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Road vehicles — Unified diagnostic services (UDS) —

Part 6:
Unified diagnostic services on K-Line implementation (UDSonK-Line)

Véhicules routiers — Services de diagnostic unifiés (SDU) —

Partie 6: SDU sur l'implémentation de la ligne-K (SDUsurLigne-K)

Reference number
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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 organizations, 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 14229 consists of the following parts, under the general title *Road vehicles — Unified diagnostic services (UDS)*:

— *Part 1: Specification and requirements*

— *Part 2: Session layer services*

— *Part 3: Unified diagnostic services on CAN implementation (UDSonCAN)*

— *Part 4: Unified diagnostic services on FlexRay implementation (UDSonFR)*

— *Part 5: Unified diagnostic services on Internet Protocol implementation (UDSonIP)*

— *Part 6: Unified diagnostic services on K-Line implementation (UDSonK-Line)*

The following part is under preparation:

— *Part 7: Unified diagnostic services on Local Interconnet Network implementation (UDSonLIN)*

The titles of future parts will be drafted as follows:

— *Part n: Unified diagnostic services on … implementation (UDSon…)*

Introduction

This part of ISO 14229 has been established in order to enable the implementation of unified diagnostic services, as specified in ISO 14229-1, on K-Line (UART based) networks (UDSonK-Line).

To achieve this, it is based on the Open Systems Interconnection (OSI) Basic Reference Model specified in 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 14229 are divided into:

— Application layer (layer 7), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14229-1 / ISO 14229-6,

  — Legislated OBD: ISO°15031-5,

  — Legislated WWH-OBD: ISO 14229-1, ISO 27145-3;

— Presentation layer (layer 6), specified in:

  — Vehicle manufacturer enhanced diagnostics: not applicable,

  — Legislated OBD: SAE J1930-DA, SAE J1979-DA, SAE J2012-DA,

  — Legislated WWH-OBD: ISO 27145-2 with reference to SAE J1930-DA, SAE J1939 Companion Spreadsheet (SPNs), SAE J1939-73:2010, Appendix A (FMIs), SAE J1979-DA and SAE J2012-DA;

— Session layer services (layer 5), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14229-2,

  — Legislated OBD: ISO 14229-2,

  — Legislated WWH-OBD: ISO 14229-2;

— Transport layer services (layer 4), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14230-2,

  — Legislated OBD: ISO 15765-2, ISO 15765-4,

  — Legislated WWH-OBD: ISO 27145-4;

— Network layer services (layer 3), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14230-2,

  — Legislated OBD: ISO 15765-2, ISO 15765-4,

  — Legislated WWH-OBD: ISO 27145-4;

— Data link layer (layer 2), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14230-2,

  — Legislated OBD: ISO 11898-1, ISO 11898-2, ISO 15765-4,

  — Legislated WWH-OBD: ISO 27145-4;

— Physical layer (layer 1), specified in:

  — Vehicle manufacturer enhanced diagnostics: ISO 14230-1,

  — Legislated OBD: ISO 11898-1, ISO 11898-2, ISO 15765-4,

— Legislated WWH-OBD: ISO 27145-4;

in accordance with Table 1.

Table 1 — DoK-Line enhanced diagnostics, legislated OBD and WWH-OBD specification reference applicable to the OSI layers

<table>
<tr><th>Applicability</th><th>OSI 7 layers</th><th>Vehicle manufacturer enhanced diagnostics</th><th>Legislated OBD</th><th colspan="3">Legislated WWH-OBD</th></tr>
<tr><td rowspan="8">Seven layer according to ISO/IEC 7498-1
and
ISO/IEC 10731</td><td>Application (layer 7)</td><td>ISO 14229-1 / ISO 14229-6</td><td>ISO 15031-5</td><td colspan="3">ISO 14229-1 / ISO 27145-3</td></tr>
<tr><td>Presentation (layer 6)</td><td>Vehicle manufacturer specific</td><td>SAE J1930-DA / SAE J1979-DA / SAE J2012-DA</td><td colspan="3">ISO 27145-2, SAE J1930-DA, SAE J1939 Companion Spreadsheet (SPNs), SAE J1939-73:2010, Appendix A (FMIs), SAE J1979-DA, SAE J2012-DA</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, ISO 15765-4</td><td rowspan="2">ISO 15765-2, ISO 15765-4</td><td rowspan="4">ISO 27145-4</td><td rowspan="2">ISO 13400-2</td></tr>
<tr><td>Network (layer 3)</td></tr>
<tr><td>Data link (layer 2)</td><td rowspan="2">ISO 14230-1</td><td rowspan="2">ISO 11898-1, ISO 11898-2, ISO 15765-4</td><td rowspan="2">ISO 11898-1, ISO 11898-2, ISO 15765-4</td><td rowspan="2">ISO 13400-3, IEEE 802.3</td></tr>
<tr><td>Physical (layer 1)</td></tr>
</table>