



VYPEL  
GmbH



# FAS-W Humidity Analyzer

Automatic condensation hygrometer



# FAS - W

HUMIDITY ANALYZER

## Automatic condensation hygrometer

the «FAS-W» Moisture Analyzer automatic condensation hygrometer can measure both the volume fraction of moisture and the dew point temperature of water in natural gas at pressures up to 100 bar. Equipped with an absolute pressure sensor, this analyzer can convert a dew point value into a volume fraction measurement. The FAS-W provides accurate and stable measurements, reported as dew point in °C, °F, or K and as a calculated value for the volume fraction of moisture in ppmV or mg /m<sup>3</sup> to the current output.



## Features

1. Extended dew point temperature measurement range of -80 °C to + 65 °C;
2. Advanced sensitivity of the optical recording system for the registration of water vapor condensation;
3. Separate pressure sensor input;
4. Explosion-proof protection ATEX: II 2G Ex db IIC T5 Gb
5. The FAS-W can be installed directly on the pipeline or in a gas preparation system;
6. External data interfaces: digital RS485, analogue 4...20mA, two alarm signal channels
7. Compact dimensions (in mm): 185x120x135;
8. Lightweight: 4 kg;

## Applications

Measurement of moisture content or humidity in inert and corrosive gases (including hydrogen-containing gases):

In the technological processes associated with natural gas preparation;  
Metallurgy;  
Machinery manufacturing;  
Petrochemical industry;  
Microelectronics;  
Energy;

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The FAS-W humidity analyzer is an automatic condensation hygrometer designed to measure the volume ratio of moisture and dew point temperature of gas under pressures up to 100 bar.

## Characteristics

	Version A	Version B	Version C
	-30...+65	—	-30...+65
Range of dew point temperature measurement (metrological), °C	-80...+20	—	-80...+20
	-65...+30	—	-65...+30
Range of moisture volume ratio measurement (metrological), ppm*	—	0.5...400·10 <sup>3</sup>	0.5...400·10 <sup>3</sup>
	—	0.5...20·10 <sup>3</sup>	0.5...20·10 <sup>3</sup>
	±1.5		
Accuracy limits in measuring dew point temperature, °C, max	±2.0		
	±3.0		
Accuracy limits in the 0.1...100 ppm range, %, max*	±10		
Accuracy limits in the 100...400·10 <sup>3</sup> ppm range, %, max*	±5		
Maximum pressure of the measured medium, bar, max	100		
Explosion proofing marking	1 Ex d IIC T5 X		
IP degree of protection	IP67		

## Specifications

Parameter		Value		
		Modification A	Modification B	Modification C
Dew point temperature measurement range (metrological), °C	Range I	-30...+65	—	-30...+65
	Range II	-80 *...+20	—	-80...+20
	Range III	-65...+30	—	-65...+30
Volume fraction measurement range (metrological), mln <sup>-1</sup>	Range I	—	0.5...200·10 <sup>3</sup>	0.5...200·10 <sup>3</sup>
	Range II	—	0.5...20·10 <sup>3</sup>	0.5...20·10 <sup>3</sup>
Dew point temperature measurement error not more than , in °C	In the range: +65 °C to -30 °C	±1.5		
	In the range: -30...-65 °C	±2.0		
	In the range -65 °C to -80 °C <sup>1</sup>	±3.0		
Volumetric measurement error in the range 0.1...100mln <sup>-1</sup> not more than , in %		±10		
Volumetric measurement error in the range 100...200·10 <sup>3</sup> mln <sup>-1</sup> not more than , in %		±5		
<b><u>Characteristics of the sample gas</u></b>				
Maximum pressure of the medium to be measured not more than , in bar		100		
<b><u>Device Characteristics</u></b>				
Electrical connection		4x1.5 mm <sup>2</sup> cable with outer diameter from 5 to 10 mm		
Materials in contact with the sample gas		stainless steel, fluoroplastic, glass, silicon		
Gas consumption in dm <sup>3</sup> / min		From 0.2 to 2		
Explosion -proof protection , ATEX		II 2G Ex db IIC T5 Gb		
Enclosure protection rating		IP67		
Data Interfaces	Alarm	2 outputs (dry collector)		
	Digital	RS485 / Modbus / RTU protocol, 500 V insulation		
	Analog (active)	output (4 -20) mA, load 400 Ω (max), 500 V insulation		
Power supply in DCV		20...27		
Power consumption not more than , in W		15		
<b><u>Weight and overall dimensions:</u></b>				
Weight not more than , in kg		4		
Overall analyzer dimensions in mm, not more than		185x120x135		

