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Tractors and machinery for agriculture and forestry — Serial control and communications data network —

Part 12: Diagnostics services

Tracteurs et matériels agricoles et forestiers — Réseaux de commande et de communication de données en série —

Partie 12: Services de diagnostic

Reference number
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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

This third edition cancels and replaces the second edition (ISO 11783-12:2014), which has been technically revised. The main changes compared to the previous edition are as follows:

— addition of SPNs to all parameters;

— removal of the Control Function Functionality parameters to an online database;

— updated document references.

A list of all parts in the ISO 11783 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

ISO 11783 specifies a communications system for agricultural equipment, based on the ISO 11898[4] protocol. SAE J1939[7] documents, on which parts of ISO 11783 are based, were developed jointly for use in truck and bus applications and for construction and agriculture applications. Joint documents were completed to allow electronic units that meet the truck and bus SAE J1939 specifications to be used by agricultural and forestry equipment with minimal changes.

General information on ISO 11783 is to be found in ISO 11783-1. The purpose of ISO 11783 is to provide an open, interconnected system for on-board electronic systems. It is intended to enable electronic control units (ECUs) to communicate with each other, providing a standardized system.

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Tractors and machinery for agriculture and forestry — Serial control and communications data network —

Part 12: Diagnostics services

1 Scope

ISO 11783, as a whole, specifies a serial data network for control and communications on forestry or agricultural tractors and mounted, semi-mounted, towed, or self-propelled implements. Its purpose is to standardize the method and format of transfer of data between sensors, actuators, control elements and information storage, and display units, whether mounted on, or part of, the tractor or implement. This document describes the network's diagnostic system.

NOTE The name and contact information of the Maintenance Agency for this document can be found at http://www.iso.org/mara.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11783-1, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 1: General standard for mobile data communication*

ISO 11783-2, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 2: Physical layer*

ISO 11783-3, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 3: Data link layer*

ISO 11783-5, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 5: Network management*

ISO 11783-7, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 7: Implement messages application layer*

ISO 14229-1, *Road vehicles — Unified diagnostic services (UDS) — Part 1: Specification and requirements*

SAE J1939-73, *Application layer — Diagnostics*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11783-1, ISO 14229-1, SAE J1939-73 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

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3.1
product
device or ECU produced by an original equipment manufacturer (OEM)

Note 1 to entry: When an ECU is installed by a device OEM, the device is a product. When an ECU is offered in the market, independent from a device (e.g. “aftermarket” installations), the ECU is a product.

3.2
basic tractor ECU
functionality characteristics which are specific to an ISO 11783-9 TECU

3.3
server
control function on the mobile implement bus that provides services to a client

4 Symbols and abbreviated terms

AUX-N	functionality – AUX new
CF	control function
DM	diagnostic message
DTC	diagnostic trouble code
ECU	electronic control unit
FMI	failure mode indicator
OC	occurrence count
PG	parameter group
PGN	parameter group number
TC-BAS	functionality – task controller basic
TC-GEO	functionality – task controller geo
TC-SC	functionality – task controller section control
TECU	functionality – tractor ECU
UT	functionality – universal terminal
VT	virtual terminal

5 General description

The standard diagnostic system specified in this document requires that all units connected to an ISO 11783 network provide the information specified in this document to enable the operator and/or service technician to complete network diagnostics and identify which unit has failed or is operating in a faulty state.

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