COMMITTEE DRAFT ISO/CD 14230-4	
Date	Reference number **ISO/TC 22/SC 3 N**
Supersedes document	

THIS DOCUMENT IS STILL UNDER STUDY AND SUBJECT TO CHANGE. IT SHOULD NOT BE USED FOR REFERENCE PURPOSES.

ISO/TC 22/SC 3

Title
Véhicules routiers - Equipement électrique et électronique

Secretariat
FAKRA

Circulated to P- and O-members, and to technical committees and organizations in liaison for :

☐ discussion at

☐ comments by

☐ voting (P-members only: ballot form attached) for approval for registration as a DIS (see 2.5.6 of part 1 of the ISO/IEC Directives), by

P-members of the technical committee or sub-committee concerned have an obligation to vote.

Road vehicles - Diagnostic systems - Keyword Protocol 2000 - Part 4 : Requirements for emission related systems

Partie 4 :

Reference language version : ☐ English ☐ French ☐ Russian

Introductory note

FORM 7 (ISO)

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organisations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

- Part 1: Physical layer

- Part 2: Data link layer

- Part 3: Application layer

- Part 4: KWP 2000 requirements for emission related systems.

Annex A of this International Standard is for information only.

0 Introduction

This International Standard contains references to SAE publications, which are regularly amended/updated without any visible change (neither in the numbering, nor any additive letter, etc.). To ensure precisely to which particular edition this International Standard refers to, Annex A gives the precise dates of the SAE publications.

1 Scope

This International Standard specifies the requirements for the Keyword protocol 2000 (KWP 2000) data link and connected vehicle and scan tool when used to comply with On-Board Diagnostic (OBD) requirements for emission related test data.

This International Standard only specifies restrictions to Keyword protocol 2000 for OBD purpose. Complete specification can be found in ISO/DIS 14230 Parts 1 to 3 (KWP 2000) and in ISO/DIS 14229.

Only those sections of ISO/DIS 14230-1, ISO/DIS 14230-2 and ISO/DIS 14230-3 explicitely referenced in this standard are applicable for OBD purposes.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of the publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on the International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/DIS 14229: 1996, Road vehicles - Diagnostic systems - Diagnostic services specification.

ISO/DIS 14230-1: 1996, Road vehicles - Diagnostic systems - Keyword protocol 2000 - Part 1: Physical layer.

ISO/DIS 14230-2: 1996, Road vehicles - Diagnostic Systems - Keyword protocol 2000 - Part 2: Data link layer.

ISO/DIS 14230-3: 1996, Road vehicles - Diagnostic systems - Keyword Protocol 2000 - Part 3: Application layer.

ISO 9141-2: 1994, Road vehicles - Diagnostic systems - Part 2: CARB-requirements for interchange of digital information.

ISO/WD 15031-5: Road vehicles - Emission related diagnostic system - Communication between vehicle and external equipment - Part 5: Emission related diagnostic services

3 Physical layer

All sections of ISO/DIS 14230-1 are applicable for OBD purposes, except for the restrictions defined below.

There is no restriction for the physical layer. It should be noticed that ISO/DIS 14230-1 and ISO 9141-2 physical layers are fully compatible. The only difference between these two standards is that ISO/DIS 14230-1 additionally supports 24 V systems. Testers meeting this standard are not required to support communications with 24 V systems.

The baud rate is specified by the protocol and shall not be determined by measurement.

4 Data link layer

All sections of ISO/DIS 14230-2 are applicable for OBD purposes, except for the restrictions defined below.

4.1 Message structure

The header shall always consist of three bytes.

An optional length byte shall not be used. Data length shall be limited to 7 bytes for compatibility with J 1979 - (and/or ISO/WD 15031-5).

Bits A1A0 of format byte = 11, with address information and functional addressing shall be used for request messages.

Bits A1A0 of format byte = 10, with address information and physical addressing shall be used for response messages.

Functional address 33 H shall be used as target address for messages sent to the vehicle.

Target address of the responses shall be the source address included in the request.

Source address of the responses shall be the physical address of the ECUs.

4.2 Timing

Only the normal timing parameter set with default values shall be used for both the vehicle and the scan tool. Timing exceptions as described in ISO/DIS 14230-2 are not allowed.

4.3 StartCommunication service

ECU(s) (OBD related) shall only support one of the two following methods of initialisation :

- 5 baud initialisation;

- fast initialisation.

The scan tool shall support both methods:

- 5 baud initialisation;

- fast initialisation.

Keywords received by the scan tool can be 2025, 2027, 2029 and 2031. In any case, the scan tool and the vehicle shall only use the functionality of keyword 2025 (ie. 3 byte header, no additionnal length byte, normal timing).

In case 5 baud initialisation is used, then 5 bauds address shall be 33H and subsequent communication shall take place at 10 400 bauds.

4.4 Stop communication service

This service may be used by the the scan tool to stop the communication but shall be supported by the vehicule.

4.5 AccessTimingParameter service

The scan tool shall not support this service.

5 Diagnostic services

All sections of ISO/DIS 14229 and ISO/DIS 14230-3 are applicable for OBD purposes, except for the restrictions below.

5.1 Emission related services

Specification and implementation of emission related diagnostic services are specified in SAE J1979.

5.2 TesterPresent service

The vehicle shall support the testerPresent service to keep the communication active. This service shall be used within P_3 by the scan tool to maintain communication with the vehicle in case no test mode request is needed at this moment. No optional parameter shall be used, meaning that there shall always be a response to a request. The scan tool may support the testerPresent service or use another method to keep communication active.

5.3 Other diagnostic services

Support of the other diagnostic services is not required by this standard.

5.4 Negative responses

A module shall always respond to a request either with positive or negative response when no transmission error has been detected. Format and usage of negative responses are defined in ISO 14230-3.

In case a negative response is used, the response code included shall be one of the following:

10 generalReject

11 serviceNotSupported

12 subFunctionNotSupported-invalidFormat

21 busy-RepeatRequest

22 conditionsNotCorrect or requestSequenceError.

78 requestCorrectlyReceived-ResponsePending.

All negative responses response code 78 included shall be sent by the modules within P_2. The modules shall terminate with a positive response or a negative response with a code different from 78.

The scan tool shall ignore the content of the negative response messages and shall not perform the error handling actions as specified in ISO/DIS 14230-3.

Annex A (informative)
Bibliography

The attention of the user is drawn so that the relevant version of the SAE publication is the following:

SAE J1979 : June 1994, E/E Diagnostic test modes.

This list contains no provision that a more updated version is also valid as a reference to be used in this standard.