

Railway applications - Current collection systems -  
Requirements for and validation of measurements of  
the dynamic interaction between pantograph and  
overhead contact line

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 50317:2025 sisaldab Euroopa standardi EN 50317:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.12.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 50317:2025 consists of the English text of the European standard EN 50317:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 19.12.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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ICS 29.280, 45.060.10

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ICS 29.280; 45.060.10

Supersedes EN 50317:2012; EN 50317:2012/AC:2012;  
EN 50317:2012/A1:2022

English Version

Railway applications - Current collection systems -  
Requirements for and validation of measurements of the  
dynamic interaction between pantograph and overhead contact  
line

Applications ferroviaires - Systèmes de captage de courant  
- Prescriptions et validation des mesures de l'interaction  
dynamique entre le pantographe et la caténaire

Bahnanwendungen - Stromabnahmesysteme -  
Anforderungen und Validierung von Messungen des  
dynamischen Zusammenwirkens zwischen Stromabnehmer  
und Oberleitung

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## European foreword

This document (EN 50317:2025) has been prepared by CLC/SC 9XC, “Electric supply and earthing systems for public transport equipment and ancillary apparatus (Fixed installations)”, of CLC/TC 9X, “Electrical and electronic applications for railways”.

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) 2026-12-31
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2028-12-31

This document supersedes EN 50317:2012 and all of its amendments and corrigenda (if any).

EN 50317:2025 includes the following significant technical changes with respect to EN 50317:2012:

- changed definitions for “collector head” replaced by “pantograph head” (3.1);
- changed definitions for “total mean uplift force” replaced by “mean cord force” (3.1);
- new definition “expansion length” (3.1);
- changed definitions “arcing” (3.1);
- added definition for “nominal voltage” (3.1);
- new definition “reference threshold”, “measurement threshold” and “reference distance” (3.1);
- updated abbreviation lists (now 3.2);
- minimum conditions recorded for measurements (Clause 4);
- more detailed explanation of measurement of cord forces (Clause 5);
- measurement of contact force (Clause 6);
  - updated requirements for definitions of requirements;
  - aerodynamic influence, Inertia correction force, Aerodynamic correction force;
  - definition of Dynamic laboratory test of the instrumented pantograph;
  - updated requirements for of measurement results, control section possible acceptable exceptions;
- measurement of displacement (Clause 7);
  - uplift at the support how to achieve representative results;
- measurement of times during pantograph lowering (Clause 8);
- measurement of arcing (Clause 9);

- removed wavelength 323 nm – 329 nm;
- reference threshold values from note to normative;
- more detailed definition of control section and possible acceptable exceptions;
- more detailed definition of Adjustment of threshold for the measurement distance.

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

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

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

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## 1 Scope

This document specifies the functional requirements for output and accuracy of measurements of the dynamic interaction between pantograph and overhead contact line.

## 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 50318:2018,<sup>1</sup> *Railway applications - Current collection systems - Validation of simulation of the dynamic interaction between pantograph and overhead contact line*

EN 50206-1:2010, *Railway applications - Rolling stock - Pantographs: Characteristics and tests - Part 1: Pantographs for main line vehicles*

## 3 Terms, definitions and abbreviations

### 3.1 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/>

#### 3.1.1

##### **pantograph**

apparatus for collecting current from one or more contact wires, formed of a hinged device designed to allow vertical movement of the pantograph head

[SOURCE: IEC 60050-811:2017, 811-32-02]

#### 3.1.2

##### **pantograph head**

##### **pantograph pan**

part of the pantograph comprising the contact strips and their mountings, horns and possibly a suspension

[SOURCE: IEC 60050-811:2017, 811-32-05]

#### 3.1.3

##### **contact point**

<for a pantograph> point of mechanical contact between a contact strip and a contact wire

#### 3.1.4

##### **contact force**

<for a pantograph> vertical force applied by the pantograph to the contact wire(s)

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<sup>1</sup> As impacted by EN 50318:2018/A1:2022.