

ICS 43.180
CCS R 86



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

GB/T 33191-2025

Replacing GB/T 33191-2016

**Technical conditions for computer control and interactive
communication of motor vehicle safety inspection equipment**

机动车安全技术检测仪器设备计算机控制与通信技术条件

Issued on: August 29, 2025

Implemented on: March 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Preface	III
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Transmission interface and communication method	1
5 Data frame format	2
6 Communication Commands and Transmission	2
7 Communication Process	6
8 Communication Time Constraints	9
Appendix A (Normative) Tire Tread Depth Automatic Measurement Communication Process	10
Appendix B (Normative) Steering wheel maximum free rotation measurement communication process	12
Appendix C (Normative) Communication Process for Automatic Measurement of External Dimensions	14
Appendix D (Normative) Steering wheel lateral slip detection communication process	16
Appendix E (Normative) Wheel (Axle) Load Detection Communication Process	18
Appendix F (Normative) Braking Performance Test (Roller Reaction Type) Communication Process	20
Appendix G (Normative) Braking Performance Test (Tablet Type) Communication Process	26
Appendix H (Normative) Curb Mass/Unloaded Vehicle Mass Testing Communication Process	31
Appendix I (Normative) Headlamp Detection Communication Process	33
Appendix J (Normative) Communication Process for New Energy Vehicle Operation Safety Performance Testing	38
Appendix K (Normative) Service Braking Performance Test (Road Test) Communication Process	46
Appendix L (Normative) Parking Brake Performance Test (Traction Method) Communication Process	48
Appendix M (Normative) Speedometer Indication Error Detection Communication Process	51
Appendix N (Normative) Front Wheel Steering Angle Detection Communication Process	53
Appendix O (Informative) Trusted Communication Mechanism and Signature Algorithm ..	55

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 replaces GB/T 33191-2016 "Technical Requirements for Computer Control and Communication of Motor Vehicle Safety Technical Testing Instruments and Equipment" and Compared with GB/T 33191-2016, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 2016 edition);
- b) Deleted the requirements for the serial interface transmission rate range (see 3.2.3 of the 2016 edition);
- c) Changed the technical requirements for network communication (see 4.2.2, 3.3 of the 2016 edition);
- d) Deleted CANBUS and optical fiber from other interfaces (see 3.4 of the 2016 edition);
- e) Added technical requirements for Universal Serial Bus (USB) interface and Bluetooth interface (see 4.2.3 and 4.2.4);
- f) The data frame format has been changed (see Chapter 5, 5.2 of the 2016 edition);
- g) Changed the directive classification (see 6.1, 4.2 of the 2016 edition);
- h) Added the command to set session key (see 6.1);
- i) Added parsing of signature error response instructions (see 6.2.1.4);
- j) Added parsing of the Set Session Key command (see 6.2.2);
- k) Added session flow (see 7.1);
- l) Deleted the serial interface wiring method (see Appendix A of the 2016 edition);
- m) Added the tire tread depth automatic measurement communication process (see Appendix A);
- n) Added the communication process for measuring the maximum free rotation of the steering wheel (see Appendix B);
- o) Added the communication process for automatic measurement of external dimensions (see Appendix C);

- p) The communication process for detecting the lateral slip of the steering wheel has been modified (see Appendix D and Appendix C of the 2016 edition);
- q) The communication process for brake performance testing (roller reaction type) has been modified (see Appendix F and Appendix E of the 2016 edition);
- r) The communication process for brake performance testing (tablet type) has been modified (see Appendix G and Appendix F of the 2016 edition);
- s) The communication process of the wheel deflection test station has been deleted (see Appendix G of the 2016 edition);
- t) Added the communication process for curb weight/unladen weight testing (see Appendix H);
- u) Added the communication process for new energy vehicle operation safety performance testing (see Appendix J);
- v) Added the communication process for driving brake performance test (road test) (see Appendix K);
- w) Added the communication process for parking brake performance test (traction method) (see Appendix L);
- x) Added front wheel steering angle detection communication flow (see Appendix N);
- y) Added trusted communication mechanism and signature algorithm (see Appendix O).

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 and coordinated by the National Technical Committee for Standardization of Motor Vehicle Operation Safety Technical Testing Equipment (SAC/TC364).

This document was drafted by: South China University of Technology, China Testing Technology Research Institute, Chengdu Product Quality Inspection Research Institute Co., Ltd., Shandong Jiaotong Vocational College, Shenzhen Anche Testing Co., Ltd., Guangzhou Jingu Intelligent Testing Technology Co., Ltd., Shenzhen Bang Intelligent Technology Group (Qingdao Island) Co., Ltd., Guangzhou Huagong Motor Vehicle Inspection Technology Co., Ltd., Guangzhou Fuli Analytical Instrument Co., Ltd., Shandong Jianlan Information Technology Co., Ltd.

Co., Ltd., Anhui Qiangkeda Intelligent Technology Co., Ltd., Shijiazhuang Huayan Transportation Technology Co., Ltd., Sichuan Tourism Investment Digital Information Industry Development Co., Ltd.

Limited Liability Company, Sichuan Shangtou Information Technology Co., Ltd., Xihua University, and Chengdu Tianchuang Precision Industry Co., Ltd.

The main drafters of this document are: Hong Jialong, Li Hai, Guo Wensheng, Fan Yujian, Wang Baoqiang, Li Mindong, Zhang Zeqian, Ye Ming, Wang Yuehuai, Wan Zhengjun, Wang Lefeng, Yang Huaxi, Di Jianhui, Huang Ping, Wang Hong, Zeng Linjun, Kong Wei, Chen Chunmei, Yang Luping, Liu Xingwei, Qin Yang, and Li Cui.

This document was first published in 2016 and this is the first revision.

Motor vehicle safety technology testing equipment Computer control and communication technology requirements

1 Scope

This document specifies the transmission interface and communication mode, data frame format, and computer control and communication of motor vehicle safety technology testing equipment.

format, communication instructions and transmission, communication process and communication time constraints.

This document applies to instruments and equipment used for motor vehicle safety technical testing.

2 Normative references

GB/T 42685-2023

3 Terms and Definitions

The terms and definitions defined in GB/T 42685-2023 and the following apply to this document.

3.1 control system

Apply computer technology to realize the monitoring of vehicle inspection equipment status, vehicle inspection process management, inspection data collection and processing A system for processing, exchanging and displaying related information.

4.1 Interface Type

Motor vehicle inspection instruments and equipment should choose serial ports, network, universal serial bus (USB), Bluetooth and other interfaces.

4.2.1 Serial Communication

4.2.1.1 It should support standards such as RS-232-C, RS-422 or RS-485.

4.2.1.2 The underlying communication protocol shall adopt asynchronous serial mode, and