CERTIFICATE NUMBER	25-0278636-1-1-PDA
EFFECTIVE DATE	11-Jun-2025
EXPIRY DATE	10-Jun-2030
ABS TECHNICAL OFFICE	London Engineering Department

CERTIFICATE OF

Product Design Assessment

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

DEIF A/S

located at

FRISENBORGVEJ 33, , SKIVE, Denmark, DK-7800

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:	**Generator Monitoring & Controlling System**
Model:	**IE250 , IE350 , IE650 . See description for more information on the models.**
Endorsements:	
Tier:	**5 - Unit Certification Required**

This Product Design Assessment (PDA) Certificate remains valid until 10/Jun/2030 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

Vasileios Vitanopoulos,Engineer/Consultant

DEIF A/S
FRISENBORGVEJ 33
SKIVE
Denmark DK-7800
Telephone: 45-9614-9614
Fax: 45-9614-9615
Email: jfl@deif.com
Web: www.deif.com

Tier: 5 - Unit Certification Required

Product: **Generator Monitoring & Controlling System**
Model: **IE250 , IE350 , IE650 . See description for more information on the models.**

Endorsements:

Intended Service:
ABS classed vessels and offshore installations in accordance with the listed ABS Rules and International Standards

Description:
The DEIF iE Series includes the iE 250, iE 350, and iE 650 models. These energy controllers are modular and scalable, designed for marine power generation, distribution, and automation systems. They support applications such as generator protection, power management, and hybrid energy integration.

More information on models below.
1. iE 250 Marine Series
A modular, compact controller platform for marine generator and power management applications. Which consist of the following:
• Genset Controller – Base/Front mounted – Synchronization, load sharing, breaker control
• Emergency Genset Controller – Base/Front mounted – Blackout recovery, priority start, PM license required
• Hybrid Controller – Base/Front mounted – Inverter control, asymmetric load sharing
• Bus Tie Breaker Controller – Base/Front mounted – Directional overcurrent, busbar section management
• Shaft Generator Controller – Base/Front mounted – Shaft generator base load, sync with gensets
• Shore Connection Controller – Base/Front mounted – Sync and control of shore power breakers
• Power Management Controller – Base/Front mounted – Full PM features, up to 32 units witu ring busbar support
• Programmable Logic Controller – Base/Front mounted– CODESYS runtime, CustomLogic, I/O expansion via MIO2.1
2. iE 350 Marine
A scalable, modular platform for advanced marine power systems with high I/O flexibility. Which consist of the following:
• Generator Protection Unit – Base mounted – Breaker trip, sync check, alarms
• Paralleling & Protection Unit – Base mounted – Load sharing, sync, breaker control
• Power Management Unit – Base mounted – Load-dependent start/stop, blackout recovery
• Programmable Logic Controller – Base mounted – CODESYS, EtherCAT I/O, CAN, RS-485, USB
3. Multi-line 300 Series.
A scalable, modular platform for advanced marine power systems with high I/O flexibility. Which consist of the following:
• Genset Controller (ML300) – Base mounted – Modular I/O, DVC integration
• Bus Tie Breaker Controller – Base mounted – Directional overcurrent, sync logic
• Hybrid Controller – Base mounted – Inverter integration, asymmetric load sharing
4. iE 650 PLC Series
A high-performance, industrial-grade PLC platform for marine and hybrid energy systems. Which consist of the following:
• Main Controller – Rack-mounted – Quad-core CPU, CODESYS, C/C++, EtherCAT master
• Expansion Rack – Rack-mounted – Up to 14 slots, modular I/O (digital, analog, temp)
• Condition Monitoring Module – Rack-mounted – High-speed analog inputs, vibration analysis
• HMI Interface – Panel mounted – Web visualization, CODESYS web server
• Redundant Controller – Rack-mounted – Controller redundancy via CODESYS option
5. Cross-Platform Compatibility
• iE 350 and ML300 share hardware modules (IOM, ACM, GAM, etc.).
• iE 650 supports full EtherCAT-based distributed I/O and advanced analytics.

DEIF A/S
FRISENBORGVEJ 33
SKIVE
Denmark DK-7800
Telephone: 45-9614-9614
Fax: 45-9614-9615
Email: jfl@deif.com
Web: www.deif.com

