TECHNICAL SPECIFICATION

ISO/TS 24534-2

First edition
2007-12-15

Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles —

Part 2: Operational requirements

Identification automatique des véhicules et des équipements — Identification d'enregistrement électronique (ERI) pour les véhicules — Partie 2: Exigences de fonctionnement

Reference number
ISO/TS 24534-2:2007(E)

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/TS 24534-2 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, and by Technical Committee CEN/TC 278, *Road transport and traffic telematics* in collaboration.

ISO/TS 24534 consists of the following parts, under the general title *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles*:

— *Part 1: Architecture*

— *Part 2: Operational requirements*

— *Part 3: Vehicle data*

— *Part 4: Secure communications using asymmetrical techniques*

— *Part 5: Secure communications using symmetrical techniques*

Introduction

A quickly emerging need has been identified with administrations to improve the unique identification of vehicles for a variety of services. Situations are already occurring where manufacturers intend to fit lifetime tags to vehicles. Various governments are considering the needs and benefits of Electronic Registration Identification (ERI) as a legal proof of vehicle identity with potential mandatory uses. There is commercial and economic justification both in respect of tags and infrastructure that a standard enables an interoperable solution.

ERI is a means of uniquely identifying road vehicles. The application of ERI will offer significant benefits over existing techniques for vehicle identification. It will be a suitable tool for the future management and administration of traffic and transport, including applications in free-flow, multi-lane traffic conditions with the capability to support mobile transactions. ERI addresses the need of authorities and other road users for a trusted electronic identification, including roaming vehicles.

The unique vehicle identifier is held in a secure environment within an Electronic Registration Tag (ERT) fitted to a vehicle. The identifier used to identify a vehicle is called the vehicle identifier or vehicleId. The preferred identifier is the VIN, assigned to the vehicle by its manufacturer in accordance with ISO 3779, or it may be a variant of this identifier.

The ERT may contain vehicle data in addition to the unique identifier, as required by authorities or their agents for ERI applications (e.g. vehicle registration details). An ERT is the core component for simple to complex applications of ERI, ranging from a simple read-only device, with more complex applications requiring one or more communication systems.

The ERT may be accessed by an Electronic Registration Reader (ERR), either to read, read/write data, from or to an ERT.

Optionally, the ERT may communicate with other onboard vehicle equipment. The potential range of ERI applications, simple to complex, will require interoperability to exist between an ERT and an ERR by application.

Whilst it is desirable to determine a single set of requirements for operation in all environments and under all operating conditions, this could impose unacceptable costs for an ERI application. This part of ISO/TS 24534 provides classification categories of operational parameters for different aspects of a system specification, enabling appropriate performance parameters to be selected for an ERI application. Annex A provides example ERI user requirements with operational scenarios.

Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles —

Part 2: Operational requirements

1 Scope

This part of ISO/TS 24534 provides the requirements for electronic registration that is based on an identifier assigned to a vehicle (e.g. for recognition by national authorities) suitable to be used for:

— electronic identification of local and foreign vehicles by national authorities,

— vehicle manufacturing, in-life-maintenance and end-of-life identification (vehicle life cycle management),

— adaptation of vehicle data (e.g. for international resales),

— safety-related purposes,

— crime reduction, and

— commercial services.

It adheres to privacy and data protection regulations.

This part of ISO/TS 24534 defines the operational requirements for the remaining parts of ISO/TS 24534 and the more limited but relevant provisions of ISO 24535.

Whilst the definition of the organizational framework required to implement, operate and maintain an ERI system is outside the scope of this part of ISO/TS 24534, a list of potential stakeholders in the public and private sector has been included.

2 Normative references

The following referenced documents are indispensable for the application 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/TS 24534-3, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 3: Vehicle data*

ISO 7498-2, *Information processing systems — Open Systems Interconnection — Basic Reference Model — Part 2: Security Architecture*

ISO 14815:2005, *Road transport and traffic telematics — Automatic vehicle and equipment identification — System specifications*

EN 301 489-1, *Radio equipment and systems, EMC, common technical requirements*

IEC 60215:1987, *Safety requirements for radio transmitting equipment*

IEC 721-3-5:1988, *Classification of environmental conditions — Part 3: Classification of groups of environmental parameters and their severities — Section 5: Ground vehicle installations*

IEC 1000-4-6, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 6: Immunity to conducted disturbances, induced by radio-frequency fields*

EN 300 764, *Electromagnetic compatibility and radio spectrum matters (ERM) — Road Transport and Traffic Telematics (RTTT) — Technical characteristics and test methods for data transmission equipment operating in the 5.8GHz industrial, scientific and medical (ISM) band*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
access control
prevention of unauthorized use of a resource, including the prevention of use of a resource in an unauthorized manner

[ISO 7498-2]

3.2
access control list
list of entities, together with their access right, which are authorized to have access to a resource

[ISO 7498-2]

3.3
authentication
entity authentication which provides each entity with the assurance of the other's identity

3.4
back office
facility for the control and data management of an ERI system by an authority, or for the provision of related services by a service provider

3.5
ERI Data
vehicle identifier and possible additional vehicle data as defined in ISO/TS 24534-3

3.6
Electronic registration identification
ERI
action or act of identifying a vehicle by electronic means for the purposes described in the scope of this part of ISO/TS 24534

3.7
Electronic registration reader
ERR
device used to read or read/write data from or to an "Electronic Registration Tag"

3.8
Electronic registration tag
ERT
onboard ERI device that contains the ERI data, including relevant security provisions and one or more interfaces to access that data

NOTE In case of high security this is a type of SAM.

