

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	DEIF A/S
Address	Frisenborgvej 33, Skive, 7800, Denmark
Type	Control Units
Description	AGC 150 - Controller incl. I/O's for Engine drive marine or Generator marine Stand-alone application
Trade Name	ML 150 (iE 150)
Application	Marine and Offshore applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – July 2021.
Specified Standard	Manufacturer's Specification.
Ratings	Power supply 12 and 24 VDC
Additional Tests	Low Temperature (-40°C / 16 hrs.) Ingress Protection rating (IP65 front / IP20 rear)
Other Conditions	The AGC 150 may provide engine and generator safety functions as a back up device only, to provide design diversity as required by the LR Rules and Regulations. MARPOL aspects are not covered with the LR Type Approval Certificate of the AGC 150 and needs to be considered on a project-specific approval.



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This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document HPC2262017-22/ML and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Appendix

	AGC 150 (Engine drive marine)	AGC 150 (Generator marine Stand-alone)
Digital Inputs	12x inputs	12x inputs
DC Outputs	12x output	12x output
Analogue Input	4x analogue (0 to 10V, 4ma to 20mA, 0Ω to 2.5kΩ)	4x analogue (0 to 10V, 4ma to 20mA, 0Ω to 2.5kΩ)
Analogue Output	Isolated voltage output (-10 to +10V)	--
Speed governor output	Isolated voltage, PWM output	--
Tacho input	± 1V to 70V (peak) / 10 to 10kHz	± 1V to 70V (peak) / 10 to 10kHz
D+ (Excitation current)	210mA, 12V or 105mA, 24V	210mA, 12V or 105mA, 24V
Voltage measurement	--	100 to 690 V phase-to-phase 10 to 135% measuring range ± 1% accuracy of nominal (10 to 75Hz)
Frequency measurement	--	3.5 to 75 Hz ± 0.01% accuracy of nominal (60 to 135% nominal voltage)
Current measurement	--	-/1A to -/5A (range 2 to 300%) 4x CT input ± 1% accuracy (2 to 100%)
Power measurement	--	± 1% accuracy within 35 to 75Hz
Software Version	V1.1z.v	V1.1z.v

Additional Tests according to IEC 60255-series

- EMC tests according to IEC 60255-26
- Environmental tests according to IEC 60255-1



LLOYD'S REGISTER TYPE APPROVAL
Issue by: Hamburg Technical Support Office (HPC2262017)

Issued to: DEIF A/S

For: ML150 (iE150)

Engine drive marine and Generator marine Stand-alone applications

Type: AGC 150 Marine

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System Procedure TA14 Version 04 (September 2020) and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

EPC0856-02/JFL Unnumbered 2502TA PRJ11100375363 10410255 10199346 4910211100D	Application request AGC 150 Marine New LR application checklist Request for Marine Services – Type Approval LR Production Quality Assessment Report ISO 9001:2015 Certificate for DEIF A/S, issued by LRQA ISO 14001:2015 Certificate for DEIF A/S, issued by Lloyd's Register Type Test Certificate – Technical Description – 01A, including layout drawings of printed circuit boards, block diagrams, part lists	29.04.2022 29.04.2022 31.05.2022 31.05.2022 01.01.2022 03.07.2019 22.09.2021
4921240621B 4189341316A 4921240622B 4189341314A AQP_AG_150 4189341185H 4189341315A CP12442 JIRA BCA-1076 CP12442 JIRA BCA-1077 CP12442 JIRA BCA-1109	Data Sheet – AGC 150 Engine drive marine Operator's Manual – AGC 150 Engine drive marine Data Sheet – AGC 150 Generator marine Stand-alone Operator's Manual – AGC 150 Generator marine Stand-alone Software Quality Plan – V1.10.3 Installation Instruction – AGC 150 Designers Handbook – AGC 150 Stand-alone SW performance test – Remote start / stop Indication SW performance test – Status text on panel SW performance test – Idle run function engine drive marine	16.06.2022 16.06.2022 16.06.2022 16.06.2022 27.05.2022 22.06.2022 22.06.2022 12.05.2022 12.05.2022 24.05.2022

TEST REPORTS

FAT Report FAT Report 4910217501R 4910217502N 4910213100G 4910213105H 4910217505K	Engine Drive Marine (AGC 150), witnessed by LR Genset Marine (AGC 150), witnessed by LR EMC Test Report – Burst EMC Test Report – Radiated Radio Frequency Fields Environmental Test Report – Low Temperature Environmental Test Report – Dry Heat EMC Test Report – Electrostatic Discharge	31.05.2022 31.05.2022 02.03.2022 07.03.2022 07.03.2022 03.03.2022 04.03.2022
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TEST REPORTS (continued)

4910213115G	Environmental Test Report – Damp Heat	10.03.2022
4910217506O	EMC Test Report – Surge	03.03.2022
4910214100M	Environmental Test Report – Vibration	07.03.2022
4910217513J	Voltage Variation Test	04.03.2022
4910215100L	Insulation Resistance Test	10.03.2022
4910215106A	High Voltage Test	02.03.2022
4910217515H	Voltage interruption Test	04.03.2022
4910216501N	EMC Test Report – Radiated Emission	07.03.2022
4910216502L	EMC Test Report – Conducted Emission	08.03.2022
4910217516F	EMC Test Report – Low Frequency Interference	20.06.2022
4910211527E	IP Test Report – IP65 front and IP20 back	12.04.2019



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Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval 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 or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.

