



Lloyd's
Register

Software Conformity Certificate

This certificate is issued to:

PRODUCER	DEIF A/S Frisenborgvej 33 7800 Skive Denmark
DESCRIPTION	Software for Generator Protection, Paralleling and Power Management
TYPE	GPU 300 – Generator Protection Unit PPU 300 – Paralleling and Protection Unit (Generator) PPM 300 – Protection (Generator) and Power Management
SOFTWARE	Application Software: (BU application) GPU 300 (V1.0.1.0) PPU 300 (V1.0.4.0) PPM 300 (V1.0.8.0) BU operating system: BSP (V3.0.0.0) Modules: ACM 3.1 (V4.1.0.2) PSM 3.1 (V2.0.0.2) GAM 3.2 (V2.0.0.2) CoDeSys Add-on (V1.0.1.0)
OPERATING ENVIRONMENT	The components are covered by the LR TA Certificate No. 15/20115(E4).
ASSESSMENT MODULE	Software Conformity Assessment System – Module GEN1 (1994)
Certificate No.	SWC 17/20004(E1)
Issue Date	07 December 2018
Expiry Date	22 August 2020
Sheet	1 of 2

Lloyd's Register EMEA
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QUALIFICATIONS

Valid for future versions, provided that the modifications are performed in accordance to the assessed configuration management process, covered by this certification.

Each revision of the above mentioned Software modules have to be announced to the Lloyd's Register office which is responsible for the SCA certification process.

The updated version has to be tested and the Software Quality Plan, including the Software Version History should reflect sufficient information to the attending/local Surveyor's satisfaction.

LIMITATIONS

The engine protection module (EIM) is not covered by the Software Conformity Assessment.

"This Certificate is valid for the Software mentioned herein and excludes Software that has been developed outside the assessed development process."

The Design Appraisal Document No. HTS/ETS 35763-17, issue 1 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No.	SWC 17/20004(E1)
Issue Date	07 December 2018
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Sheet	2 of 2

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Design Appraisal Document

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Date
07 December 2018

Please quote this reference number on all future communications
HPC1762059/37570-18/ML/AC

**SOFTWARE CONFORMITY ASSESSMENT
ISSUED TO: DEIF A/S
FOR: GENERATOR PROTECTION UNTI, PARALLELING AND PROTECTION UNIT,
PROTECTION AND POWER MANAGEMENT
TYPE: GPU 300, PPU 300, PPM 300
SOFTWARE CONFORMITY CERTIFICATE NO. SWC 17/20004(E1)**

This Design Appraisal Document supersedes and cancels the Design Appraisal Document No. HTS/ETS 35763-17, Issue 0, dated 23 August 2017

APPROVAL DOCUMENTATION

Form2592	Request for LR Software Conformity Assessment	19.07.2018
GMS03-11-14	Request for Marine Services	16.08.2018
421770_Rev.B	Software Quality Plan GAM 3.2	06.12.2017
4189341097E	Desinger's Handbook – PPU 300	2018
410040_Rev.B	Software Quality Plan PPU 300	12.04.2018
GAM 3.2_V1.0	Module Design – GAM 3.2	04.07.2017
Unnumbered_V0.2	Description – Board Support Package	15.10.2018
ACM 3.1.txt	Change Log of ACM 3.1 application up to V4.1.0.2	25.01.2018
CODESYS.txt	Change Log of CoDeSys application up to V1.0.1.0	23.10.2018
GAM3.2.txt	Change Log of GAM 3.2 application up to V2.0.0.2	25.09.2018
GPU300.txt	Change Log of GPU300 application up to V1.0.1.0	28.09.2016
PPM300.txt	Change Log of PPM300 application up to V1.0.8.0	23.10.2018
PPU300.txt	Change Log of PPU300 application up to V1.0.4.0	23.10.2018
PSM3.1.txt	Change Log of PSM3.1 application up to V2.0.0.2	05.07.2017
CP8524	Corrective and Preventive Action – example GAM3.2	13.09.2016
DEM 300	Specification of GAM 3.2	undated
GAM3.2 – code	Example for source code with comments	25.09.2018
421770	Project Report for GAM 3.2	06.12.2017

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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APPROVAL DOCUMENTATION (continued)

JIRA-189	Main Task with Sub Tasks (Bug tracking Tool) for GAM 3.2	08.12.2017
ML300	Project Report for Multi Line platform	17.07.2018
421704_Rev.A	Software Quality Plan – ML300-PCM3.1 (BSP V3.0.0.0)	05.09.2016
Form 2592	Request for LR Software Conformity Assessment	21.03.2017
Form 2502TA	Request for Marine Service	28.03.2017
Unnumbered	SCRUM Quick Guide	19.04.2012
4910000011AC	Guidelines for Development of Software	22.10.2016
SM, 170424	Software life-cycle overview	24.04.2017
4037100002B	QI 7.1.2 Handling of review in product lifecycle	undated
4057300003E	QI 7.3.3 Application Development	undated
4037300004E	QI 7.3.4 Design & development	undated
Unnumbered	AC Measurement Card Module Design	07.06.2017
ACM 3.1	Reliability block diagram	16.06.2017
421704	Software Quality Plan for ml300 (ACM 3.1)	12.06.2017
Unnumbered	IOM 3.1 module design	12.06.2017
IOM 3.1	Reliability block diagram	16.06.2017
421704	Software Quality Plan for ML300 (IOM3.1)	26.01.2015
Unnumbered	ML 300 IO cards SW platform module design	12.06.2017
Unnumbered	ML 300 PSM 3.1 and PSM 3.2 module design	12.06.2017
PSM 3.1	Reliability block diagram	16.06.2017
421704	Software Quality Plan for PSM 3.1 (ML300)	09.06.2017
Unnumbered	Multi-line 300 CODESYS-add-on Module design	16.06.2017
Unnumbered	Multi-line 300 – Priority configuration_V1.1	04.07.2017
Unnumbered	Protection system module design	16.06.2017
Unnumbered	Software Review report for ACM 3.1 (ML 300)	02.11.2014
Unnumbered	CODESYS – Installation and First start	28.06.2017
Unnumbered	Software Quality Plan for PPU 300 version 1.0.0.3 (CP9004, CP9005, CP9009)	03.04.2017
HPC1762059	LR SCA Report	XX.07.2017
4921240563D	Data Sheet for PPU 300	2017
4189341097D	Designer's Handbook – PPU 300	2017
4189341098D	Installations Instructions – PPU 300	2017
4189341099D	Operator's Manual – PPU 300	2017
410010	Software Quality Plan for CoDeSys Add-on V.1.0.0.0 (draft)	28.06.2017

