Marine & Offshore

Certificate number: 24978/C0 BV
File number: AP 4262
Product code: 3946H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

CARRIER FIRE & SECURITY LTD

Milton Keynes - UNITED KINGDOM

for the type of product

OIL MIST DETECTION SYSTEMS

GRAVINER Mk7 Oil Mist Detector

Requirements:
BUREAU VERITAS Rules for the Classification of Steel Ships.

EC Code: 31 for Display and 33 for Detectors / Control Unit

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 17 May 2027

For Bureau Veritas Marine & Offshore,
At BV LONDON, on 17 May 2022,
Spencer Yule

This certificate was created electronically and is valid without signature

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

- Product model or type designation :
  OMD Mk7

- Product description:
  Oil Mist Detection system

1.1 - General:

Stand-alone crankcase Oil Mist Detection System with capacity to monitor simultaneously up to 10 addressable detectors per Control Unit. OMD Mk7 is intended to be used on 2 or 4 stroke-engine.

1.2 - OMD Mk7 System Comprises:

Oil Mist Detector (P/N 53836-K269) Oil Mist Detector Short sample tube (P/N53836-K269-01)	Powered by Control Unit 1 x Serial CANbus to communicate with Control Unit IP 65 / Engine Installation
Control Unit (P/N 53836-K270) Control Unit Caterpillar (P/N 53836-K270-01) Control Unit No Membrane (P/N 53836-K276)	10 x Serial CANbus to communicate with Detectors 4 x Volt Free Relays (Fault, Pre-Alarm, Slow Down, Back-up Alarm) 24 V dc supply IP 65 / Engine Installation
Optional Display (P/N 53836-K271)	1 x Serial Modbus to communicate with Control Unit 24 V dc supply IP 32 / Control Room installation

1.3 - Software:

OMD Mk7 Detector (K191/K192 Boards)	**:** P66100, Ver./Rev. 101
OMD Mk7 Control Unit (K190 Board)	**:** P66200, Ver./Rev. 109
OMD Mk7 Control Unit Caterpillar (K190-01 Board)	**:** P66220, Ver./Rev. 103
OMD Mk7 Display (K193 Board)	**:** P66300, Ver./Rev. 103

2. DOCUMENTS AND DRAWINGS:

- 44792-K190CD (Control Unit Board - 8 pages), Rev. 7 dated 09/08/11
- 44782-K194CD (Display USB Board), Rev. 2 dated 28/06/11
- 44782-K196CD (Membrane Board), Rev. 1 dated 28/06/11
- ED868 - OMD Mk7 Specification, Rev. 2 dated 06/12/10
- ED869 - OMD Mk7 Control Board Hardware Specification, Rev. 1 dated 01/02/10
- ED870 - OMD Mk7 Control Unit Mechanical Specification, Rev. 1 dated 03/02/10
- ED871 - OMD Mk7 Display Unit Hardware Specification, Rev. 1 dated 18/03/10
- ED872 - OMD Mk7 Display Unit Mechanical Specification, Rev. 1 dated 04/02/10
- ED873 - OMD Mk7 Detector Hardware Specification, Rev. 2 dated 06/05/10
- ED874 - OMD Mk7 Detector Software Specification, Rev. 1 dated 17/03/10
- ED875 - OMD Mk7 Control Unit Software Specification, Rev. 2 dated 29/08/11
- ED880 - OMD Mk7 Display Software Specification, Rev. 1 dated 25/03/11
- ED882 - OMD Mk7 System Verification Specification, Rev. 1 dated 11/04/11.
- Software Part Number - Coding and Documentation N°. DOP(C)20 Issue 7, undated
- OMD Mk7 - System Software FMEA, ref PC17082011 Rev. 2.
- 53836-K271 (Display Unit Assembly - 3 pages) Rev. 10, dated Mar 18, 2016
- 53836-K271ID (Display Unit ID - 3 pages) Rev. 3, dated Dec 4, 2013
- 53836-K272 (Detector Head Assembly - 5 pages) Rev. 8, dated Sep 1, 2016.
- 43682-K285 (Cable Assembly OMD Mk7 Detector) Rev. 7, dated Jan 27, 2015
- 43682-K286 (Cable Assembly OMD Mk7 Detector) Rev. 5, dated Oct 16, 2012
- OMD Mk7 M67 Test Procedure No. ED811 Rev. 3, dated Oct 24, 2016
- Mk7 Oil Mist Detector - Installation, Operation and Maintenance Manual No. 59812-K007 Rev.15, dated November 2017.
- Drawings:

