



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAA000017K**  
Revision No:  
**4**

## This is to certify:

**That the Public Address and General Alarm System**

with type designation(s)  
**Elemec E3- PUBLIC ADDRESS & GENERAL ALARM SYSTEM (P.A.G.A)**

Issued to  
**GAI-TRONICS (a division of Hubbell Ltd)**  
**Burton-on-Trent, Staffordshire, United Kingdom**

is found to comply with  
**DNV 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 :

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Issued at **Høvik** on **2023-12-19**

for **DNV**

This Certificate is valid until **2025-08-15**.

DNV local unit: **Newcastle-upon-Tyne**

Approval Engineer: **Steinar Kristensen**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

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

Equipment		Part Number	Power Voltage	Location
Main System rack (A and B), consisting of:	Equipment rack	333-02-xxxx-yyy	230VAC	Protected
	Access Panel	666-02-0216-101	24VDC	Protected
	Amplifier	025-02-0030-yyy	230VAC	Protected
	E3 Controller	013-02-0095-yyy	24VDC	Protected
	API	999-02-3010-yyy	24VDC	Protected
	Generic I/O Module	013-02-0095-yyy	24VDC	Protected
	MRM	030-02-0097-yyy	24VDC	Protected
	MIM	030-02-0096-yyy	24VDC	Protected
	AB Link	999-02-3003-yyy	24VDC	Protected
AP1 Desktop Access Panel		666-02-0210-xxx 666-02-0211-xxx	24VDC	Protected
Indoor Bulkhead Access Panel		666-02-0212-xxx 666-02-0213-xxx 666-02-0214-xxx 666-02-0215-xxx 666-02-0216-xxx 666-02-0217-xxx	24VDC	Protected
AP2 Rack Mount Access Panel		666-02-0218-xxx 666-02-0219-xxx 666-02-0220-xxx 666-02-0221-xxx 666-02-0226-xxx	24VDC	Protected
AP5 Outdoor Bulkhead Access Panel		666-02-0222-xxx 666-02-0223-xxx 666-02-0224-xxx 666-02-0225-xxx	24VDC	Protected
AP7 Outdoor Access Panel		668-02-xxxx-101	24VDC	Protected <sup>1)</sup>

Location specifies the location for the units according to IEC 60945 (2002).

## Software:

Equipment	Description	software version
E3 Controller		v.3.3.x
Access Panel	UNIVERSAL ACCESS PANEL SOFTWARE	v.6 (900-02-6410-006)
Generic Amplifier Interface	E3 Generic Amplifier Interface Software	v.1(900-02-0265-001)
Amp D600i 2 X 300W	CLASS D AMPLIFIER SOFTWARE	v.20 (900-02-6421-020)

<sup>1)</sup> AP7 Outdoor Access Panel has been tested to IP66 and meets the requirements for installation on Open deck as specified in DNV-CG-0339, with the following classifications: Temperature: D, Humidity: B, EMC: B, Vibration: A. Enclosure: C

### 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 hazardous 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 with installation documentation.

### Type Approval documentation

DNV No	Document ID	Rev.	Description
96	333-00-XXX-YYY (D402)	1	Drawing: GAI-TRONICS, Internal Wiring Diagram PA/GA System "B" Equipment Cabinet
95	333-00-XXX-YYY (D401)	1	Drawing: GAI-TRONICS, Internal Wiring Diagram PA/GA System "A" Equipment Cabinet
94	333-00-XXX-YYY (D102)	1	Drawing: GAI-TRONICS, General Arrangement, PA/GA System "B" Equipment Cabinet
93	333-00-XXX-YYY (D302)	1	Drawing: GAI-TRONICS, Termination Diagram, PA/GA System B Equipment Cabinet
92	333-00-XXX-YYY (D301)	1	Drawing: GAI-TRONICS, Termination Diagram, PA/GA System A Equipment Cabinet
91	333-00-XXX-YYY (D101)	1	Drawing: GAI-TRONICS, General Arrangement, PA/GA System A Equipment Cabinet
90	333-00-XXX-YYY (D107)	1	Drawing: GAI-TRONICS, General Arrangement, I.S. Access Panel AP7 - GRP
89	333-00-XXX-YYY (D106)	1	Drawing: GAI-TRONICS, General Arrangement, I.S. Access Panel AP5 - Bulkhead Outdoor
88	333-00-XXX-YYY (D305)	1	Drawing: GAI-TRONICS, Interconnection Diagram to Equipment Cabinets, Access Panel AP5 - Bulkhead Outdoor
87	333-00-XXX-YYY (D306)	1	Drawing: GAI-TRONICS, Interconnection Diagram to Equipment Cabinets, Access Panel AP7 - GRP
86	333-00-XXX-YYY (D303)	1	Drawing: GAI-TRONICS, Interconnection Diagram to Equipment Cabinets, Access Panel AP2 - Desktop
85	333-00-XXX-YYY (D304)	1	Drawing: GAI-TRONICS, Interconnection Diagram to Equipment Cabinets, Access Panel AP2 - Bulkhead Indoor
84	333-00-XXX-YYY (D105)	1	Drawing: GAI-TRONICS, General Arrangement, Safe Area Access Panel AP2 - Bulkhead Indoor
83	333-00-XXX-YYY (D104)	1	Drawing: GAI-TRONICS, General Arrangement, PA/GA System Access Panel AP1 - Desktop
82	333-00-XXX-YYY (D103)	1	Drawing: GAI-TRONICS, General Arrangement, Safe Area Access Panel AP2 - 19"
80	42004-485D A4	D	Manual: GAI-TRONICS, Appendix 'L' Elemec3 Portal User Manual
77	502-25-0092-001GAI-ENG-786	Issue 7	Manual: GAI-TRONICS, Appendix 'F' - IS Access Panel Manual TECHNICAL & OPERATING MANUAL FOR IECEx/ATEX CERTIFICATION
76	42004-563B	B	Manual: GAI-TRONICS, Appendix 'G' 013-02-0095-005/-006 E3 System Controllers
75	TL14021	Issue 01	Report: MS Testing, IP66 test report for Elemec Access Panel Type AP7
74	TL21153	2021-12-21	Report: MS Testing, Radiated Immunity and Emissions (2-6GHz) test report - Elemec3 PA and General Alarm System
72	E3 Demo Type Test	2017-07-11	Report: GAI-TRONICS, Type Approval test report for Elemec E3 Public Address and General Alarm system
71		Rev. 01	Manual: GAI-TRONICS, Appendix 'N' - Operating Instructions
69	E3 M01	Rev. 2	Manual: GAI-TRONICS, E3 Technical Manual PUBLIC ADDRESS & GENERAL ALARM SYSTEM (P.A.G.A.)
67	502-20-0673-001		Manual: GAI-TRONICS, Appendix 'K' API 4 Line Access Panel Model 999-02-3010-001 Elemec3 4-Line Access Panel Interface (API)

