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

GB/T 45023-2024

**Automation systems and integration - Measuring methods for
CAN bus controller**

自动化系统与集成 CAN总线控制器测试方法

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	1
5 Test Requirements	2
5.1 General	2
5.2 Functional Verification Requirements	2
5.3 Electrical parameter test requirements	2
5.4 Test Environment	2
6 Test Method	2
6.1 Register Read and Write	2
6.2 Standard frame message transmission and reception	3
6.3 Extended frame message transmission and reception	4
6.4 Remote frame message transmission and reception	5
6.5 Overload frame sending	5
6.6 Bus Arbitration	6
6.7 Message reception filtering	7
6.8 Error Handling	8
6.9 Node shutdown	9
6.10 DC parameters	9
10 Reference	12

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. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Automation System and Integration Standardization Technical Committee (SAC/TC159). This document was drafted by: Beijing Zhenxing Metrology and Testing Institute, Beijing Remote Sensing Equipment Institute, Beijing Institute of

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1 Scope

GB/T 45023-2024 gives the Chinese test methods for CAN bus controllers. CAN remains the backbone of industrial and vehicle control networks, and a controller that is subtly non-conformant is the worst kind of fault to have on one: it works on the bench and fails intermittently on a loaded bus, because the defects that matter are in bit timing, resynchronisation, error confinement and arbitration behaviour rather than in the ordinary transmission of frames. The standard sets the test requirements, the general conditions and the functional verification requirements, and then the methods: the verification of the frame formats and the acceptance filtering, the bit timing and sampling point measurement, the synchronisation and resynchronisation behaviour, the arbitration under contention, the error detection, the error counters and the transitions between error active, error passive and bus off states, the overload and retransmission behaviour, and the electrical and timing measurements at the interface. It takes effect on 1 June 2025.

This document describes the methods for functional verification and electrical parameter testing of CAN bus controllers. This document is applicable to the functional verification and electrical parameter testing of CAN bus controllers.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 41588.1-2022 Road Vehicle Controller Area Network (CAN) Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 identifier identifier; ID A symbol that characterizes the arbitration priority of a particular frame.

3.2 Overload frame overloadframe A frame type used to notify the sending node that the

receiving node is not ready to receive the next frame of data.

3.3 remoteframe Requests a frame to send the specified data frame.

3.4 Standard frame format baseframeformat Using an 11-bit ID, only one bit rate is used for transmission, and a frame contains a maximum of 8 data bytes in data frame or remote frame format.

3.5 Extended frame format extendedframeformat Using a 29-bit ID, only one bit rate is used for transmission, and a frame contains a maximum of 8 data bytes in data frame or remote frame format.

4 Abbreviations

The following abbreviations apply to this document.