INTERNATIONAL STANDARD

ISO 11748-1

First edition
2001-06-01

Road vehicles — Technical documentation of electrical and electronic systems —

Part 1: Content of exchanged documents

Véhicules routiers — Documentation technique des systèmes électriques et électroniques —

Partie 1: Contenu des documents échangés

Reference number
ISO 11748-1:2001(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 part of ISO 11748 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11748-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 11748 consists of the following parts, under the general title *Road vehicles — Technical documentation of electrical and electronic systems*:

— *Part 1: Content of exchanged documents*

— *Part 2: Documentation agreement*

— *Part 3: Application example*

Introduction

There are two types of requirements to be taken into account when producing technical documentation for an electrical or electronic system: those of the submitters and receivers of data on the one hand, and those of the project data organizer on the other. Both types of requirement are met by a data management process related to the project lifetime.

Technical documentation is thus described as both a set of technical data elements and as document organization, whose structure depends on the content and the data management system.

In addition, document technology is to be chosen according to the content and organization of the technical documentation, together with the document technology strategy of the partners involved.

Within the context of technical documentation exchanged between partners for the development of on-board electronic control systems for road vehicles, the general approach is reduced to:

— content, by means of an inventory and a precise description of the possible technical data elements;

— structure, by a description of the procedure allowing a document agreement to be implemented between partners for a given technical information base and data management system.

The choice of technology for technical documentation will depend on what is currently available on the market and chosen by the automotive industry, but should allow the complete implementation of the technical documentation to be demonstrated.

Road vehicles — Technical documentation of electrical and electronic systems —

Part 1:
Content of exchanged documents

1 Scope

This part of ISO 11748 gives guidelines for the content and structure of technical documentation for on-board electronic control systems used in road vehicles. It provides a checklist of technical data elements to be considered when creating technical documentation.

The actual set of technical data elements to be exchanged between project partners is settled by the documentation agreement described in ISO 11748-2. Any decision on which information is relevant, mandatory or optional will be specific to a given project, and will thus be documented in that agreement.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11748. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11748 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9000, *Quality management systems — Fundamentals and vocabulary*.

ISO 11748-2:2001, *Road vehicles — Technical documentation of electrical and electronic systems — Part 2: Documentation agreement*.

IEC 60050-191, *International Electrotechnical Vocabulary — Chapter 191: Dependability and quality of service*.

3 Terms and definitions

For the purposes of this part of ISO 11748, the terms and definitions given in ISO 9000 and the following apply.

3.1
reliability
ability of an item to perform a required function under given conditions for a given time interval

NOTE Adapted from IEC 60050-191.

3.2
safety
conservation of human life, the effectiveness of that conservation, and the prevention of damage consistent with mission requirements

3.3
availability of an item
in a state to perform a required function under given conditions at a given instant of time or over a given time interval, assuming that the required external resources are provided

NOTE Adapted from IEC 60050-191.

3.4
data dictionary
defines data objects such as calibration parameters or variables used in electronic control unit (ECU) software, and contains auxiliary items such as methods for conversion between physical and ECU internal domains

3.5
calibration parameter contents
contains values for all calibration parameters for a specific ECU application

4 Items to be considered for information exchange

4.1 Purpose

The development of automotive ECUs implies a wide range of technical cultures. The aim of ISO 11748 is to help the partners in a project to establish commonly agreed rules for the exchange of technical information, not to settle definitively a background for the development of an automotive system.

Thus the items listed in this part of ISO 11748 could, for some projects, appear irrelevant, overlapping or ambiguous. If so, accurate definitions within the project-specific technical culture shall be included in the documentation agreement.

The items are intended for use as reminders within a large range of technical data elements. As such, they have deliberately not been defined explicitly nor have they been given a fixed structure.

A technical data element can be described as a certain amount of clearly identifiable information. The following items may include constraints, test procedures, test results and acceptance criteria when applicable.

4.2 General information

The following items give general information about a given document regardless of its presentation.

— Document identification: unambiguously identifies the document regardless of the version. It can comprise a name or number or both.

  EXAMPLE Functional specification 1234.

— Document version: unambiguously identifies the version of the actual document related to the document identification.

  EXAMPLE Working draft 12.

— Document outline: gives an overview of the structure and content of the actual document. The document outline can, for example, be given as an abstract.

— Partners: the development process participants who produce or receive the technical documents covered by the documentation agreement.

— Document management information: defines the general strategy of document management as given in 4.9 in ISO 11748-2:2001.

— Document production information: describes the process and settings used to produce the document. This may include the technical systems used to produce the document as well as their adjustments.

— Glossary: defines the specific terms and acronyms used in the document.

4.3 System overview

The system overview comprises a general description of the system, such as the type of system, its fundamental characteristics and targeted vehicle.

4.4 Performance and behaviour

This includes the following items:

— systems behaviour;

— system environment;

— operating modes;

— states and state transitions;

— functions.

4.5 Human-machine interface (HMI)

This consists of a general description of the human-machine interface.

4.6 Architecture

This includes the following items:

— block diagrams;

— interfaces, including mechanical, electrical, optical, hydraulic and pneumatic characteristics;

— signal specification;

— connection specifications.

4.7 Electrical characteristics

This includes the following items:

— electrical test specification;

— power supply;

— electrical immunity;

— electromagnetic compatibility.

4.8 Environmental characteristics

This includes the following items:

— mechanical characteristics;

— climatic characteristics;

— chemical characteristics.

4.9 Other physical characteristics

This includes the following characteristics:

— optical;

— magnetic;

— acoustical.

4.10 Mechanical design

This includes the following items:

— layout;

— housing;

— labelling;

— dimensions (measures) and masses;

— shapes;

— mounting;

— recycling.

4.11 Network communication

This includes the following items:

— network topology;

— protocol;

— network signals;

— network messages.

4.12 Software

This includes the following items:

— data dictionary;

— software function specification;

— calibration parameter contents.

4.13 Hazard analysis

This includes the following:

— reliability (e.g. general description concept of guaranteed reliability, reliability requirements, reliability analysis);

— safety (e.g. failure mode and effect analysis);

— availability;

— failure management (general description of fail-safe concept, self-diagnosis, diagnosis with field test and assembly line tests).

4.14 Manufacturing and aftermarket services

This includes:

— assembly line, and

— servicing.

5 Structure of the technical documentation

The structure of the technical documentation describes, in detail, how the documentation is to be organized, and specifies the relationship of the parties involved. The structure shall be agreed upon by the partners as part of the documentation agreement specified in ISO 11748-2.

NOTE ISO 11748-3 provides an application example of a documentation agreement.