



BSI Standards Publication

Railway applications — Design for PRM use — General requirements

Part 1: Contrast

National foreword

This British Standard is the UK implementation of EN 16584-1:2025. It supersedes BS EN 16584-1:2017, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RAE/1/-/15, Railway Applications - People with Reduced Mobility.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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European foreword

This document (EN 16584-1:2025) 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of an identical text or by endorsement, at the latest by April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

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

This document supersedes EN 16584-1:2017.

In comparison with the previous edition, the following technical modifications have been made:

- the document template has been updated;
- the document has been revised generally for document references and editorial issues with grammar;
- scope modified;
- normative references updated;
- terms and definitions revised;
- 5.1 removed references to annexes covering EC verification and testing requirements;
- 5.2.6 Platform danger area and edge of platform – Note 1 changed to be a bullet point, Note 2 moved from 7) to 5);
- 5.2.7 End of Platform – addition of ‘contrast requirement for the barrier shall be assessed according to free-standing device’;
- 5.3.4 Interior doors – text modified;
- 5.3.6.2 - text amended and additional Figures added;
- 5.3.11 Boarding aids – text changed from ‘up-stand’ to ‘tapered lip’;
- Annex D “EC verification - Interoperability constituents” removed;
- Annex E “Summary of testing requirements” removed;
- Subsequent Annexes renumbered;
- Annex ZA updated;
- Bibliography updated.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

This document is part of a suite of four ‘Design for PRM use’ standards that have in total nine parts:

EN 16584 is a standard that covers both infrastructure and rolling stock — Railway applications — Design for PRM use — General requirements:

- Part 1: Contrast (EN 16584-1);
- Part 2: Information (EN 16584-2);
- Part 3: Optical and friction characteristics (EN 16584-3).

EN 16585 is a standard that covers rolling stock — Railway applications — Design for PRM use — Equipment and components on board rolling stock:

- Part 1: Toilets (EN 16585-1);
- Part 2: Elements for sitting, standing and moving (EN 16585-2);
- Part 3: Clearways and internal doors (EN 16585-3).

EN 16586 is a standard that covers rolling stock — Railway applications — Design for PRM use — Accessibility of persons with reduced mobility to rolling stock:

- Part 1: Steps for access and egress (EN 16586-1);
- Part 2: Boarding aids (EN 16586-2).

EN 16587 is a standard that covers infrastructure — Railway applications — Design for PRM use — Requirements for obstacle-free routes for infrastructure.

These standards aim to clarify the requirements (with clear and consistent terms and definitions) and to define the associated criteria and, where appropriate, methodologies to allow a clear pass/fail assessment”.

1 Scope

This document describes the specific 'Design for PRM use' requirements applying to both infrastructure and rolling stock and the assessment of those requirements. The following applies to this document:

The definitions and requirements describe specific aspects of 'Design for PRM use' required by persons with disabilities and persons with reduced mobility as defined in the PRM TSI.

This document defines elements that are universally valid for board-free travelling relating to visual contrast. The definitions and requirements of this document cover the infrastructure and rolling stock applications.

This document only refers to aspects of accessibility for PRM passengers; it does not define non-PRM related requirements and definitions.

This document assumes that the infrastructure or rolling stock is in its defined operating condition.

Where minimum or maximum dimensions are quoted these are absolute NOT nominal requirements.

The 'General requirements' standard is written in three parts:

This document is Part 1 and contains:

- contrast.

Part 2 contains:

- spoken information;
- written information;
- tactile information;
- pictograms;
- audible signals.

Part 3 contains:

- lighting;
- low reflective properties;
- transparent obstacles;
- slip resistance.

