

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB0000ARY
Revision no.:
0

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

that the **Oil-content meters**

with type designation(s)
BilgMon 488 II (Ex)

issued to

Brannstrom Sweden AB
GÖTEBORG, Sweden

is found to comply with the Implementing Regulation (EU) 2024/1975 for
Item no. **MED/2.3** (Row **1 of 1**)
according to the following requirements:
MARPOL 73/78 Annex I, Reg. 14, IMO Res. MEPC.107(49), IMO MEPC.1/Circ. 643

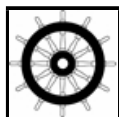
Further details of the equipment and conditions for certification are given overleaf.

Date of issue: **2025-04-24**

Expiry date: **2030-04-23**

DNV local unit:
Sweden CMC

Approval Engineer:
Martin Olofsson



Notified Body
no.: **0575**

for **DNV AS**

.....
Christine Mydlak-Röder
Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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 USD 300 000.

Product description

The BilgMon 488 II oil content meter (Bilge Alarm) is intended for installation on board ships for monitoring the oil content of bilge water. The unit monitors the effluent from an approved bilge water separator and sends an alarm signal that facilitates the activation of discharge control devices when the oil content exceeds 15 ppm.

The BilgMon 488 II also comes in an explosion proof (Ex) version, where a connection box and the measuring cell are placed in the hazardous area zone.

The BilgMon 488 II has also been verified to comply with DNV class programme DNV-CP-0485, which implies that the bilge alarm can be preset to 5 ppm alarm level and work satisfactory in accordance with the DNV standard (which is derived from MEPC.107(49)).

The BilgMon 488 II is equipped with an alarm relay as well as an alert relay, both in alarm/alert state when the unit is de-energized. Both outputs are adjustable (15 ppm or lower) and in alarm/alert state when the oil content of the processed sample exceeds the set limits, and if the equipment malfunctions.

The alarm output is also in alarm state when the bilge separator is not operating.

A red LED indicates alert state. A yellow "valve open" LED indicates that the Automatic Stopping Device is not active (alarm relay not in alarm state) and separated water is being discharged to the sea.

There is also a digital or analogue 0(4) - 20 mA current signal output for remote surveillance and recording of oil content.

An optional flow switch can be connected to generate alarm/alert if there is no sample water flow when the bilge separator is operating.

The BilgMon 488 II uses the principle of scattered light for real time detection and measurement of the oil content.

Application/Limitation

Details of application and operational parameters are given in appendix.

The on board arrangement of the 15 ppm oil content meter (Bilge Alarm), 15 ppm Bilge Separator and the discharge control device (automatic stopping device) shall function automatically. The following shall be verified during installation:

- The alarm is always activated whenever clean water is used for cleaning or zeroing purposes.
- The alarm is always activated if the Bilge Alarm fails to function, requires a warm-up period or otherwise be de-energized.
- Any alarm will activate the automatic stopping device preventing overboard discharge and lead to recirculation.
- The overall response time (including the response time of the alarm) between the effluent discharge exceeding 15 ppm oil and the operation of the automatic stopping device preventing overboard discharge is not more than 20 seconds.

Basis of acceptance:

The BilgMon 488 II oil content meter has been subjected to performance testing according to IMO Resolution MEPC.107(49), Annex Part 2. The test reports are listed in the "Test carried out" section of this certificate and the test results are given in the appendix to this certificate.

The electrical and electronic sections of the BilgMon 488 oil content meter have been subjected to environmental testing according to IMO Resolution MEPC.107(49), Annex Part 3 and the reports are listed in the "Test carried out" section of this certificate.

Please see Appendix: Application/Limitation

Type Examination documentation

Tests carried out

Performance tests:

Test protocol for type approval of 15 ppm Bilge Alarm according to MEPC.107(49), SGS Institut Fresenius, report 117-3969183-1, dated 2017-12-12. See test result details in appendix.

Environmental tests:

Environmental testing of converting and analyzing unit CleanTrack 1000B (now BilgMon 488 II (Ex) measuring cell), DNV Certification AS, report 2011-3155 rev.2, dated 2011-07-08.

Environmental tests of BilgMon 488 II - 15 ppm Bilge Alarm, PAConsult GmbH, report 24DE-00633 rev.1, dated 2024-10-25

Please see Appendix: Tests carried out

Marking of product

For traceability to this EC Type Examination, each unit to be marked with:

- Manufacturer's name and trademark
- Type designation
- Serial no.
- Mark of conformity

The revision history of this certificate can be found in appendix.

A copy of this certificate should be carried on board a vessel fitted with this equipment at all times.

A vessel fitted with BilgMon 488 II oil content meter should always, have on board a copy of the instruction manual (listed in type examination documentation).

Please see Appendix: Marking of product

APPENDIX

Application/Limitation

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Application

Model	Application
BilgMon 488 II	Detection of oil content in bilge water. Sending an alarm signal when the oil content exceeds 15 ppm. Sending an alarm signal when no flow of the sample water is present, if a flow switch is connected.
BilgMon 488 II (Ex)	Same as above The ATEX approved measuring cell (CTB11) is in the hazardous area zone. It is electronically connected to a connection box that is power fed by an intrinsically safe and ATEX approved Zener barrier (Z11). The master unit (display) of BilgMon 488 II is to be placed in a safe area.

