

# BlueEye™ Ex-D



Gas quality analyzer  
Reliable, no moving parts  
Fast response time  
Low CAPEX, no OPEX

BROCHURE



## About the BlueEye™ Ex-D

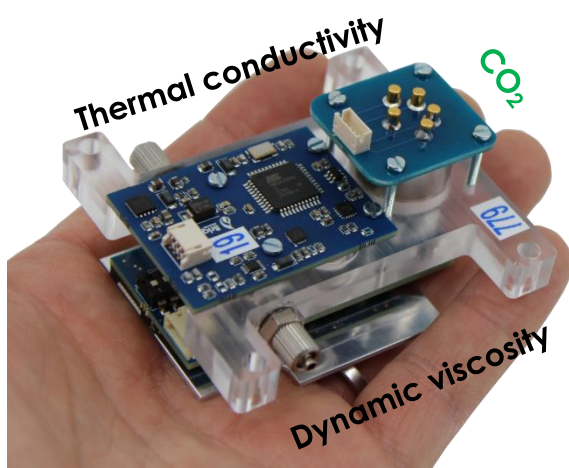
The BlueEye™ Ex-D is a low CAPEX gas analyzer, designed for the continuous measurement of combustible gases. Every second the device accurately reports the combustion properties (**H<sub>s</sub>**, **H<sub>i</sub>**, **W<sub>l</sub>**, **W<sub>i</sub>**, **p**, **Z**, **s-AFR**, **MN**, **CO<sub>2</sub>**, **H<sub>2</sub> mol%**) of gas compositions.

Gas is flowing at low flow rate (50 ml/min) in and out of the BlueEye™ Ex-D through 3/4 NPT connectors. Measurement output is interfaced through 4-20 mA current loop and Modbus RTU.

The BlueEye™ Ex-D uses Bright Sensors' patented MEMS gas viscometer technology combined with other MEMS sensors. The analyzer is specifically developed for biomethane injection, hydrogen blending, combustion control, gas grid monitoring and other stationary applications.

The sensor units come in 4 different versions for specific accuracy and gas composition ranges:

- BlueEye™ **Extended**: Viscosity + TCD sensor
- BlueEye™ **Renewable**: Viscosity + TCD + **CO<sub>2</sub>** sensor
- BlueEye™ **Hydrogen**: Viscosity + TCD + **H<sub>2</sub>** hardware
- BlueEye™ **Ultragreen**: Viscosity + TCD + **CO<sub>2</sub>** + **H<sub>2</sub>** hardware



## Main Features

Measurement output:

- Wobbe Index (**W<sub>l</sub>** & **W<sub>i</sub>**)
- Calorific content (**H<sub>s</sub>** & **H<sub>i</sub>**)
- **H<sub>2</sub>** and **CO<sub>2</sub>** mol% (optional)
- Density, relative density & compressibility
- (stoichiometric) Air Fuel Ratio
- Methane Number

Accuracy:

- Wide composition range, typically <1%
- Other gas compositions on request

Maintenance free & reliable

- No moving parts
- No chemical reactions

Fast & continuous measurement

- 7 second Viscosity
- 1 second Thermal Conductivity and **CO<sub>2</sub>**

Other features:

- Explosion proof certified enclosure
- Built-in flow reducer
- Interface: 4-20mA, Modbus RTU
- Input Power: 24VDC
- Plug-and-play installation & operation
- Easy replacement of sensor unit
- CE, UKCA, ATEX & IECEx certified
- OILM R140 Class B in progress

## BlueEye™ Ex-D Specifications

Reported values	Units	Reference conditions	Applied correlation and calculation standards
Gross Calorific Value (H <sub>g</sub> )	MJ/m <sup>3</sup> , kWh/m <sup>3</sup> BTU/scf, Therm/scf	0/0°C, 15/0°C, 15/15°C, 20/20°C, 25/20°C, 25/0°C at 101325 Pa and 60°F at 14.65, 14.696, 14.73 and 15.025 psi <b>absolute</b>	NIST AGA-8 ISO 6976:2016 GPA 2172:2009
Net Calorific Value (H <sub>n</sub> )			
Gross Wobbe Index (W <sub>g</sub> )			
Net Wobbe Index (W <sub>n</sub> )			
Density ρ	kg/m <sup>3</sup> , lbm/scf		
Air Fuel Ratio λ	-	Volume, 20.946% O <sub>2</sub>	Simplified method
Methane Number	-	-	ISO23306 PKI Methane Number
<b>CO<sub>2</sub> &amp; H<sub>2</sub> concentration</b> <sup>1 2</sup>	mol%	-	Proprietary methods

<b>Accuracy</b>	≤ 1% of reading
<b>Repeatability</b>	≤ 0.2% of reading <sup>3</sup>
<b>Dynamics</b>	One measurement every 1s, reaction time T90 < 60s

Gas Composition Range					
CH <sub>4</sub>	70-100 mol%	Higher Alcanes	0-1 mol%	O <sub>2</sub>	≤ 3 mol%
C <sub>2</sub> H <sub>6</sub>	0-20 mol%	N <sub>2</sub>	0-15 mol%	H <sub>2</sub> O (Gaseous)	≤ 0.1 mol%
C <sub>3</sub> H <sub>8</sub>	0-5 mol%	<b>CO<sub>2</sub></b>	0-3 mol% ( <b>20/100 mol%</b> ) <sup>1</sup>	Dust, Liquids	Without
C <sub>4</sub> H <sub>10</sub>	0-3 mol%	<b>H<sub>2</sub></b>	≤ 0.5 mol% ( <b>30 mol%</b> ) <sup>2</sup>	H <sub>2</sub> S	≤ 0.01 mol%
<b>H<sub>2</sub> addressable range</b>		27.52 to 50.40 MJ/m <sup>3</sup> (15°C/15°C)			
<b>Environment temperature</b>		0 to 50°C, 32 to 122°F			
<b>Medium inlet temperature</b>		Within +/- 2°C, 36°F from environment temperature			
<b>Operating gas pressures</b>		960 to 1100 mbar <b>absolute</b> , 13.9 to 16 psi <b>absolute</b>			
<b>Flow rate</b>		50 ml/min (+/- 10%), 0.00177 scf/min (+/- 10%) <sup>4</sup>			

<sup>1</sup> only for BlueEye™ Ex-D **Renewable** & **Ultragreen**

<sup>2</sup> only for BlueEye™ Ex-D **Hydrogen** & **Ultragreen**

<sup>3</sup> unfiltered 1 second cycle measurement

<sup>4</sup> flow rate range customizable on request

## Electrical and Mechanical Specifications

<b>Interfaces</b>	Modbus RTU (RS485), analog output (4-20mA current loop)
<b>Supply Voltage</b>	24V, < 2W
<b>Dimensions and Weight</b>	140mm x 135mm x 125mm and 2.6kg, 5.51in x 5.32in x 4.92in and 5.7 lbs
<b>Gas Connections</b>	2 x 1/4" NPT (Female)
<b>Certifications</b>	IP66, CE, IECEx, ATEX certified UL and OIML R140 Class B in progress

## Environment Conditions

<b>Operating Temperature</b>	-20°C to 70°C, -4°F to 158°F
<b>Storage Temperature</b>	-40°C to 70°C, -40°F to 158°F
<b>Environment Humidity</b>	0-95 % Relative Humidity, non-condensing
<b>Burst Pressure</b>	< 250 mbar <b>gauge</b> , < 3.6 psi <b>gauge</b>

