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DELTA Test Report



 **DANAK**
TEST Reg. no. 19

Test for Marine Type Approval of GPM Central units and detection systems

Performed for Geopal System A/S

DANAK-19/13815

Project no.: T204840

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including 10 annexes

14 March 2014

DELTA

Venlighedsvej 4

2970 Hørsholm

Denmark

Tel. +45 72 19 40 00

Fax +45 72 19 40 01

www.delta.dk

VAT No. 12275110

Title	Test for Marine Type Approval of GPM Central unit and detection systems
Test objects	Detailed information is given in Chapter 2. The test objects were received 11 March 2013.
Report no.	DANAK-19/13815
Project no.	T204840
Test period	11 March 2013 – 24 January 2014
Client	Geopal System A/S Skelstedet 10B 2960 Vedbæk
Contact person	Mr Dan Modvig E-mail: dm@geopal.dk
Manufacturer	Geopal System A/S
Specifications	IACS E10: Rev. 5, Dec 2006. Test Specification for Type Approval”. IEC 60945: Fourth edition, 2002 “Maritime navigation and radio communication equipment and systems - General requirements - Methods of testing and required test results.” IEC 60945: Fourth edition, CORRIGENDUM 1, 2008 IEC 60092-504: Third edition, 2001-03 “Electrical installations in ships – Part 504: Special features – Control and instrumentation.” IEC 60533: Second edition, 1999-11 “Electrical and electronic installations in ships – Electromagnetic compatibility.”
Results	No malfunctions were detected. The criteria for compliance are listed in Section 3.2.
Test personnel	Claus Momme Thomsen Raqia Ibrahim Khalil Karsten Kruse Jensen Olling Truelsen Carsten Kiørboe Jens Schoustrup-Thomsen Jacob Franck Petersen Henrik Funding Raun



Date 14 March 2014

Project manager



Karsten Kruse Jensen
DELTA

Responsible



Susanne Otto, B.Sc.E.E., B.Com (Org.)
DELTA



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1. Summary of test

1.1 Test requirements

The following tests were carried out as agreed with the client.

Test	Test method
Visual inspection and performance test	IEC 60945:2002, IACS E10:2006
Power supply failure	IEC 60945:2002, IACS E10:2006
Power supply variations – permanent AC	IEC 60945:2002, IACS E10:2006
Power supply variations – transient	IEC 60945:2002, IACS E10:2006
Power supply variations – permanent DC	IEC 60945:2002, IACS E10:2006
Excessive conditions - Reverse polarity	IEC 60945:2002
Excessive conditions - Excessive voltage	IEC 60945:2002
Low temperature (cold)	IEC 60068-2-1:2007
Dry heat	IEC 60068-2-2:2007
Damp heat, cyclic	IEC 60068-2-30:2005
Salt mist, cyclic - corrosion	IEC 60068-2-52:1996
Insulation resistance (UN<65V)	IACS E10:2006
Insulation resistance (UN>65V)	IACS E10:2006
High voltage	IACS E10:2006
Vibration - Resonance search	IEC 60068-2-6:2007
Vibration - Endurance sinusoidal	IEC 60068-2-6:2007
Electrostatic discharge	IEC 61000-4-2:2001
Radiated radio frequency interference	IEC 61000-4-3:2006
Conducted low frequency	IEC 61000-4-16:1998
Conducted radio frequency interference	IEC 61000-4-6:2007
Fast transients – Burst	IEC 61000-4-4:2004
Slow transients – Surge	IEC 61000-4-5:2005
Radiated emission	CISPR 16-2-3:2006
Conducted emission	CISPR16-2-1:2008
Acoustic noise and signals	IEC 60945:2002. Not relevant, see note
Compass safe distance	IEC 60945:2002
Enclosure protection, IP 2X	IEC 60529:2001
Enclosure protection, IP 5X	IEC 60529:2001
Enclosure protection, IP X2	IEC 60529:2001
Rain and spray	IEC 60529:2001

Note: According to the manufacturer, this test is not relevant, see Annex 8.



Conclusion

The test objects mentioned in this report meet the relevant requirements of the standards stated below.

