Type Approval Certificate

[Power Management System]

Initial Approval 20 March 2026

Manufacturer DEIF A/S

Frisenborgvej 33, DK-7800 Skive, Denmark

Product Description Type : iE 250, iE 650, iE7

″ See Appendix 1 ″

Approval Condition ″ See Appendix 1 ″

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Pt. 6, Ch. 2, Art. 301 of the Rules for Classification of Steel Ships.

This Certificate is valid until 19 March 2031

Issued at Busan, Korea on 20 March 2026

This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "http://e-cert.krs.co.kr" by using the tracking No(ME26012086140) and certificate No.(CPH06107-AC008).

KOREAN REGISTER

General Manager of
Marine & Ocean Equipment Team

Note : *1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.*
2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

Date of Issue : 20 March 2026

A. Product Description

1. Product Specification

iE 250 and iE 650 are modular base power management system controllers used for generator control, power management and generator protection applications comprising of the following units.

1) iE 250 (Intelligent Energy Controller)
- PCM 2.1 Front/Base mounted controller
- MIO 2.1 Measurement input and output module
- PIM1 Plug in module 8 digital bi-directional
- PIM2 Plug in module 4 Analog bi-directional

2) iE 650 (Programmable Automation Controller)
- PCM 6·2 Computer module
- SIM 6·1/6·2 6·3/6·4/6·5 Station interface module
- PDM 6·1/6·2 Power module
- DIO 6·1/6·2 Digital input and output module
- DIM 6·1/6·3 Digital input and output module
- DOM 6·1/6·3 Digital input and output module
- AIO 6·1/6·2 Analogue input and output module
- AOM 6·2 Analogue input and output module
- AIM 6·1/6·2 Analogue input and output module
- TIM 6·1 Temperature input module
- IFM 6·1/6·2 Communication interface module
- MIM 6·1/6·2 Multifunctional input module

3) iE7 (Display Unit)

4) Application Software Version
- iE 250 : 2.0.x.x
- iE 650 : 2.0.x.x
- iE7 : 1.0.x.x

2. Approved Drawings and Documents

1) Data Sheets
- iE 250 Marine Power management 4921240660A
- iE 250 Marine 4921240655G
- iE 250 PLC 4921240658F
- iE 650 PLC 4921240662B

3. Test Reports, etc.

1) Environmental / EMC Test Reports
- EPC 929 iE7 A-tests witnessed DNV dated 2025-01-15, EPC 929 iE7 B-tests witnessed DNV dated 2025-01-15, iE250 A test witnessed DNV dated 2024-03-24, iE250 B test witnessed DNV dated 2024-05-24, 929-01 Witnessed test iE250 by LR dated 2024-10-14, 398-01 iE 650 AMC 600 A-Tests Witnessed DNV dated 2024-03-27, 398-01 iE 650 AMC 600 B-Tests Witnessed DNV dated 2024-03-27, 929-01 Witnessed test iE 650 by LR dated 2024-10-14, 4910213100H dated 2025-10-27, 4910217501R dated 2025-10-28, 4910229901C dated 2025-11-06, 4910217513J dated 2025-10-24

2) Manuals
- PICUS Manual 4189341362C
- iE 250 Installation instructions 4189341417E

3) Software Documents
- iE 250 : ELEMENT DEP BSP V5.0.7.2, PRODUCT iE250 UP V2.0.15.1, ELEMENT DEP APP UP V2.0.15.1, MIO 2.1 V1.0.0.2, PRODUCT CODESYS_SP20_TSP PCM2.1 V1.3.2.2
- iE 650 : ELEMENT DEP BSP V5.0.7.2, PRODUCT iE650 UP V2.0.15.1, ELEMENT DEP APP UP V2.0.15.1, PRODUCT CODESYS_SP20_TSP PCM 6.2 V1.3.2.2

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- iE7 V1.0.0.1 424355
- Software development document 4910000011AL
- Software lifecycle 291122

4) FMEA
- DFMEA_iEx50_DEP_V3, Risk assessment - ML200

5) FAT & Performance Test Reports
- iE 250 Marine DNV signed dated 2024-05-27
- iE 250 Marine Power Management DNV signed dated 2024-05-28
- Performance test 4040000003E dated 2025-01-03, Performance test iE 650 modules

6) Schematic Drawing & BOM
- 4157200601C, 4157200602D, 4157200617A, 4157200618B, 4157200619B, 4157200625A, 4157200628A, 4106200524B, 4106200525A, 4106200527B, 4106200528B, 2036020025B, 2036020026B, 2036020027C, 2036020028C, 2036020031B, 2046020212A, 1044650060C, 4157200625C, 2044650011B, 2044650060B

B. Approval Condition

1. Application & Limitation

1) This approval is granted on the basis of the test reports and the approved documentation.

2) Degree of protection is to be complied with Rule Pt.6 Ch.1 Sec.2 201.2.(5).

3) The manufacturer is to inform this Society of all kinds of revisions of the equipment including major changes of software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.

4) This certificate covers the hardware and basic software under the Product Description. The function of the actual application software is to be verified by the individual product certification of switchboard or on-board test of the integrated power system of the ships.

2. Individual Product Cert. and Drawing Approval Requirement

1) Individual Product Certification is typically required by switchboard maker.

2) In case where this system is installed on board, the system drawings for individual vessel are to be approved by this society.

3. Marking

1) The product or packing is to be marked with the manufacturer's name and type designation on a suitable position.

4. Others

1) Test condition

Test	Condition	Remark
EMC	All locations excluding the bridge and deck zone	-
Temperature	-30 ~ +70℃ -40 ~ +70℃	(1) (2)
Vibration	Acceleration ±0.7g	-

(1) iE7, iE250
(2) iE650

< End of Certificate >