SLOVENSKI STANDARD
SIST EN 50695:2021

01-julij-2021

Splošni javni krizni alarmni sistem, komunikacijski sistem za pomorske aplikacije

Public-address-general-emergency-alarm-system, communication-system for marine applications

Lautsprecher-Durchsage-System-General-Notfallalarm-System, Kommunikations-System für Marine-Anwendungen

Dispositifs de communication avec le public et systèmes d'alarme générale en cas de situation critique pour applications maritimes

Ta slovenski standard je istoveten z: **EN 50695:2021**

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13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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European foreword

This document (EN 50695:2021) has been prepared by CLC/BTTF 157-1 “Public address and general emergency alarm systems”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022–04–26
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2024–04–26

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The EU-Commission has received requests from stakeholders for the development of standards for public address and general emergency alarm systems (entry A.2/1.5 in Annex A.2 of Directive 96/98/EC as amended by Commission Directive (EU) 2015/559) and therefore requests the European standardization organisations start the development of the respective standards.

The development of standards for public address and general emergency alarm systems is necessary because these systems are very important for safety on board and they are exposed to specific conditions (e.g. moisture, salt) which do not occur in other circumstances. The legislative provisions will detail the modalities for assessing that equipment.

The availability of testing standards will allow these products to be included in the scope of Directive 2014/90/EU, which in turn will allow them to be conformity assessed by a notified body and to affix the wheel mark.

Introduction

Public address and general emergency alarm systems have the primary purpose to inform persons on board of ships of emergency situations, and to enable the ship's officers relay voice messages to persons on board those ships in emergency situations.

EN 50695 has been written in pursuit of a request of the European Commission for a standard on equipment for public address and general emergency alarm systems (PA, GA and PAGA systems). The European Commission issued this request with the intention of taking this standard on board the Implementing Regulations belonging to the Marine Equipment Directive (MED), with the aim to enable and require MED certification for equipment for public address and general emergency alarm systems (PA, GA and PAGA systems). This will ensure that such equipment complies with all applicable requirements to that equipment set by the International Maritime Organization (IMO) in SOLAS 1974 and the LSA-code, before it is installed on board a ship.

Equipment compliant with this standard, certified according to the Marine Equipment Directive, can thus be used to engineer and install a public address and general emergency alarm system on board a ship flying the flag of an EU member state.

EN 50695 has been designed to make use of existing standards where possible, and specifies clarifications of requirements in other standards, additional requirements and methods of test and required test results where necessary to satisfy the IMO requirements.

Equipment based on EN 54 could be used as basis for PA and PAGA systems when additionally, compliant with this document.

1 Scope

This document describes operational and performance requirements, methods of testing and required test results for components of public address systems (PA), general emergency alarm systems (GA) and public address general emergency alarm systems (PAGA) for marine applications as in Table 1 in support of the requirements of IMO for such systems, while it is up to the manufacturer to define the components to be type approved together or separately, to build up a system.

NOTE 1 This document does not include system engineering for installation on board nor installation requirements.

This document refers as much as possible to relevant established standards. Where relevant standards do not exist or are not precise enough, this document will describe additionally own operational and performance requirements, methods of testing and required test results.

NOTE 2 All text of this document, whose wording is identical to that of IMO circular MSC.808 or to SOLAS convention requirements, is printed in italics, and the resolution and associated paragraph numbers are indicated in brackets.

Table 1 describes the applicable IMO requirements for each combination of ship category and type of system.

Table 1 — Product-ship type matrix

	GA	PA	PAGA
Cargo ship	SOLAS reg. II-2/12 .1 and .2 SOLAS reg. III/6.4 LSA Code 7.2.1 Res. A.1021(26) 5.10	LSA Code 7.2.2	SOLAS reg. II-2/12 .1 and .2 SOLAS reg. III/6.4 LSA Code 7.2 Res. A.1021(26) 5.8
Passenger ship (not SRtP)	SOLAS reg.II-2/12 .1 and .2 SOLAS reg. III/6.4 LSA Code 7.2.1 Res. A.1021(26) 5.10	SOLAS reg. II-2/12 .1 and .3 SOLAS reg. III/6.5 LSA Code 7.2.2 MSC/Circ.808	SOLAS reg. II-2/12 .1, .2 and .3 SOLAS reg. III/6.4, 6.5 LSA Code 7.2 A.1021(26) 5.8 MSC/Circ.808.
Passenger ship (SRtP)	SOLAS reg. II-2/12 .1 and .2 SOLAS reg. III/6.4 LSA Code 7.2.1 Res. A.1021(26) 5.10	SOLAS reg. II-2/12 .1 and .3 SOLAS reg. III/6.5 LSA Code 7.2.2 MSC/Circ.808 SOLAS reg. II-2/21&22 MSC.1/Circ.1369/Add.1	SOLAS reg. II-2/12 .1, .2 and .3 SOLAS reg. III/6.4, 6.5 LSA Code 7.2 Res. A.1021(26) 5.8 MSC/Circ.808 SOLAS reg. II-2/21&22 MSC.1/Circ.1369/Add.1

Unless this document explicitly states otherwise, each section in this document applies to all ship types.

