

# Type Approval Certificate



[ Power Management System ]

**Initial Approval** 8 November 2018  
**Manufacturer** DEIF A/S  
Frissenborgvej 33, DK-7800 Skive, Denmark

**Product Description** Multi-line 300 Power Management System  
Type : GPU 300, PPU 300, PPM 300

" 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, Steel Ships, Guidance of Approval of Manufacturing process and Type Approval, Etc.

This Certificate is valid until 7 November 2028

Issued at Busan, Korea on 7 February 2023



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(ME23004694711) and certificate No.(CPH06107-AC005).



**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 : 7 February 2023

### A. Product Description

#### 1. Product Specification

##### 1) System Description

Multi-line 300 is an power management system used for generator control, power management and generator protection applications comprising of the following units.

##### a) GPU 300 (Generator Protection Unit)

- PSM 3.1 Power supply module
- ACM 3.1 Alternating current module
- IOM 3.1/3.4 Input/output module
- PCM 3.1 Processor and communication module
- GAM 3.1/3.2 Governor/AVR module

##### b) PPU 300 (Paralleling and Protection Unit)

- PSM 3.1/3.2 Power supply module
- ACM 3.1/3.2 Alternating current module
- IOM 3.1/3.2 Input/output module

##### c) PPM 300 (Protection and Power Management)

- PSM 3.1/3.2 Power supply module
- ACM 3.1/3.2 Alternating current module
- IOM 3.1/3.2 Input/output module
- EIM 3.1 Engine input module
- GAM 3.1/3.2 Governor/AVR module
- PCM 3.1 Processor and communication module

##### d) DU 300 (Display unit)

2) Power supply : 12 or 24 V DC

3) Communication : CAN communication 2EA, Ethernet 2EA,  
Analog & Digital I/O etc.

##### 4) Software version ;

- a) GPU 300 : 1.0.x.x
- b) PPU 300 : 1.0.x.x
- c) PPM 300 : 1.0.x.x
- d) DU 300 : 1.0.x.x

##### 5) Intended for :

- a) GPU 300
  - Breaker trip and alarms
  - Synchronisation check
  - Breaker close (external command)
  - Breaker position detection etc.
- b) PPU 300
  - Load control
  - Breaker opening and closing
  - Dynamic and Static Synchronisation
  - Breaker position detection and alarms etc.
- c) PPM 300
  - Dynamic and Static Synchronisation and breaker closing
  - De-load before opening
  - Automatically-initiated synchronisation and de-loading
  - Operator-initiated synchronisation and de-loading possible etc.

#### 2. Approved Drawings and Documents

- 1) Drawing : 4157200505 E, 4157200501 L, 4157200507 H, 4157200508 E,  
4157200509 E, 4157200504 I, 4157200503 I, 4157200539 F,  
4157200544 D
- 2) Data sheet : 4921240530B, 4921240464H, 4921240563E, 4921240464W,
- 3) Operator manual : 4189341034A, 4189341099E, 4189340910G, 4921240563Q
- 4) Software quality plan : GPU300 1.0.1.0, PPU300 1.0.18.0, PPM 1.0.18.0
- 5) FMEA : SFMEA, HFMEA IPA0331
- 6) Type test overview : ver 1.0, 20170531/JFL

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### 3. Test Reports, etc.

- 1) Environmental/Performance Test : IPA311-11 test data\_1 (597 pages),  
IPA0331 test data for Display Unit (304 pages)  
4910213100G, 4910213105G, 4910213115G, 4910213120H,  
4910214100M, 4910217513J, 4910215100I, 4910215100I,  
4910215100I, 4910215100I, 4910215105I, 4910217515H
- 2) EMC Test : DANAK-19/17105 Rev.A dated 16th Nov. 2016  
4910217501Q, 4910217502M, 4910217505J, 4910217506M,  
4910217507L, 4910216501K, 4910216502I

## 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 shall be complied with Rule Pt.6 Ch.1 Sec.2 201.2. (5).
- 3) 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.
- 4) The manufacturer should inform this Society of all kinds of revisions of the equipment including software. If the changes are recognized to affect the functionality of the approved equipment, a type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.

### 2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is not required.
- 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 (IACS UR E10 Rev.8 basis)

| Test        | Condition  | Remark |
|-------------|--|--------|
| EMC         | All locations excluding the bridge and deck zone | -      |
| Temperature | -40 ~ +70°C                                      | -      |
| Vibration   | Acceleration $\pm 0.7g$                          | -      |

< End of certificate >