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 10088-2:2024, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resistant steels for general purposes*

EN 13272-1:2019, *Railway applications - Electrical lighting for rolling stock in public transport systems - Part 1: Heavy rail*

EN 16584-2:2025, *Railway applications — Design for PRM use — General requirements — Part 2: Information (Basel)*

EN 16584-3:2025, *Railway applications — Design for PRM use — General requirements — Part 3: Optical and friction characteristics*

EN 16586-1:2025, *Railway applications — Design for PRM use — Accessibility of persons with reduced mobility to rolling stock — Part 1: Steps for access and egress*

EN 16587:2025, *Railway applications — Design for PRM use — Requirements for obstacle-free routes for infrastructure*

ISO 17398:2004, *Safety colours and safety signs — Classification, performance and durability of safety signs*

ISO 21542:2021, *Building construction — Accessibility and usability of the built environment*

ISO 3864-1:2011, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

3 Terms and definitions

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

ISO and IEC maintain terminology 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

bezel

raised area that surrounds a pressel as part of a pushbutton

3.2

boarding aid

device (fixed or portable) that bridges the gap between rolling stock and platform to allow a PRM to board or alight from a train

Note 1 to entry: This includes manual, semi-automatic or automatic ramps, lifts and other devices.

3.3**bridging plate**

retractable device integrated into the vehicle as close as possible to the door threshold level that enables access for wheelchair users, fully automatic and activated/controlled in conjunction with the door opening/closing sequences or semi-automatic on demand from passenger or staff

Note 1 to entry: It retains its strength without support on the station platform when extended.

3.4**character height**

vertical size of uppercase letters or numbers

3.5**clear width****clear usable width**

unobstructed width of an open door or clearway to allow all passengers, including PRM, to pass through

3.6**contrast**

perception of a difference visually between one surface or element of a building/rail vehicle and another by reference to their light reflectance values (LRV) or luminance values

Note 1 to entry: See BS 8300-1 and BS 8300-2 for further information.

3.7**customer information**

all visual and spoken information other than information intended only for staff

3.8**doorway**

opening in the vehicle body side that allows access to and egress from that vehicle

3.9**effective clear width**

horizontal usable width of the surface of a boarding aid or entrance step

3.10**first step**

step that is the first step for a passenger to use, to overcome a height change

Note 1 to entry: For the external access/egress steps this will normally be the step that is closest to the platform edge (fixed or movable step), therefore this is the first step when boarding and the last step when alighting.

Note 2 to entry: In the context of steps for internal height changes (other than the external access/egress steps) this means the first usable step when ascending and the edge of the walking floor when descending.

3.11**fixed longitudinal seat**

passenger seat which is installed along the body side (not foldable or intended to tip up) facing perpendicular to the direction of travel

3.12

free-standing device

element or item within the confines of the station and on platforms, whether fixed or removable, that is not part of the station structures

Note 1 to entry: Elements that are not included in this definition are lifts, external staircases, walls, any suspended devices, (the lower most part of which is more than 2 100 mm above the walking floor) and items that have a dimension greater (perpendicular to the walking direction) than 2 000 mm (e.g. fence, waiting shelter).

3.13

gap

distance between a platform and the closest point on the rolling stock at the passenger door where passengers traverse from one to the other (both vertical and horizontal)

3.14

halo

illuminated ring surrounding a pressel, not necessarily continuous

3.15

handhold

discontinuous element designed to be gripped or held in order to aid personal stability

3.16

handrail

continuous element with round cross section for passengers to use to aid personal stability by gripping around

3.17

hue and chroma

attributes of a colour which include its hue (frequency) and saturation (the dominant wavelength of a colour) also known as “chromaticity”

Note 1 to entry: A colour system (colour space, colour model) defines colour by hue, saturation and brightness. The hue is the predominant colour, the saturation is the colour intensity from achromatic (colourless) to the pure colour and the value (result) is the brightness from light to dark.

3.18

innovative solution

technological progression that results in a solution that does not comply with the specification set out in Clause 5 of this standard or for which there are no assessment methods

Note 1 to entry: An innovative solution (Article 6 Commission Regulation (EU) N° 2023/1694 of 10 August 2023 may only be used following a positive opinion from the European Commission.

3.19

last step

final step for an ascending passenger to use to overcome a height change, forming the edge of the walking floor

3.20**Light Reflectance Value****LRV**

total quantity of visible light that is reflected by a surface at all wavelengths and directions when illuminated by a light source

Note 1 to entry: The measured range of LRV is between 0 and 100 points, with a value of 0 points for pure black and a value of 100 points for pure white.

