Second edition
2012-06-01

Road vehicles — Diagnostic communication over K-Line (DoK-Line) —

Part 1: Physical layer

Véhicules routiers — Communication de diagnostic sur la ligne K (DoK-Line) —

Partie 1: Couche physique

Reference number
ISO 14230-1:2012(E)

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Foreword

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The main task of technical committees is to prepare International Standards. 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.

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

ISO 14230-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition cancels and replaces the first edition (ISO 14230-1:1999), which has been technically revised.

ISO 14230 consists of the following parts, under the general title *Road vehicles — Diagnostic communication over K-Line (DoK-Line)*:

— *Part 1: Physical layer*

— *Part 2: Data link layer*

— *Part 3: Application layer*

— *Part 4: Requirements for emission-related systems*

Introduction

ISO 14230 has been established in order to define common requirements for vehicle diagnostic systems implemented on K-Line (UART based) communication link, as specified in this part of ISO 14230.

To achieve this, it is based on the Open Systems Interconnection (OSI) Basic Reference Model in accordance with ISO/IEC 7498-1 and ISO/IEC 10731, which structures communication systems into seven layers. When mapped on this model, the services specified by ISO 14230 are broken down into the following.

a) Diagnostic services (layer 7), specified in ISO 14229-6, ISO 14229-1;

b) Presentation layer (layer 6):

— vehicle manufacturer specific,

— legislated OBD: specified in ISO 15031-2, ISO 15031-5, ISO 15031-6, SAE J1930-DA, SAE J1979-DA, SAE J2012-DA,

— legislated WWH-OBD: specified in ISO 27145-2, SAE J1930-DA, SAE J1979-DA, SAE J2012-DA, SAE J1939 Appendix C (SPNs), SAE J1939-73 Appendix A (FMIs);

c) Session layer services (layer 5):

— legislated OBD: specified in ISO 14229-2,

— legislated WWH-OBD: specified in ISO 14229-2;

d) Transport layer services (layer 4), specified in ISO 14230-2;

e) Network layer services (layer 3), specified in ISO 14230-2;

f) Data link layer (layer 2), specified in ISO 14230-4, ISO 14230-2;

g) Physical layer (layer 1), specified in ISO 15765-4, ISO 14230-1.

This breakdown is shown in Table 1.

Table 1 — Enhanced and legislated OBD diagnostic specifications applicable to the OSI layers

<table>
<tr><th>Applicability</th><th>OSI 7 layer</th><th>Vehicle manufacturer enhanced diagnostics</th><th colspan="2">Legislated OBD (On-Board Diagnostics)</th><th colspan="2">Legislated WWH-OBD (On-Board Diagnostics)</th></tr>
<tr><td rowspan="8">Seven layers according to ISO 7498-1 and ISO/IEC 10731</td><td>Application (layer 7)</td><td>ISO 14229-1, ISO 14229-6</td><td colspan="2">ISO 15031-5</td><td colspan="2">ISO 14229-1, ISO 27145-3</td></tr>
<tr><td>Presentation (layer 6)</td><td>vehicle manufacturer specific</td><td colspan="2">ISO 15031-2, ISO 15031-5, ISO 15031-6, SAE J1930-DA, SAE J1979-DA, SAE J2012-DA</td><td colspan="2">ISO 27145-2, SAE 1930-DA, SAE J1979-DA, SAE J2012-DA, SAE J1939:2011 Appendix C (SPNs), SAE J1939-73:2010 Appendix A (FMIs)</td></tr>
<tr><td>Session (layer 5)</td><td colspan="5">ISO 14229-2</td></tr>
<tr><td>Transport (layer 4)</td><td rowspan="2">ISO 14230-2</td><td rowspan="2">ISO 15765-2</td><td rowspan="4">ISO 15765-4</td><td>ISO 15765-4, ISO 15765-2</td><td rowspan="3">ISO 27145-4</td></tr>
<tr><td>Network (layer 3)</td><td rowspan="3">ISO 15765-4, ISO 11898-1, ISO 11898-2</td></tr>
<tr><td>Data link (layer 2)</td><td>ISO 14230-2</td><td rowspan="2">ISO 11898-1, ISO 11898-2</td></tr>
<tr><td>Physical (layer 1)</td><td>ISO 14230-1</td></tr>
</table>

The application layer services covered by ISO 14229-6 have been defined in compliance with diagnostic services established in ISO 14229-1 and ISO 15031-5, but are not limited to use only with them. ISO 14229-6 is also compatible with most diagnostic services defined in national standards or vehicle manufacturers' specifications.