



Lloyd's
Register

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.

This certificate supersedes certificate number 98/20022 (E6) issued on 06 November 2017 which is hereby cancelled.

This certificate is issued to:

| | | |
|--------------------|--|-------------------------------|
| PRODUCER | DEIF A/S Frisenborgvej 33 DK-7800 Skive Denmark | |
| DESCRIPTION | Generator and mains control, monitoring and protection units | |
| TYPE | Uni-Line Comprising: | |
| | Voltage relays | RMV-112D, -122D, -132D, -142D |
| | Overcurrent and short circuit relays | RMC-111D, -121D, -122D, -132D |
| | Differential current relay | RMC-131D |
| | Overload/reverse power relays | RMP-111D, -112D, -121D |
| | Excitation relays | RMQ-111D, -121D |

| | |
|------------------------|------------------|
| Certificate No. | 98/20022 (E7) |
| Issue Date | 29 May 2019 |
| Expiry Date | 04 November 2022 |
| Sheet | 1 of 2 |



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| | | |
|-----------------------|--------------------------|-----------------------------------|
| TYPE CONTINUED | Frequency relay | RMF-112D |
| | Synchronisers | FAS-113DG, -115D, -125DG |
| | Paralleling relay | HAS-111DG |
| | Load sharing units | LSU-112DG, -113DG, -114DG, -122DG |
| | Electronic Potentiometer | EPN-110DN |
| | Phase sequence relay | RMT-111Q96 |

APPLICATION Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – 2002.

STANDARD Manufacturer's specification

RATINGS

| | |
|--------------------|-----------------------------------|
| Power supply: | 24V d.c. to 220V d.c., -25/+30% |
| | 57,5 V a.c. to 690V a.c., ±20% |
| Measuring voltage: | 57,7V a.c. to 690V a.c., ±20% |
| Power supply: | 380-400V ±20% for RMT-111Q96 only |

OTHER CONDITIONS HAS-111DG is approved with dead bus option B1 and B2

The Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.

The Design Appraisal Document No. HTS/ETS 38279-19 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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|------------------------|------------------|
| Certificate No. | 98/20022 (E7) |
| Issue Date | 29 May 2019 |
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| Sheet | 2 of 2 |




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LR031.1.2016.06

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Design Appraisal Document

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Date
29 May 2019

Please quote this reference number on all future communications
HPC1762123/38279-19/TW/EBO

**THE LLOYD'S REGISTER'S TYPE APPROVAL SYSTEM, 2017
ISSUED TO: DEIF A/S, DK-7800 SKIVE, DENMARK
FOR GENERATOR AND MAINS CONTROL, MONITORING
AND PROTECTION UNITS
TYPE APPROVAL CERTIFICATE NO. 98/20022 (E7)**

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

APPROVAL DOCUMENTATION

| | | |
|------------------|---|------------|
| Unnumbered | Application Checklist | 15.03.2019 |
| HTS/ETS 36057-17 | Design Appraisal Document for Certificate No. 98/20022 (E6) | 06.11.2017 |
| 4921240260D | Data sheet Short circuit current relay, RMC-121D | undated |

TEST REPORTS

| | | |
|-------------|---|------------|
| 4910212100F | Performance Test– 02A test report | 13.02.2019 |
| 4910217501Q | Electrical Fast Transients (EFT) – Burst 1B test report | 05.11.2018 |
| 4910217505J | Electrostatic Discharge (ESD) – 5B test report | 05.11.2018 |
| 4910217507L | RF Common mode – test 07B | 05.11.2018 |
| 4910216502I | Conducted emission AC, DC and tele ports – 17A | 05.11.2018 |
| 4910217518G | 1 MHz Immunity–18B | 05.11.2018 |

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

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DRAWINGS

| | | |
|-------------|-------------------------------------|--|
| 1044450200D | Copper lay 1/lay 2 | 12.05.2009 |
| 1044450260D | Copper top/lay 1/lay 2/bottom | 07.06.2017 |
| 4157200374 | uni-line Relay and power supply | 13.09.2017 |
| 4157200387 | Relay board 2 contact sets uni-line | Revision F 31.01.2002 |
| 4157200495 | RMC main sheet | Revision A 08.06.2017 Revision H |



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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 LR Type Approval System Procedure.

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

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Part 2

Power Distribution Systems / Protective Devices

| Producer/Licence No. | Type | Standard | Rating | Category/ Additional Tests | Remarks | Cert. No. |
|--|---|----------|---|--|--|----------------------|
| <p>DEIF A/S Frisenborgvej 33 DK-7800 Skive Denmark</p> | <p>Generator and mains control, monitoring and protection Units</p> <p>Type : Uni-Line Comprising: Voltage relays RMV-112D, -122D, -132D, -142D</p> <p>Overcurrent and short circuit relays RMC-111D, -121D, -122D, -132D</p> <p>Differential current relay RMC-131D</p> <p>Overload/reverse power relays RMP-111D, -112D, -121D</p> <p>Excitation relays RMQ-111D, -121D</p> <p>Frequency relay RMF-112D</p> <p>Synchronisers FAS-113DG, -115D, -125DG</p> <p>Paralleling relay HAS-111DG</p> <p>Load sharing units LSU-112DG, -113DG, -114DG, -122DG</p> <p>Electronic Potentiometer EPN-110DN</p> <p>Phase sequence relay RMT-111Q96</p> | | <p>Power supply: 24V d.c. to 220V d.c., -25/ +30% 57,5 V a.c. to 690V a.c., ±20%</p> <p>Measuring voltage: 57,7V a.c. to 690V a.c., ±20%</p> <p>Power supply: 380-400V ±20% for RMT-111Q96 only</p> | <p>ENV1 ENV2 ENV3 (2002)</p> | <p>Expires: 04 November 2022</p> <p>HAS-111DG is approved with dead bus option B1 and B2</p> | <p>98/20022 (E7)</p> |