



Lloyd's  
Register

## Type Approval Certificate

*This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.*

This certificate is issued to:

|                            |   |
|----------------------------|---|
| <b>PRODUCER</b>            | Woodward Inc.<br>1000 East Drake Road<br>Fort Collins<br>CO 80525-1824<br>USA   |
| <b>PLACE OF PRODUCTION</b> | Woodward Poland Sp. z o.o.<br>32-005 Niepołomice, ul.Skarbowa 32<br>Poland  |
| <b>DESCRIPTION</b>         | Large Engine Control Module (LECM)  |
| <b>APPLICATION</b>         | For use in environmental categories ENV1, ENV2, ENV3 and ENV4 as defined in Lloyd's Register Test Specification No. 1, July 2015. |
| <b>STANDARD</b>            | Lloyd's Register Test Specification Number 1, July 2015   |

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|------------------------|------------------|
| <b>Certificate No.</b> | 16/60012         |
| <b>Issue Date</b>      | 29 November 2016 |
| <b>Expiry Date</b>     | 28 November 2021 |
| <b>Sheet</b>           | 1 of 2           |



LR031.2.2008

Andrew Munden / Matthew Partyka  
Americas Technical Support Office

*Lloyd's Register Canada Limited  
5420 North Service Road, Suite 506, Burlington, Ontario, L7L 6C7, Canada*

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**OTHER CONDITIONS**

Validity of this Type Approval is conditional upon a valid Lloyd's Register Software Conformity Assessment Certificate.

Installation of this equipment is to be in accordance with current Lloyd's Register Rules and Regulations. Documentation for each actual application is to be submitted for plan approval. This is to include details of engine configuration and a risk based analysis giving due consideration to engine operation and ship and personnel safety, and is to demonstrate adequate risk mitigation through fault tolerance and/or reliability. For detailed requirements see current Lloyd's Register Rules for electronically controlled engines.

Alarms are to be provided in accordance with current Lloyd's Register Rules and Regulations. A separate, independent safety system is to be provided.

Radiated and conducted emissions meet the requirement for equipment in the general power distribution zone, with the following exception. With certain configurations of input and output devices the limits of conducted emissions have been found to be exceeded in the 0.150 to 2.0 MHz range due to high peak current pulse wave modulated (PWM) signals associated with actuators, spark ignition coils, and oxygen sensor heaters. To prevent possible interference with other systems each engine package should be supplied from a separate, isolated power supply.

*"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Canada Limited of any modification or changes to the equipment in order to obtain a valid certificate."*

*The Design Appraisal Document No. 16/60012 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

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