This document indicates for each section if that section is applicable to PA, GA and/or PAGA systems.

Where this document makes sections applicable to “passenger ships”, these sections apply to both “Passenger ship (not SRtP)” and “Passenger ship (SRtP)”.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN IEC 60268-4:2018, *Sound system equipment - Part 4: Microphones*

EN 60945:2002, *Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results (IEC 60945:2002)*

EN 61162-1, *Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners (IEC 61162 1)*

EN 61162-2, *Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 2: Single talker and multiple listeners, high-speed transmission (IEC 61162 2)*

EN IEC 61162-450, *Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection (IEC 61162 450)*

EN 62288, *Maritime navigation and radiocommunication equipment and systems - Presentation of navigation-related information on shipborne navigational displays - General requirements, methods of testing and required test results (IEC 62288)*

EN IEC 62923-1, *Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 1: Operational and performance requirements, methods of testing and required test results*

EN IEC 62923-2, *Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 2: Alert and cluster identifiers and other additional features*

IEC 60268-1, *Sound system equipment - Part 1: General (IEC 60268-1)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms, definitions and abbreviations apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
alarm
high-priority alert
(MSC 302/A) *Condition requiring immediate attention and action by the bridge team, to maintain the safe navigation and safe operation of the ship*

3.1.2
alert
(MSC 302/A) *announcement of abnormal situations and conditions requiring attention*

Note 1 to entry: Alerts are divided in four priorities: emergency alarms, alarms, warnings and cautions. An alert provides information about a defined state change in connection with information about how to announce this event in a defined way to the system and the operator.

3.1.3
bridge alert management
(MSC.302/A) overall concept for management, handling and harmonized presentation of alerts on the bridge

3.1.4
central alert management system
CAM system
combined functionality of CAM and CAM-HMI

Note 1 to entry: CAM-HMI means: *(MSC.302/A) human machine interface for* centralized *presentation and handling of alerts on the bridge*

Note 2 to entry: CAM means *(MSC.302/A) functionality for the management of the presentation of alerts on the CAM-HMI, the communication of alert states between CAM-HMI and navigational systems and sensors. The functions may be centralized or partly centralized in subsystems and interconnected via a standardized alert-related communication*

3.1.5
control station
human machine interface (e.g. panel) for the operator to use the system

3.1.6
emergency public address
emergency PA
voice announcement used to supplement general emergency alarm having priority over the general emergency alarm

3.1.7
general emergency alarm
audible signal used on board ships to indicate an emergency situation, summoning passengers and crew to muster stations and to initiate the actions included in the muster list

3.1.8
general emergency alarm system
GA system
equipment to distribute audible signals used on board ships in times of emergency

3.1.9
loop
transmission-path between amplifiers and loudspeakers and between controllers and active loudspeakers

Note 1 to entry: A loop may be an open or closed loop.

3.1.10
multiplication and duplication systems
combination of interconnected systems that can operate as a single system and autonomously corrects a single fault by using the other system

Note 1 to entry: Multiplication and Duplication systems can be solved by independent systems, if they are based on the same or different technologies, both fulfilling the requirements of this document.

3.1.11
passive loudspeaker
loudspeaker that does not include any active circuit (e.g. amplifier)

3.1.12
public address
voice announcement

3.1.13
public address system
PA system
electronic system comprising microphones, amplifiers, loudspeakers, and related equipment to increase and distribute the volume (loudness) of a live spoken human voice, or other acoustic sound source

3.1.14
public address general emergency alarm system
PAGA system
equipment which has the functions and performance of both a PA system and a GA system

3.1.15
redundancy
duplication of critical components or functions of a system with the intention of increasing reliability

3.1.16
redundant system
system that includes the possibility to autonomously correct a single fault by an internal replacement functionality

3.1.17
safe return to port
facilities supporting SOLAS reg. II-2/21 and II-2/22

3.1.18
single point of failure
internal or external cause (e.g. fire) that results in the loss of communication between two or more connected independent systems

3.2 Abbreviations

EMC	Electromagnetic compatibility
EUT	Equipment under test
GA	General emergency alarm
IEC	International electrotechnical commission
IMO	International marine organization
MSC	Maritime safety committee
LSA	International life-saving appliance
PA	Public address
PAGA	Public address general alarm
RMS	Root mean square
SNR	Signal to noise ratio
SOLAS	Safety of life at sea
SRtP	Safe return to port
THD	Total Harmonic Distortion

4 Test requirements

4.1 Equipment under test

The manufacturer shall declare for

a) which ship types and

b) which product types

as defined in Table 1 the system is designed.

The manufacturer shall document the design and lay-out of the overall system that is to comply with this standard.