3.9
interoperability
ability of systems to provide services to and accept services from other systems and to use these services to enable the systems to operate effectively together

3.10
lifetime
period of time over which an item of equipment exists and functions according to the requirements of the defining standard

[ISO 14815]

3.11
onboard ERI equipment
equipment fitted within or on the outside of the vehicle and used for ERI purposes

NOTE The onboard ERI equipment comprises an ERT and may also comprise any additional communication devices.

3.12
operator
entity responsible for the operational management of an ERI system

3.13
privacy
right of individuals to control or influence what information related to them may be collected and stored and by whom and to whom that information may be disclosed

[ISO 7498-2]

3.14
read only
property that data content cannot be changed by a reader/interrogator

3.15
read/write
data mode corresponding to an ERT in which data content can be changed by means of a compatible interrogator via the air interface

3.16
read/write cycle
complete sequence of interaction by the reader/interrogator where the ERT is unambiguously identified and new data, comprising either whole or part of the full data set, is written onto the ERT by means of the air interface

3.17
registration authority
authority responsible for the registration and maintenance of vehicle records

NOTE The authority may provide vehicle records to accredited organizations.

3.18
registration authority (with respect to the ERI data)
organization responsible for the ERI data and security data, according to local legislation

NOTE The registration authority with respect to the ERI data may be the same as the registration authority (defined in 3.17). This part of ISO/TS 24534, however, does not require this.

3.19
roadside equipment
equipment located at a fixed position along the road transport network, for the purpose of communication and data exchanges with the onboard equipment of passing vehicles

3.20
security
protection of information and data so that unauthorized persons or systems cannot read or modify them and authorized persons or systems are not denied access

3.21
service provider
person or organization providing a service that requires the vehicle identity and/or other information concerning the vehicle

3.22
specific vehicle identification
action or act of establishing the identity of a specific vehicle

3.23
vehicle vicinity identification
action or act of establishing the identity of a specific vehicle near an external ERI reader (ERR) without pinpointing the exact position of the vehicle

4 Abbreviations

For the purpose of this part of ISO/TS 24534, the following abbreviations apply throughout the document unless otherwise specified.

4.1
AIB
Accredited, Independent Testing Body

4.2
ERI
Electronic Registration Identification

4.3
EMC
Electro Magnetic Compatibility

4.4
ERM
Electromagnetic compatibility and radio spectrum matters

4.5
ERR
Electronic Registration Reader

4.6
ERT
Electronic Registration Tag

4.7
ELV
End of Life Vehicles

4.8
SAM
Secure Application Module

5 Onboard ERI equipment requirements

5.1 ERI System context

Figure 1 provides a context diagram (informative) of the environment within which the ERT functions, with the wider relationships which may exist with other components of an ERI system.

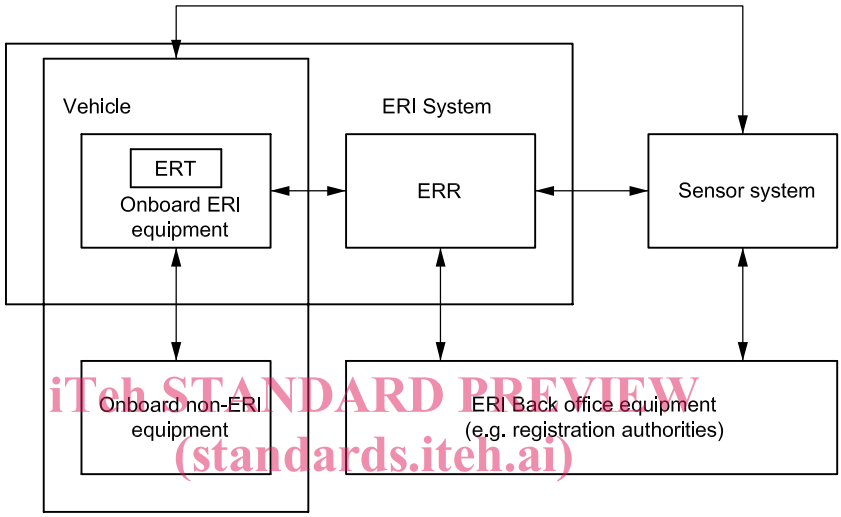

Figure 1 — Fully featured ERI system, with onboard ERT component

5.2 ERT

The ERT shall contain the vehicle identifier and may include additional vehicle data.

The ERT shall communicate directly or indirectly, with an ERR.

NOTE The ERT may also communicate with other onboard ERI equipment, or onboard non-ERI equipment, when ERI data are required to support other transport applications.

5.3 Operational parameters

5.3.1 General

In the classes defined herein, the ERT shall have the capability to communicate ERI data over a wireless link to an ERR.

An ERI system may be required to operate from stationary or low vehicle speeds; also, with traffic travelling in congested traffic conditions or at free flow, motorway speeds. In order to claim compliance with this part of ISO/TS 24534, equipment shall achieve the performance of a declared classification parameter, or combination of parameters, specified in the tables defined in this clause.

NOTE Reading parameters are defined within this clause; writing parameters are subject to many factors and are outside the scope of this part of ISO/TS 24534.