SLOVENSKI STANDARD
SIST EN 16334:2014

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Nadomešča:
SIST EN 15327-1:2008

Železniške naprave - Potniški alarmni sistem - Zahteve

Railway applications - Passenger Alarm System - System requirements

Bahnanwendungen - Fahrgastalarmsystem - Systemanforderungen

Applications ferroviaires - Système d'alarme passager - Prescriptions relatives au système

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ICS:

13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
45.060.20	Železniški vagoni	Trailing stock

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English Version

Railway applications - Passenger Alarm System - System requirements

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Bahnanwendungen - Fahrgastalarmsystem - Systemanforderungen

This European Standard was approved by CEN on 22 May 2014.

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Foreword

This document (EN 16334:2014) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2015 and conflicting national standards shall be withdrawn at the latest by February 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15327-1:2008.

This document has been prepared under a mandate given to CEN/CENELEC/ETSI by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the characteristics of the Passenger Alarm System. The aim of the Passenger Alarm System is to:

a) permit passengers in case of emergency situations to inform the driver;

b) permit the driver to keep the train moving or to stop the train at a safe location;

c) stop the train automatically:

1) at a platform,

2) if there is no acknowledgement by the driver.

This European Standard covers the Passenger Alarm System (PAS) fitted to the passenger carrying rolling stock and specifies:

— the functional requirements for an alarm triggered in the driving cab (Clause 6);

— the communication channel between the driver and passengers or on-board staff (6.4);

— the dynamic analysis of the Passenger Alarm System (Clause 7);

— the requirements for the degraded modes management (Clause 8);

— the safety related requirements (Clause 9);

— requirements for the Passenger Alarm Device and Passenger Alarm Device area (Clause 10).

This European Standard is applicable to rolling stock which are in the field of the Directive 2008/57/EC.

NOTE 1 Existing Passenger Alarm Systems may require modification to work in conjunction with vehicles that comply with this standard.

NOTE 2 Most of the requirements of UIC 541–6 are compliant with this standard.

Other communications systems named 'communication device for passengers' or 'call for aid' in the CR LOC and PAS TSI [1] respectively “Emergency call” or “Call for assistance” in the TSI PRM [3] are not covered by this standard.

NOTE 3 prEN 16683, *Railway applications – Call for aid and communication device – Requirements* covers these aspects.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13272, *Railway applications — Electrical lighting for rolling stock in public transport systems*

EN 14478:2005, *Railway applications — Braking — Generic vocabulary*

prEN 16186 (all parts), *Railway applications — Driver's cab*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 3864-4:2011, *Graphical symbols — Safety colours and safety signs — Part 4: Colorimetric and photometric properties of safety sign materials*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478:2005 apply.

NOTE The definition for 'passenger alarm' given in EN 14478:2005, 4.9.2.2, is superseded by this document.

3.1
Closed Circuit Television
CCTV
on board video recording system

3.2
PAD operated
handle that is operated when it is manipulated in order to change its mechanical status and therefore to send an information to the PAS

3.3
Passenger Alarm Interface
PAI

arrangement of equipment close to each other or one single equipment, which includes:

— passenger alarm device (see Clause 9);

— microphone;

— loudspeaker;

— visual indicators: lights;

— resetting device(s);

— information labels;

— a seal (optional)

3.4
Passenger Alarm Device
PAD
interface to the PAS through which the requirement for a defined Passenger Alarm System demand is indicated or initiated by passengers or operating staff

Note 1 to entry: The PAD is sometimes called emergency handle or alarm handle. These short-terms should only be used where misunderstanding is not possible or in descriptions prepared for passengers. In this document, 'handle' is used as a generic term and its design is defined in 10.2.

3.5
standstill
when the speed of the train has decreased to 3 km/h or less

4 Symbols and abbreviated terms

For the purposes of this document, the following symbols and abbreviated terms apply.

CCTV Closed Circuit Television (see 3.1)

PAI Passenger Alarm Interface (see 3.3)

PAD Passenger Alarm Device (see 3.4)

PAS Passenger Alarm System (see Clause 6)

TCMS Train Control and Monitoring System

5 System overview, architecture and interfaces

An example of the system overview is described in Annex E.

6 Functional requirements

6.1 General

The aim of the Passenger Alarm System is:

a) to permit passengers in case of emergency situation to inform the driver;

b) to permit the driver to keep the train moving or to stop the train at a safe location;

c) to stop the train automatically:

1) at a platform,

2) if no acknowledgement by the driver.

