

TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00001T8
Revision No:
1

This is to certify:

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

with type designation(s)
PAGASYS GEN 2 PA/GA SYSTEM

issued to

Federal Signal Corporation
University Park, IL, USA

is found to comply with

DNV 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.

Temperature	B
Humidity	A
Vibration	A
EMC	A (copper seals and ferrites to be installed according to makers datasheet)
Enclosure	Required protection according to the Rules shall be provided upon installation on board.

Issued at **Hamburg** on **2024-08-20**

This Certificate is valid until **2028-06-04**.

DNV local unit: **Certification & Inspection Services**

Approval Engineer: **Torsten Dzillak**



for **DNV**

Digitally signed by: **Dariusz Lesniewski**
Location: **DNV Hamburg, Germany**

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.



PAGASYS GEN 2 PA/GA SYSTEM

Federal Signal PAGASYS Gen 2 system is a rack-mounted, software-controlled system that can incorporate duplicate control systems and redundant/protected audio signalling.

Model	Description
P-NET-G	CONTROL SHELF GEN II
P-A250-G	AMP, 250W PWM DIGITAL GEN II
P-A500-G	AMP, 500W PWM DIGITAL GEN II
P-A750-G	AMP, 750W PWM DIGITAL GEN II
P-A1000-G	AMP, 1000W PWM DIGITAL GEN II
P-ISMT-G	ISMT LINE CARD GEN II
P-16DIN-G	I/O DIGITAL INPUT GEN II
P-BK-MON-G	I/O BEACON MONITOR GEN II
P-SPDT-G	I/O PCBA,RELAY OUTPUT GEN II
P-IAMC-G	INTERNAL AP MUX CARD GEN II
P-EAMC-G	EXTERNAL AP MUX CARD GEN II
P-APAC-G	I/O ACCESS PANEL AGGR GEN II
P-FCMC-G	I/O FAN CNTRL/MONITOR GEN II
P-MONIC-G	I/O MONITORED INPUT GEN II
ECHO-MB-460	ECHO, MOTHERBOARD, 460 CODE
P-PTBC-G	PASSIVE TERMINAL BLOCK CARD
P-CPIC-G I/O	I/O CABLE POWER INJECTOR
P-AADC1-G	AMP AUDIO DIST CARD 1:1
P-AADC2-G	AMP AUDIO DIST CARD 1:2
P-AADC4-G	AMP AUDIO DIST CARD 1:4
P-AADC8-G	AMP AUDIO DIST CARD 1:8
P-FWTC-G	FAN WIRING TERM CARD
P-MICW-EX	MIC STATION, ATEX
P-MICW-SA	MIC STATION, SAFE AREA
P-AP-EX	ACCESS PANEL, ATEX
P-AP-SA	ACCESS PANEL, SAFE AREA
ATS-1000-8000	Automatic transfer switches
ATS-1000-8000	Automatic transfer switches

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

- Equipment is intended for Industrial and Offshore platforms only
- Redundancy provides two racks for A & B systems. A & B are identical redundant equipment linked by RS485 serial cable in a closed system wiring. No network connections to other equipment outside the PA/GA system.
- Final approval of the PAGA system shall be carried out based on individual assessment of the design for each project in compliancy with following codes/rules/regulations: Offshore Standards DNV-OS-A101

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- Topological System block diagram
- Arrangement plan (location of centrals, call stations and loudspeakers)
- Power supply arrangement (may be part of the System block diagram)
- Circuit diagrams
- Description of functions covered by software (may be part of the functional description)
- Test program for application software at manufacturer

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

See Annex

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

IMO Code Code on Alerts and indicators, 2009 Resolution A.1021(26)

IMO SOLAS/MODU Code/HSC

IMO MSC Circ. 808

Marking of product

The products to be marked with:

- model name
- manufacturer name
- serial number

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

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.

END OF CERTIFICATE

ANNEX

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Type Approval documentation

Test Reports:

Environmental, No. 1600619-01
 EMC, No. 1600620-01
 EMC, No. 1600620-02

Functional Test Report:

PAGASYS DNV TYPE APPROVAL PERFORMANCE TEST PROCEDURE, Rev. 03/28/2018

Installation Manuals:

Drawing No.	Rev.
25500458	A0 0418
25500459	A0 0418

System Drawings:

Drawing No.	Rev.	Date
800401085A_GA (sht 1of3)	A0	2/15/2018
800401085A_GA (sht 2of3)	A0	2/16/2018
800401085A_GA (sht 3of3)	A0	2/27/2018
800401085010_1		2/26/2018
800401085010_2		2/26/2018
800401085011_1		2/26/2018
800401085011_2		2/26/2018
800401085012		2/26/2018
800401085014		2/26/2018
800401085202		2/26/2018
850000637A	A0	7/16/2017
850000638A	P1	9/13/2017
850000632A	P1	9/08/2017
800402470A_GA	A0	2/16/2018
800402505A_GA	A0	2/21/2018
800402513A_GA	A0	2/26/2018
800402509A_GA	A0	2/21/2018
850000693A	A	8/02/2018
850000687	1	1/26/2018

Assembly Drawings:

Drawing No.	Rev.	Date
800401085A	A0	3/14/2018

Component Drawings:

Component	Drawing No.	Rev.	Date
Cabinet/Rack	800401080A	A2	02/23/2018
P-16DIN-G	20000164	A2	02/16/2017
P-A1000-G	20000150	A6	01/24/2018
P-AADC2-G	20000192A	A1	08/21/2017
P-AAMC-G	20000173	A5	11/01/2017
P-ADPS-G	20000178A	A0	01/23/2017
P-AP-EXDM-G	2005723A	A6	12/01/2017
P-AP-EXDM-G	800402470A	A0	02/15/2018
P-BK-MON-G	20000168	A3	02/20/2017
P-BK-MON-G	20000208	A4	10/04/2017
P-CMC-G	20000177	A2	06/14/2017
P-CPC-G	20000172B	B1	11/18/2017
P-CPC-G	20000172B-01	B1	11/20/2017
P-CPC-G	20000235A	A0	11/16/2017
P-FCMC-G	20000167	A3	02/01/2018
P-FWTC-G	20000196	A1	06/30/2017



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P-IAMC-G	20000174	A3	06/16/2017
P-IOIC-G	20000176	A2	06/14/2017
P-ISB-G	20000321A	A0	10/26/2017
P-ISMT-G	20000151	A2	12/22/2017
P-MIC-EXWM1-316-G	2005723A	A6	12/01/2017
P-MIC-EXWM1-316-G	8004630A	A4	07/19/2017
P-NET-G	20000170	A0	04/06/2017
P-NET-G	800401027A	A0	10/21/2016
P-NET-G	800401031A	A0	10/21/2016
P-NET-G	800401044A	A1	07/19/2017
P-PTBC-G	20000180A	A1	02/10/2017
P-SERV-G	8004325A-04	A0	01/26/2018
P-SPDT-G	20000166A	A2	01/16/2018
P-TRANS-SW-G 120VAC	131285A-04	A0	08/28/2014
P-TRANS-SW-G 230VAC	131285A-03	A1	08/28/2014

Renewal audit dated 2024-08-05
EMC Engineering Test Report No. 1600620-01 Rev.A dated 2024-07-18