TYPE APPROVAL CERTIFICATE
No. **ELE060125XP/001**

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

Description	**Power Management System**
Type	**iE 250 Marine Power Management/ Marine CORE/ PLC**
Applicant	**DEIF A/S** **Frisenborgvej 33** **7800 Skive** **DENMARK**
Manufacturer	**DEIF A/S**
Place of manufacture	**Frisenborgvej 33** **7800 Skive** **DENMARK**
Reference standards	**Rules for the classification of ships.- Part C - Machinery, systems and fire protection. - Ch.3, Sect. 6, Table 1.**

Issued in **GDAŃSK** on **July 4, 2025.** *This Certificate is valid until* **July 3, 2030**

RINA Services S.p.A.
Adam Mejer

This certificate consists of this page and 1 enclosure

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iE 250 Marine Power Management/ Marine CORE/ PLC

.Product description:

The **iE 250 Marine** product lines is built as a modular front-or base mounted hardware platform ranging from simple stand-alone units for:
- Generator
- Bus-tie
- Shore connection
- Shaft breaker

to integrated power management systems.
Flexible units can be expanded with I/O modules. The units are designed for the following applications:
1. **iE 250** with **CORE** software package (Paralleling and Protection Unit) having following functions:
- Breaker trip alarms
- Breaker status (open/close external command)
- Breaker position detection
- Synchronization check
- Synchronization(static and dynamic) and deloading
- Diesel generator start and stop commands
- Load sharing (isochronous, over DEIF Ethernet ring network)

2. **iE 250 Marine** with **Power Management** software package (Protecion and Power Management) has in addition to iE250 Marine with CORE software package the following basic functions:
- Load-dependent start and stop of generators
- Generators priority selection
- Automatic blackout recovery
- Heavy consumer function
- Stop of non-connected generator

The hardware building blocks for a iE 250 Marine are the following modules:
- Plug in module 8 Digital I/O
- Plug in module 4 Analogue I/O
- AC measurement and I/O board MIO2.1
- Display unit iE7 remote display

3. **iE 250 PLC Programmable Automation Controller** (PLC) with local I/O and optional expansion modules. It consists of the following modules:
iE 250 PLC (Base Mounted)
Software: iE 250 PLC
Appliction: C/C++ amnd CODESYS application
I/O: 8 Bi-directional digital channels
4 Bi-directional analogue channels
Interface: 4 x Ethernet (1 independent, 3 switched managed), 3 x CAN, 3 X RS-485,
1 x USB Host, 1 x Display Port
Processor: 1.6 GHz quad code
Memory: 2 GB DDR4 RAM, 128 kB FRAM
Storage: 32 GB non- volatile (8 GB user available)
iE 250 PLC (Front Mounted)
Software: iE 250 PLC
Application: C/C++ and CODESYS application
Display: 7" Touch type, Project Capacitive (PCAP)
Interface: 4 x Ethernet (1 independent, 3 switched managed), 3 x CAN, 3 x RS0485, 1 x USB Host
Pocessor: 1.6 GHz quad core

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Product description:

Memory: 2 GB DDR4 RAM, 128 kB FRAM
Storage: 32 GB non-volatille (8 GB user available)
Operational expansion modules
Measurement and I/O Module MIO2.1
- 2 direct 3-phase AC voltage measurements
- 3-phase AC current measurement
- 4th current measurement
- 8 Digital input channels
- 8 Digital bi-directional channels
- 4 Analogue bi-directional channels
- Analogue load sharing
- Analogue Tacho (MPU/N/NPN/PNP) input
- 2 Analogue output

List of Protection functions:

Protection function	ANSI no.	Levels
Over-voltage U>, U>>	59	2
Under-voltage U<, U<<	27	2
Voltage unbalance UUB>	47	1
Positive sequence undervoltage U1<	27D	1
Negative sequence voltage U2>	47	1
Zero sequence voltage U_0	$59U_0$	1
Over-current 3I>, 3I>>	50TD	2
Fast over-current 3I>>>	50/50TD	2
Directional over-current	67	2
Inverse time over-current It>	51	1
Current unbalance IUB>	46	1
Negative Sequence Current	46	1
Zero Sequence Current	51Io	1
Earth Inverse time overcurrent It>	51G	1
Neutral inverse time over-current	51N	1
Lockout relay	86	
Over-frequency f>, f>>	81O	2
Under-frequency f<, f<<	81U	2
Directional power P>, P>>	32	2
Reverse power P<, P<<	32R	2
Reactive power export Q>, Q>>	40O	2
Reactive power import Q<, Q<<	40U	2
Earth inverse time over-current It>	51G	2
Synchronisation	25	n.a
Over-frequency f>, f>>	81O	2
Under-frequency f<, f<<	81U	2

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iE 250 Marine Power Management/ Marine CORE/ PLC

Documents:

Block schematics: 4157200601 rev.: C; 4157200602 rev.: D; 4157200617 rev.:A; 4157200618 rev.:B; 4157200619 rev.: B; 4157200625 rev.: A; 4157200628 rev.:A.
Datasheets: iE250 Marine Intelligent Energy Controller Data sheet 4921240655G; , iE250 PLC Programmable Automation Controller 4921240658F
Manuals: - Paralleling and Protection Unit PPU300 4189341097I, 4189341099J, Protection and Power Management PPM300 4189340911N, 4189340909P, 4189340910N;
Software Quality Plan: - Product iE350 MarinePM V2.04.1 proj. 424356; ML 300 ACM 3.1 proj. 421704; CODESYS add-on V.1.0.5.0 proj.: 460156; CODESYS add-on V.1.0.3.1 proj.: 410176, CODESYS SP18 TSP PCM 3.3 proj 424356; DEP proj.: 424356; PPM 300 V.1.0.25.1 proj.: 424349; PPM 300 V.1.0.25.2 proj.: 424349; PPM300 V1.0.26.0 proj.: ML300-226033, ML300-228150; PPU 300 V.1.0.21.1 proj.: ML300-171178; PPU 300 V.1.0.26.1 proj.: 424349; PPU 300 V.1.0.26.2 proj.: 424349; PPU 300 V.1.0.26.3 proj.: 410267; PPU 300 V.1.0.26.0 proj.: 424349;

Test reports:

DEIF: - 4910213100H; 4910217501R; 4910213105H;
- FAT iE350 Marine dated 27.05.2024; iE 350 Marine Power Management dated 28.05.2024

Remarks:

- The equipment fulfill the EMC requirements for installation in power distribution zone.
- Drawings of each system configuration is to be sent for approval before installation on board.
- Electrical protection featured by this system may be used in addition to circuit breaker intrinsic protections.
- In case of major software modification detailed information and suitable documents are to be submitted to the Society.

GDAŃSK July 4, 2025

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