



Certificate No. 03-001758/031457

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 IV (A4:E4v3.1)

MANUFACTURER:

DELPHI DELCO ELECTRONICS DE MEXICO S.A. de C.V.

Delphi Electronics & Safety

Carretera A, Matamoros KM 13.5

Parque Industrial Reynosa & Parque Industrial de Norte

Reynosa – Tamaulipas 88747

MEXICO

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

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

APPROVAL IS VALID UNTIL: **2024-10-06**

Place and date: Split, 2020-07-23

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 IV – Engine Control Module A4:E4v3	Caterpillar engines
System level schematics (with sensors and I/O)	263-6560_1; 263-6560_2
Control Gp. – ADEM IV	488-4881; 488-4884
Air Cooled ECM Assembly Drawing	28087463
Air Cooled Housing	23003066
Schematic	24063410 (base); 28087483 (chart)
Schematic – Power Supply	28037326 (base); 28037327 (chart)
Board Assembly	28087483 (chart)
Board Assembly – Power Supply	28037327 (chart)
ECM Software Version	A4E4v3.1 December 2006
ECM Suffix Code	MC

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

TYPE APPROVAL DOCUMENTATION:

- ADEM IV – (A4:E4v3) Electronic Control Module - Product Information Sheet,
- EC-29 Marine Society Test Plan for ADEM IV, Ver. 1.1- September 01,2006,
- Environmental Test Reports – Elite 37999-01,03,05,07,09,11,13,17,20,
- EMC Test Report – Elite 37724-02, March 26 – April 06, 2007,
- Performance Test Report with C175 - April 02-03, 2007,
- Witness Test Sign-off Sheets, April 04-06, 2007,
- A4E4v3.0 Pilot III to Prod I Whitepaper (Design differences), Version 1.0 – July 06, 2009,
- DELPHI Validation Testing Summary,
- CATERPILLAR Whitepaper Ver. 1.0 - 10/31/2011 showing the changes, dated November 7, 2011,
- ELITE Engineering Test Report for A4:E4v3.1 - No. 1102580-01.
- Caterpillar A4E4v3.1 Prod IV to Prod V Whitepaper – Ver. 1.2, dated 12-Oct-2012,
- ELITE Engineering Test Reports No. 1302487-01 Rev.A & No. 1302489-01,
- A4:E4v2/A4:E4v3.1/A5:E4v2 RoHS Update White Paper, Version 1.0, dated 17 March 2016,
- A4:E4v2 RoHS Update Type Approval Test, Version 1.00, dated 16 March 2016,
- Electronics & Systems Integration (E&SI) – ECM RoHS and Obsolescence, Table Top Review //16/15,
- Elite Electronic Engineering Inc. – Engineering Test Report No. 1504199-01 Rev. A, dated 07 March 2016.

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.

NOTES:

Engines for single propulsion vessels as well as engines for emergency generators, must be equipped with two ECM modules.

Any relaxation from a.m. applications may be accepted after consideration by the Class Society.