BlueEye™ Ex-D

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

BROCHURE

About the BlueEye™ Ex-D

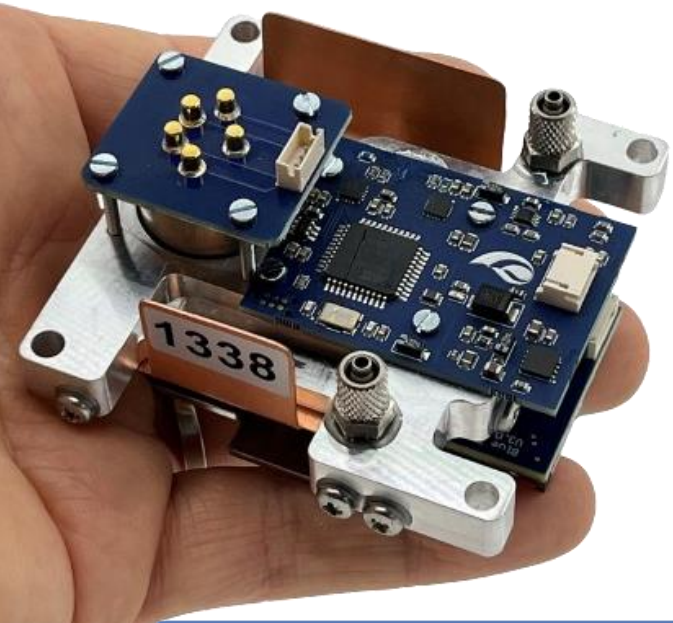
The BlueEye™ Ex-D is a low CAPEX gas analyzer, designed for the continuous measurement of combustible gases. Every second the device accurately reports the combustion properties (**H_s, H_i, WI_s, WI_i, ρ, Z, s-AFR, MN, CO_2, H_2 mol%**) of gas compositions.

Gas enters at flow rate (30 ml/min) the BlueEye™ Ex-D through ¾ 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 process 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_2** sensor
- BlueEye™ **Hydrogen**: Viscosity + TCD + **H_2** hardware
- BlueEye™ **Ultragreen**: Viscosity + TCD + **CO_2** + **H_2** hardware



Main Features

Measurement output:

- *Wobbe Index (WI_s & WI_i)*
- *Calorific content (H_s & H_i)*
- ***H_2** and **CO_2** 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

- *4.75 second Viscosity*
- *1 second Thermal Conductivity and CO_2*

Other features:

- *Explosion proof certified enclosure*
- *Interface: 4-20mA, Modbus RTU*
- *Input Power: 24VDC*
- *Plug-and-play installation & operation*
- *Easy replacement of sensor unit*
- *CE, ATEX, IECEx and cLCus certified*
- *OILM R140 Class A in progress*
- *Cabinet solutions available*

BlueEye™ Ex-D

BlueEye™ Ex-D Specifications

Reported values	Units	Reference conditions	Applied correlation standards
Gross Calorific Value (H_s)	MJ/m³, kWh/m³ 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 **absolute**	NIST AGA-8 ISO 6976:2016 GPA 2172:2019
Net Calorific Value (H_i)			
Gross Wobbe Index (W_s)			
Net Wobbe Index (W_i)			
Density ρ	kg/m³, lbm/scf		
Air Fuel Ratio λ	-	Volume, 20.946% O_2	Simplified method
Methane Number	-	-	ISO 23306:2020 and EN 16726:2015
CO_2 & H_2 concentration [1] [2]	mol%	-	Proprietary methods

Accuracy	≤ 1% of reading
Repeatability	≤ 0.2% of reading [3]
Dynamics	One measurement every 1s, reaction time T90 < 30s

Gas Composition Range					
CH_4	70-100 mol%	Higher Alcanes	0-1 mol%	O_2	≤ 3 mol%
C_2H_6	0-20 mol%	N_2	0-15 mol%	H_2O (Gaseous)	≤ 0.1 mol%
C_3H_8	0-5 mol%	CO_2	0-3 mol% (**20**/**100** mol%) [1]	Dust, Liquids	Without
C_4H_{10}	0-3 mol%	H_2	≤ 0.5 mol% (**30** mol%)[2]	H_2S	≤ 0.01 mol%
H_s addressable range	27.52 to 50.40 MJ/m³ (15°C/15°C)				
Environment temperature	0 to 50°C, 32 to 122°F				
Operating gas pressures	950 to 1100 mbar **absolute**, 13.78 to 15.95 psi **absolute**				
Flow rate	30 ml/min (+/- 10%), 0.001059 scf/min (+/- 10%)[4]				

[1] only for BlueEye™ Ex-D **Renewable** & **Ultragreen**
[2] only for BlueEye™ Ex-D **Hydrogen** & **Ultragreen**
[3] unfiltered 1 second cycle measurement
[4] flow rate range customizable on request

Electrical and Mechanical Specifications

Interfaces	Modbus RTU (RS485), analog output (4-20mA current loop)
Supply Voltage	24V, < 2W
Dimensions and Weight	140mm x 135mm x 125mm and 2.6kg, 5.51in x 5.32in x 4.92in and 5.7 lbs
Gas Connections	2 x 1/4" NPT (Female)
Certifications	CE, IECEx, ATEX ⟨Ex⟩ II 2 G Ex db IIC T6 Gb, cLCus

Environment Conditions

Operating Temperature	-20°C to 70°C, -4°F to 158°F
Storage Temperature	-40°C to 70°C, -40°F to 158°F
Environment Humidity	0-95 % Relative Humidity, non-condensing
Burst Pressure	350 mbar **gauge**, 5.07 psi **gauge**