The mandatory functions that are set out in this clause are for normal mode operations. They are supplemented by additional optional functions which may be incorporated in the PAS. For degraded modes see Clause 8.

6.2 Advise the driver (and optionally on board staff members or control centre) of a potential danger

6.2.1 PAD shall be available for passengers and staff (see Clause 10 for PAD installation requirements).

6.2.2 The information that at least one PAD has been operated shall be transmitted to the driver.

6.2.3 An acoustic and flashing visual signal shall be given to the driver when a PAD has been operated. For the duration of signals and triggering conditions see Clause 7.

Colour and frequency of visual and acoustic signals in the driver's cab shall conform to the prEN 16186 series requirements.

6.2.4 In addition, if remote resetting of PADs is available, an acoustic signal shall be activated for each new activation of a PAD, in accordance with the safety requirements given in Clause 9.

6.2.5 The maximum permitted delay from any PAD operated and the acoustic and visual signal for the driver is 2 s.

6.2.6 When the driver has acknowledged, each acoustic signal shall be turned off within 1 s, and the visual signal should change from blinking to steady within 1 s. It is permitted to retain a flashing light as a reminder for the driver. A visual signal shall remain until all the PADs operated have been reset.

6.2.7 The system shall indicate to the driver if the PAS is not working properly or is working in limited mode (see Clause 8).

6.2.8 A PAS passenger area module shall not be automatically or remotely isolated.

NOTE This is to ensure a member of the train staff or the driver carries out the isolation.

Colour and frequency of visual and acoustic signals in the driver's cab shall conform to the prEN 16186 series requirements.

6.2.9 Additional optional functions

6.2.9.1 There may be a reminder for the driver that a PAD has been operated by repeating the acoustic and flashing signals at intervals until all the PAD have been reset (cycling through 6.2.3 to 6.2.6). The time interval between reminders may be selected having taken into account the proposed train service.

6.2.9.2 The PAS can advise the on board staff by acoustic and/or visual signals that a PAD has been operated. The recommended maximum delay from any PAD operated and the acoustic and/or visual signal for on board staff is 2 s.

6.2.9.3 The PAS may indicate that a PAD has been operated on the outside of the train.

EXAMPLE An external flashing light on the vehicle where the PAD has been operated.

6.2.9.4 For a vehicle with several compartments, PAS may give information to identify the activated PAD.

EXAMPLE For a vehicle with compartments such as a sleeping car or restaurant car, or the train manager's office, a light outside each compartment could be used to identify the activated PAD.

6.2.9.5 If TCMS from each vehicle to the cab is available, PAS may give an output to identify where a PAD has been operated.

EXAMPLE To show the location on a driver's display in the cab or other areas for on board staff.

6.2.9.6 If train CCTV is available, PAS may inform the CCTV system on the location of the PAD that has been operated.

6.2.9.7 If remote resetting of PAD is available, an acoustic signal may be activated for each new activation of a PAD.

6.2.9.8 The acoustic signal can be turned off if the PAS alarm is supported by an emergency brake application by the driver. In this case, if the automatic brake controller is already in emergency brake position, the acoustic signal sounds for at least 5 s.

6.3 Advise the passenger

6.3.1 When a PAD is operated, the PAI shall give local feedback to the passenger within 1 s maximum.

— The PAD shall be latched in the applied position and shall be visibly different to the un-operated normal status.

— A flashing visual signal (red colour recommended) shall be activated on the PAI.

— An acoustic signal shall be activated.

— If another PAD is operated before the driver's acknowledgement the PAI response is the same.

6.3.2 The PAS shall give feedback of driver's acknowledgement by stopping the PAI acoustic signal and changing status of the previous feedback signal from flashing to steady.

The PAI acoustic signal shall not interfere with the ability of the driver to communicate with the passenger.

6.3.3 After the driver's acknowledgement, if another PAD is operated, the PAI flashing signal goes to steady. PAI acoustic signal is managed for a minimum duration of 3 s, unless communication with the driver is already implemented.

6.3.4 It is recommended that the PAI should indicate when audio communication with the driver is available:

— by a steady green indication;

— by a tone feedback signal.

NOTE A possible tone can be two frequencies (1,5 kHz and 4 kHz), alternating at 8 Hz.

The acoustic signal may be complemented by a broadcast announcement.

EXAMPLE To advise the train crew.

6.4 Manage PAS communication

6.4.1 PAS shall provide an acoustic link to enable a conversation between the driver and the place where the PAD has been operated. That link shall be initiated and closed by the driver.

