>	-25 ~ 70°C			
<b>Ambient Temperature</b>	-15 ~ 60°C			
<b>Ambient Humidit</b>	0~100%RH			
<b>Wall-mounted(1~2Channels)</b>	4.3" color touchscreen	ABS,Gray RAL7045	213*185*84mm	IP65,Ex d IIC T4 optional
	7" color touchscreen		323x237x172mm	
<b>Laboratory Desktop(1~2Channels)</b>	7" color touchscreen	Aluminum,Black	250x144x184mm	IP40
<b>Portable(1~2Channels)</b>	7" color touchscreen	ABS,Yellow	420x325x180mm	IP67
<b>19" Rack(1~6Channels)</b>	7" color touchscreen	Aluminu,natural-coloured	483x133x238mm	IP40

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MZD dew point analyzer can be used in some corrosive gases. The following table gives some guidelines in this regard. A certain amount of corrosive gas is allowed in the dry gas, but it cannot be used in some samples with high moisture content. It can be applied to all samples with water content if it is marked "no limit".

Corrosive gases		Maximum allowable content ppm	Maximum allowable DewPoint temperature °C	Explosion limit in air (%LEL)
	exhaust	no limit	no limit	
	Freon	no limit	no limit	
	natural gas	no limit	no limit	
	Aromatic alcohols	no limit	no limit	
	petroleum	no limit	no limit	
<b>Br<sub>2</sub></b>	Bromine gas	no limit	-12°C	
<b>CCl<sub>2</sub>F<sub>2</sub></b>	Dichlorodifluoromethane	no limit	-12°C	
<b>CCl<sub>4</sub></b>	Carbon tetrachloride	no limit	no limit	N/A
<b>CF<sub>4</sub></b>	Carbon tetrafluoride	no limit	-12°C	
<b>Cl<sub>2</sub></b>	Chlorine gas	Prohibited		
<b>CH<sub>4</sub></b>	Methane	no limit	no limit	5,0-15,0%
<b>C<sub>2</sub>H<sub>2</sub></b>	Acetylene	^	0°C	
<b>C<sub>2</sub>H<sub>6</sub></b>	Ethane	no limit	no limit	3,0-12,5%
<b>C<sub>3</sub>H<sub>8</sub></b>	Propane	no limit	no limit	2,2-9,5%
<b>(CH<sub>2</sub>)<sub>2</sub>O</b>	Ethylene oxide	Prohibited		
<b>CH<sub>3</sub>OH</b>	Methanol	20 ppm	no limit	
<b>C<sub>4</sub>H<sub>11</sub>O</b>	Ethylene glycol	no limit	no limit	
<b>C<sub>6</sub>H<sub>6</sub></b>	Benzene	no limit	no limit	1,4-7,1%
<b>C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub></b>	Toluene	no limit	no limit	1,3-6,8%
<b>C<sub>6</sub>H<sub>5</sub>(CH<sub>3</sub>)<sub>2</sub></b>	Xylene	no limit	no limit	1,0-6,0%
<b>CO</b>	Carbon monoxide	no limit	no limit	12,5-76,2%
<b>CO<sub>2</sub></b>	Carbon dioxide	no limit	no limit	N/A
<b>COCl<sub>2</sub></b>	Carbonyl dichloride	no limit	-20°C	
<b>CS<sub>2</sub></b>	Carbon disulfide	no limit	no limit	
<b>F<sub>2</sub></b>	Fluorine	10 ppm	-20°C	
<b>HBr</b>	Hydrobromic acid	Prohibited		
<b>HCl</b>	Hydrochloric acid	Prohibited		
<b>HCOOH</b>	Formic acid	Prohibited		

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Corrosive gases	Maximum allowable content ppm	Maximum allowable DewPoint temperature °C		Explosion limit in air (%LEL)
<b>HF</b>	Hydrofluoric acid	500 ppm	-20°C	
<b>Hg</b>	Mercury	Prohibited		
<b>HNO<sub>3</sub></b>	Nitric acid	10 ppm	^	
<b>HClO<sub>4</sub></b>	Perchloric Acid	Prohibited		
<b>HOCH<sub>2</sub>CH<sub>2</sub>OH</b>	Ethylene glycol	no limit	no limit	
<b>H<sub>2</sub>O<sub>2</sub></b>	Hydrogen peroxide	Prohibited		
<b>H<sub>2</sub>S</b>	Hydrogen sulfide	no limit	no limit	4,3-45,5%
<b>H<sub>2</sub>SO<sub>4</sub></b>	Sulfuric acid	10 ppm	-20°C	
<b>NaOH</b>	Sodium hydroxide	Prohibited		
<b>NH<sub>3</sub></b>	Ammonia	1400 ppm	-10°C	16,0-25,0%
<b>NO<sub>2</sub></b>	Nitrogen Dioxide	no limit	^	
<b>N<sub>2</sub>O</b>	Nitrous oxide	no limit	^	
<b>O<sub>2</sub></b>	Oxygen	no limit	no limit	
<b>O<sub>3</sub></b>	Ozone	Prohibited		
<b>SO<sub>2</sub></b>	Sulfur dioxide	no limit	no limit	N/A
<b>SF<sub>6</sub></b>	Sulfur hexafluoride	no limit	no limit	
<b>SO<sub>3</sub></b>	Sulphur trioxide	no limit	-20°C	

Note:

\*The data above might change with the deepening of research and experiment of the MZD laboratory and user experience.

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