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TEST REPORTS

IPA0331_HWFMEA	Failure Mode and Effects Analysis (Hardware) – ML 300	10.09.2018
IPA0331_SFMEA	Failure Mode and Effects Analysis – ML 300	17.09.2018
GAM3.2 LCOV	Report – Line Coverage for GAM 3.2	06.12.2017
FMECA IOM3.4	Failure Mode, Effects and Criticality Analysis – IOM3.4	18.09.2018
test suite Software	Test case for Software Version V2.0.0.2 of GAM 3.2	05.12.2017
test suite Standalone	Test case for standalone backplane blackout V2.0.0.2	05.12.2017
FMECA-ACM_V1.1	Failure mode, effects and criticality analysis ACM 3.1	16.06.2017
FMECA-IOM_V1.1	Failure mode, effects and criticality analysis IOM 3.1	16.06.2017
FMECA-PSM_V1.2	Failure mode, effects and criticality analysis PSM 3.1	16.06.2017
FMECA-CODESYS_V1.2	Failure mode, effects and criticality analysis (System)	16.06.2017
TCBroadcastStorm_V0.2	DEIF ML300 Network Test Report – Broadcast Storm protection	03.07.2017
TCRingprotocol	DEIF ML300 Network Test Report – Non-revertive ring protection	03.07.2017
Test Setup_witnessed	Test witnessed by LR for fast overcurrent release	03.07.2017
FAT LR SCA	Factory Acceptance Test Version 1 – PPU300 (status ok check, Lamp test, Short circuit protection)	03.07.2017
ANSI50	ANSI 50 Instantaneous overcurrent Test_witnessed by LR	03.07.2017
unnumbered	CODESYS application OK	10.07.2017
unnumbered	CODESYS Dynamic Memory Allocation Prevention Test	03.07.2017
unnumbered	CODESYS overload Test	03.07.2017
4040000003E	Performance Test of Multi-line 300	21.12.2016
acm_v4.0.1.4_unittest	Unit test performed for ACM 3.1	19.06.2017
ml300_auto_Loop1_010	Automated unit test of alarm handling and actions (Block)	29.06.2017
161220-19.59.00	Performance Test – Fast OverCurrent 2	20.12.2016



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Supplementary Software Conformity Assessment Terms and Conditions

LR Software Conformity Assessment certifies that the product(s) referred to herein has/have been found to meet the applicable assessment criteria for the use specified herein. It does not mean or imply that the product(s) has/have been assessed for any other use or developed in a manner other than stated in the said information supplied to Lloyd's Register EMEA.

LR Software Conformity Assessment is based on the understanding of compliance with the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations.

LR Software Conformity Assessment does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register EMEA reserves the right to cancel a Software Conformity Assessment Certificate as detailed in LR Software Conformity Assessment System – Procedure SC94.

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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APPROVED

Part 9
Subject: Software Conformity (SWC)
Product: Software

Producer/Licence No.	Description of Product				Cert. No.
	Type	Details of Approval	Application	Remarks	
DEIF A/S Frisenborgvej 33 7800 Skive Denmark	GPU 300 – Generator Protection Unit PPU 300 – Paralleling and Protection Unit (Generator) PPM 300 – Protection (Generator) and Power Management	<u>Application Software:</u> (BU application) GPU 300 (V1.0.1.0) PPU 300 (V1.0.4.0) PPM 300 (V1.0.8.0) BU operating system: BSP (V3.0.0.0) Modules: ACM 3.1 (V4.1.0.2) PSM 3.1 (V2.0.0.2) GAM 3.2 (V2.0.0.2) CoDeSys Add-on (V1.0.1.0)	Software for Generator Protection, Paralleling and Power Management System <u>Operating environment:</u> Components are covered by LR TA Certificate No. 15/20115(E4). <u>Limitation:</u> The engine protection module (EIM) is not covered by the Software Conformity Assessment.	Expires: 22 August 2020 Valid for future versions, provided that the modifications are performed in accordance to the assessed configuration management process, covered by this certification. Each revision of the mentioned Software modules have to be announced to the Lloyd's Register office which is responsible for the SCA certification process. The updated version has to be tested and the Software Quality Plan, including the Software Version History should reflect sufficient information to the attending/local Surveyor's satisfaction.	SWC 17/20004(E1)