HY-OPTIMA™ 2700 Series

Explosion Proof Inline Hydrogen Process Analyzer

Applications

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:

Refinery

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

Natural Gas

- H2 in natural gas or biomethane

Industrial Gas Supply

- Air separation
- Steam methane reforming
- Electrolysis process streams

Petrochemical

- H2 measurement in polymer feeds and flare gas process streams

Manufacturing

- Metals annealing
- Semiconductors
- Oil hydrogenation

Advantages

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

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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.

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.

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.

HY-OPTIMA 2700 Series Specifications

Performance

Operating Pressure at Analyzer:
Recommended: 0.95 – 1.1 atm absolute (14.0 – 16.1 psia)
Maximum: 2 atm absolute (29.4 psia)
Note: Analyzers are factory calibrated at 1 atm. For operation at higher pressure special factory calibration is required which may incur a nominal fee.

Process Gas Temperature: -20 to 60°C
Flow Rate: 0.1 to 10 slpm
Operating Humidity: < 95% RH (non-condensing)
Calibration Interval: 90 days

Output Signals

Analog: 4-20 mA **Serial:** RS232 or RS422
Relays: 5A/240 VAC or 5A/30 VDC
Two programmable relays and one fault relay

Power

Input Voltage
90 – 240 VAC, 50 – 60 Hz

Input Power
15 W

Physical

Dimensions
7.5in (L) x 5.4in (W) x 5.7in (D)

Weight
5.9 lbs

Adapter Fitting: ¾ Inch Union Compression Tee

Environmental

Operating temp: -20 to 55°C **Storage temp:** -30 to 80°C
Ingress Protection: IP67

Safety Certifications

	2700 Series Analyzer	Remote Control
US / CAN	Class I, Div 1, Groups B, C, D	Class I, Div 1, Groups A, B, C, D
ATEX*	Ex II 2 G Ex d IIB + H2 T4 Gb	Ex II 1 G Ex ia IIC T4
IECEx*	Ex db IIB + H2 T4 Gb	Ex ia IIC T4 Ga
KOSHA	Ex d IIB+H2 T4	Ex ia IIC T4
UKCA*	Ex II 2 G Ex d IIB + H2 T4 Gb	Ex II 1 G Ex ia IIC T4

* Max pressure 1.1 atm absolute and max ambient temperature 55° at the analyzer

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
	Min	Max					Min to 10% H2	10 to Max% H2	Min to 10% H2	10 to Max% H2	Min to 10% H2	10 to Max% H2	Min to 10% H2	10 to Max% H2	
2710	0.1%	10%	Yes	<100 ppm	<20 ppm	< 90	0.15%	N/A	0.15%	N/A	0.15%	N/A	0.15%	N/A	N2
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%	N2
2740	0.5%	100%	Yes	20%	3%	< 90	0.3%	1.0%	0.2%	0.4%	0.2%	0.4%	0.2%	0.4%	N2
2720	0.4%	5%	No	0	0	< 60	0.3%	N/A	0.3%	N/A	0.3%	N/A	0.3%	N/A	O2, N2

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

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