DNV·GL

Certificate No:
MEDB0000672

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Oil-content meters

with type designation(s)
GPP, EXP

Issued to
Inov8 Systems Ltd
Belfast, Ireland

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2019/1397,**
item No. MED/2.3. Marpol 73/78 as amended, Annex I Regulation 14, IMO Res. MEPC.107(49), IMO MEPC.1/Circ. 643

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

This Certificate is valid until **2025-03-03**.
Issued at **Hamburg** on **2020-03-04**

DNV GL local station:
Manchester

Approval Engineer:
Andrii Pishchanskyi

Notified Body
No.: **0098**

for **DNV GL SE**

Gerhard Aulbert
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 GL SE 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

Product description

Bilge alarms of types GPP and EXP detect hydrocarbons in water using laser radiation and fluorometry in combination with a proprietary flow cell and ultrasonic homogenization.

Two oil alarm relays and two 4-20 mA output are provided to control the overboard discharge and to monitor oil content level remotely.

Software revision

The standard software revision is V1.9.99. The software version can be found at the top of the pop-out menu on the left hand side of user interface. It is not written in IMO log and shall be manually saved as per manufacturer's instructions.

Application/Limitation

The controllers of types GPP and EXP are intended for installation on-board ships as 15 ppm bilge alarms for monitoring the oil content of bilge water. The bilge alarm monitors the effluent from an approved Bilge Water Separator and sends an alarm signal that facilitates the activation of discharge control devices that divert bilge water from overboard to bilge tank(s) when the oil content exceeds 15 ppm.

Installation of bilge alarms in spaces subject to explosion hazard:

- Of type GPP is not permitted;
- Of type EXP shall be according to EU-Type Examination Certificate No. FM19ATEX0172X.

The arrangement on board ship for the extraction of samples from the 15 ppm bilge separator discharge line to the 15 ppm bilge alarm shall give a truly representative sample of the effluent.

The bilge alarm is not fitted with no-flow sensor. The control system/wiring diagram is fitted with interface for an external sensor. Final installation on-board ship is to be installed with a no-flow sensor in inlet sample line to a bilge alarm.

The bilge alarm does not require clean water inlet for cleaning or zeroing purposes.

Bilge alarm is not fitted with automatic stopping device but fitted with electrical outlet for automatic stopping device.

Installation

Installation requirements to the 15 ppm bilge arrangement shall be as per
IMO Resolution MEPC.107(49), 6.

The onboard arrangement of the 15 ppm bilge alarm, 15 ppm bilge separator and automatic stopping device shall function automatically. However, fail-safe arrangements to avoid any discharge in case of malfunction shall be provided and verified during installation:

1. The alarm is always activated whenever clean water is used for cleaning or zeroing purposes, if applicable;
2. Any alarm will activate the automatic stopping device preventing overboard discharge and lead to recirculation;
3. 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;
4. By-passing the alarm during normal operation shall by no means be possible;

Type Examination documentation

Tests carried out

The product is tested as per MEPC.107(49).

Marking of product

The final product shall be marked with:

Marking scope	Example
Manufacturer's identification	Inov8 Systems Ltd
Type designation and/or model identification	EXP-2
Serial number	0089
Date of manufacture (month/year)	12/19

the MED Mark of Conformity (see page 1).

Software revision is shown on the user interface. "Build & test records" includes a serial number, list of hardware and its versions.

APPENDIX

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:	**Inov8 Systems, Limited**
Test location:	**TEi-Testing Services, LLC 3455 South 500 West Salt Lake City, UT 84115-4234 · USA**
Organisation conducting the test:	**TEi-Testing Services, LLC 3455 South 500 West Salt Lake City, UT 84115-4234 · USA**
Method of sample analysis:	**ISO 9377-2:2000**
Test rig according to drawing:	**Report TS-P1901090**
Samples analysed by:	**Director, TEi-Testing Services, Analytical Laboratory (TEi-TS-A). USEPA Laboratory I.D. No. UT00930**

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 Test(s) carried out at **TEi-Testing Services, Salt Lake City UT 84115-4234, USA**, Test report No. **TS-M1900739** issued at **Salt Lake City** on **3 May 2019**.

Calibration Test and Response Time

	Test Fluid					
	A		**B**		**C**	
	Measured	**Grab sample**	**Measured**	**Grab sample**	**Measured**	**Grab sample**
0 ppm	0	<0.5	0	<0.5	0	<0.5
15 ppm	15.2	14.7	15.1	14.9	15.2	14.9
Full scale [ppm]	29.8	30.1	29.5	29.8	30.2	29.8
Water Temperature	22.2 °C		24.1 °C		24.5 °C	
Re-zero	No		No		No	
Recalibrate	No		No		No	
Response Time	1.2 sec		1.2 sec		1.1 sec	

Contaminant(s) and Colour Test

Non-oil particulate matter.
Meter reading shift with ppm non-oil particulate contaminants and with very salt water.

Test condition		Expected Reading	Oil Content Meter Reading
Clean water and 10 ppm Test Fluid "B"		10	10.0
Very salt water (6% common salt with clean water)		10	10.0
Fluid B and Iron Oxide in a concentration of	10 ppm	10	9.6
	50 ppm	10	9.7
	100 ppm	10	9.2

Sample Pressure of Flow Test

15 ppm Bilge Alarm reading shift at normal	15.0	ppm
15 ppm Bilge Alarm reading shift at 50 % of normal	15.0	ppm
15 ppm Bilge Alarm reading shift at 200 % of normal	15.0	ppm
Deviations from this test should be stated if necessary: None		

Shut-Off Test

15 ppm Bilge Alarm before shut-off	15.0	ppm
15 ppm Bilge Alarm reading after start-up (minimum dry period 8 hours)	14.9	ppm
Damage to meter as follows: None		

Utilities Supply Variation Test

110 %	voltage effects	There was no change in the Oil Content Meter Reading when the voltage was varied.
90 %	voltage effects	There was no change in the Oil Content Meter Reading when the voltage was varied.
110 %	air pressure effects	Not applicable
90 %	air pressure effects	
110 %	hydraulic pressure effects	
90 %	hydraulic pressure effects	

Other Comments

None

Calibration and Zero Drift Test

Calibration drift	0.5	ppm
Zero drift	0.0	ppm