

HY-OPTIMA® 1700 Series

INTRINSICALLY SAFE IN-LINE HYDROGEN PROCESS ANALYZER



Real Time, Minimal Maintenance Intrinsically Safe Hydrogen Process Analyzer

The HY-OPTIMA® 1700 in-line hydrogen process analyzer series is ideal for gas streams where real-time, hydrogen-specific measurements can enhance process plant efficiencies, improve yields, and reduce maintenance costs. It provides the most accurate, tolerant and affordable hydrogen process gas measurement solution for industrial markets. The intrinsically safe analyzer uses a solid-state, non-consumable sensor for direct hydrogen measurement in process gas streams, with no cross sensitivity to other gases.

Benefits

- 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

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 a quick calibration every three months, using readily available primary standard gases that span the expected operating range. No other maintenance is necessary. Communication with the unit is either via an analog 4-20 mA output or serial communication using RS232 or RS422.

Performance and Safety

The model 1730 and 1740 analyzers are intended for use in dry gas streams where hydrogen is always present, and can be safely exposed to hydrogen continuously. The model 1720 is for use in processes where hydrogen is only occasionally present in an air, oxygen or nitrogen background for short periods. For optimal performance, ensure the pressure at the analyzer stays constant ideally between 0.95 to 1.1 ATM Absolute.

Applications

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



Product 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)
Process Gas Temperature	-20°C to 60°C (-4°F to 316.4°F)
Flow Rate	0.1 to 10 slpm
Operating Humidity	<95% RH (non-condensing)
Calibration Interval	90 days

Output Signals

Analog	4-20 mA
Serial	RS422
Relays	Optional IS barrier with two programmable SPST relays

Power

Input Voltage	Power Barrier: 20-28 VDC, 24 VDC nominal Analyzer: 5-28 VDC, 10 VDC nominal
Input Power	10 W




Physical


Dimensions	261.62 x 86.36 x 35.56 mm (10.3 x 3.4 x 1.4 in)
Weight	0.45 kg (1.0 lbs)
Adapter Fitting	1/2 in MNPT

Environmental

Operating Temperature	-20°C to 40°C (-4°F to 104°F)
Storage Temperature	-40°C to 50°C (-40°F to 122°F)

Certifications

Ex	
CE	
LC	

Probe tip:  II 1 G, Ex, ia II H2, d+d IIB T3 Ga

Analyzer Body:  II 2 G, Ex ib d IIB T3 Gb

Certificate Number: ITS07ATEX25634X

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	
1720 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
1730	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
1740	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), constant pressure, and are in addition to any errors in calibration gases used.

Specifications subject to change without notice
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