\*With supplemental cooling

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## Analyzer Scope of Delivery

Designation	Description	Qty.	Note
<b><u>Standard set</u></b>			
VMPL 2.848.008	Moisture Analyzer "FAS -W" complete with the following additional equipment and accessories:	1	
KRAU 8.046.155	Cover	1	to transport the analyzer
VMPL 8.054.011	Cover	1	for the gas inlet
KRAU 8.331.003	Key for covers	1	
	Cotton swabs for cleaning the mirror	1	(package of 50)
	Power Supply DR -60 -24	1	
1.622.1600.50	Cable gland	2	multiple cable glands
1.325.1600.50	Sealing ring	2	for the installation of cable glands
<b><u>Accessories available by special order</u></b>			
	Interface converter RS485 / RS232 / USB		
	Gas preparation system SGA 002		
	Submersible extraction probe		
	Thermal cover		
	Supplementary interface and display module		

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# FAS-W

HUMIDITY ANALYZER

**Automatic condensation hygrometer**

FAS-W is ideal for measuring dew point and moisture content and has all the necessary functions for efficient operation. The analyzer can be equipped with a gas preparation system and a thermal cover, in cases where the device is mounted directly on the gas pipeline.

## OUTSTANDING CHARACTERISTICS

Innovations implemented in the sensor installed in the FASW analyzer make possible an increase in the difference between the housing temperature and the temperature of the chilled mirror's surface of up to  $\Delta 95^\circ\text{C}$ .

This is the highest performance of any online automatic chilled-mirror hygrometer.

The FAS-W analyzer is equipped with both a 4..20mA analog output, and a Modbus-based digital output, making it easy to integrate the device into any modern telecommunication system.

The analyzer features high sensitivity to water vapor condensation as well as a 60% reduction in the area of the chilled mirror's surface as compared to the most similar devices – CONG-Prima and Hygrovision series dew point analyzers.

Before each measurement cycle, the surface of the mirror is heated to  $+ 80^\circ\text{C}$ , ensuring a long service life and a reduction in the need for preventive maintenance (cleaning the mirror).

## MEASUREMENTS IN EXPLOSIVE ZONES

The FAS-W has an ATEX certification of II G Ex d IIC T5 Gb, ensuring that it is safe for use in explosive areas. In addition, the housing of the analyzer has an ingress protection rating of IP 67. This ensures that even if the FAS-W were exposed to strong jets or streams of water (from any direction) the internal components would remain completely dry and protected. Moreover, the analyzer is fully protected against contamination from dust. This level of protection means that the FAS-W is appropriate for a wide range of applications under almost any conditions.

## SUPERIOR ACCURACY

Limits of absolute error when measuring the dew-point temperature are not more than, in °C	In the range -30 °C to +65°C	±15
	In the range -65 °C to -30 °C	±2.0
	In the range	±3.0

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## EASY TO USE

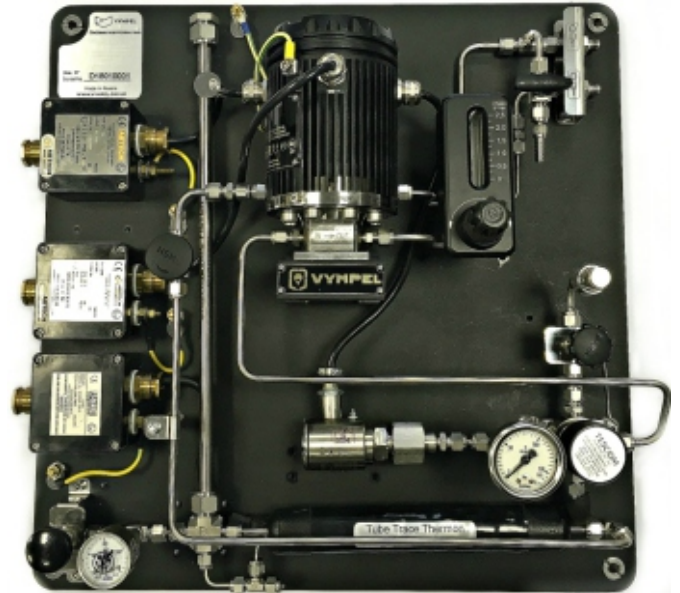
Uncomplicated original design does not require control measurements. All operational functions, such as monitoring the condition of the measurement cell and cleaning the mirror are made automatically before each measurement cycle and do not require verification by an operator.

Self diagnostics monitor the cooling / heating channel of the mirror; monitor the channels for measuring the temperature of the mirror and the sensor housing and analyze the level of contamination of the mirror's surface to ensure this remains below permissible limits.

This system also checks the efficiency of the condensate detection system.

In the event of a problem, all error information is transmitted as error codes via analogue and digital outputs.

## GAS PREPARATION SYSTEMS

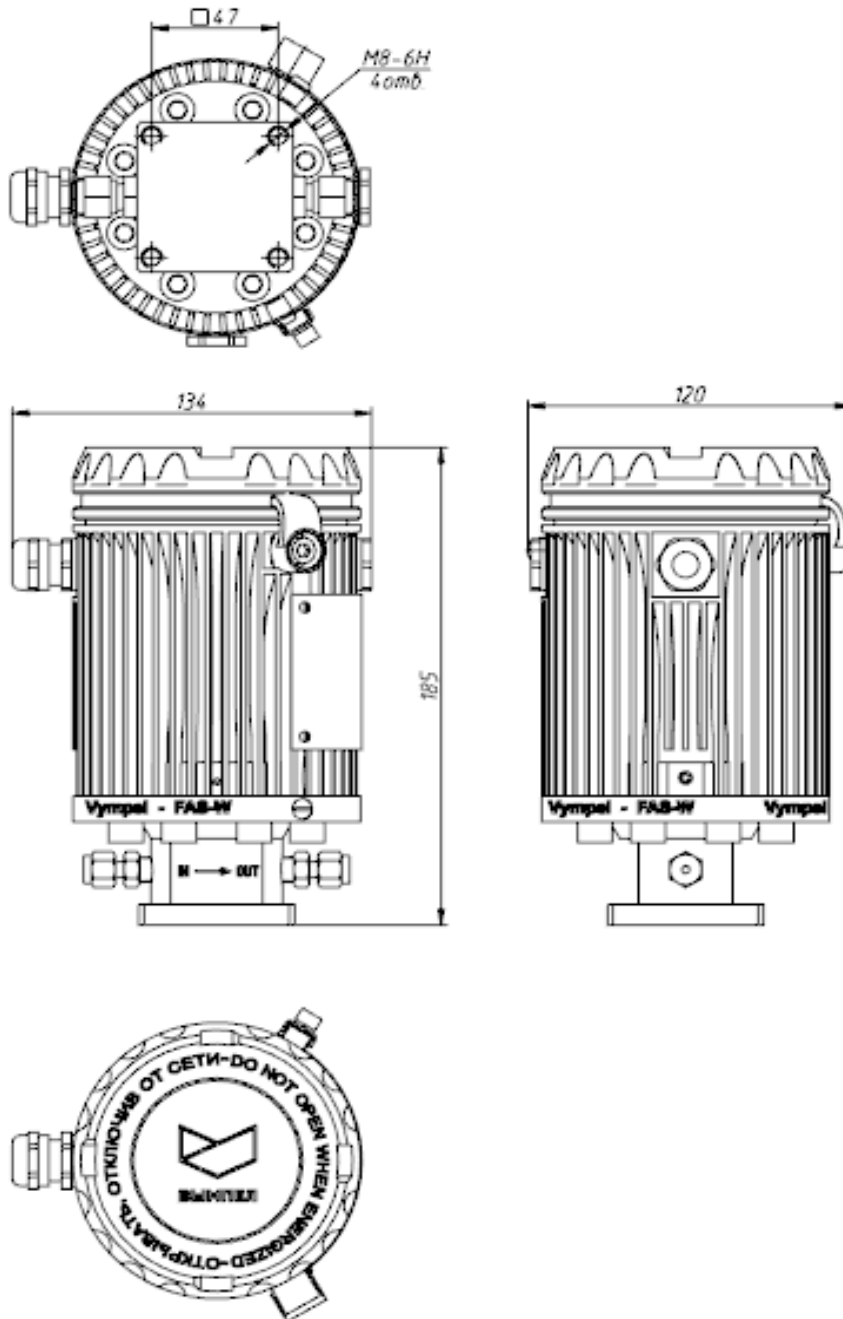


The FAS-W can be equipped with a gas preparation system (GPS). These are available in a variety of models that are capable of operating at pressures up to 100 bar. A GPS can remove mechanical and aerosol contaminants from the gas and supply a representative sample to the measurement chamber of the analyzer at operating pressure (not more than 10 bar) or at reduced pressure in the range from 1 bar to 80 bar.

A submersible extraction probe can likewise be equipped with a gas filtration system.