Tier: 5 - Unit Certification Required

Rating:
1. Power Supply Voltage:
• iE 250: 12/24 V DC (6.5–36 V DC)
• iE 350: 12/24 V DC (8–36 V DC)
• iE 650: 24 V DC (18–32 V DC)
2. Power Consumption:
• iE 250: 15 W typical
• iE 350: 20–35 W typical
• iE 650: 17.5 W typical
3. AC Voltage Measurement:
• iE 250/iE 350: 100–690 V AC nominal
4. AC Current Measurement:
• iE 250/iE 350: 1 A or 5 A via CT input
5. Frequency Range:
• iE 250/iE 350: 10–75 Hz
6. Operating Temperature:
• iE 250 and iE 350: -30 to +70 °C
• iE 650: -40 to +70 °C
7. Ingress Protection:
• iE 250: IP65 (front), IP20 (rear)
• iE 350: IP20
• iE 650: IP30
8. Speed Input (Tacho):
• iE 250: ±1 to 70 Vp, 10 Hz–10 kHz
• iE 350 and iE 650: Supported via I/O modules
9. Governor/AVR Output:
• All models: ±10.5 V DC or PWM (1–2500 Hz)
10. Digital I/O:
• iE 250: 8 DI/DO + 8 DI (MIO2.1)
• iE 350: Up to 32 DI/DO
• iE 650: Up to 64 DI/DO
11. Analogue I/O:
• iE 250: 4 AI/AO + 4 AO (MIO2.1)
• iE 350: Up to 16 AI/AO
• iE 650: Up to 32 AI/AO
12. Communication Interfaces:
• iE 250: 3x CAN, 2x RS-485, 4x Ethernet
• iE 350: CAN, RS-485, Ethernet
• iE 650: 4x Ethernet, 3x RS-485, 2x CAN

Service Restriction:
1. Unit Certification is required for this product. Unit Certification is to be carried out during Factory Acceptance Testing at the plant of manufacture or during Factory Acceptance Testing of the overall system. Furthermore, as this product is to be regarded as Computer Based System Category II as described in MVR 4-9-3/7.1 Table 1, applicable testing in accordance with MVR 4-9-3/Table 5 and MVR 4-9-9/15.7 Table 2 is to be witnessed by the ABS Surveyor.
2. 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.
3. This PDA covers only the hardware aspects of the product and does not cover any cybersecurity (IACS E27) requirements
4. The product is classified as open-type and must be installed within an enclosure that provides a degree of ingress protection appropriate for the intended installation environment in accordance with ABS Marine Vessel Rules 4-8-3/Table 2.
5. Each configuration and external connection is to be specifically approved by ABS engineering.

DEIF A/S
FRISENBORGVEJ 33
SKIVE
Denmark DK-7800
Telephone: 45-9614-9614
Fax: 45-9614-9615
Email: jfl@deif.com
Web: www.deif.com

Tier: 5 - Unit Certification Required

Comments:
1.The manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. All instructions in the User's Manual must be observed and followed.

Notes/Drawing/Documentation:
Datasheets & Installation Manuals:
Drawing No. EPC 929-04_16, iE_250 Data_sheet_4921240629O_UK, Pages:45
Drawing No. EPC 929-04_17, iE_250_Installation_instructions_4189341417E_UK, Pages: 99
Drawing No. EPC 929-04_18, iE 350 Marine Power management installation instructions 4189341393 E UK, Pages: 186
Drawing No. EPC 929-04_19, ie-250-marine-data-sheet-4921240655-uk, Pages: 44
Drawing No. EPC 929-04_20, ie-250-plc-data-sheet-4921240658-uk,Pages: 38
Drawing No. EPC 929-04_21, ie-350-marine-data-sheet-4921240657-uk, Pages: 54
Drawing No. EPC 929-04_22, ie-350-plc-data-sheet-4921240659-uk,Pages: 45
Drawing No. EPC 929-04_23, ie-650-plc-data-sheet-4921240662-uk, Pages: 37
Manufacturer Statement Modules

Test Reports:
Manufacturer Statement Modules, Dated 19/06/2025, Pages:1
Drawing No. EPC 929-04_05, EPC 929 iE7 A-tests witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2025-01-15, Pages: 174
Drawing No. EPC 929-04_06, EPC 929 iE7 B-tests witnessed DNV, Revision: IACS E10 Testing, DEIF laboratory, Dated 2025-01-14 , Pages: 240
Drawing No. EPC 929-04_07, iE250 A test witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2024-05-21,Pages: 202
Drawing No. EPC 929-04_08, iE 250 B test witnessed DNV, Revision:IACS E10 Testing, DEIF laboratory, Dated 2024-05-23 , Pages: 147
Drawing No. EPC 929-04_10, 929 iE350 A tests Witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2024-05-31 ,Pages: 104
Drawing No. EPC 929-04_11, 929 iE350 B tests Witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2024-05-23, Pages: 125
Drawing No. EPC 929-04_13, 398-01 iE 650 AMC 600 A- tests Witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2024-05-24, Pages: 132
Drawing No. EPC 929-04_14, 398-01 iE 650 AMC 600 B- tests Witnessed DNV, IACS E10 Testing, DEIF laboratory, Dated 2024-05-27, Pages:164

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 10/Jun/2030 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.

STANDARDS

DEIF A/S
FRISENBORGVEJ 33
SKIVE
Denmark DK-7800
Telephone: 45-9614-9614
Fax: 45-9614-9615
Email: jfl@deif.com
Web: www.deif.com

Tier: 5 - Unit Certification Required

ABS Rules:
Marine Vessels Rules (2025): 1-1-4/7.7, 1-1-A3, 1-1-A4 which covers the following:
4-8-2/5.19, 4-8-3/1.7, 4-9-2/7 , 4-9-9/13, 4-9-9/Table 1 & Table 2

Offshore Rules (2025) 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
4-3-1/11 , 6-1-1/13,

National:
NA

International:
IACS E10

Government:
NA

EUMED:
NA

OTHERS:
NA