



## Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

<b>Manufacturer</b>	<b>Danfoss IXA A/S</b>
<b>Address</b>	Marsvej 5, Kolding, 6000, Denmark
<b>Place of Production</b>	Danfoss IXA A/S Marsvej 5, Kolding, 6000, Denmark
<b>Type</b>	Washwater Monitoring System
<b>Description</b>	<p>The MES 1003 Washwater Monitoring System (WMS) is a continuous water monitoring system used on vessels equipped with exhaust gas cleaning system (EGCS) such as scrubbers.</p> <p>The WMS consisting of the units: Washwater Analyzer Unit (WAU) Washwater Sample Unit w. external pump (WSU) Washwater Sample Unit w. pressure reduction Unit (WSR)</p> <p>The system supports either a WSU or a WSR, depending on the application.</p> <p>In the standard configuration, the system monitors PAH, turbidity, pH and temperature.</p> <p>The MES 1003 WMS is a standalone system, with its own controller and a local control display. The WMS can be connected to external systems via Modbus TCP/IP.</p>

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<b>Trade Name</b>	MES 1003
<b>Application</b>	Marine, Offshore and Industrial applications for use in environmental categories ENV1 and ENV2 as defined in Lloyd's Register Type Approval System, Test Specification Number 1 – December 2021. The WMS is to be used in general power distribution zones.
<b>Specified Standard</b>	Manufacturer's specification IACS UR E10 Rev. 8 / 2021
<b>Ratings</b>	Power Supply: WAU: 24 VDC WSU: 440 VAC, 50 Hz WSR: no power required (passive unit)  Ambient temperature: 5 °C to 55 °C Sample water temperature: 0 to 40 °C Max. working pressure: 1 bar (WAU, WSU) / 4 bar (WSR) Ingress protection: IP54 Interface: Modbus TCP/IP  Measuring ranges: pH: 0 to 14 pH Temperature: 0 to 80 °C Turbidity: 0 to 1000 FNU PAHphe (phenanthrene equivalent): 0 – 80 µg/l or 0-800 µg/l  Software version:1.x.x (x = minor changes) HW version: WAU:H WSU: A WSR: A

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### Additional Tests

Dry heat test: 55 °C / 16 h  
Ingress Protection IP55

### Other Conditions

For systems consisting of the listed components the final functional arrangement and application software are to comply with appropriate Lloyd's Register Rules and Regulations and shall be subject to project related Plan Approval Process, when installed on LR classed vessels. Documents and drawings for the actual application are to be provided according relevant LR Rules and Regulations.

If the MES 1003 Washwater Monitoring System is intended to be used in installations complying with Resolution MEPC.340(77) – 2021 Guidelines for Exhaust Gas Cleaning Systems, the requirements of MEPC.340(77) Chapter 7 and 10 must be observed.

The external pump required for WSU is no part of this type approval certificate.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document HPC2162042-23/MK and its supplementary Type Approval Terms and Conditions form part of this Certificate.