H2scan
ADVANCED HYDROGEN SENSING

HY-OPTIMA® 2700 Series

EXPLOSION PROOF
INLINE HYDROGEN
PROCESS ANALYZER

Explosion Proof Inline Hydrogen Process Analyzer

The HY-OPTIMA 2700 Series inline hydrogen process analyzer is ideal for gas streams where real-time, hydrogen-specific measurements can enhance process plant efficiencies, improve yields, and reduce maintenance costs:

- Real time, continuous hydrogen measurement
- No reference or carrier gases required
- Non-consumable solid state technology
- Easy to install and operate
- Highly reliable and low life cycle cost
- Field configurable settings
- Minimal maintenance required
- No cross sensitivity to combustible gases
- Tolerant of many harsh background contaminants

Benefits

The HY-OPTIMA 2700 Series analyzer provides the most accurate, tolerant and affordable hydrogen process gas measurement solution for industrial markets. The explosion proof analyzer uses a solid-state, non-consumable sensor for direct hydrogen measurement with no cross sensitivity to most gases present in process gas streams. Since it is a solid state device, the sensor does not degrade over time.

How it Works

Proprietary coatings and special conditioning protect the sensor to enable continuous operation in environments with certain levels of CO and H2S present. Since it is a solid state device, the sensor does not degrade over time. An optional pressure transducer is available to reduce the impact of minor pressure fluctuations.

Ease of Use

With no moving parts, the analyzer is extremely reliable and easy to use. Once installed and field calibrated, it typically only requires calibration every three months, using readily available primary standard gases that span the expected operating range. No other maintenance is necessary. The unit can be controlled using the included intrinsically safe remote control, and communication is either via an analog 4-20mA output or serial communication using RS232 or RS422.

Applications

Refining:

- Catalytic reforming
- Hydrodesulfurization
- Fuel gas
- Tail gas treating units

Natural Gas:

- H_2 in natural gas or biomethane

Industrial Gas Supply:

- Air separation
- Steam methane reforming
- Electrolysis process streams

Petrochemical:

- H_2 measurement in polymer feeds and flare gas process streams

Manufacturing:

- Metals annealing
- Semiconductors
- Oil hydrogenation

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HY-OPTIMA® 2700

EXPLOSION PROOF INLINE HYDROGEN PROCESS ANALYZER

Performance and Safety

The model 2710, 2730, and 2740 analyzers are intended for use in dry gas streams where hydrogen is always present. They can be safely exposed to hydrogen continuously. The model 2720 is for use in processes where hydrogen is only occasionally present in an air, oxygen or nitrogen background for short periods, as may occur if there is a leak or an upset condition. For optimal performance, it is recommended to ensure that the pressure at the analyzer stays constant, ideally between 0.95 to 1.1 ATM Absolute, and the flow rate is around 1 slpm. The explosion proof 2700 series analyzers are ATEX / IEC certified and UL / CSA approved for safe operation in hazardous Class I Division 1 environments.

Operating Conditions

Environmental	
Ingress Protection	IP67
Operating Temperature	-20°C to 55°C (-4° F to 131°F)
Storage Temperature	-30°C to 80°C (-22° F to 176°F)
Humidity	0 to 95% RH, non-condensing
Mechanical	
Dimensions H x W x D	190.5 x 137.06 x 144.78 mm (7.5 x 5.39 x 5.66 in)
Weight	2.7 kg (5.9 lbs)
Electrical	
Power Input	90-240 VAC, 50-60 Hz
Input Power	15 W
Power Consumption	5 W (no external connection), up to 25 W (with 2 sensors connected)

Safety Certifications	Analyzer	Remote Control
US/Canada	Class I, Div 1, Groups B, C, D	Class I, Div 1, Groups A, B, C, D
ATEX*	II 2 G Ex d IIB + H_2 T4 Gb	II 1 G Ex ia IIC T4
IECEx*	Ex db IIB + H_2 T4 Gb	Ex ia IIC T4 Ga
KOSAH	Ex db IIB + H_2 T4	Ex ia IIC T4
UKCA*	II 2 G Ex d IIB + H_2 T4 Gb	II 1 G Ex ia IIC T4

*Max pressure 1.1 ATM Absolute and max ambient temperature 55°C (131°F) at the analyzer

Performance	
Operating Pressure at Analyzer	**Recommended:** 0.95-1.1 ATM Absolute (14.0-16.1 psia) **Maximum:** 2 ATM Absolute (29.4 psia)
Process Gas Temperature	-20°C to 60°C (-4°F to 140°F)
Flow Rate	0.1 to 10 slpm
Operating Humidity	95% RH (non-condensing)
Calibration	90 days

Product Selection

Model	Hydrogen Range		Hydrogen MUST be present	CO Limit	H2S Limit	T90 Response Time (sec)	Accuracy		Drift/Week		Repeatability		Linearity		Calibration Background Gas
	Low	High					Low to 10% H2	10 to 100% H2	Low to 10% H2	10 to 100% H2	Low to 10% H2	10 to 100% H2	Low to 10% H2	10 to 100% H2	
2710	0.03%	10%	Yes	<100 ppm	<20 ppm	<90	0.15%	N/A	0.15%	N/A	0.15%	N/A	0.15%	N/A	N_2
2720[1]	0.4%	5%	No	0	0	<60	0.3%	N/A	0.3%	N/A	0.3%	N/A	0.3%	N/A	O_2, N_2
2730	0.5%	100%	Yes	<100 ppm	<1000 ppm	<60	0.3%	1.0%	0.2%	0.4%	0.2%	0.4%	0.2%	0.4%	N_2
2740	0.5%	100%	Yes	20%	3%	<90	0.3%	1.0%	0.2%	0.4%	0.2%	0.4%	0.2%	0.4%	N_2

1: Sensor performance specifications are absolute and assume a dry process stream, an ambient temperature of 25°C (77°F), pressure compensation, and are in addition to any errors in the calibration gases used. Accuracy, drift, repeatability, linearity are defined as t/- the values listed.

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