DNV GL Type Approval

1. Introduction

This Application Note provides background information concerning the installation of Praesideo systems on vessels in case the installation needs to be compliant with the DNV GL Type Approval (EN60945).

1.1 Involved Praesideo products

The products which are involved in the DNV GL Type Approval certification are specified in the table below.

Type number	Description
PRS-NCO3	Network Controller
PSP-D00039	SPEC RCS, Special Network Splitter, Master
PSP-D00040	SPEC RCS, Special Network Splitter, Slave
LBB4402/00	Audio Expander Analogue
PRS-4AEX4	Audio Expander Analogue
PRS-16MCI	Multi Channel Interface
PRS-2B250	Basic Amplifier 2x250W
PRS-8B060	Basic Amplifier 8x60W
PRS-1B500	Basic Amplifier 1x500W
PRS-4B125	Basic Amplifier 4x125W
PRS-2B250-EU	Basic Amplifier 2x250W
PRS-8B060-EU	Basic Amplifier 8x60W
PRS-1B500-EU	Basic Amplifier 1x500W
PRS-4B125-EU	Basic Amplifier 4x125W
PRS-NSP	Network Splitter
PRS-FIN	Fiber Interface
PRS-FINNA	Fiber Interface Non-Addressable
PRS-FINS	Fiber Interface Single-Mode
PRS-CRF	Call Stacker
PRS-CSI	Call Station Interface
PRS-CSR	Remote Call Station
LBB4432/00	Call Station Keypad
PRS-CSRM	Remote Call Station Module
PRS-CSKPM	Call Station Keypad Module
PRS-CSM	Call Station Module
PRS-SW	Praesideo Software

Products used in PA/GA installations, which are not specified in this table are not certified according the DNV GL Type Approval.

1.2 Abbreviations

AN Application Note
dB(A) decibel, A-weighted
DNV Det Norske Veritas

GA	General Alarm
GOF	Glass Optical Fiber
PA	Public Address
RCS	Redundant network Controller Switch

2. Installation Guidelines

In the DNV GL Type Approval, requirements are specified concerning the installation of PA/GA systems on board of vessels.
In this chapter specific issues that require special attention from the installers when installing a Praesideo system are described.

2.1 Restrictions where to install the products

The Praesideo system 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 GL Statutory Interpretations [July 2015]

The involved Praesideo equipment has to be installed in a protected and climate controlled environment, i.e. indoor.
Moreover, at installation the following distance to a magnetic compass on board of a vessel must be taken into account:

- Rack mounted products: > 5 m
- PRS-CSR and LBB4432/00 combination: > 5 m
- PRS-CSM and PRS-CSKPM combination: > 0.75 m
- PRS-CSRM and PRS-CSKPM combination: > 0.85 m

2.2 System setup

The following issues must be taken into account to ensure that the systems are installed and configured in accordance with the DNV GL Type Approval requirements:

- For a system used for PA on passenger vessels or used for integrated PA and GA on any vessel, essential parts of the system shall be duplicated (A+B systems). Various duplications are possible within Praesideo, like Network Controller, Multi Channel Interface, Amplifier sparing and A/B loudspeaker cabling.
  Information about duplication of essential parts of a system is available in the “Installation and User Instructions” manual of Praesideo.

- When used for passenger vessels, the A+B systems are to be installed in separate fire zones.

- When used for a combined PA/GA system, as a minimum two independent speaker loops are required.

- For ongoing announcements during a switchover between the Network Controller Master and Slave the following should be taken into account:
  - For GA and automated Emergency PA announcements (e.g. pre-recorded messages) the automated signal must continue after a switchover.
  - For manual Emergency PA announcements (i.e. using PTT key on a Call Station), it is acceptable that the announcement is terminated and re-initiated by the user after a switchover.

