
**Intelligent transport systems —
Automatic vehicle identification — Basic
electronic registration identification
(Basic ERI)**

*Systèmes intelligents de transport — Identification automatique des
véhicules — Identification d'enregistrement électronique de base
(ERI de base)*

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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.

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 24535 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

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Introduction

Electronic registration identification (ERI) is used, or can be used, for a number of purposes and with a range of levels of security. This International Standard provides for a basic ERI functionality for the exchange of data between an in-vehicle component containing the ERI data and a reader or writer inside or outside the vehicle. Other International Standards in this family of ERI standards, ISO/TS 24534-4 and ISO/TS 24534-5, are being developed to service a range of ERI requirements. The relationship between the various parts of ISO 24534 and ISO 24535 are shown in Figure 1.

This International Standard defines a “basic ERI” system with security adequate for information that is currently available manually (such as license plate and/or VIN data). This International Standard does not purport to provide the high levels of security, authentication and confidentiality required for some administrative requirements (those requiring high-security fully featured systems are advised to follow ISO/TS 24534-4 or ISO/TS 24534-5).

In its most fundamental form, “basic ERI” simply provides unique vehicle identification. However the “basic ERI” concept allows for the transmission of additional application-relevant data.

Different envisaged applications require some or all of these aspects. Simple registration identification requires a basic communication stack together with moderate levels of security. If there are national security issues or there is personal confidential information stored, the levels of security and encryption need to be more comprehensive.

However, while many applications require an ISO/TS 24534-4 or ISO/TS 24534-5 “fully featured” operational environment, a rapidly emerging, and urgent, need has also been identified within road traffic administrations to provide a simple unique electronic identification of registered vehicles. Such applications may frequently be those where visible information is currently supplied in the form of, for example, the vehicle registration numberplate, VIN number, or a vignette to publicly display registration and compliance with vehicle testing, payment of excise duties, but is not necessarily restricted to those applications. Such applications may not require the levels of security associated with the more demanding requirements envisaged within security, regulatory, enforcement, or anonymous environments.

“Basic ERI” is defined in this International Standard as an electronic system that uniquely identifies a registered vehicle. It incorporates an electronic device that allows the unique, remote and reliable communication of one or more identifying parameters of a vehicle. It typically comprises an in-vehicle data storage element and a vehicle-to-infrastructure data communication element.

“Basic ERI” is a simple means of uniquely identifying road vehicles using a system that can be implemented and deployed at minimum cost. The widespread application of “basic ERI” offers significant benefits over existing manual techniques for vehicle identification. “Basic ERI” addresses the need of authorities and other users for simple electronic identification of roaming vehicles. The identification data always includes a unique vehicle identifier and can also include other data typically found in the vehicle's registration certificate and other data related to specific applications.

“Basic ERI” is an application in its own right, allowing the electronic identification of vehicles. But more importantly, it acts as an enabler, making many other applications more effective through the provision of vehicle identification information. It will contribute to the improvement of road safety and traffic management, reduce crime, and enhance the operational efficiency of public authorities.

Electronic registration identification can also be used in support of vehicle end-of-life mandatory provisions, such as Directive 2000/53/EC of the European Parliament on end-of-life vehicles (ELV directive).

Whilst the requirements for “basic ERI” can be less demanding than those for ISO/TS 24534-4 or ISO/TS 24534-5 “fully featured” ERI, it is important that the basic data concepts utilised are common with those defined in ISO/TS 24534-3. (ISO/TS 24534-4 and ISO/TS 24534-5 are also capable of instantiation in different degrees of capability, and the reader is advised to study all three International Standards to find that most suitable to their needs).

