

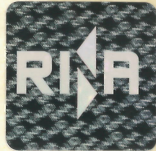


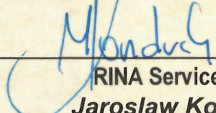
**TYPE APPROVAL CERTIFICATE**  
**No. ELE064520XP**

**This is to certify** that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	<b>Power Management Systems and protection</b>
<i>Type</i>	<b>PPM-3 Power Management and protection PPU-3 Paralleling and protection GPU-3 Generator control and protection</b>
<i>Applicant</i>	<b>DEIF A/S Frisenborgvej 33, DK-7800 Skive DENMARK</b>
<i>Manufacturer</i>	<b>DEIF A/S</b>
<i>Place of manufacture</i>	<b>Frisenborgvej 33, DK-7800 Skive DENMARK</b>
<i>Reference standards</i>	<b>Rules for the Classification of Ships - Part C - Machinery, Systems and fire protection - Ch.3, Sect.6, Tab.1.</b>

*Issued in* **GDANSK** on **July 25, 2020**. *This Certificate is valid until* **September 8, 2025**



  
RINA Services S.p.A.  
**Jaroslaw Kondracki**

This certificate consists of this page and 1 enclosure

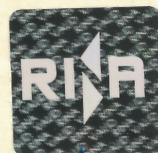




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**PPM-3 Power Management and protection**  
**PPU-3 Paralleling and protection**  
**GPU-3 Generator control and protection**

.....Available Functions:

Modules	ANSI	PPM 3	PPU 3	GPU 3
<b>Main Functions</b>		<b>Protection and Power Management system</b>	<b>Paralleling and Protection Unit</b>	<b>Generator Protection Unit</b>
Software Ver. 3.		X	X	X
Hardware platform ver. 3		X	X	X
Auxiliary voltage 8-36Vdc		X	X	X
Measuring 100-690Vac		X	X	X
Current transformer 1 or 5 A		X	X	X
Frequency 30-70 Hz		X	X	X
Power Management		X	--	--
Start/ Stop relay output to next. Gen.			X	X
M-logic		X	X	X
Synchronising		X	X	X
Load sharing		X	X	--
Voltage control		X	X	X
Var / cos $\Phi$ control		X	X	--
<b>Protection</b>				
Reverse power	32	X	X	X
Overload	49	X	X	X
Overcurrent	49/51	X	X	X
Overvoltage	59	X	X	X
Undervoltage	27	X	X	X
Overfrequency	81	X	X	X
Underfrequency	81	X	X	X
Voltage dependent overcurrent	51	X	X	X
Voltage umbalance	46	X	X	X
Current umbalance	46	X	X	X
Reactive power import (loss of excit.)	40	X	X	X
Reactive power export (loss of excit.)	40	X	X	X
NEL groups		X	X	X
<b>Bus bar Protection</b>				
Overvoltage	59	X	X	X
Undervoltage	27	X	X	X
Overfrequency	81	X	X	X
Underfrequency	81	X	X	X
Voltage umbalance	46	X	X	X
NEL group		X	X	X
				continued....





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**Available Functions: (continued)**

Modules	ANSI	PPM 3	PPU 3	GPU 3
Generator add-on protection				
Negative sequence voltage high	47	--	X	X
Negative sequence current high	46	--	X	X
Zero sequence voltage high	59	--	X	X
Zero sequence current high	50	--	X	X
Power dependent reactive power import	40	--	X	X
Power dependent reactive power export	40	--	X	X
Inverse time overcurrent	51	--	X	X
Loss of mains protection				
Vector jump	78	--	X	X
Rate of change of frequency (df/dt)	81R	--	X	X
Time dependent undervoltage	27T	--	X	X
Reactive power dependent undervoltage	27Q	--	X	X
Positive sequence (mains voltage low)	27	--	X	X
Directional overcurrent	67	--	X	X

**Software Versions:**

	PPM 3	PPU 3, GPU 3
Application Software	3.0x.x	3.1x.x
M4 Board SW	2.0x.x	2.0x.x
G9 Option	--	3.1.x.x





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**Test Reports:**

- DEIF report n. IPA 0272-1; IPA 0272-3; IPA 0275 test 13A

**DEIF Technical descriptions:**

- Data sheet doc. n. 4921240337C (PPM-3 \_\_sw. 3.0x.x or later)
- Data sheet doc. n. 4921240354B (PPU-3 \_\_sw. 3.0x.x or later)
- Data sheet doc. n. 4921240352B (GPU-3 \_\_sw. 3.0x.x or later)
- Designer' s reference Handbook \_\_ PPM-3 Protection and Power management, doc. 4189340558B
- Operator' s manual \_\_ PPM-3 Protection and Power management, doc. n. 4189340559B
- Designer' s reference Handbook \_\_ PPU-3 Paralleling and Protection unit , doc. n. 4189340583B
- Operator' s manual \_\_ PPU-3 Paralleling and Protection unit, doc. n. 4189340579A
- Designer' s reference Handbook \_\_ GPU-3 Generator Protection unit, doc. n. 4189340584A
- Operator' s manual \_\_ GPU-3 Generator Protection unit, doc. n. 4189340579A
- CPN\_2422\_QMS\_ISO9001English\_2013.pdf
- DEIF SW Life Cycle JST20130916\_SM.pdf
- DEIF sw version numbering.pdf
- Development of SW 4910000011S.pdf
- DNV A-13553.pdf
- LR 0920024E3.pdf
- PPM-3 data sheet 4921240392 UK\_2012.06.15.pdf
- PPM-3,PPU-3,GPU-3 RINA renewal adding G9 option Application request.pdf
- PPM3-PPU3-GPU3.pdf
- QI712 Handling of reviews in product lifecycle.pdf
- QI733 Application Development.pdf
- QI734 Design & Development.pdf
- QI754 Maintenance of warehousing.pdf
- QP7.8 Technology & Development.pdf
- Software Release check list.docx
- Software Release verification.docx
- Software Version.pdf

**Remarks:**

- Following evaluation on a case by case basis independent generator protections may be requested.
- For each installation the block diagram showing the specific system configuration is to be sent for approval.
- Software version is to be available on board.

*This certificate is the subsequent of n°ELE062815XG.*

**GDANSK July 25, 2020**

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