- IACS E10:2006
- IEC 60945:2002 and CORRIGENDUM 1:2008
- IEC 60092-504: 2001-03
- IEC 60533: 1999-11

The test results relate only to the objects tested.

2. Test objects

2.1 Test objects

Test object 2.1.1

Name of test object	GPM-02C
Model / type	GPM-02C Gas alarm monitor
Part no.	GAS01010
Serial no.	2012 MARINE 1a & 2012 MARINE 1b
Manufacturer	Geopal System A/S
Supply voltage	230 VAC
Comments	Marked 1a and 1b 1a with detector normal mode 1b with resistor alarm mode

Test object 2.1.2

Name of test object	GPM-04C
Model / type	GPM-04C Gas alarm monitor
Part no.	GAS01025
Serial no.	2012 MARINE 2/2
Manufacturer	Geopal System A/S
Supply voltage	230 VAC
Comments	Marked 2

The test object was modified in the course of the testing, please refer to Annex 6.

Test object 2.1.3

Name of test object	GPM-06C
Model / type	GPM-06C O2 Gas alarm monitor
Part no.	GAS01042
Serial no.	2012 MARINE 3a & 2012 MARINE 3b
Manufacturer	Geopal System A/S
Supply voltage	230 VAC
Comments	Marked 3a and 3b 3a with detector normal mode 3b with resistor alarm mode



Test object 2.1.4

Name of test object	GPM-03R
Model / type	GPM-03R Multi-Point Central Unit, 1-9 Linie
Part no.	RACK01000
Serial no.	2012-MARINE 4
Manufacturer	Geopal System A/S
Supply voltage	230 VAC
Comments	Marked 4

The test object was modified in the course of the testing, please refer to Annex 6.

Test object 2.1.5ab

Name of test object	GPM-07C
Model / type	GPM-07C Gas alarm monitor
Part no.	GAS01202
Serial no.	2012 MARINE 5a, -5b
Manufacturer	Geopal System A/S
Supply voltage	110-240 VAC
Comments	Marked 5a and 5b 5a Gas Detector GJ-C mounted as detector (normal mode) 5b Gas Detector GJ-C mounted as detector – (Alarm mode with resistor)

The test object was modified in the course of the testing, please refer to Annex 6.

Test object 2.1.6

Name of test object	GPM-SA2
Model / type	GPM-SA2 Gas detector
Part no.	DET01403A
Serial no.	2012 MARINE 5c
Manufacturer	Geopal System A/S
Supply voltage	110-240 VAC
Comments	Marked 5c – Inside detector (normal mode)

The test object was modified in the course of the testing, please refer to Annex 6



Test object 2.1.7

Name of test object	GPM-CC
Model / type	GPM-CC Gas Detector
Part no.	DET01401A
Serial no.	2012 Marine 6
Manufacturer	Geopal System A/S
Supply voltage	Powered through central or monitor
Comments	Marked 6

Test object 2.1.8

Name of test object	GPM-EX
Model / type	GPM-EX 80C Gas Detector (ATEX)
Batch no.	DET01410A
Serial no.	2012 MARINE 7
Manufacturer	Geopal System A/S
Supply voltage	Powered through central or monitor
Comments	Marked 7

Test object 2.1.9

Name of test object	GJ-EX
Model / type	GJ-EX 80C Detector (ATEX)
Part no.	DET-1010A
Batch no.	2012-1161
Serial no.	2012-MARINE 8
Manufacturer	Geopal System A/S
Supply voltage	Powered through central or monitor
Comments	Marked 8

Test object 2.1.10

Name of test object	GPM-OX
Model / type	GPM-OX 50C Detector (ATEX)
Batch no.	DET01417A
Serial no.	2012 MARINE 9
Manufacturer	Geopal System A/S
Supply voltage	Powered through central or monitor
Comments	Marked 9



Test object 2.1.11

Name of test object	GPM-SA1 24VDC
Model / type	GPM-SA1 Gas Detector
Part no.	DET01402A
Serial no.	2012 Marine 12
Manufacturer	Geopal System A/S
Supply voltage	24 VDC
Comments	Marked 12