- The Call Stations capable of issuing GA and Emergency PA shall be connected to both Network Controllers (Master and Slave). This shall be done with the special network splitters to create the redundant network controller solution.

o The following power management instructions must be taken into account.
Connection to mains and emergency source of power are handled by a UPS outside the Praesideo system. It is not allowed to use the 48V DC input supply connections inside the Praesideo system for installations.

o Output contacts shall be used to override local muting or local volume control (at the speakers) during a GA and Emergency PA.

o Emergency PA shall have a priority higher than GA, otherwise it is not possible to have an Emergency PA announcement when GA is already running. General PA should have a priority that is lower than GA and PA.
Any Call Station which is not used for Emergency PA activation shall have a lower priority than GA.

o Call Stations with functions for activation of Emergency PA and GA are to be installed in locations with access control.

o Call Stations with functions for activation of Emergency PA and GA shall be provided with means to avoid unintended use.
For each programmable key a clear descriptive label has to be slide into the corresponding paper slot, to identify where the programmable key has been configured for.
To protect keys from being pushed accidentally, key covers (LBB4436/00) should be put on these keys. See images below.

o In order to reset a GA emergency alarm as a default single key action, a combined Acknowledge/Reset action must be programmed for that key to prevent that two keys need to be pressed separately. In addition, by selecting “Reset aborts active emergency calls” for that key, the Reset action will not be blocked by emergency calls that are still active.

o In order to achieve the required audibility, i.e. it is possible to adjust the GA and Emergency PA sound pressure level between 75dB and 120dB, the volume can be adjusted on amplifier output level (via “Audio Processing” pages) and/or via Zone configurations. Detailed information about this subject is available in the “Installation and User Instructions” manual of Praesideo.

o Interference/feedback is avoided by not installing a loudspeaker nearby a Call Station microphone. Because a Call Station has a monitor speaker (build in for a Remote Call

Station and attached for a Remote Call Station Module) there is no need to install a loudspeaker nearby a Call Station.

- For the PRS-4AEX4, the Audio Expander Analogue, the use of audio outputs 3 and 4 is not allowed for maritime applications that needs to be EN60945 compliant and certified according the DNV GL Type Approval.

2.3 Praesideo rack mounting on board of vessels

19” Mounting brackets

By installing a Praesideo system special attention should be taken to the mechanical mounting of Praesideo units.
Praesideo units are supplied with rugged 19" mounting brackets creating a more solid construction and make rack mount units less sensitive for shock and vibrations.

2.4 Cabling

Cables and wiring serving internal communications or signals should, as far as practicable, be routed clear of galleys, laundries, machinery spaces of category A and their casings and other high fire risk areas unless serving those spaces.
Where practicable, all such cables should be run in such a manner so as to preclude their being rendered unserviceable by heating of the bulkheads that may be caused by a fire in an adjacent space. All areas of each fire zone should be served by at least two dedicated loops sufficiently separated throughout their length and supplied by independent amplifiers.

In case heat resistant fiber optic cable (GOF) is specified within the system design, two recommended GOF may be used.

Fiber optic cable 4OF50/125-E30

- 4 fibers, multimode G50/125, loose tube (max. 12 fibers)
- Functional integrity during fire according to DIN 4102 Part 12: 30 minutes (E30)
- Halogen free to IEC 60754-1/2
- Fire resistance according to IEC 60331, IEC 60332.3C and BS 6387 cat. C

- Suitable for indoor use; outdoor use with proper mechanical protection
- Water tight and non-metallic rodent protected
- High crush resistance
- Temperature range during operation: -25 °C to +70 °C

Fiber optic cable QFCI

- 2 - 24 fibers, multimode G62.5/125, loose tube
- Steel wire braid armoured
- Applications: offshore and marine
- Functional integrity during fire according upgraded IEC 60331: 3 hours at 1.000 °C
- Halogen free to IEC 60754-1/2
- Fire resistant according to IEC 60331, IEC 60332-3C, BS 6387 cat. C
- Suitable for both indoor and outdoor use
- Temperature range during operation : -30 °C to +60 °C

The use of a certain type of glass fiber cable depends on specific installation and environmental requirements.
Please, check always the actual requirements.