



Marine &amp; Offshore

Certificate number: 42536/C0 BV

File number: AP4648

Product code: 4421H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**DEIF A/S**

Skive - DENMARK

*for the type of product*

**ELECTRICAL POWER MANAGEMENT SYSTEMS**

PPM 300, PPU 300, DU 300, AMC 300 & GPU 300.

### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 31

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 11 Jul 2027**

**For Bureau Veritas Marine & Offshore,**

At BV FREDERICA, on 11 Jul 2022,

Jesper JENSEN

***This certificate was created electronically and is valid without signature***



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <https://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=vqq8cffjy>

BV Mod. Ad.E 530 June 2017

This certificate consists of 5 page(s)

## **THE SCHEDULE OF APPROVAL**

### **1. PRODUCT DESCRIPTION :**

- Product model or type designation:

**PPM 300, PPU 300, DU 300, AMC 300 & GPU 300**

- Product description:

Protection and power management controller system for various marine applications.

#### **1.1 - General hardware configuration:**

Type	Function
PSM3.1	Power supply module
PSM3.2	Power supply module
ACM3.1 & 3.2	Alternating current module
EIM3.1	Engine interface module
GAM3.1	Governor and AVR module
IOM3.1	I/O module
PCM3.1	Processor and communication module
IOM3.4	I/O module
GAM3.2	Governor and AVR module
IOM 3.2	I/O module
IOM 3.3	I/O module

Note: each configuration is to be adapted following the final application.

#### **1.2 - Software:**

Principal software:	Ver. 1.0.X.X
Utility software:	PICUS

Note: Not Applicable for AMC300

### **2. DOCUMENTS AND DRAWINGS :**

FAT report Ref. TKP/150427, dated 06.May.2015.

FMEA report Ref. POS/150428, dated 06.May.2015.

DU HELP.

PPM 300 commissioning guidelines No. 4189340912B.

PPM 300 data sheet No. 4921240464B.

PPM 300 handbook No. 4189340911B.

PPM 300 installation instructions No. 4189340909B.

PPM 300 Operator's Manual No. 4189340910B.

ACM3.1 module design ref. IPA0331, dated 04.Mar.2015.

ACM3.1 software quality plan ref. 421704, dated 17.Jan.2015.

EIM3.1 module design ref. IPA0331, dated 04.Mar.2015.

EIM3.1 software quality plan ref. 421704, dated 26.Jan.2015.

ML 300 software documentation, dated 10.Feb.2015.

Software life-cycle overview, ref. SM, 141104.

GAM3.1 module design, dated 19.Nov.2015.

GAM3.1 ref. 421704, dated 26.Jan.2015.

GPU 300 FAT dated 28.Jun.2016.

GPU 300 commissioning guidelines ref. 4189341033A, dated 17.Jun.2016.

GPU 300 data sheet ref. 4921240530A, dated 17.Jun.2016.

GPU 300 installation instructions ref. 4189341031A, dated 17.Jun.2016.

GPU 300 designer's handbook ref. 4189341032A, dated 17.Jun.2016.

Software version numbering ref. 4910000011AA, dated 17.Oct.2016.

PPU 300 data sheet No. 4921240563, dated 21 dec 2016

PPU 300 designers handbook No. 4189341097, dated 22 Dec 2016

PPU 300 operator's manual No. 4189341099, dated 21 Dec 2016

PPU 300 installation instructions No. 4189341098, dated 21 Dec 2016

Software Quality Plan PPU 300 version 1.0.0.0 No. 421763, dated 20 Dec 2016

Software Quality Plan DU 300 version 1.0.5.0 No. 421763, dated 20 Dec 2016

Software Quality Plan PPU 300 version 1.0.0.1 No. 421763, dated 24 Feb 2017

Software Quality Plan for ML300 No 410007 rev D dated 2019-10-30

#### **Drawings:**

Type	Reference
DU 300	4157200501 Rev. I, dated 02.Apr.2014.
PSM3.1	4157200503 Rev. I, dated 16.Sep.2014. 1044600030H, dated 30.Jun.2014.

ACM3.1 & 3.2	4157200505 Rev. D, dated 18.Nov.2013. 1044600050 Rev. D Additional block diagram for ACM3.2 dated 30 Sept 2020
EIM3.1	4157200507 Rev. G, dated 13.Jan.2015. 1044600070 Rev. E
Backplane	4157200502 Rev. C, dated 10.Apr.2013. 1044600020B, dated 24.Apr.2013.
GAM3.1	4157200508 Rev. D, dated 13.Aug.2013.
IOM3.1	4157200509 Rev. E, dated 09.Nov.2012. 1044600090 Rev. E
PCM3.1	4157200504 Rev. E, dated 25.Nov.2014. 1044600040E, dated 02.Jul.2014.
IOM3.4	Input output module Data Sheet, No.4921240557 A, dated 30 May 2018
GAM3.2	Governor and AVR modul Data Sheet, No. 4921240058 A, dated 30 May 2018
Technical description	No. 4910211100D, dated 13 Dec 2016

**For C0 version:**

- IOM 3.2 ML300, Drawing No. 4157200539, rev.F, dated 01 Sept. 2020.
- IOM 3.3 ML300, Drawing No. 4157200544, rev.D, dated May 05, 2020.
- Designer's Handbook PPM 300, No. 4189340911U
- Datasheet PPM 300, No. 4921240464W
- Operator's Manual PPM 300, No. 4189340910R
- Designer's Handbook PPU 300, No. 4189341097M
- Datasheet PPU 300, No. 4921240563Q
- Operator's Manual PPU 300, No. 4189341099N
- PPM 300 and PPU 300 Hybrid Controllers, No. 4189341309A
- AMC 300 Technical Datasheet No. 4921240613F
- Software Quality Plan for PPU 300, dated 20/04/2022.
- Software Quality Plan for PPM 300, dated 20/04/2022.