This shall include:

— the manufacturer-defined components of which the system consists, if applicable, and

— the possible minimum and maximum configurations of the system.

NOTE 1 Minimum configuration means the minimum number of connected components which represents a complete system compliant with this document.

NOTE 2 Maximum configuration means the maximum number of connected components which represents a complete system compliant with this document.

The manufacturer shall define the EUT as part of the overall system layout.

The test report shall state which set of validated manufacturer-defined components is tested together, including their configuration.

4.2 Test set-up

Except where stated otherwise in this document, compliance with this document shall be tested in:

— a test setup covering at least the minimum configuration according to the ships type and systems type the system shall be certified for

— the maximum configuration as describe by the manufacturer, shall be confirmed by measurement of a maximum configuration or functionally and electrically representative for the maximum set-up, or inspection of documented evidence where applicable

For the testing of loudspeakers and sounders only, a test set-up may be provided that enables testing of the functionality of the loudspeakers only.

Insofar relevant for the tests to be performed the test set-up shall be installed according to the installation manual.

The manufacturer may specify a set of components that, when assembled as specified in the installation instructions, perform a function of the PA, GA or PAGA system.

5 Generic Performance, Safety, Marine Environmental and EMC

5.1 Applicability

Applicable to all components of the PA, GA or PAGA system, including optional features, for all ship types.

5.2 Requirement

Further to the requirements of SOLAS 1974 reg. V/17 and IMO resolutions A.813(19) and A.694(17), in addition to the requirements of this standard all components of the EUT shall comply with EN 60945, except that

— for passive loudspeakers EN 60945:2002, Clauses 9 and 10 do not apply; and

— for equipment for which the installation manual requires installation:

  — outside the bridge, and

  — away from mandatory receiving antenna's as specified in IEC 60533 and/or EN 60945,

EN 60945:2002, Clauses 9 and 10 may be replaced with the requirements of IEC 60533.

For the purpose of EN 60945, where for a component of the EUT no applicable definitions for performance test and performance check are stated in an IEC or EN equipment standard, the following definitions apply:

— Performance test: Perform any operator action in the EUT and confirm by non-quantitative observation that the system is still operative. Where no operator action is available in the EUT (e.g. a loudspeaker), activate a primary function of the EUT (e.g. to produce sound) and confirm by non-quantitative observation that the system is still operative.

— Performance check: Identical to the performance test.

For all components of the EUT, the manufacturer shall declare the EN 60945 environment category to which the components are successfully tested. The manufacturer's documentation that will be available with the equipment shall reflect the applicable EN 60945 environment categories for all components. The applicable category may also be marked on the equipment.

The manufacturer's documentation that will be available with the equipment shall reflect the compass safe distances of all components of the EUT or the instruction to install the components at least 5 m from the compass. The compass safe distance shall at least be marked on portable equipment.

5.3 Methods of test and required test results

Confirm by inspection of the manufacturer's documentation that will be available with the EUT, that, in pursuit of the EN 60945 requirements, the following documentation is available and is in compliance with the requirements of EN 60945:

— manual for operation of the EUT;

— manual for maintenance of the EUT;

— manual for installation of the EUT.

These manuals may be combined.

Confirm by inspection of the manufacturer's documentation that will be supplied with the EUT, that it holds:

— the applicable environment category of the equipment of all components of the EUT; and

— the compass safe distance of all components of the EUT, or instructions to install the components of the EUT with at least 5 m separation from any compass.

These markings may also be affixed to the components.

Refer to the manufacturer's documentation that will be available with the equipment to identify equipment for which the applicable EN 60945 environment category is portable. Confirm by observation that this equipment is marked with the compass safe distance or with instructions to install the equipment with at least 5 m separation from any compass.

Confirm by inspection of documented evidence that the EUT complies with the requirements of EN 60945 for

— marine environment;

— marine power supply; and

— marine special purpose tests.

For equipment other than passive loudspeakers, also confirm by inspection of documented evidence that the EUT complies with the requirements of EN 60945 for marine EMC (EN 60945:2002, Clauses 9 and 10), where for equipment for which the installation manual requires installation

— outside the bridge, and

— away from mandatory receiving antenna's as specified in IEC 60533 and/or EN 60945,

EN 60945:2002, Clauses 9 and 10, may be replaced with the requirements of IEC 60533.

For equipment for which the requirements of EN 60945:2002, Clauses 9 and 10 were replaced with the requirements of IEC 60533, confirm by inspection of manufacturer's documentation that the installation manual contains a requirement to install that equipment

— outside the bridge, and

— away from mandatory receiving antenna's as specified in IEC 60533 and/or EN 60945.

Such information may also be affixed to the equipment itself.

For the EN 60945 requirements for which compliance is not confirmed by documented evidence, perform the corresponding EN 60945 test and confirm by analytical evaluation that the EUT complies with those EN 60945 requirements.

6 External interfaces

6.1 Overview

Figure 1 gives an overview of the external interfaces of PA, GA and PAGA Systems