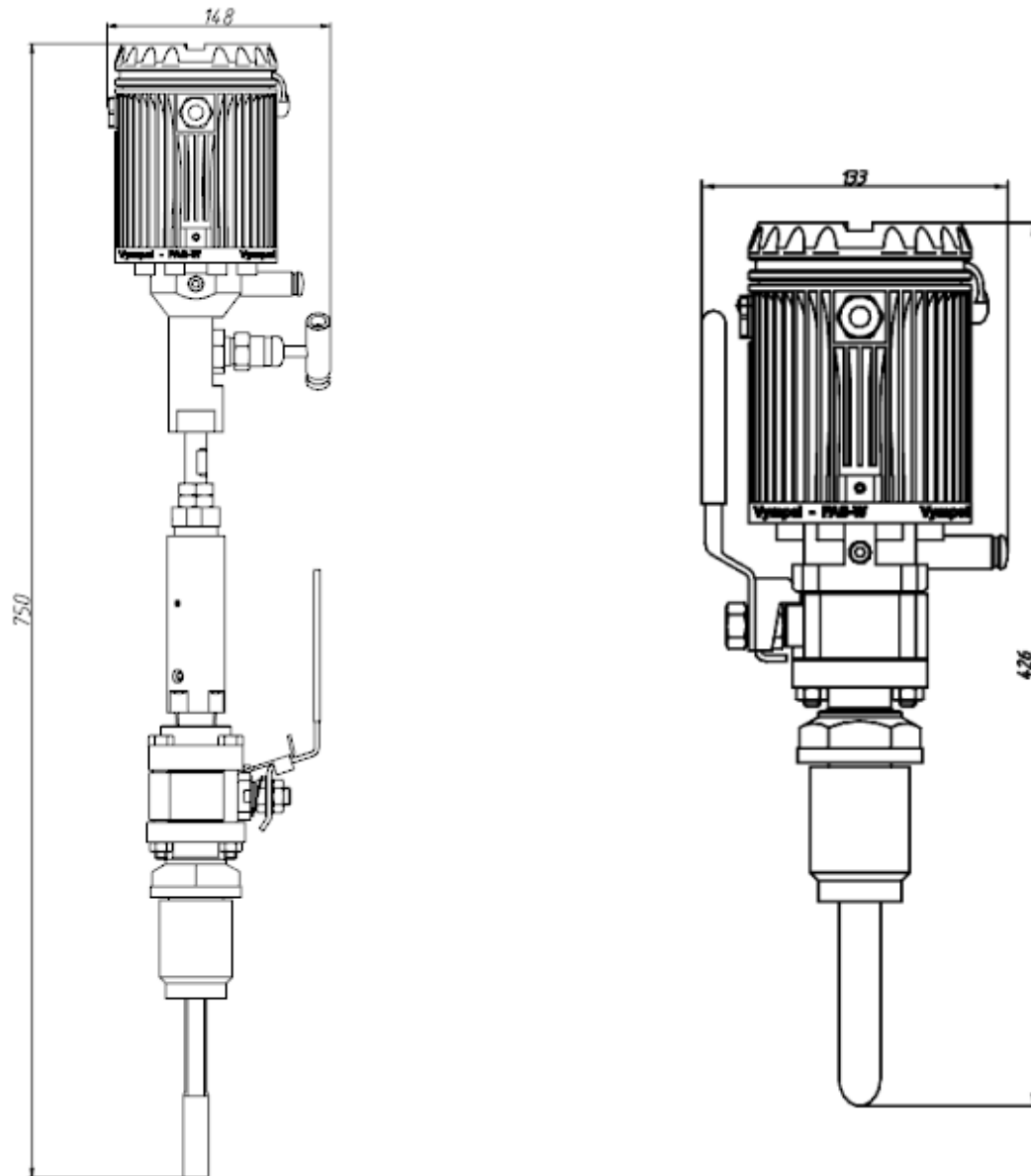


## FAS -W HUMIDITY ANALYZE





## FAS -W HUMIDITY ANALYZER WITH SUBMERSIBLE EXTRACTION PROBE

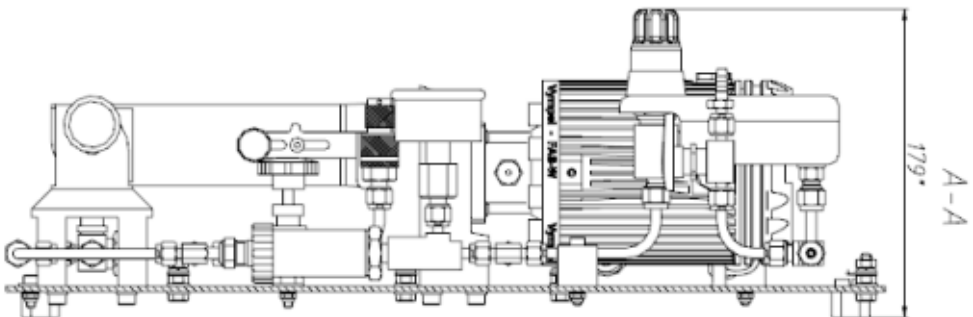
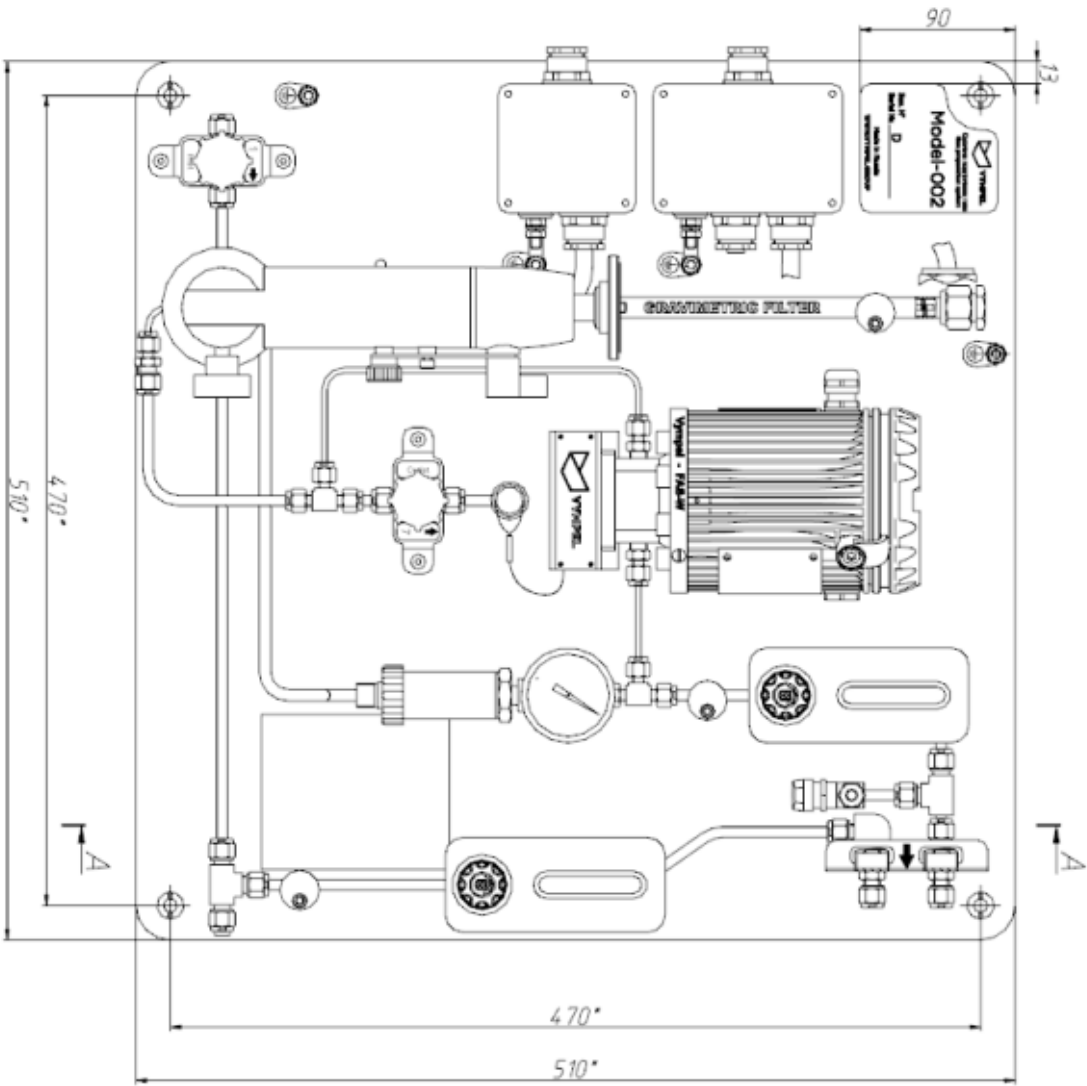


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**FAS -W HUMIDITY ANALYZER  
WITH GAS PREPARATION SYSTEM SGA -002**



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# INSTALLATION AND CONNECTION

Position	Description
1	Needle Valve
2	Gravity-Inertia Filter
3	FAS-W Humidity Analyzer
4	Manometer
5	Pressure Transmitter
6	Rotameter
7	Needle Valve
8	Quick coupler
9	Rotameter
10	T-joint
11	Outlet
12	Outlet
13	Ball Valve
14	Outlet

