

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Electrical Measuring and Protection Relay**

with type designation(s)

**Uni-line Generator controls**

Issued to

**DEIF A/S****Skive, Midtjylland, Denmark**

is found to comply with

**DNV GL rules for classification – Ships, offshore units, and high speed and light craft****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:**

<b>Temperature</b>	<b>D</b>
<b>Humidity</b>	<b>B</b>
<b>Vibration</b>	<b>A</b>
<b>EMC</b>	<b>A</b>
<b>Enclosure</b>	<b>Required protection according to relevant rules shall be provided upon installation on board.</b>

Issued at **Høvik** on **2019-10-09**for **DNV GL**This Certificate is valid until **2021-10-08**.DNV GL local station: **Aalborg**Approval Engineer: **Bartosz Kabak**

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**Jan Tore Grimsrud**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-001953-8**  
Certificate No: **TAA0000022**  
Revision No: **1**

## Place of system modules manufacture

### DEIF A/S

Skive  
Denmark

## Product description

The uni-line comprising:

RMC-142D	Stator earth fault relay
RMV-112D/ RMV-122D/ RMV-132D	Voltage relays 3-phase
RMV-142D	Voltage relays 1-phase
RMC-111D/ RMC-122D	Short circuit/ overcurrent relays
RMC-121D	Short circuit current relay
RMC-132D	Double over current relay
RMC-131D	Differential current relays
RMP-111D	Overload relays
RMP-112D	Overload/ reverse power relays
RMP-121D	Reverse power relays
RMQ-111D	Loss of excitation relays
RMQ-121D	Over excitation relay
RMF-112D	Frequency relays
HAS-111DG	Paralleling relay
LMR-111D	Loss of mains relays
FAS-113DG	Synchronizers
FAS-115DG	Synchronizers w/voltage match. (dyn)
FAS-125DG	Synchronizers w/voltage match. (stat)
LSU-112DG	Load sharing unit
LSU-113DG	Load sharing unit (and-P> protectio)
LSU-114DG	Load sharing unit (start/stop outputs)
LSU-122DG	Var Load sharing unit
EPN-110DN	Electronic Potentiometer
RMT-111Q96	Phase sequence indicator/ relay

## Application/Limitation

1. The Type Approval is valid for systems made by production facilities listed under Place of system modules manufacture
2. The Type Approval covers hardware and basic software listed under Product description

### Documentation requirement:

For each delivery where the product is included (typically a switchboard) the following information related to Uni-line Generator controls is to be submitted for approval:

- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of hardware and software modules as identified in this Type Approval Certificate
- List of implemented alarm and protection functions with proposed limits and time delays

### Product certificate

As long as the delivered system is covered by this Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 [1.4] is not required. Correct configuration and set up for the delivery to be tested during commissioning after installation onboard.

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Software update notification

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

**Type Approval documentation**

TYPE	Technical Specification	Environmental Report
RMV-112D/ RMV-122D/ RMV-132D	4921240096E	IPG0092
RMV-142D	4921240128D	IPG0092
RMC-111D/ RMC-122D/RMC-132D	4921240102D	IPA0274
RMC-121D	4921240260A	IPG0093
RMC-131D	4921240104F	IPG0093
RMP-111D	4921240108E	IPG0094
RMP-112D	4921240110E	IPG0094
RMP-121D	4921240106F	IPG0094
RMQ-111D/RMQ-121D	4921240112D	IPG0094
RMF-112D	4921240223B	IPG0095
HAS-111DG	4921240144G	IPG0095
LMR-111D	4921240214C	IPG0096
FAS-113DG	4921240114D	IPG0097
FAS-115DG	4921240116D	IPG0097
FAS-125DG	491240141D	IPG0097
LSU-112DG	4921240118D	IPG0098
LSU-113DG	4921240120F	IPG0098
LSU-114DG	4921240122D	IPG0098
LSU-122DG	4921240124D	IPG0098
EPN-110DN	4921240126E	IPG0099
RMT-111Q96	4921240131F	IPG0100

Amendments 2004: Due to internal hardware changes, new environmental tests have been carried out according to applicable sections in S.f.C No.2.4 for a representative no. of components in the Uni-line product range. Ref. report no. IPA0175

Quality Manual 4010030001A(UK) sheet 1-7, software controls doc. 4034050007F dated 97-12-18, Type test doc. ref.: \DNV\B980323.1JU dated 1998-01-23.

Amendments 2010:

Drawing No.	Rev.	Title
20100305/JST		HAS111 dead bus options B2 and B3 Type Test (configuration)
240144	G	data sheet, HAS-111DG paralleling relay
4189340135	J	Uni-line Customisation manual
4921240130	N	Uni-line Voltage Relays table of products

Amendment 2012: Due to internal hardware changes for RMC-111D/ RMC-122D/RMC-132D new environmental tests have been carried out according to applicable sections in S.f.C No.2.4, ref. report no. IPA0274

Drawing No.	Rev.	Title
4921240102E		data sheet, RMC-111D, RMC-122D, RMC-132D

Job Id: **262.1-001953-8**  
Certificate No: **TAA00000Z2**  
Revision No: **1**

Amendment 2013:

Drawing No.	Rev.	Title
n.a.		data sheet, ANSI code 25 FAS-113DG synchronisers incl. option I (re. sync to dead bus in ABB version)

Type approval renewal assessment report for TAA00000Z2, DNV GL Aalborg 2018-12-21.

### Tests carried out

Applicable tests according to Standard for Certification No. 2.4 (report Nos. IPA0175 and IPA0274)

### Marking of product

Each module shall be externally marked to enable identification in accordance with the documentation and be marked with the manufacturer's name.

### Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE