DNV·GL

Certificate No:
TAA000017K

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Public Address and General Alarm System

with type designation(s)
Elemec P3- PUBLIC ADDRESS & GENERAL ALARM SYSTEM (P.A.G.A.)

Issued to
GAI-Tronics, A division of Hubbell Limited
Burton-on-Trent Staffordshire, United Kingdom

is found to comply with
DNV GL rules for classification – Ships
IMO A.1021(26) Code on alerts and indicators (2009)
IMO Res. A.694(17) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids
IMO MSC Circ 808
LSA Code VII 7.2

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Høvik** on **2017-09-26**
This Certificate is valid until **2022-09-25**.
DNV GL local station: **Manchester**

Approval Engineer: **Frederik Tore Elter**

for **DNV GL**

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.

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Product description

The GAI-TRONICS Elemec E3 system consists of two independent packages called "System A" subsystem and "System B" sub-system. Both sub-systems are identical and each sub-system can operate autonomously. There is no common hardware, software or field cables between each sub-system other than System AB interlink and Internal Access panel interlink cables.

Approved componens:

Equipment Description		**Part Number**	**Power Voltage**	**Location**
Main System rack (A and B), consisting of:	Equipment rack	333-02-0869-xxx	230VAC	Protected
	Access Panel	666-02-0139-102	24VDC	Protected
	Amplifier	025-02-0030-001	230VAC	Protected
	E3 Controller	013-02-0095-002	24VDC	Protected
	API	999-02-3010-001	24VDC	Protected
	Generic I/O Module	013-02-0095-xxx	24VDC	Protected
	MRM	030-02-0097-008	24VDC	Protected
	MIM	030-02-0096-001	24VDC	Protected
	AB Link	999-02-3003-002	24VDC	Protected
AP1 Desktop Access Panel		333-00-0869-104	24VDC	Protected
Indoor Bulkhead Access Panel		333-00-0869-105	24VDC	Protected
AP2 Rack Mount Access Panel		333-00-0869-103	24VDC	Protected
AP5 Outdoor Bulkhead Access Panel		333-00-0869-106	24VDC	Protected
AP7 Outdoor Access Panel		333-00-0869-107	24VDC	Protected

Software:

Equipment	**Description**	**software version**
E3 Controller		v.1.3.3
Access Panel	UNIVERSAL ACCESS PANEL SOFTWARE	v.4 (900-02-6410-004)
Gen Amp I/face	E3 Generic Amplifier Interface Software	v.1(900-02-0265-001)
2 X 300W Amp	CLASS D AMPLIFIER MONITOR BOARD SOFTWARE	v.20 (900-02-6421-020)

Application/Limitation

- The GAI-TRONICS Elemec E3 system main and emergency power supply input shall be fed via an uninterruptable power supply (UPS). The UPS is to be specified in accordance with the requirements for the installation.
- Any Ex-equipment (equipment to be used in areas with potentially explosive atmospheres) listed in this Certificate is subject to separate Ex-approvals.
- Elemec E3 Portal software may be installed on a dedicated computer connected to the GAI-TRONICS Elemec E3 system via LAN.
- The system is to be installed in accordance to installation documentation.

