



BSI Standards Publication

Railway applications — Brake indicators

National foreword

This British Standard is the UK implementation of EN 15220:2025. It supersedes BS EN 15220:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RAE/4/-/1, Railway applications - Braking.

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Railway applications - Brake indicators

Applications ferroviaires - Indicateurs de freins

Bahnanwendungen - Bremsanzeigevorrichtungen

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European foreword

This document (EN 15220:2025) 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of an identical text or by endorsement, at the latest by January 2026, and conflicting national standards shall be withdrawn at the latest by January 2026.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 15220:2016.

EN 15220:2025 includes the following significant technical changes with respect to EN 15220:2016:

- Scope has been modified;
- Normative references have been updated;
- Clause 5 “Requirements” has been revised and restructured;
- Clause 6 “Type test methods” has been revised;
- Clause 7 “In Service assessment” has been revised and restructured (new informative Annex B added);
- Clause 8 “Routine tests” has been deleted;
- Clause 9 “Designation” has been deleted;
- Annex ZA has been deleted.

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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1 Scope

This document specifies the requirements for the function, design, performance and testing of brake indicators. It applies to brake indicators visible from the outside of the rail vehicle.

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 45545-2, *Railway applications — Fire protection on railway vehicles — Part 2: Requirements for fire behaviour of materials and components*

EN 50121-3-2, *Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus*

EN 50125-1:2014, *Railway applications - Environmental conditions for equipment - Part 1: Rolling stock and on-board equipment*

EN 50155:2021, *Railway applications - Rolling stock - Electronic equipment*

EN 60423, *Conduit systems for cable management - Outside diameters of conduits for electrical installations and threads for conduits and fittings*

EN 60529:1991¹, *Degrees of protection provided by enclosures (IP Code)*

EN 60721-3-5, *Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 5: Ground vehicle installations*

EN 61373, *Railway applications - Rolling stock equipment - Shock and vibration tests*

EN ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads - Part 2: Verification by means of limit gauges (ISO 228-2:1987)*

EN ISO 6270-2, *Paints and varnishes - Determination of resistance to humidity - Part 2: Condensation (in-cabinet exposure with heated water reservoir) (ISO 6270-2:2017)*

EN ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227:2022)*

EN ISO 24478:2024, *Railway applications - Braking - General vocabulary (ISO 24478:2023, including corrected version 2024-04)*

ISO 5208, *Industrial valves — Pressure testing of metallic valves*

ISO 4975, *Railway applications — Braking system — Quality of compressed air for pneumatic apparatus and systems*

¹ As impacted by EN 60529:1991/corrigendum May 1993, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/AC:2016-12-02 and EN 60529:1991/A2:2013/AC:2019-02

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 24478:2024 and the following 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
uncertain braking status of a parking brake
condition where the parking brake indication becomes uncertain in case of isolated parking brake with possibility of manual release or, e.g. lack of air pressure in a pneumatic brake system

3.2
application status of the brake unit
condition which indicates that the brake is applied or not completely released

3.3
release status of the brake unit
condition which indicates that the brake is released

4 Symbols and abbreviated terms

U_n nominal voltage

UV ultraviolet (UV irradiation)

" inch

IP International Protection Marking as defined in EN 60529:1991¹

RAL colour standardization system of the German Institute for Quality Assurance and Certification e.V.

NOTE IP is a coding system to indicate the degrees of protection provided by an enclosure against access to hazardous particles, ingress of solid foreign objects, ingress of water and to give additional information in connection with such protection.

5 Requirements

5.1 Functional requirements

5.1.1 General

Brake indicators shall be able to display the status of the brake unit. Different forms of energy may be used, e.g. air pressure or electricity.

5.1.2 Application/release status

In normal operation the application status of the brake unit shall be displayed with red colour and the release status of the brake unit shall be displayed with green colour.

When the input signal follows an increase of the braking force, the brake indicator shall be designed to switch from "released status" to "applied status" at the latest for defined value of input signal. In case of pneumatic input signal this value shall be not more than 0,8 bar.

When the input signal follows a decrease of the braking force, the brake indicator shall be designed to switch from “application status” to “release status” at the latest for defined value of input signal. In case of pneumatic input signal this value shall be lower or equal to 0,3 bar but higher or equal to 0,1 bar.

The operating conditions of the application/release flag and its change in status shall be tested in accordance with 6.3.8.

5.1.3 Lubrication (pneumatic brake indicator)

The brake indicator shall operate at the air pressure range defined by this document without additional lubrication between overhauls.

5.1.4 Leakage (pneumatic brake indicator)

The sealing arrangement within the brake indicator shall prevent any unacceptable loss of air. The allowable loss of air shall be less than the leakage values when tested in accordance with 6.3.7.1.

5.1.5 Electrical characteristics

For pneumatic brake indicators, the electrical circuits within the brake indicator shall withstand an insulation test of at least 500 V DC and a dielectric test (flash test) in accordance with EN 50155:2021. This requirement shall be tested in accordance with 6.3.5 and 6.3.6.

For electrical brake indicators the requirements of EN 50155:2021 and EN 50121-3-2 shall apply.

5.2 Operating conditions

5.2.1 Shock and vibration

The brake indicator shall be able to operate without restriction under shock and vibration conditions as specified in EN 61373, category 1, class B, body mounted or category 2, bogie mounted. This shall be tested in accordance with 6.3.9.

The brake indicator shall be able to withstand shocks and shall be tested in accordance with 6.3.10.

5.2.2 Altitude

The brake indicator shall be able to operate without restrictions up to an altitude of 2 000 m above sea level.

5.2.3 Temperature

Brake component shall be able to operate within the temperature class TX as specified by EN 50125-1:2014, where the upper limit for TX is +70 °C external air temperature. This requirement shall be tested in accordance with 6.3.7 and 6.3.8.

5.2.4 Humidity

The following external humidity levels shall be considered:

- yearly average: ≤ 75 % relative humidity;
- on 30 days in the year continuously: between 75 % and 95 % relative humidity;
- on the other days occasionally: between 95 % and 100 % relative humidity;
- maximum absolute humidity: 30 g/m³ occurring in tunnels.

An operationally caused infrequent and slight moisture condensation shall not lead to any malfunction or failure.