

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Engine Safety, Control and Alarm System**

with type designation(s)

"UNIC" for Wärtsilä W31 Dual Fuel engine series used in multi-engine propulsion plants and auxiliary applications

Issued to

**Wärtsilä Finland Oy
Vaasa, Finland**

is found to comply with

DNV GL 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 GL.****System minimum location classes according to data listed on page 2:****Temperature B****Humidity B****Vibration B****EMC A****Enclosure Required protection according to the Rules to be provided upon installation on board.**Issued at **Høvik** on **2019-04-06**This Certificate is valid until **2021-03-23**.for **DNV GL**DNV GL local station: **Turku**Approval Engineer: **Krzysztof Aleksander Jankowski****Jan Tore Grimsrud
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.



Job Id: **262.1-021851-3**
Certificate No: **TAA0000264**

Place of system manufacture

UNIC system is manufactured, mounted and tested at:

Wärtsilä Finland Oy,

Tarhaajantie 2,
65380, Vaasa,
Republic of Finland

Product description

UNIC: Engine control, safety, and monitoring system which utilize **HSR** communication, intended for type approved Wärtsilä for type approved Wärtsilä W31, 4-stroke, dual fuel, common rail engine series with electronically controlled twin needle injectors, used in multi-engine propulsion plants and auxiliary applications.

Separately Type Approved hardware		
Module type	Description	Type Approval Certificate ¹⁾
CCM-30	Cylinder Control module ²⁾	TAA00000DX
ESM-21	Engine safety module ²⁾	TAA0000132
LDU-30	Local display module ²⁾	TAA00000FY
COM-10	Communication module ²⁾	TAA00000DW
1) These are the TA numbers valid at the date of issue of this TA. When the TA are renewed during the period of validity of this TA, the new TA applies.		
2) Module with internal fuse protection.		

Hardware Type Approved by this Type Approval certificate						
Location classes						
Module type	Description	Temperature	Humidity	Vibration	EMC	Enclosure
IOM-20	I/O module ²⁾	D	B	B	A	⁴⁾
3) Module with internal fuse protection.						
4) Required protection according to the Rules to be provided upon installation on board.						

System software and configuration versions			
UNIC type with designation code	Software	Configuration	Code description
UNIC DF	6.5.X.X	Y.Y.Y.Y	DF – Dual Fuel
X - Shall be represented by fix digit. Changes shall be evaluated by DNV GL.			
Y - Shall be represented by fix digit, depends on engine designation.			

Maintenance of Software versions is described in document DBAB166787, Rev.I.
The software configuration numbering is defined in the document DBAA030801, Rev. AA.

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Application/Limitation

1. This certificate is valid only for systems applications made and delivered by production facilities listed under Place of system manufacture for engines series listed under Product description, provided they hold a valid DNV GL Type Approval Certificate.
2. The Type Approval covers system design principles and software listed under Product description.
3. The UNIC system is suitable for use in multi-engine propulsion plants or auxiliary duties only.
4. The DNV GL Type Approved Oil Mist Detector shall be used for crankcase explosive condition monitoring.

5. LDU-30 is not fulfilling DNV GL Rules requirements for alarm handling and presentation. Connection to separate/additional equipment shall be provided.
6. For class notations covered by DNV GL Rules for Ships Pt.5 Ch.7, monitoring of "Gas detection before 100% LEL in crankcase of internal combustion engines that can run on gas", required by Sec.13 Table 6, shall be monitored by external system at the vent line of engine.
7. The UNIC system does not include gas detection and ventilation monitoring required by GAS FUELLED notation.
8. The UNIC system does not include Gas Valves Unit (GVU) control.
9. The UNIC system is prepared to control dual fuel engine start in gas mode.
10. List of Control and Monitored points (with defined alarm, load reductions and shutdowns, including identification of which automatic safety actions can be overridden) settings shall be in accordance with engine intended function (propulsion, auxiliary, etc.) and shall comply with vessel main class and relevant class notations requirements from DNV GL Rules.
11. Power supply arrangement shall be in principle as shown in document document: "Engine wiring diagram" (Document id. DAAF410423, Rev.c, dated 2018-03-12), pages 7,8 and 9.
12. Fuel Sharing mode is not covered by this Type Approval Certificate.
13. Load Sharing function is not covered by this Type Approval Certificate.

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this DNV GL Type Approval Certificate⁵⁾
- Reference to valid hardware DNV GL Type Approval Certificate numbers, if they are different than the ones listed on table under Product description⁵⁾
- Reference to valid DNV GL Type Approval Certificate for Oil Mist Detector⁵⁾
- Information about engine type and usage⁵⁾
- System block diagram showing overall system layout and separation between Safety System and Control and Monitoring
- Software and configuration versions used in specific delivery⁵⁾
- Confirmation that Application/Limitation point 10 is fulfilled⁵⁾
- Confirmation that Application/Limitation point 11 is fulfilled⁵⁾
- Test program for certification

5) – Information to be submitted as document **DBAD616263**.

Product certificate

Each delivery of the application system **is to be** certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system, preferably at the engine/system application maker integrating control, monitoring and safety system, before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Application software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board.

Type Approval documentation

Tests carried out

Functional Type Tests UNIC serie 6 system on W31 engine, performed at Wärtsilä Finland Oy premises in Vaasa, Republic of Finland, dated 2019-02-20 to 2019-02-22.

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

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- 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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE