



Confirmation of Product Type Approval

Company Name: DEIF A/S

Address: FRISENBORGVEJ 33, SKIVE, Denmark, DK-7800

Product: Multi-function System For Control and Protection of Generator Plants

Model(s): PPU-3 Paralleling and Protection Unit, GPU-3 Generator Protection Unit

Endorsements:

| Certificate Type | Certificate Number | Issue Date | Expiry Date |
|---------------------------------|---------------------------|-------------------|--------------------|
| Product Design Assessment (PDA) | 21-2077076-PDA | 25-FEB-2021 | 24-FEB-2026 |
| Manufacturing Assessment (MA) | 18-EG3574567 | 25-OCT-2018 | 27-NOV-2023 |
| Product Quality Assurance (PQA) | NA | NA | NA |

Tier

5 - Unit Certification Required

Intended Service

ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description

PPU 3 and GPU 3 are member of the DEIF Multi-line 2 product series.

GPU-3: The Generator Protection Unit (GPU-3) is a compact microprocessor-based protection unit containing all necessary functions for protection of a synchronous/asynchronous generator.

Generator protection functions: reverse power, overload, overcurrent, fast overcurrent, overvoltage, undervoltage,

overfrequency, underfrequency, overspeed, wire failure, voltage/current unbalance.

Busbar protection: over/under frequency; over/under voltage; voltage unbalance.

PPU-3: The Paralleling and Protection Unit (PPU-3) is a compact all in one microprocessor-based control unit containing all necessary functions for protection and control of a synchronous/asynchronous generator.

Generator protection functions: reverse power, overload, overcurrent, fast overcurrent, overvoltage, undervoltage, overfrequency, underfrequency, overspeed, wire failure, voltage/current unbalance.

Busbar protection: over/under frequency; over/under voltage; voltage unbalance.

Regulation modes: Load sharing, fixed frequency, fixed power and frequency droop.

Ratings

Operating temperature: -25 to +70 C degrees.

Unit Protection: IP 20

Display protection: IP52 (IP 54 with gasket option L).

Power supply: +12/24VDC

Appl. SW 3.1X.X

M4 board SW 2.0X.X

Service Restrictions

Unit certification is required for generator controllers of 100 kW (135 hp) and over intended for essential services or for services indicated as specified in ABS Marine Vessels Rules 2021: 4-8-3/1.5 & 4-1-1/ Table 3 item 1. When this product is used as a part of the switchboard or console for electrical power generating plant, unit certification of aforementioned equipment may cover this product provided that tests required by 4-9-9/Table 2 of the Marine Vessels Rules 2021 are witnessed by ABS Surveyor. Tests and approval are for hardware only. Each configuration is to be specifically approved.

Controller is fitted with reverse power protection, however the actual setting of the device needs to be verified for each vessel specific project separately as per Marine Vessels Rules (2021):4-8-2/9.11.4.

GPU3 does not offer load sharing only PPU3 offers the load sharing option, however the actual setting of the active and reactive load sharing needs to be verified for each vessel specific project separately as per Marine Vessels Rules (2021): 4-8-3/3.13.3(b), 3.13.3(c). Controller is fitted with under voltage protection, however the under voltage release needs to be verified for each vessel specific project separately as per Marine Vessels Rules (2021): 4-8-2/9.11.6.

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.

Comments

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes, Drawings and Documentation

Drawing No. 0778-01, ML_HFMEA_Hardware_HBI20120925, Revision: A, Pages: 1

Drawing No. 0778-03, PPU3 3.10.0 FAT test signed, Revision: A, Pages: 29

Drawing No. 0778-04, DEIF PPU Test June 2016, Revision: A, Pages: 3

Drawing No. 0778-05, LR SWC LR2002345SS UK, Revision: A, Pages: 6

Drawing No. 0778-12, Manufacturer Statement PPM-3 MCS-3, Revision: A, Pages: 1

Drawing No. 0778_10, 07B RF Common Mode-, Test Lab: -, Location: -, Date: 2013/06/07, Revision: B, Pages: 8

Drawing No. 0778_11, 17A Conducted disturbance-, Revision: A, Pages: 21

Drawing No. 0778_11, 17A Conducted disturbance-, Revision: B, Pages: 21

Drawing No. 0778_13, ppu-3-drh-4189340583k-uk, Revision: K, Pages: 103

Drawing No. 14A Insulation resistance, 14A Insulation resistance Test report, Revision: -, Pages: 4

Drawing No. 15A - High Voltage Test, 15A - High Voltage Test report, Revision: -, Pages: 4

Drawing No. ISO Certificate Deif, ISO Certificate Deif by LR, Revision: -, Pages: 1

Drawing No. PPM3_PPU3_GPU3_MCS3 HW list, PPM3_PPU3_GPU3_MCS3 HW list, Revision: -, Pages: 1

Drawing No. 0778-02, SQP_PPU-3_V.3.12.2, Revision: A, Pages: 17

Drawing No. 0778-06, 1B Electrical Fast Transients (EFT) - Burst, Revision: A, Pages: 8

Drawing No. 0778-07, 02B RF electromagnetic field immunity, Revision: A, Pages: 17

Drawing No. 0778-08, 16A Radiated disturbance, Revision: A, Pages: 9

Drawing No. 13B DC variations, 13B - DC variations GI witness test, Test Lab: -, Location: -, Date: 2009/09/24, Revision: 1, Pages: 3

Drawing No. 4A Dry heat, 4A Dry heat GL witness test, Test Lab: -, Location: -, Date: 2009/09/24, Revision: 1, Pages: 6

Drawing No. LR 2009-12-02 6A0, 6A0 PPU-3, GPU-3 Damp Heat LR Witness test, Test Lab: -, Location: -, Date: 2009/12/02, Revision: 1, Pages: 10

Drawing No. LR 2009-12-01 9A0, 9A0 PPU-3, GPU-3 Vibration LR Witness test, Test Lab: -, Location: -, Date: 2009/12/02, Revision: 1, Pages: 19

Drawing No. 12A inclination test, 12A inclination test report BV witness test, Test Lab: -, Location: -, Date: 2009/10/13, Revision: 1, Pages: 3

Drawing No. 3A cold test, 3A cold test report BV witness test, Test Lab: -, Location: -, Date: 2009/10/13, Revision: 1, Pages: 7

Drawing No. LR 2009-12-01 5B0, 5B0 PPU-3, GPU-3 ESD LR Witness test, Test Lab: -, Location: -, Date: 2009/12/1, Revision: 1, Pages: 5

Drawing No. 16B DC LF interference, 16B DC LF interference GL witness test, Test Lab: -, Location: -, Date: 2009/09/24, Revision: 1, Pages: 4

Drawing No. LR 2009-12-02 6B0, 6B0 PPU-3, GPU-3 surge - LR Witness test, Test Lab: -, Location: -, Date: 2009/09/24, Revision: 1, Pages: 4

Drawing No. Manufacturer declaration, Manufacturer declaration, Revision: 1, Pages: 1

Drawing No. 0640-04_03, PPU-3 data sheet 4921240354 UK, Rev. H_KWK, Pages: 11

Drawing No. GPU-3-1, GPU-3-1 Data Sheet 4921240352A, Rev. 1, Pages: 11

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 24/Feb/2026 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.

ABS Rules

- Marine Vessels Rules (2021): 1-1-4/7.7, 1-1-A3 & 1-1-A4, 4-8-2/9.11.4, 4-8-2/9.11.5, 4-8-2/9.11.6,

4-8-3/1.9, 4-8-3/1.17, 4-8-3/1.11, 4-9-3/7, 4-9-3/11,4-9-9/3 ,4-9-9/7 ,4-9-9/13 ,4-9-9/15.7 Table 1 & Table 2;

- Facilities on Offshore Installations (2021): 1-1-4/9.7, 1-1-A2, 1-1-A3 ,3-7/3.3
- Steel Vessels for Service on Rivers and Intracoastal Waterways (2021): 1-1-4/7.7, 1-1-A3, 1-1-A4;
- High Speed Crafts (2021): 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-6-1/11, 4-6-1/17,4-6-2/9.5.2(b), 4-6-2/9.5.2(c), 4-6-4/3.21.3(a),4-6-4/3.21.3(b), 4-7-8/3.1, 4.7.8/7.1,4.7.8/9,4-7-9/15,4-7-9/15.5 Table 9 and Table 10;
- Steel Barges (2021): 1-1-4/7.7, 1-1-A3 & 1-1-A4;
- Mobile Offshore Units (2021): 1-1-4/9.7, 1-1-A3, 1-1-A4, 6-1-1/9, 6-1-1/13; 4-3-1/11, 4-3-1/15, 4-3-1/17, 4-3-2/9.5.2(b), 4-3-2/9.5.2(c);

International Standards
IACS UR E10 Rev.7:2018

EU-MED Standards
NA

National Standards
NA

Government Standards
NA

Other Standards
NA



A handwritten signature in blue ink, appearing to read 'Joseph W. ...', is written over the printed name.

Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 07-Apr-2021 3:06

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

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 prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.