Type Approval documentation

DNV GL No	Title	Document No.	Rev.
72	Report: FAT functional test, plus As Built drawing set		
71	Manual: Appendix 'N' - Operating Instructions		Rev. 01
70	Appendix 'A' - Drawing List		Rev. 01
69	Manual: E3 Technical Manual PUBLIC ADDRESS & GENERAL ALARM SYSTEM (P.A.G.A.)		Rev. 2
68	Mnaual: Appendix 'L' Elemec3 Portal User Manual – Version 1.2	42004-485A A4	
67	Manual: Appendix 'K' API 4 Line Access Panel Model 999-02-3010-001 Elemec3 4-Line Access Panel Interface (API)	502-20-0673-001	
66	Manual: Appendix 'J' 030-02-0097-000 MIM-MRM - Model 030-02-0097-0XX Elemec3 Monitored Relay Modules (MRM) and Model 030-02-0096-001 Elemec3 Monitored Inputs (MIM)	502-20-0672-001	Issue 3
65	Manual: Appendix 'H' 030-02-0095-000 IO module - Elemec3 Generic Input/Output (I/O) Module	502-20-0670-001	
64	Manual: Appendix 'G' 013-02-0095-002 Elemec3 System Controller	42004-480B	
63	Manual: Appendix 'F' - IS Access Panel Manual TECHNICAL & OPERATING MANUAL FOR IECEx/ATEX CERTIFCATION	502-25-0092-001	Issue 5
62	Appendix 'E'- System Test Schedule		Rev. 01
61	Appendix 'C' - Access Panel Station Identity Table		Rev. 01
60	Appendix 'B'- Utilities Schedule		Rev. 01
59	Drawing: Internal Wiring Diagram PA/GA System B (Sheets 1-10)	333-00-0869-402	Issue 1
58	Drawing: Internal Wiring Diagram PA/GA System A (Sheets 1-10)	333-00-0869-401	Issue 1
57	Drawing: Interconnection Diagrams	333-00-0869- (303 to 306)	Issue 1
56	Drawing: Termination Diagram PA/GA System B Equipment Cabinet (sheet 1-4)	333-00-0869-302	Issue 1
55	Drawing: Termination Diagram PA/GA System A Equipment Cabinet (sheet 1-4)	333-00-0869-301	Issue 1
54	Drawing: Access panels	333-00-0869- (102 to 107)	Issue 1
53	Drawing: General Assembly PA/GA System A Equipment Cabinet (sheet 1-5)	333-00-0869-102	Issue 1
52	Drawing: General Assembly PA/GA System A Equipment Cabinet (sheet 1-5)	333-00-0869-101	Issue 1
50	Report: MS Testing IEC60945, Test Report Environmental Compatibility Gai-Tronics Elecmec3 PA and General Alarm System	TL14060-ENV	ISSUE 2
31	Manual: Elemec Public Address & General Alarm System TECHNICAL & OPERATING MANUAL FOR IECEx/ATEX CERTIFCATION	502-25-0092-001	Issue 5
30	Drawing: Internal wiring diagram PA/GA system - Internal wiring MRM card	333-00-0788-006	A2

DNV GL No	Title	Document No.	Rev.
29	Drawing: Internal wiring diagram PA/GA system - Internal wiring I/O card 1	333-00-0788-005	A2
28	Drawing: Internal wiring diagram PA/GA system - Internal wiring Access Panel Connections	333-00-0788-004	A2
27	Drawing: Internal wiring diagram PA/GA system - Internal wiring amplifiers	333-00-0788-003	A2
26	Drawing: Internal wiring diagram PA/GA system equipment cabinet - (power distribution)	333-00-0788-002	A2
25	Drawing: Internal wiring diagram PA/GA system equipment cabinet - (power distribution)	333-00-0788-001	A2
24	Drawing: Test System G/A I.S. Bulkhead access unit panel mo. 5	333-00-0788-020	A1
23	Drawing: Test System G/A 19'' Engineers test panel no. 4	333-00-0788-019	A2
22	Drawing: Test System G/A Weatherproof Bulkhead access unit panel no 3.	333-00-0788-018	A2
21	Drawing: Test System G/A Bulkhead indoor access unit panel no 2.	333-00-0788-017	A2
20	Drawing: Test System G/A Desktop access unit panel no 1. AP100DT	333-00-0788-016	A2
19	Drawing: General Assembly Equipment Cabinet View on arrow C	333-00-0788-015	A1
18	Drawing: General Assembly Equipment Cabinet View on arrow B	333-00-0788-014	A1
17	Drawing: General Assembly Equipment Cabinet Rear View	333-00-0788-013	A1
16	Drawing: General Assembly Equipment Cabinet front and footprint	333-00-0788-012	A1
15	Drawing: General Assembly Equipment Cabinet front and footprinft	333-00-0788-011	A1
14	Drawing: Internal Equipment Cabinet (Card Layout)	333-00-0788-010	A1
13	Drawing: Internal System I/O card layouts	333-00-0788-009	A1
12	Drawing: Internal Wiring I/O card 2 (2)	333-00-0788-008	A1
11	Drawing: Internal Wiring I/O card 2 (1)	333-00-0788-007	A2
9	Datasheet: GAI-Tronics Systems Elemec3		
5	Report MS Testing Application for Type Approval Application for Type Approval	TL14060-EMC	
3	Report: MS Testing Environmental Compatibility Elecmec3 PA and General Alarm System	TL14060-ENV	

Tests carried out

- Environmental testing: IEC 60945 (2002)
- Performance testing: Functional tests according to DNV GL Type Approval program 848.22 (August 2017)

Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location. In addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.
The scope of the periodical/renewal assessment is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society.

END OF CERTIFICATE