The BilgMon 488 II oil content meter is designed to operate in the following conditions:

Measurement range:	0 to 30 ppm
Measurement precision:	15±5 ppm (5±2 ppm)
Sample water pressure:	Recommended: 1-2 bar Maximum: 3 bar
Sample water temperature:	Maximum 50°C
Working temperature:	0-55°C, max. 90% relative humidity
Power supply:	AC 115 or 230 V, 50-60 Hz AC 24 V, 50-60 Hz; or DC 24 V
Inclination range:	0 to 22.5 degrees in each direction

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Revision history of this certificate

Revision no.	Date of Issuance	Description
-	2025-04-24	New certificate MEDB0000ARY for BilgMon 488 II, which is a later model of BilgMon 488 (certified in MEDB00006MV rev.3). The BilgeMon 488 II, is optional to install in hazardous area zone (Ex proof installation), and also has an extra relay output called "Alert" (to trig an audible alarm). The BilgMon 488 II can be preset to alarm at 5 ppm.

To check the validity of this certificate, please look it up in:
[DNV Approval Finder](https://approvalfinder.dnv.com/?filterMode=current) - (<https://approvalfinder.dnv.com/?filterMode=current>)

APPENDIX

Tests carried out

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BilgMon 488 II

Test data and results of tests conducted on a 15 ppm Bilge Alarm in accordance with Part 2 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49).

15 ppm Bilge Alarm submitted by:	Brannstrom Sweden AB
Test location:	Gothenburg, Sweden
Organisation conducting the test:	Brännströms Elektronik AB
Method of sample analysis:	ISO 9377-2:2000
Test rig according to drawing:	BilgMon 488 Test Arrangement, GM170922.1 (2017-11-08)
Samples analysed by:	SGS Institut Fresenius

Environmental testing of the electronic sections of the 15 ppm Bilge Alarm has been carried out in accordance with Part 3 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Environmental tests carried out at:

- DNV Certification AS, Høvik, test report no. 2011-3155 rev.2, dated 2011-07-08.
- PAConsult, Hamburg, test report no. 24DE-00633, rev.1, dated 2024-10-25.

Remarks: **None**

Calibration test

	Test fluid								
	A			B			C		
	Test fluid (ppm)	Reading (ppm)	Grab sample (ppm)	Test fluid (ppm)	Reading (ppm)	Grab sample (ppm)	Test fluid (ppm)	Reading (ppm)	Grab sample (ppm)
0 ppm	0	-0.1	-	0	0.1	-	0	-0.2	-
15 ppm	14.0	14	14.7	15.7	15.3	13.1	16.3	12.9	14.4
Full scale (ppm)	28.7	27.7	26.4	30.2	28.7	26.8	29.2	25.6	24.1
Water temp.	55°C			25°C			25°C		
Re-zero	☐ Yes ☒ No			☐ Yes ☒ No			☐ Yes ☒ No		
Recalibrate	☐ Yes ☒ No			☐ Yes ☒ No			☐ Yes ☒ No		

Contaminant(s) and colour test

Meter reading with high ppm non-oil particulate contaminants and with very salt water.

	Expected content (ppm)	Reading (ppm)	Grab sample (ppm)
Clean water	0.0	0.0	-
Clean water and 10 ppm test fluid "B"	9.6	9.4	7.7
Fluid B and Iron Oxide in a concentration of 10 ppm	9.6	8.7	-
Fluid B and Iron Oxide in a concentration of 50 ppm	9.6	8.6	-
Fluid B and Iron Oxide in a concentration of 100 ppm	9.6	8.1	7.9
Clean water and 10 ppm test fluid "B"	9.6	9.4	-
Very salty water (6% common salt with clean water)	10.0	8.0	8.7

Sample pressure or flow test

15 ppm Bilge Alarm reading shift at 50% flow of normal: 0.3 ppm

15 ppm Bilge Alarm reading shift at 200% flow of normal: 0.8 ppm

Deviations from this test should be stated if necessary: None

Shut off test

	Expected content (ppm)	Reading (ppm)	Grab sample (ppm)
15 ppm Bilge Alarm before switched off	15.6	15.4	-
15 ppm Bilge Alarm reading after start-up (minimum dry period 8 hours)	15.4	14.5	14.0

Damage to 15 ppm Bilge Alarm as follows: None

Utilities supply variation test

110% voltage effects:	No influence (shift 0.0 ppm)
90% voltage effects:	No influence (shift 0.1 ppm)
110% air pressure effects:	N/A
90% air pressure effects:	N/A
110% hydraulic pressure effects:	N/A
90% hydraulic pressure effects:	N/A

Other comments: None

Calibration and zero drift test

Calibration drift:	0.1 ppm
Zero drift:	0.0 ppm