44782-K191CD (Detector CPU Board), Rev. 4 dated 25/01/12.
44782-K192CD (Detector LED Board), Rev. 3 dated 10/02/15.
44782-K193CD (Display Driver Board), Rev. 9 dated 31/01/20.
53836-K269 (Oil Mist Detector Assembly - 3 pages) Rev. 7, dated 20/12/16
53836-K270 (Assembly Drawing for OMD Mk7 Control Unit) Rev. 8 dated 18/02/19

3. TEST REPORTS:

Kidde Products:

Engineering Report - Detector temperature testing, dated 27/01/11
Engineering Report - OMD Mk7 Halt Testing, dated 24-28/02/11.

Mariner Systems:

Environmental Test Report - Oil Mist Detector System OMD Mk7 - Test file No. TL1550 Issue 03 dated 25/07/11
(EMC) - Oil Mist Detector System OMD Mk7- Test file No. TL1550 Issue 02 dated 27/10/11
Temperature Test Report - Oil Mist Detector System OMD Mk7 - Test file No. TL1550-A Issue 01 dated 05/09/11

BSI:

EN 60695-2-2 Tests - Test Report No. 2407/7753833 dated 20/09/11

Trac:

IP Tests - Certificates of Testing N°. TRA007124CC01C issued on 27/09/11, N°. TRA007124CC02A issued on 26/09/11 and N°. TRA007124CC03A issued on 11/10/11.

CARRIER FIRE & SECURITY LTD:

- OMD Mk7 Class NK Test Results - according to IACS URs M67 Rev.2 & E10 Rev.6 No. ED912 Rev. 3, dated Jan 20, 2016

MS Testing:

- EMC Test Report Mk7 Oil Mist Detector No. TL15082-EMC, dated Oct 14, 2015
- Environmental Test Report Mk7 Oil Mist Detector No. TL15082-ENV, dated Oct 14, 2015
- Test Report OMD Mk7 Remote Display Unit No. TL19128 Issue 3 dated Sep 25, 2020.
- Test report TL20118 dated 26 January 2021

4. APPLICATION / LIMITATION:

4.1 - BV Rules for the Classification of Steel Ships.
4.2 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31** for Display and **33** for Detectors / Control Unit.
4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zone.
4.5 - Two & Four Stroke diesel engines, both single and multi engine installations.
4.6 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in cover page, according to the declaration of the manufacturer are covered by this certificate.
4.7 - Any modification of the hardware, firmware or software having an impact on the product performance or functionality has to be validated with type testing.
4.8 - In accordance with IACS UR E22 and as applicable to programmable devices for computer based systems of Category II or III, for each ship application:
- Ship specific documentation is to be submitted including software documentation and categorization of the computer based system.
- Inspection and testing before installation onboard is to be performed under the surveillance of the Society.
4.9 - OMD Mk7 has been tested according to requirements of IACS UR E10 rev 7.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **CARRIER FIRE & SECURITY LTD** in compliance with the type described in this certificate.
5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
5.3 - **CARRIER FIRE & SECURITY LTD** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
5.4 - **CARRIER FIRE & SECURITY LTD** has declared to Bureau Veritas the following production site :

Carrier Manufacturing Poland Sp. z o.o.
Kolejowa 24
39-100 Ropczyce
POLAND

6. MARKING OF PRODUCT:

6.1 - Trade name.
6.2 - Date of manufacture and serial number.
6.3 - Equipment type number or model identification under which it was type-tested.
6.4 - Alternatively, the marking may be presented on a display at equipment start-up.
6.5 - The title and version of each software element included in the installed software system shall be either marked or displayed on command on the equipment.
6.6 - When the marking and the title and version of the software are displayed only on the display, such information shall also be included in the equipment manual.

7. OTHERS:

7.1 - It is **CARRIER FIRE & SECURITY LTD's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate No. 24978/B1 BV issued on 10 Feb 2021 by the Society.

***** END OF CERTIFICATE *****