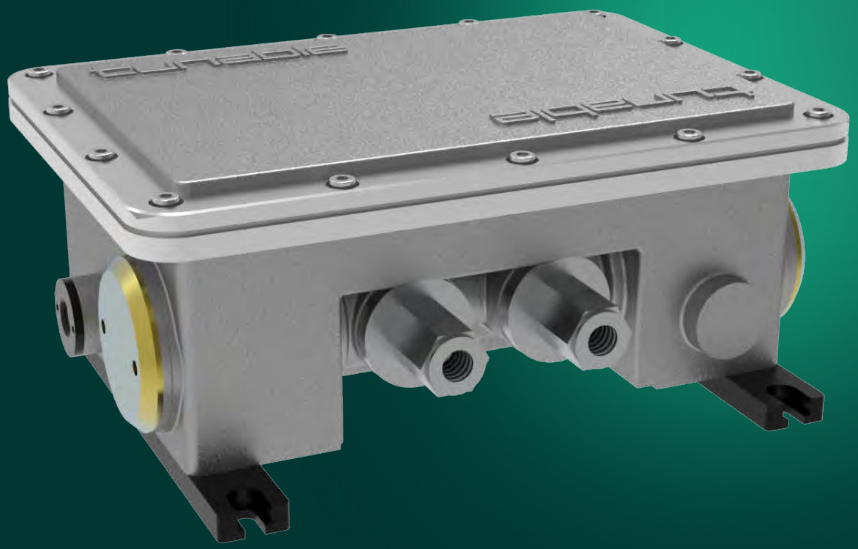
tunable

T1000

Natural Gas Analyser

Product Data Sheet



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Overview

The T1000 natural gas analyser is designed for easy operation and quantification of gas quality in Boil-off Gas (BoG), fuel metering, engine control and process control.

The analyser is compact and based on optical spectroscopy. Tunable's proprietary MEMS technology enables flameless detection with no moving parts or need for consumables, and provides the gas composition real-time as well as Calorific Value, Wobbe Index, Methane Number and more.

Description

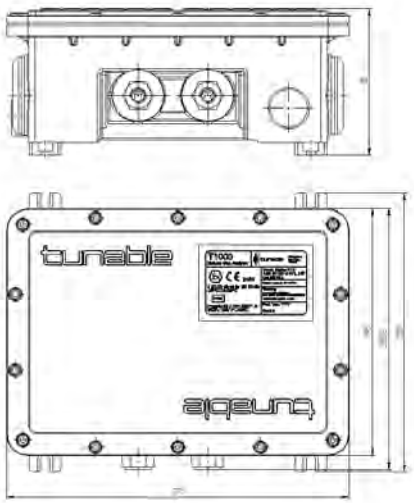
The T1000 natural gas analyser is based on an optical measurement method known as infrared (IR) absorption spectroscopy. The technology offers long lifetimes, stability and little or no maintenance. Moreover, the analyser requires no consumables such as carrier or calibration gases. An ultra-stable IR source specified to last over 10 years ensures that no bulb replacement is required.

Infrared absorption spectroscopy is a direct measurement method. Sample gas is analysed continuously as it flows through the sampling cell. This provides quick response time, high accuracy data in real-time and allows for efficient and effective process optimization.

Ratings and performance

	T1000-10 LNG analyser		T1000-20 Natural gas analyser	
Component	Range % vol	Accuracy % vol	Range % vol	Accuracy % vol
Methane	0 – 100 %	± 0.5 %	0 – 100 %	± 0.5 %
Ethane	0 – 20 %	± 0.5 %	0 – 20 %	± 0.5 %
Propane	0 – 20 %	± 0.5 %	0 – 20 %	± 0.5 %
Iso-Butane	0 – 5 %	± 0.2 %	0 – 5 %	± 0.2 %
N-Butane	0 – 5 %	± 0.2 %	0 – 5 %	± 0.2 %
C5-total	0 – 2 %	± 0.2 %	0 – 2 %	± 0.2 %
Carbon dioxide	-	-	0 – 20 %	± 1 %
Nitrogen	0 – 100 %	Balance	0 – 100 %	Balance

Calorific Value (CV) [1]	Accuracy ± 0.5 %
Methane Number (MN)	Available
Response time (T90)	< 30 seconds
Update frequency	down to 15 seconds



Design and interfaces

Service	Natural gas analysis	Power	24 V_{DC}
Measurement principle	Infrared absorption	Protocols	Modbus RTU, Modbus TCP
Mounting orientation	Horizontal or vertical	Communication	1 x RS-485, 1 x Ethernet
Ingress protection	IP66	Solenoid valve control	2 x 24 V_{DC}, 0.5 A
Hazardous zone	II 2G Ex db eb ia IIB T6 IP66 Gb	Cable gland interface	2 x M20 x 1.5 mm
Certified temperature	-20°C - +55°C	Cable OD	6.5 - 14 mm
Material, housing	Stainless steel AISI 316	Dimensions W x D x H	271 x 220 x 115 mm
Materials, process wetted	AISI 316, ZnSe, FKM seals	Weight	12 kg
Electronic cavity	Ex db	Mounting arrangement	Slotted brackets
Terminal block compartment	Ex eb	Gas inlet and Gas outlet	G ¼″ threaded female

[1] Calculated in accordance with ISO 6976:2016

Operating conditions and environment

Ambient conditions – operation		**Ambient conditions – storage**	
Temperature[2]	0°C to +55°C	Temperature	-20°C to +55°C
Humidity	< 100 % RH (non-condensing)	Humidity	< 100 % RH (non-condensing)
Pressure (ambient)	Atmospheric	Pressure (ambient)	Atmospheric

Sample gas and auxiliary gas conditions	
Operational sample gas pressure (calibrated range)	0.9 to 1.1 bar absolute
Maximum inlet gas pressure (Ex)	1.5 bar absolute
Minimum gas flow	≥ 0.1 l/min
Particles	< 100 µg/m^3
Zeroing gas[3]	N_2 > 99%
Zeroing interval / period	Configurable - recommended: 24hrs

Power requirements	
Supply voltage	24 V_{DC} (+/- 10 %)
Power consumption - operating	≤ 5 W
Power consumption - start up	≤ 20 W
Protective Earth (PE)	Via chassis

Environmental and electromagnetic compliance	
Electromagnetic compatibility - Directive 2014/30/EU	EN 61000-6-4:2007 + A1:2011
	EN IEC 61000-6-2:2019
ESD immunity	IACS E10 Rev.8:2021
	DNVGL-CG-0339:2021
	IEC/EN 60945:2002 + Cor1:2008
	EN 61000-4-2:2009, Ed.2.0
Vibration (Sinusoidal)	IEC/EN 60945:2002 + Cor1:2008
	IACS E10 Rev.8:2021
	DNV-CG-0339:2021
	EN 60068-2-6:2008, Ed.7.0
Power Supply Variation	IEC/EN 60945:2002 + Cor1:2008
	IACS E10 Rev.8:2021
	EN IEC 61000-4-11:2020, Ed.3.0
Low Temperature	EN 60068-2-1:2007, Ed.6.0
Dry Heat	EN 60068-2-2:2007, Ed.5.0

Approvals and certificates	
Marine Type Approval	DNV
IECEx	IECEx DNV 21.0081X
EU-Type Examination	Presafe 20 ATEX 02871 X

Ordering information

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[2] Calibrated range 5 - 45°C
[3] Alternatively other inert gases; Helium, Argon