Note 2 to entry: See Annex D for further information.

3.21**obstacle-free route**

link between two or more public areas dedicated to the transport of passengers that can be navigated independently by all persons with disabilities and reduced mobility

Note 1 to entry: In order to achieve this, the route can be divided to better meet the needs of all persons with disabilities and reduced mobility. The combination of all the parts of the obstacle-free route constitutes the route accessible for all persons with disabilities and reduced mobility.

3.22**pictogram**

graphical symbol, diagram or Figure with a particular meaning which directly represents or conveys its meaning independently of language through a pictorial representation of a physical object, action or character

Note 1 to entry: Refer to ISO 7001:2023, ISO 22727:2007 and ISO 9186 (all parts) for rules regarding graphical symbols and frames.

3.23**pressel**

surface of the pushbutton which is pressed in order to activate the pushbutton

3.24**routeing information**

information, used by passengers to guide them on their journey, a guide as to which route to take to get to a required destination or facility and changes along that journey

Note 1 to entry: This can be temporary information to an event e.g. exhibition or sporting event but NOT any form of commercial advertising.

3.25**spoken information**

information audibly communicated in words

Note 1 to entry: This can be direct, pre-recorded or synthesized information.

3.26**standard toilet**

toilet not designed to be accessible to a passenger in a wheelchair

3.27**station**

any form of infrastructure where a train operates and passengers can board or alight in normal operation

3.28

step nose

step nosing

intersection point of the projections of horizontal and vertical surfaces of a step

Note 1 to entry: This is illustrated in EN 16586-1:2025, Annex B showing example step noses.

3.29

tactile

information that is relayed through the physical sense of touch

Note 1 to entry: Tactile signs, controls, symbols, pictograms, guide path and Braille or raised characters are a physical means by which tactile information is provided.

3.30

transparent obstacle

obstacle that allows objects or images to be seen as if there were no intervening material, seen through with a level of clarity

Note 1 to entry: Transparency in this standard is when an obstacle allows at least 50 % direct light transmission.

3.31

universal toilet

toilet designed to be used by all passengers including passengers in wheelchairs

3.32

visual acuity

threshold of the capacity of the eye to perceive fine details of a visual object (a sign), the recognizability of which depends on the visual angle

3.33

visual information

written information, pictograms and markings

3.34

wheelchair space

designated space in the passenger compartment for a wheelchair user and their wheelchair

3.35

written information

information visually communicated in words, letters and numerals, excluding pictograms and markings

4 Symbols and abbreviations

For purposes of this document, the symbols and abbreviations in Table 1 and Table 2 apply.

Table 1 — Abbreviations

Abbreviation	Designation
CIE	Commission Internationale de l'Eclairage.
EN	European Standard
ISO	the International Organization for Standardization
LRV	Light Reflectance Value
NCS	Natural Colour System
PRM	Persons with disabilities and persons with reduced mobility
TSI	Technical Specification for Interoperability
UV	Ultraviolet light

Table 2 — Symbols

Symbol	Designation	Unit
E_F	brightness of extraneous light	
k	unit of contrast	
K	correlated colour temperature (of a light source)	Kelvin
K_{eff}	the effective contrast	
L	unit of luminance in candela per square metre	cd/m ²
L_o	the LRV of the object	
L_1	the luminance for self-lit displays when off	cd/m ²
L_2	the luminance for self-lit displays when on	cd/m ²
L_c	the LRV of the character (signage only)	
L_F	the luminance generated by extraneous light	cd/m ²
L_h	the LRV of the background or adjacent surface	
lx	illuminance	lux
m	length	metre
mm	length	millimetre
nm	length (one billionth of a metre)	nanometre
ρ_A	reflectance value of surface of the display	

5 Requirements and assessment

5.1 General

The fonts, symbols and pictograms used for visual information shall contrast with their background.

Contrast shall be assessed according to Annex A.

All dimensions in the Figures are in millimetres (mm) unless otherwise stated.

Colours used in the Figures in this document are for illustrative purposes only and not to be considered as demonstrating compliance.

5.2 Infrastructure

5.2.1 Obstacle-free routes

5.2.1.1 Horizontal circulation

Where thresholds are installed on a horizontal route, they shall contrast with the surrounding floor and shall not be higher than 25 mm.

- Contrast shall be assessed according to Annex A.
- Assessment of height shall be according to EN 16587:2025.

5.2.1.2 Vertical circulation

As a minimum the first and last steps of a flight of stairs shall be indicated by a contrasting band. This shall apply from a single step.

- Contrast shall be assessed according to Annex A.

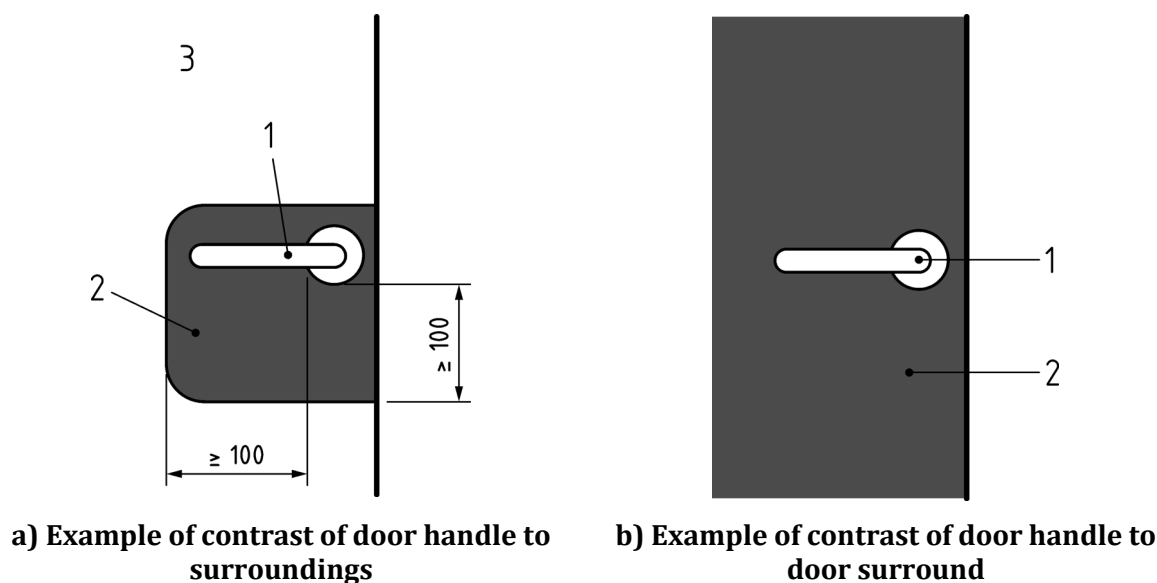
5.2.2 Doors and entrances

This clause applies to all doors and entrances that are on obstacle-free routes according to EN 16587:2025 with the exception of doors giving access to the toilets which are not dedicated to persons with disabilities and persons with reduced mobility.

If pushbuttons or other control devices are provided for operation of doors, then each pushbutton or device shall contrast with its surroundings:

- Contrast shall be assessed according to Annex A;
- The surroundings shall be defined as 100 mm in at least two directions (at least 90 degrees apart) from the edge of the control bezel outwards over at least the full width of that control (the resultant area shall be at least 20 000 mm²) see Figures 1a and 1b;
- The control for the doors if it is a pushbutton shall be assessed as the pressel, the illuminating halo and the bezel combined which shall have a minimum area of 5 000 mm². See Figure 2.