DNV No	Document ID	Rev.	Description
66	502-20-0672-001	Issue 3	Manual: GAI-TRONICS, 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)
65	502-20-0670-001		Manual: GAI-TRONICS, Appendix 'H' 030-02-0095-000 IO module - Elemec3 Generic Input/Output (I/O) Module
64	42004-480B		Manual: GAI-TRONICS, Appendix 'G' 013-02-0095-002 Elemec3 System Controller
61		Rev. 01	Manual: GAI-TRONICS, Appendix 'C' - Access Panel Station Identity Table
60		Rev. 01	Manual: GAI-TRONICS, Appendix 'B' - Utilities Schedule
58	333-00-0869-401	Issue 1	Drawing: GAI-TRONICS, Internal Wiring Diagram PA/GA System A (Sheets 1-10)
57	333-00-0869- (303 to 306)	Issue 1	Drawing: GAI-TRONICS, Interconnection Diagrams
54	333-00-0869- (103 to 107)	Issue 1	Drawing: GAI-TRONICS, Access panels
50	TL14060-ENV	Issue 2	Report: MS Testing, Environmental test report for Elecme3 PA and General Alarm System
31	502-25-0092-001	Issue 5	Manual: GAI-TRONICS, Elemec Public Address & General Alarm System TECHNICAL & OPERATING MANUAL FOR IECEx/ATEX CERTIFICATION
30	333-00-0788-006	A2	Drawing: GAI-TRONICS, Internal wiring diagram PA/GA system - Internal wiring MRM card
29	333-00-0788-005	A2	Drawing: GAI-TRONICS, Internal wiring diagram PA/GA system - Internal wiring I/O card 1
27	333-00-0788-003	A2	Drawing: GAI-TRONICS, Internal wiring diagram PA/GA system - Internal wiring amplifiers
26	333-00-0788-002	A2	Drawing: GAI-TRONICS, Internal wiring diagram PA/GA system equipment cabinet - (power distribution)
25	333-00-0788-001	A2	Drawing: GAI-TRONICS, Internal wiring diagram PA/GA system equipment cabinet - (power distribution)
23	333-00-0788-019	A2	Drawing: GAI-TRONICS, Test System G/A 19" Engineers test panel no. 4
22	333-00-0788-018	A2	Drawing: GAI-TRONICS, Test System G/A Weatherproof Bulkhead access unit panel no 3.
19	333-00-0788-015	A1	Drawing: GAI-TRONICS, General Assembly Equipment Cabinet View on arrow C
18	333-00-0788-014	A1	Drawing: GAI-TRONICS, General Assembly Equipment Cabinet View on arrow B
17	333-00-0788-013	A1	Drawing: GAI-TRONICS, General Assembly Equipment Cabinet Rear View
16	333-00-0788-012	A1	Drawing: GAI-TRONICS, General Assembly Equipment Cabinet Terminal Rail and Trunking
15	333-00-0788-011	A1	Drawing: GAI-TRONICS, General Assembly Equipment Cabinet front and footprint
14	333-00-0788-010	A1	Drawing: GAI-TRONICS, Internal Equipment Cabinet (Card Layout)
13	333-00-0788-009	A1	Drawing: GAI-TRONICS, Internal System I/O card layouts
12	333-00-0788-008	A1	Drawing: GAI-TRONICS, Internal Wiring I/O card 2 (2)
11	333-00-0788-007	A2	Drawing: GAI-TRONICS, Internal Wiring I/O card 2 (1)
5	TL14060-EMC	Issue 1	Report: MS Testing, EMC test report Elecme3 PA and General Alarm system

### Tests carried out

- Environmental testing: IEC 60945 (2002) inc. Corr. 1 (2008) and DNV-CG-0339 (2021)<sup>\*)</sup>
- Performance testing: Functional tests according to DNV Type Approval program 848.22 (August 2017)

<sup>\*)</sup> Only for EMC in the range 2 GHz to 6 GHz

### 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. Additionally, a renewal assessment is to 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.

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

### Places of production

1. GAI-TRONICS (a division of Hubbell Ltd), Brunel Drive, Stretton Business Park, Burton-on-Trent, Staffordshire DE13 0BZ, United Kingdom
2. GAI-Tronics Inc., 3030 Kutztown Road, Reading, PA 19605, USA