



Certificate No. 03-001999/031704 rev.1

## TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

**Electronic Engine Control Module for Caterpillar Engines**

**ADEM VI (A6E4v3.1)**

MANUFACTURER:

**CATERPILLAR Inc.**  
3701 South Street  
Lafayette, Indiana 47905-4856  
UNITED STATES OF AMERICA

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

**Croatian Register of Shipping: Rules for the classification of ships,  
Part 9. – Machinery, Part 13. – Automation**

**IACS UR E10  
IACS UR E27**

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2028-01-25**

Place and date: Split, 2025-04-28

Seal

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

**DETAILED PRODUCT DESCRIPTION:**

ADEM VI (A6E4v3.1) is an Electronic Engine Control Module intended for use on a wide range of Caterpillar Marine Diesel Engines.

Part number(s): 586-5297, 616-8896

**APPLICATION / LIMITATIONS:**

Correct configuration and set up for each delivery to be tested during commissioning, after installation, under the supervision of a Society Surveyor. Major changes in the software are to be approved before being installed.

Single engine application is acceptable when back-up ECM is implemented.

Approval is also valid for ships to be granted with class notations: AUT 1, AUT 2 and AUT 3.

**TYPE APPROVAL DOCUMENTATION:**

- ADEM VI – A6E4v3.1 Electronic Control Unit – Product specification sheet,
- A6E4v3.1 – Schematics – 586-5297,
- A6E4v3.1 – Chart-S/A Main – 19100962, Rev. A,
- A6E4v3.1 – Schematic P/S – 24154441. Rev. A,
- A6E4v3.1 – Chart-S/A P/S – 24154442, Rev. A,
- A6E4v3.1 – Schematic Main – 42007389, Rev. A,
- C32B System Diagram,
- C32B System SRS,
- A6E4v3.1 – Caterpillar DFMEA – 10-4-2018,
- C32B System FMEAs,
- Marine Society Requirements EC-29 v2.3,
- 2020 Engine ECM Software Quality,
- ISO Cert Delphi Delco Reynosa 2018,
- C32B Marine Engine Alarm and Protection System EC-29 Test Plan v1.0,
- C32B Marine Engine Alarm and Protection System EC-29 Test Report,
- A6E4v3.1 – Control GP – Elek – 616-8896,
- A6E4v3.1 586-5297 vs 616-8896 Differences – White Paper,
- A6E4v3.1 – Schematic Main – 19100961, Rev. A,
- A6E4v3.1 ECM Part Number 616-8896 Marine Type Approval Version 0.3 2022-10-11,
- Cyber Security Type Approval Documentation Engine ECM, Version 1 dated 2023-09-15 and Version 5 dated 2024-11-11,
- ECM Cyber Security Integration Guidance for ECM Suppliers, Version 1.0, dated 2020-05-20,
- ICS Cyber Security Guidelines for HRS Documents, Version 0.2, dated 2021-02-24,
- NPI & Secure Development Life-cycle Process, dated 2024-01-30,
- Test Procedures for Cyber Security Type Approval, Version 3.1, dated 2024-08-24, and Version 5.3, dated 2024-12-13.

**MARKING OF PRODUCT:**

In accordance with IEC60945 – Marking and identification (The Manufacturer and Type Designation of the product, serial number, date of manufacture, safe distance to magnetic compass-if app., supply voltage, software version...).

**CONDITIONS FOR CERTIFICATION:**

All changes in components and software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to CRS for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.