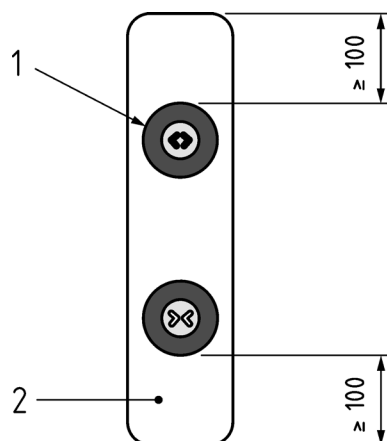
Dimensions in millimetres

**Key**

- 1 Door control device (handle)
- 2 a) Surroundings (may be the whole door or minimized as dimensioned)
b) Surroundings (door)
- 3 The rest of the door when localized contrast is used

Figure 1 — Examples of contrast of door handles

Dimensions in millimetres

**Key**

- 1 Door control device (for example pushbutton)
- 2 Contrasting surface, min. 20 000 mm², min. 100 mm in at least two directions from a cluster of pushbuttons

Figure 2 — Example of contrast of pushbuttons to background

5.2.3 Transparent obstacles

Transparent obstacles on or along the routes used by passengers, consisting of glass doors or transparent walls, shall be marked. These markings shall highlight the transparent obstacles.

— Assessment shall be according to ISO 21542:2021 or appropriate national or regional standards.

These markings shall:

i. Contrast with the background against which they are viewed.

— Contrast shall be assessed according to Annex A.

NOTE 1 The background is the area behind the obstacle as viewed in the direction of passenger movement.

or

ii. Consist of two separate colours that have a minimum difference in LRV of 60 points and comply with requirements in B.3.

NOTE 2 60-point difference in LRV achieves contrast against varying lighting conditions and backgrounds.

iii. If the obstacle can be approached from two different directions the requirement shall be met on each side that the obstacle can be approached.

iv. These markings are not required along transparent walls if passengers are protected from impact by other means – for example, by handrails or continuous benches.

5.2.4 Furniture and free-standing devices

All items of furniture and free-standing devices at stations shall contrast with their background:

— Contrast shall be assessed according to Annex A or

— According to ISO 21542:2021 or

— According to appropriate national or regional standards.

5.2.5 Handrails

Handrails shall contrast with the surrounding wall colours:

— Contrast shall be assessed according to Annex A.

NOTE The surrounding wall is the surface immediately behind the handrail.

Where used, stainless steel handrails shall meet the appropriate requirements of Clause 6.

5.2.6 Platform danger area and edge of platform

1) The danger area of a platform commences at the rail side edge of the platform and is defined as the area where passengers are not allowed to stand when trains are passing or arriving.

— The danger area shall be according to National Standards or Guidance.

2) The boundary of the danger area, furthest from the rail side edge of the platform, shall have visual marking and tactile walking surface indicators.

- The tactile walking surface indicators shall be according to EN 16584-2:2025.
- 3) The visual marking shall be a contrasting, slip resistant, warning line with a minimum width of 100 mm:
 - Contrast shall be assessed according to Annex A;
 - The surface, with which the warning line shall contrast, is the immediately adjacent area of the platform;
 - Slip resistance shall be assessed according to EN 16584-3:2025.
- 4) The width shall be measured horizontally and perpendicular to the track.
- 5) The rail side edge of the platform shall contrast with the darkness of the gap.

NOTE As this refers to the gap, it assumes that a train is present and casting a shadow, so the gap is therefore dark and assumed to have an LRV of 0.
- 6) The LRV of the rail side edge of the platform shall be defined and measured according to Clause 6 (Methodologies for assessing contrast).
- 7) The LRV of the rail side edge of the platform shall be greater than 30 points.
- 8) If the gap is illuminated by artificial lighting from below, 30 points difference to that gap shall be demonstrated.

5.2.7 End of platform

Where there is no physical barrier that prevents public access, then the end of the platform shall have a visual marking and tactile walking surface indicators with an attention pattern indicating a hazard.

- Contrast of the visual marking shall be assessed according to Annex A;
- The tactile walking surface indicators shall be assessed according to EN 16584-2:2025;
- For contrast requirement for the barrier this shall be assessed according to free-standing device, 5.2.4.

5.3 Rolling stock

5.3.1 Seats

Handholds or other items that can be used for personal stability shall contrast with the seat:

- Contrast shall be assessed according to Annex A.
- The surface of the seat that the handhold shall contrast against is the surface that can be viewed in the normal use of that handhold i.e. the front and/or back of the seats depending on the application see Figure 3.