

ICS 29.280
CCS S 35



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43790-2024

**Railway applications - Current collection systems - Technical
criteria for the interaction between pantograph and overhead
contact line**

(English Translation)

Issued on: March 15, 2024

Implemented on: October 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Symbols and abbreviations
5 Spatial geometric features
6 Contact materials
7 Interaction performance
8 Operation Requirements
Appendix A (Normative) Special requirements
Appendix B (Informative) General characteristic parameters of bow head
Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is modified to adopt IEC 62486:2017 "Criteria for interaction between pantograph and catenary in rail transit current collection system (interconnection)" Pass).

This document has made the following structural adjustments compared to IEC 62486:2017.

---A.4 corresponds to A.4 and A.5 of IEC 62486:2017.

This document has many technical differences compared to IEC 62486:2017.

These technical differences and their reasons are as follows.

--- Deleted the description of "the parameters and values of this document apply to all planned lines and new lines" in the scope of application (see Section 1 Chapter), in order to meet the application requirements of our country;

--- Added "This document applies to railways and urban rail transit using AC or DC overhead contactors that comply with GB/T 1402 the current receiving system of the network (see Chapter 1) is in accordance with the application requirements of my country;

--- Added normative references GB/T 1402, GB/T 21561.2-2018, GB/T 32591, GB/T 36981, TB/T 2809 (see Chapter 1, 5.2.7, 5.3.1, 6.2, 6.3, 7.2, 7.3) to adapt to my country's technical conditions and improve operability;

--- IEC 60050-811:1991 (see Chapter 3) has been replaced by the normative reference GB/T 2900.36 to adapt to my country's technology Conditions and improve operability;

--- Changed the additional information in the definition to notes (see 3.1, 3.2, 3.7) to conform to my country's national conditions;

--- The terms "maximum contact line design height" and "minimum contact line height" are deleted and are indicated by notes in 5.2.3 (see Chapter 3).

Use 1 time;

--- Changed the English term "contact wire gradient" to "contactwiregradient" (see 3.19), keeping the same as the Chinese Consistent;

--- The term "current loss" (see Chapter 3) has been deleted, which is not suitable for my country's national conditions;

--- Changed the maximum design height of the contact line from 6.2m to 6450mm (see 5.2.3) to meet my country's national conditions;

--- Changed the line classification and height range requirements in Table 1 (see 5.2.3) to adapt to the characteristics of the overhead contact system used in my country's railways the breadth of

--- The definition of the permissible contact line slope and the change of contact line height in special sections (see 5.2.4) have been deleted to conform to my country's national conditions;

--- Deleted "determine different wind speeds and pantograph lengths according to the transportation requirements of different lines" (see 5.2.5), the content is concise;

--- Deleted the description of 1600mm pantograph (see 5.2.5, 5.3.2.2, 5.3.2.3, A.2), which is not suitable for my country's national conditions;

--- Deleted "The design of the neutral section shall meet the requirements of multiple train pantographs arranged according to A.1.5, and the pantograph spacing shall be the minimum.

The maximum distance can reach 400m", the power failure over-phase technical matching requirements were added, and the "compatibility of the neutral section and the pantograph spacing" was changed.

"See Article 8" means "shall comply with the provisions of A.1" (see 5.2.7) to meet the application requirements of my country;

---Change "The maximum pantograph operating height is 6500" to "The maximum value of AC railway should be greater than 6500mm and the minimum value should be less than 5150mm. The maximum working height of DC railway should be greater than 5800mm and the minimum should be less than 3980mm (see 5.3.1) to meet the application requirements of my country;

--- Added the figure of "continuous bow head profile, i.e. the outer contour of the pantograph of the non-independent suspension slide bow head" (see 5.3.2.2) to facilitate standardization understanding of use;

---According to the use of pantographs in my country, the maximum slope requirement outside the transition zone of the pantograph head is 30° when the pantograph section is downward.

Changed to 40°, and added the requirement that the difference between the two angles in Figure 3 should be less than 10° (see 5.3.2.3);

--- Changed the requirements for skateboard material (see 6.3) to suit my country's national conditions;

--- Deleted the descriptions related to construction and operation management such as "infrastructure manager" or "railway company" (see 6.3, 7.3, Table 7), which are not suitable for our national conditions;

--- Replaced IEC 62499:2008 (see 6.3) with the normative reference GB/T 34572 to adapt to my country's technical conditions and improve Operability;

--- The performance of the pantograph-catenary interaction should be evaluated for compliance (see 7.1) has been deleted, and the management-related requirements are not included in this document;

--- Deleted the current-dependent parameters of the contact network and the definition of static contact force (see 7.2) to avoid duplication;

--- According to the application of railways in my country, the current limit of running trains and contact network is changed from "complying with Table 2" to "complying with 7.1 in GB/T 28027-2011" (see 7.2);

---The DC1.5kV test value is changed from 90N to 120N (see 7.2) to suit my country's national conditions;

--- Deleted the corresponding data and requirements of "DC3kV" (see Table 4, Table 6, A.4), which are not suitable for my country's national conditions;

--- Deleted "The dynamic performance of pantographs and overhead lines limits the acceptable number of pantographs and their minimum spacing (see Table 8)", added Added "Dynamic performance requirements should be verified by evaluating the contact wire lift parameters" and added "In engineering applications, it is necessary to determine which the

specific application description of "evaluating the measurement system" adds the simulation evaluation of dynamic performance in the design of the pantograph-catenary current collection system the offline and offline rate requirements (see 7.3) should be met to meet the railway application conditions in my country;

--- The normative reference GB/T 32592 replaces IEC 62846:2016 (see Section 7.3) to adapt to my country's technical conditions and improve High operability;

--- Added arcing evaluation requirements for AC railways in my country (see 7.3) to meet my country's national conditions;

--- Changed the speed from 320km/h to 350km/h (see 7.3) to suit my country's national conditions;

--- Deleted the technical requirements of Europe and Japan (see 7.3, Appendix A), which are not suitable for my country's national conditions;

--- Added the performance requirements of the automatic bow lowering device (see 8.1) to meet the national conditions of my country;

--- The minimum distance between adjacent pantographs has been deleted, and the requirement for the distance between pantographs when the pantographs are online has been added (see 8.2), which is not suitable for my country National conditions;

--- According to the application of my country's railways, the "neutral section principle" is changed to "short neutral section", and the "working pantograph spacing L should be Comply with the provisions of Table 8.It can only be used when the working pantograph spacing L is.200m" (see A.1.1);

--- According to the application of railways in my country, the three pantographs in Figure A.2 are changed to two pantographs (see A.1.2);

--- According to the application situation of my country's railways, "short neutral section" is changed to "device-type phase separation (neutral section)", and the neutral section (d) is deleted.

According to the requirements, the 2 d-zone device diagram in Figure A.3 is changed to a 3 d-zone device diagram (see A.1.3);

--- According to the application of my country's railways, the "multi-break neutral section" is changed to "three-break phase separation". The three pantographs in Figure A.4 show Meaning. 2 pantographs (see A.1.4);

--- Deleted the requirements for the arrangement of pantographs on trains (see A.1), which is not suitable for my country's national conditions;

--- According to the application of railways in my country, the "recommended profile of the pantograph head" is changed to "the pantograph head wheel with a length of 1950mm".