

# TYPE APPROVAL CERTIFICATE

## This is to certify:

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

with type designation(s)  
**PAGASYS**

Issued to

**Federal Signal Corp.  
University Park IL, United States**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards**

**IMO A.1021(26) Code on alerts and indicators (2009)**

**LSA Code VII 7.2**

**IMO MSC Circ 808**

**General requirements for electromagnetic compatibility for all electrical and electronic ship's equipment (IMO Res. A.813(19))**

## Application :

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

<b>Temperature</b>	<b>B</b>
<b>Humidity</b>	<b>A</b>
<b>Vibration</b>	<b>-</b>
<b>EMC</b>	<b>A</b>
<b>Enclosure</b>	<b>A</b>

This Certificate is valid until **2020-12-21**.

Issued at **Høvik** on **2015-12-22**

for **DNV GL**

DNV GL local station: **Houston**

Approval Engineer: **Steinar Kristensen**

**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.

## Product description

The PAGASYS Industrial Public Address General Alarm system (IPAS) employs a modular construction approach to make a customizable system. The modules are mounted in a rack style cabinet and consist of the following modules:

Module	Type designation
Cabinet rack System Core	See Variant Numbering
Network Processor	P_NET
Touch Screen P.C	P_TSPC
250W Class 'D' Amplifier	P_A250
250W Loudspeaker Monitoring Card	P_SB
Two-Channel Loudspeaker Monitoring Card	P_M250
500W Loudspeaker Monitoring Card	P_M500
250W ISMT Standby Routing Loudspeaker Monitoring Card	P_ISMT-SB
500W ISMT Loudspeaker Monitoring Card	P_ISMT500
Power Supply Monitoring PCB	P_PSUI/F
1200W Power Supply Module	P_PSU1200
Digital Signal Processor Card	P_DSP
Amplifier Interface Card	P_AIC
Amplifier Interface Card	P_X/YMATRIX
Access Panel Controller	P_APIC
Access Panel Interface Card MKII	P_API-MKII
8 Digital Input PCB	P_8DIN
Beacon Monitor PCB	P_BK-MON
5 Relay Output PCB	P_5DPDT
Relay Output PCB	P_DPST
Power Supply Monitoring PCB	P_PSU-INTF
Beacon Line Monitoring Card	P_BLM
PABX Interface with Digital Store	P_PABX
Wiring and Termination Duplication Kit	P_DUP
Wall Mounted Microphone Station for Hazardous Areas	P_MIC-EX
Echo Controller	ECHO_MB
CTS Series Amplifier	CTS-XXXX
Ethernet Audio Controller	FS-IP-XXXX
Access Panel (PA/GA activation)	P-AP-SA-XX
Access Panel (PA/GA activation)	P-AP-EX-XX
Microphone panel	P-MICW-SA-2-316
Microphone panel	P-MICW-EX-2-316

### Software Versions:

Description	Software ID	Versions
Graphical User Interface	GUI	PAGASYS GUI Rev 1.X
Firmware Exec. Control	U13	U13 Rev 1.X
Firmware Comms	U3	U3 Rev 1.X

### Variants and variant numbering:

The PAGASYS Industrial PA System can be supplied in different configurations. The variant numbering is as follows:

**P# - xx - suffix**

Where:

'#' = Number of 3U amplifier cardframes. Each 3U amplifier cardframe can house up to four P-A250 amplifiers.

'xx' = Power supply variants. 24 = 24VDC, 48 = 48VDC, AC = 85V to 264V AC.

'Suffix' indicates the quantity of 250W, 500W or Hot-Standby amplifiers according to Table 1.1 below.

Code Letter *	#250 Watt Amps	#500 Watt Amps	#Standby Amps
A	1	.	.
AS	1	.	1
B	2	.	.
BS	2	.	1
C	3	.	.
CS	3	.	1
D	4	.	.
E	.	1	.
ES	.	1	1
F	1	1	.
FS	1	1	1
G	2	1	.
H	.	2	.

Table 1.1

Example:

P5-AC-CSDDDH

P5 = 5 pcs 3U cardframes  
AC = AC power supply.  
CS = 3 pcs 250W Amps, 1 pcs Standby Amp.  
DDD = 3x 4 pcs 250W Amps  
H = 2 pcs 500W amps

### Application/Limitation

1. The PAGASYS Industrial Public Address General Alarm system (IPAS) may be used in cargo ships, passenger vessels, high-speed & light craft and mobile offshore units for compliance with the following codes/rules/regulations:
  - SOLAS
  - HSC Code
  - MODU Code
  - DNV Statutory Interpretations [Sept 2013]
2. When used for PA on passenger vessel or integrated PA and GA on any vessel, the system shall be duplicated. When used for passenger vessels the duplicated parts of the system are to be installed in separate main vertical fire zones.
3. Access panels with functions for activation of Emergency PA and GA shall be provided with means to avoid unintended use. This can be either cover for protection of keys, or keys shall be pressed for minimum 2 seconds to activate function. Keys shall be clearly labelled.
4. Any Ex-equipment (equipment to be used in areas with explosive atmosphere) listed in this certificate are subject to separate Ex- approvals.

Job Id: **262.1-003502-3**  
Certificate No: **TAA0000081**

### Type Approval documentation

DNV GL No	Drawing No	Rev.	Description
27	Operation and installation manual	1	Manual: Federal Signal Corp, MK2 PAGASYS System, Soft Access Panel & Mimic Program Operation & Installation Manual
19	G	2015-10-13	Manual: Federal Signal Corp, TDI Transistor Devices, Application Manual Mercury Power Supplies and Accessories
18			Manual: Federal Signal Corp, PAGASYS Technical Installation Guides (TIG's)
16		ISSUE 02	Manual: Federal Signal Corp, PAGASYS Software Manuals
15		ISSUE 02	Manual: Federal Signal Corp, A Fault-finding and maintenance guide for the PAGASYS Public Address System
14	DNV PAGASYS IOM rev 2.doc	4, 01 Mar 2011	Manual: Federal Signal Corp, Operation & Maintenance Manual
13	G42251	20/06/00	Manual: Whitley Electronics Limited, Installation reference handbook, Telipager 2
5	0900057-01	2/9-3/11/2009	Report: Elite Electronic Engineering Inc, Environmental Tests on PAGASYS system
4	0900056-01	Jan-Apr. 2009	Report: Elite Electronic Engineering Inc, Electromagnetic Compatibility Tests on a Public Address General Alarm System Part Number PAGASYS
3	9952531	6	Report: Federal Signal Corp, DNV PAGA Type Approval Functional Test report

### Tests carried out

- Environmental testing: DNV Standard for Certification No. 2.4 (2006) and IEC 60945 (2002)
- Performance testing: Functional tests according to DNV Type Approval program 848.22

### 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

A retention survey is to be performed at least once every second year, and again upon renewal of this certificate.

The scope of the retention/renewal survey 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.