



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAA00002Y9**  
Revision No:  
**1**

## This is to certify:

**That the Monitoring System**

with type designation(s)  
**T1000 Natural Gas Analyser**

Issued to

**Tunable AS**  
**Oslo, Norway**

is found to comply with

**DNV rules for classification – Ships, offshore units, and high speed and light craft**

## Application :

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

## Location classes:

Temperature	<b>B</b>
Humidity	<b>B</b>
Vibration	<b>A</b>
EMC	<b>B</b>
Enclosure	<b>B / IP66</b>

Issued at **Høvik** on **2021-10-01**

for **DNV**

This Certificate is valid until **2023-02-11**.

DNV local station: **Oslo Maritime and CAP**

Approval Engineer: **Frode Nygård**

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**Marta Alonso Pontes**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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## Product description

The T1000 Natural Gas Analyser is designed for real-time gas analysis of natural gas composition in hazardous areas.

This Type Approval Certificate covers the T1000 Natural Gas Analyser as shown on Tunable AS drawing no. "System Diagram, T1000 Sampling system P&ID" and comprises:

- Gas sample extraction,
- Gas sample handling,
- Gas sample analysis,
- Modbus interface to system for remote diagnostic,
- Ethernet port for service purpose,
- 24 VDC outputs for external valve control.

The standard system setup-up will include communication between the T1000 Gas Analyser and customer/application specific controller using Modbus (not covered by this type approval).

## Place of manufacture

Tunable AS  
 Kabelgata 8,  
 0580 Oslo  
 Norway

## Approval conditions

This Type Approval certificate covers hardware listed under Product description.

For installation of the subject system onboard DNV classed vessels, the following project specific documentation of the actual application shall be submitted for information (I) in each case:

- (I) Reference to this Type Approval certificate
- (I) Signal block diagram (shall indicate the physical location of the components listed under product description).
- (I) Power supply arrangement (may be part of the System block diagram)

The T1000 Natural Gas Analyser shall be installed, operated and calibrated in accordance with the requirements and intervals as specified in *Tunable T1000 Natural Gas Analyser Operating Manual*.

Correct configuration and set up for each delivery to be tested during commissioning after installation.

## Application/Limitation

This Type Approval certificate does not cover the gas sample lines.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

## Type Approval documentation

Document Name	Document No.	Rev.	Date
Operating Manual, Tunable T1000 Natural Gas Analyser	MAN1004	01	2020-12-04
System Diagram, T1000 Sampling system P&ID	n/a	n/a	n/a
Product Datasheet, T1000 Natural Gas Analyser	PDST1000	07	n/a
Test for Marine Type Approval of Natural Gas Analyser	E20013.02	02	2021-06-25
Type Approval assessment report DNV GL Oslo Maritime, dated 2020-10-15			

## Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Test for Marine Type Approval of Natural Gas Analyser, document no. E20013.02, 25<sup>th</sup> of June 2021.

## Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

### **Periodical assessment**

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at renewal of this certificate.

END OF CERTIFICATE