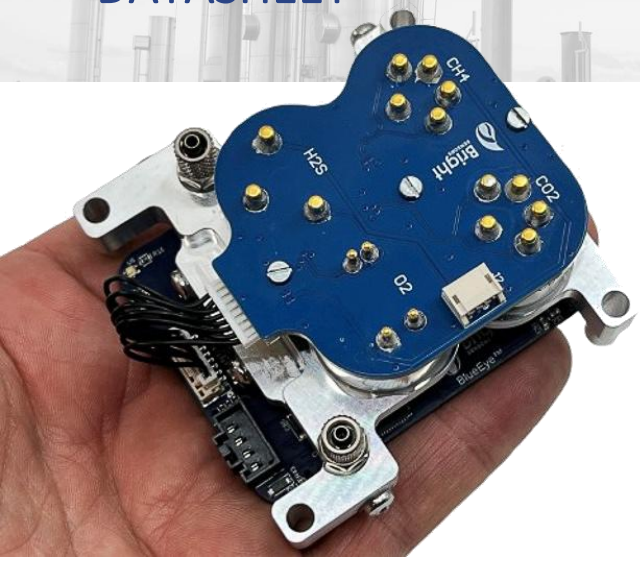
BlueEye™ Ex-D

DATASHEET





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 Alkanes	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

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BlueEye™ Ex-D

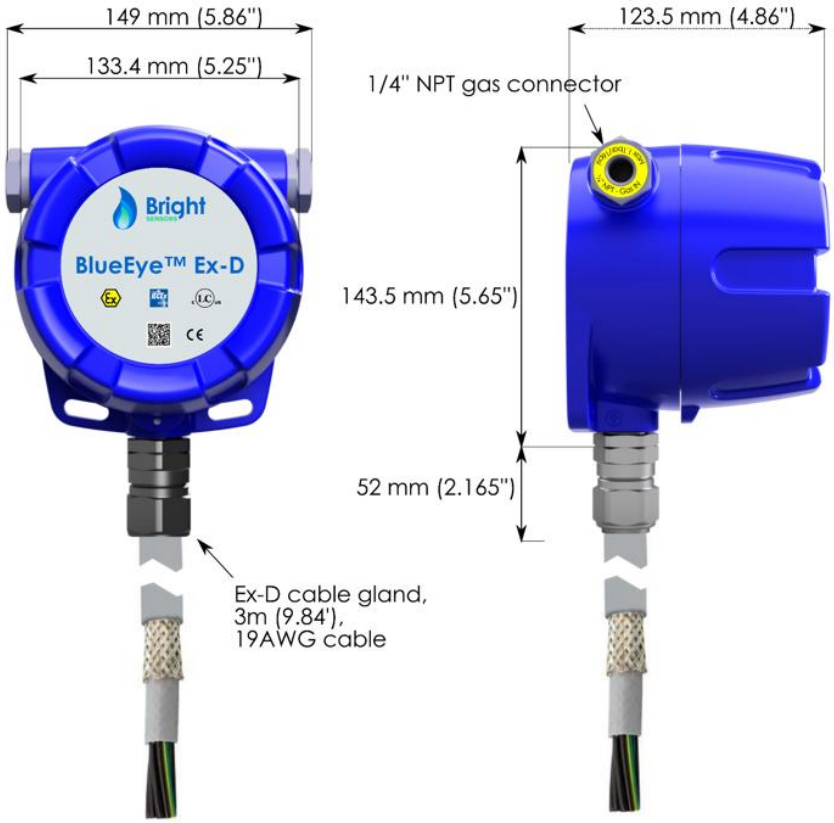
Electrical and Mechanical Specifications

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 Ⓔx 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**

BlueEye™ Ex-D Dimensions





BlueEye™ Ex-D

BlueEye™ Ex-D Installation P&ID



Wire ID

1: +24V	3: 4 – 20 mA-	5: RS-485_A	7: RS-485_Y	9: GND
2: -24V	4: 4 – 20 mA +	6: RS-485_B	8: RS-485_Z	

BlueEye™ Ex-D 4-20 mA Current Loop Output

The current loop output and range can be user defined via the Modbus registers.