**3. TEST REPORTS :****DELTA:**

- EMC immunity test report Ref.: DANAK-19/17105 Rev. A, dated 16 Nov. 2016

**DEIF:**

- Tests report No. 4910213105F, dated 05 Dec 2015.
- Tests report No. 4910217511E, dated 17 Feb 2014.
- Tests report No. 4910217515E, dated 10 Mar 2014.
- Tests report No. IPA0331-05-W1, dated 05.Sep.2016.
- Dry Heat Ref.: 4910213105G/E
- Cold Test Ref.: 4910213100G/D
- Insulation Resistance Ref.: 4910215100F
- Radiated Emission Ref.: 4910216501J, dated 07 Dec 2016
- Conducted Emission AC, DC and teleports, dated 07 Dec 2016
- Test report 4910213100G dated 2018-09-27
- Test report 4910213105Gdated 2018-11-22
- Test report 4910214100J dated 2018-11-22
- Test report 4910215100I dated 2018-11-22
- Test report 4910215105I dated 2018-11-22
- Test report 4910217501Q dated 2018-10-08
- Test report 4910217505J dated 2018-09-28
- Test report 4910217513I dated 2018-10-04
- Test report 4910227515H dated 2018-10-02
- Test report 4910217516F dated 2018-10-02
- Test report 4910217502N dated 2020-05-05, 2020-05-14, 2020-05-12
- Test report 4910216501M dated 2020-05-12
- Test report 4910212100F dated 2019-07-15
- Test report 4910217501Q dated 2019-07-10
- Test report 4910210501C dated 2019-06-19
- Test report 4910213100G dated 2019-09-20
- Test report 4910217501Q dated 2018-10-08

- Test report 4910217502N dated 2021-01-06
- Test report 4910217516F dated 2021-02-12
- Test report 4910216501M dated 2021-01-06

**For C0 version:**

- RF Common Mode-Test 07B, No. 4910217507L, dated 2020-12-02.
- 7 A Damp Heat Test, No. 4910213120H, dated 2020-12-07.
- 6A Damp Heat cycle Marine, No. 4910213115G, dated 2020-12-03.
- Cold Test- 3A, No. 4910213100G, dated 2020-12-03
- RF Electromagnetic field Test, No. 4910217502M, dated 2020-12-02.
- Electrical Fast Transients - Burst, No. 4910217501Q, dated 2020-12-02.
- Dry Heat Test- 4A, No. 4910213105G, dated 2020-12-03
- Electrostatic Discharge-5B, No. 4910217505J, dated 2020-12-02
- Surge -6B, No. 4910217506M, dated 2020-12-02.
- Vibration Test-9A, No. 4910214100M, dated 2020-12-04.
- Insulation Resistance Test-14A, No. 4910215100I, dated 2021-04-29.
- Factory Acceptance Test PPU 300, dated 21-01-2022.
- Factory Acceptance Test PPM 300, dated 20-01-2021.
- High voltage Test-15A, No. 4910215105I, dated 2021-04-29.
- Conducted Emission AC, DC and tele ports-17A, No. 4910216502I, dated 2021-04-29.
- Interruptions- DC Power Port 15B, No. 4910217515H, dated 2021-04-29
- Radiated Emission -16A, 4910216501K, dated 2021-04-29.

**4. APPLICATION / LIMITATION :**

- 4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31**
- 4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones.
- 4.5 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev7
- 4.6 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in cover page, according to the declaration of the manufacturer are covered by this certificate.
- 4.7 - Any modification of the hardware, firmware or software having an impact on the product performance or functionality has to be validated with type testing.
- 4.8 - In accordance with IACS UR E22 and as applicable to programmable devices for computer based systems of Category II or III, for each ship application:
- Ship specific documentation is to be submitted including software documentation and categorization of the computer based system.
  - Inspection and testing before installation onboard is to be performed under the surveillance of the Society.
- 4.9 - For AMC 300 type, Only hardware is covered by this certificate.

**5. PRODUCTION SURVEY REQUIREMENTS :**

- 5.1 - The above products are to be supplied by **DEIF A/S** in compliance with the type and the requirements described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
- 5.3 - **DEIF A/S** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
- 5.4 - For information, **DEIF A/S** has declared to Bureau Veritas the following production site :

**DEIF A/S**  
**Frisenborgvej 33**  
**DK-7800 Skive**  
**DENMARK**

**6. MARKING OF PRODUCT :**

- 6.1 - Trade name.
- 6.2 - Date of manufacture and serial number.
- 6.3 - Equipment type or model identification under which it was type-tested.

**7. OTHERS :**

- 7.1 - It is **DEIF A/S** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate No. 42536/B1 BV issued on 02 Feb 2022 by the Society.

**\*\*\* END OF CERTIFICATE \*\*\***