6.4.2 The acoustic link shall be available at all locations where a PAD has been operated, permitting the driver to talk to every location where a PAD has been operated (link 'one to many' for the driver).

6.4.3 The system shall enable the driver to manage (simultaneously or sequentially) communications from at least one location and up to a maximum of three locations.

6.4.4 A location shall not hear the communication generated by another location, except from the driver, as shown in Figure 1.

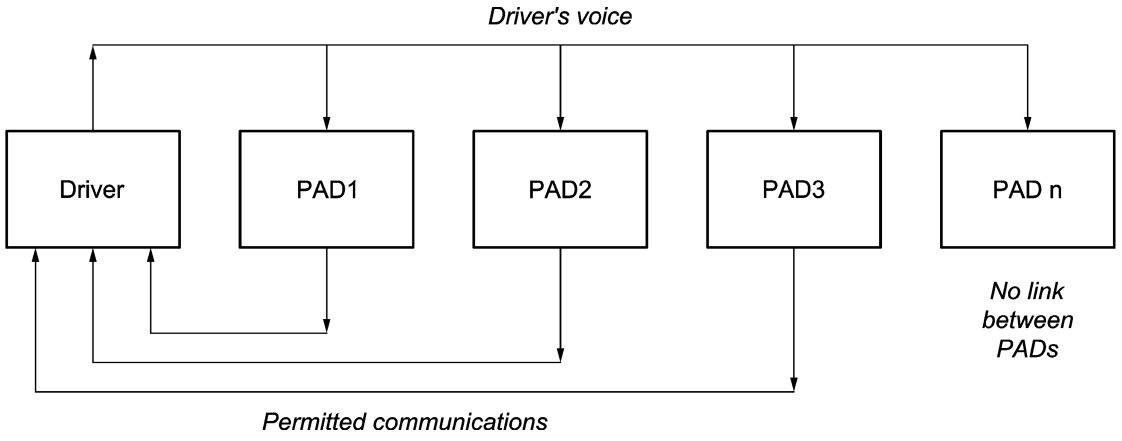

Figure 1 — Permitted communications

6.5 Determine if the train is stopped at a platform or departing from a platform

6.5.1 A train is considered as stopped at a platform if a door 'release' command has been activated and the train is at standstill. A train at a platform where there has not been any door 'release' command is considered as outside a platform area.

6.5.2 PAS shall consider that the train is still at a platform when there has been a change of door status from 'released' to 'closed and locked' and the end of platform has not been passed by the last vehicle.

6.5.3 PAS should have input from an on-board platform detection system.

6.5.4 If the platform is not physically detected, the train shall be considered to have left the platform when either one of the two following requirements is fulfilled:

— the distance covered is (100 ± 30) m; or

— the train travels for a duration of (16 ± 2) s.

6.6 Recognize the action of the driver

6.6.1 The PAS shall recognize if the driver has acknowledged the information that a PAD has been operated.

6.6.2 The PAS shall recognize if the driver has initiated the override of PAS brake request.

6.6.3 The PAS shall recognize if the driver has initiated or closed a communication link with a location where a PAD has been operated.

6.7 Request brake action

The activation of the PAD shall initiate the PAS to automatically request a brake application in the following situations:

a) If the train is at a platform or is leaving a platform (as defined in 6.5), the PAS shall request an emergency brake or full service brake.

b) If a train is outside the platform area described in 6.5, (10 ± 1) s after activation of the (first) passenger alarm, an automatic service brake application shall be requested by the PAS with at least 2/3 of the full service brake effort unless the passenger alarm is acknowledged by the driver within this time. It is permitted to request a full service or an emergency brake application. The PAS shall allow the driver to override at any time a PAS automatic brake request.

   In that case, the driver is permitted to acknowledge after the PAS has requested a brake application. This should cancel the brake request.

   If the PAS alarm is acknowledged by an emergency brake application by the driver, using the emergency brake position of the automatic brake controller, it is permitted that the PAS additionally requests an automatic brake application.

c) If a train, with a PAD operated AND acknowledged by the driver, stops at a platform (6.5) when the doors are released, the PAS shall request an emergency brake application or a full service brake application. As an option the PAS can provide a reminder that the PAD is activated.

d) As an option, for the trains running at high speed, activation of a PAD at a speed greater than a threshold speed of 200 km/h may initiate a controlled reduction in the speed, not less than 160 km/h After acknowledgement by the driver, the response of the PAS is the same as for lower speed.