Selectable Measurement Output				One of Parameters: H_s, H_i, WI_s, WI_i, ρ, ρ rel., Z, AFR, s-AFR, MN, CO_2, H_2							
Default Output Range Definition				Default ranges per table below. Customization range possible via Modbus.							
Output	Ref Con	Range	Units	Output	Ref Con	Range	Units	Output	Ref Con	Range	Units
WIs	00/00	32 - 63	MJ/m³	HHV	00/00	26 - 58	MJ/m³	LHV	00/00	23 - 53	MJ/m³
WIs	15/00	32 - 63	MJ/m³	HHV	15/00	26 - 58	MJ/m³	LHV	15/00	23 - 53	MJ/m³
WIs	15/15	30 - 60	MJ/m³	HHV	15/15	25 - 55	MJ/m³	LHV	15/15	22 - 50	MJ/m³
WIs	20/20	29 - 59	MJ/m³	HHV	20/20	25 - 54	MJ/m³	LHV	20/20	22 - 49	MJ/m³
WIs	25/00	32 - 63	MJ/m³	HHV	25/00	26 - 58	MJ/m³	LHV	25/00	23 - 53	MJ/m³
WIs	00/00	9 - 18	kWh/m³	HHV	00/00	7 - 16	kWh/m³	LHV	00/00	6 - 15	kWh/m³
WIs	15/00	9 - 18	kWh/m³	HHV	15/00	7 - 16	kWh/m³	LHV	15/00	6 - 15	kWh/m³
WIs	15/15	8 - 17	kWh/m³	HHV	15/15	7 - 15	kWh/m³	LHV	15/15	6 - 14	kWh/m³
WIs	20/20	8 - 17	kWh/m³	HHV	20/20	7 - 15	kWh/m³	LHV	20/20	6 - 14	kWh/m³
WIs	25/00	9 - 18	kWh/m³	HHV	25/00	7 - 16	kWh/m³	LHV	25/00	6 - 15	kWh/m³
WIs	60/14.696	805 - 1610	BTU/scf	HHV	60/14.696	670 - 1480	BTU/scf	LHV	60/14.696	590 - 1342	BTU/scf



BlueEye™ Ex-D

BlueEye™ Ex-D Modbus Output

The BlueEye™ Ex-D output can be individualized via Modbus. The output configurations are:

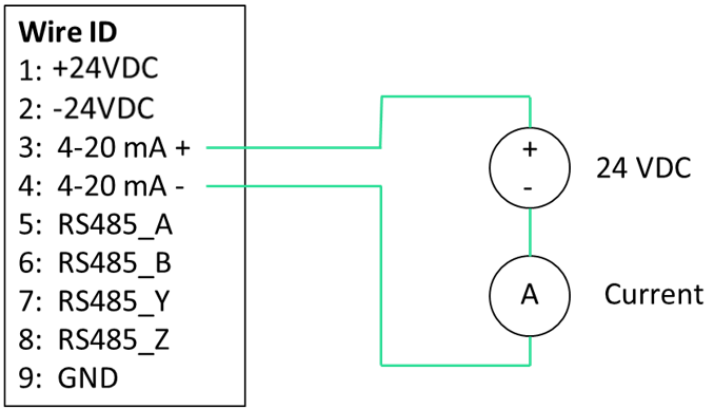
Reported values	H_s, H_i, WI_s, WI_i, ρ, Z, s-AFR, MN, CO_2 mol% and H_2 mol% Temperature, Absolute Pressure
Selectable Reference Conditions	0°C/0°C, 15°C/0°C, 15°C/15°C, 20°C/20°C, 25°C/0°C, 25°C/20°C, 101325 Pa and 60°F, 14.65 psi, 14.696 psi, 14.73 psi and 15.025 psi
Output granularity	Default 1 second values. Customizable: Moving average (2 to 10.000 measurements), Hourly average

BlueEye™ Ex-D Wiring

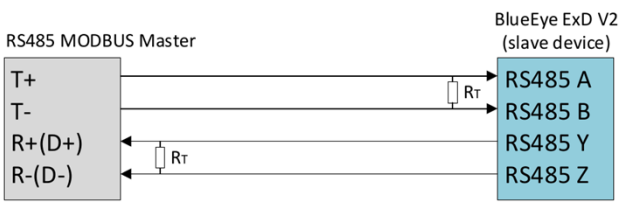
Wire ID	Description	
1, Black	Power supply	+24 VDC
2, Black	Power supply	0 VDC
3, Black	4-20 mA Current Loop	Positive
4, Black	4-20 mA Current Loop	Negative
5, Black	T+	RS-485_A
6, Black	T-	RS-485_B
7, Black	R+ (D+)	RS-485_Y
8, Black	R- (D-)	RS-485_Z
9, Yellow/Green	GND	Ground

BlueEye™ Ex-D Wiring Schematics

The BlueEye™ Ex-D features a passive 4-20 mA current loop.



The BlueEye™ Ex-D is configured for full-duplex (4-wire) and half-duplex (2-wire) RS485 Modbus.





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