



CERTIFICATE NUMBER	21-2044595-PDA
EFFECTIVE DATE	08-Feb-2021
EXPIRY DATE	07-Feb-2026
ABS TECHNICAL OFFICE	Hamburg Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

IMES GMBH

located at

DR.-HERBERT-KITTEL-STR. 2, D-87600 KAUFBEUREN, Germany

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Diesel Engine, Monitoring and Control Equipment
Model: CMS/CRT Combustion Monitoring /Common Rail Timing System
Endorsements:
Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 07/Feb/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping


Efstratios Maliatsos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

IMES GMBH

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Tier: 5 - Unit Certification Required

Product: Diesel Engine, Monitoring and Control Equipment
Model: CMS/CRT Combustion Monitoring /Common Rail Timing System
Endorsements:

Intended Service:

ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International standards.

Description:

The Imes CMS/CRT system utilizes signals from cylinder pressure sensors for monitoring the combustion of internal combustion engines. Specific values, such as peak pressure, mean indicated pressure and knock are calculated and transmitted via CAN bus for closed loop engine control. In addition, the CRT system also calculates control parameters for the injection timing of common rail engines. Via CAN/USB adapter a PC with the imes monitoring software can be connected in order to change parameters or to display cylinder pressure trends and calculation results.

System Components:

Cylinder Pressure Sensors (one per cylinder up to 20, not in scope of this certificate).

Terminal Boxes for collecting the signals from the cylinder pressure sensors.

ZAD Data Acquisition Module: monitors and analyses up to 10 cylinders, measuring knock intensity and misfiring of each cylinder. Each ZAD is mounted in a robust aluminum housing.

PC with CAN bus interface (not in scope of this certificate).

Rating:

Input Voltage: 24V DC

Ambient Operating Temperature: up to 60° C

Degree of Protection: IP66 for the housing, IP68 for the cable glands

Service Restriction:

1) Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

2) Unit Certification is required if the product is incorporated in a Category II or Category III system, as detailed in 4-9-3/7.1 and 4-9-3/Table 1 of the ABS Marine Vessel Rules or in a propulsion related control system for a vessel/unit with a specific class notation (e.g. ACC, ACCU).

3) Test and approval are for hardware only.

Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

2) Each particular configuration and connection arrangement is to be specifically approved for each installation, when the product is incorporated in a Category II or III system, as detailed in 4-9-3/7.1 and 4-9-3/Table 1 of the ABS Marine Vessel Rules.

3) Cables used are design approved under 20-2041906-PDA (HABIA CABLE AB, RTFRO).

Notes/Drawing/Documentation:

Drawing No. 1, ZAD61a_Schematic, Revision: 1, Pages: 1

Drawing No. 2, ZAD61a_PCB Assembly, Revision: 1, Pages: 1

Drawing No. 3, CRT-CMS system general description, Revision: 1, Pages: 1

Drawing No. 4, CRT6 visualisation software manual rev.2.0, Revision: 2.0, Pages: 1

Drawing No. 5, CMS6 visualisation software manual rev.1.0, Revision: 1.0, Pages: 1

Drawing No. 6, CMS6 - CRT6 system diagram dwg 900133, Revision: 1, Pages: 1

Drawing No. 7, 14KFU2221748_PC1418933_IMES_CRT6_Environmental test report, Intertek, 11.09.2014, Revision: 1, Pages: 1

Drawing No. 8, IMES_ZAD_Termialbox_Sensor_14TH0308_EMI Test Report, Revision: 2, Pages: 1

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Drawing No. 9, DNV-GL Certificate TAA00000DS-revision1, Revision: 1, Pages: 1

Drawing No. 10, IMES_Messbox_IEC60068_Environmental test update 16 hours, Dry & Damp Heat test, Bureau Veritas, 09.04.2020, Revision: 1, Pages: 1

Drawing No. IMES_TG 2020-0007_CLASSNKp7Ch1_0, EMC Test Report, Bureau Veritas, 30.12.2020 (6GHz), Revision: 1, Pages: 1

Drawing No. rtfro-2016_a, RTFRO Cable Datasheet, Revision: 1, Pages: 1

Drawing No. PB03_002_Software Entwicklung_v1_0, Software Quality Plan

Terms of Validity:

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STANDARDS

ABS Rules:

2021 Marine Vessels Rules: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-3/1.7, 4-8-3/1.11.1, 4-8-3/1.17, 4-9-3/5, 4-9-3/7, 4-9-3/9, 4-9-9/13.1, 4-9-9/Table 1 & Table 2

2021 Mobile Offshore Units Rules: 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-3-1/11, 4-3-1/15, 4-3-1/17

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

NA