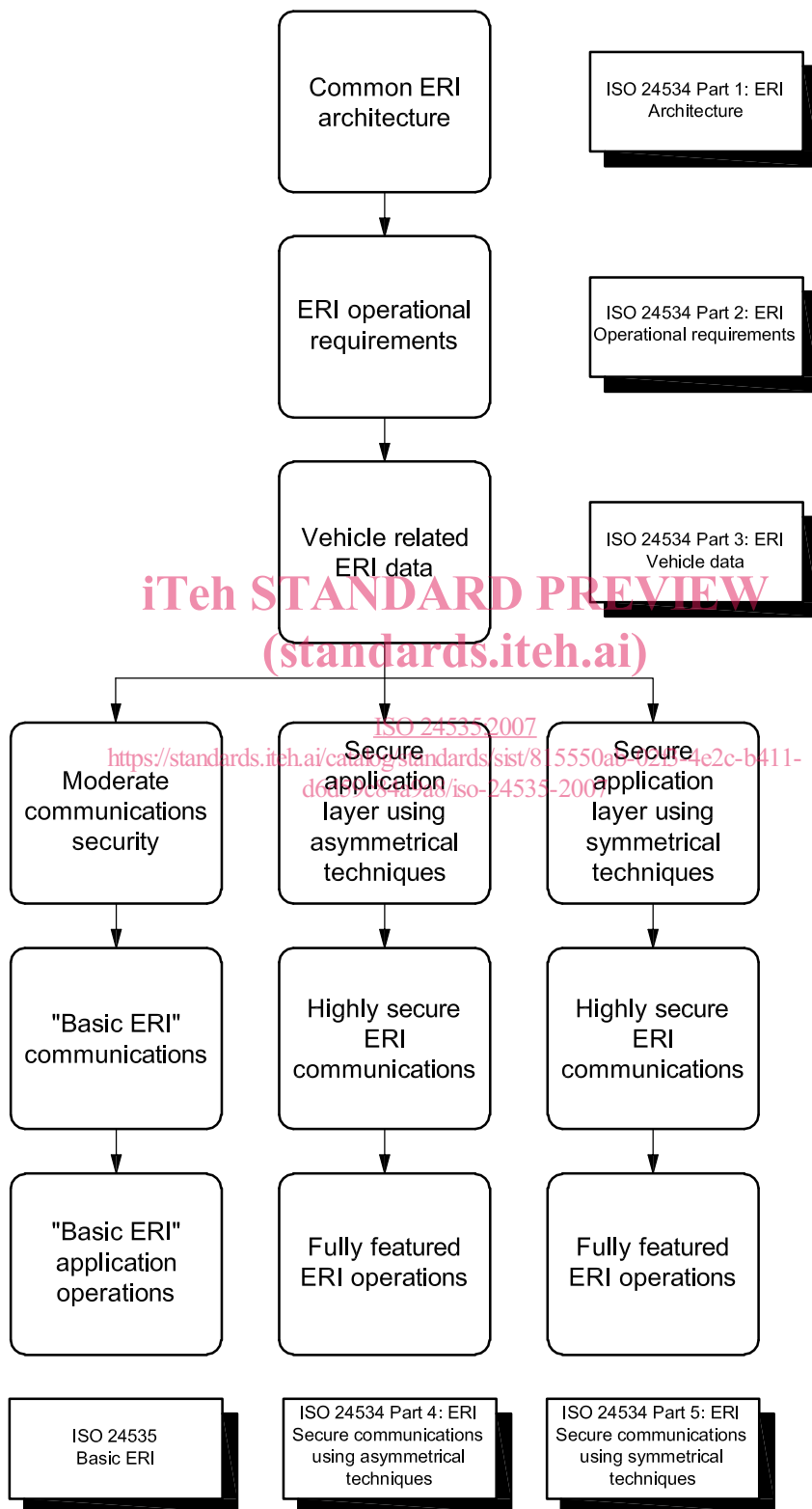


Figure 1 — Functional stack accommodating both “fully featured” and “basic ERI”

Intelligent transport systems — Automatic vehicle identification — Basic electronic registration identification (Basic ERI)

1 Scope

This International Standard supports simple systems for “basic electronic registration identification” (“basic ERI”) for use in intelligent road transport applications.

This International Standard “basic ERI” defines the

- specification of a unique vehicle identifier (using an International Standard, or non-standard, data concept),
- “basic ERI” functional capabilities, selectable for different “basic ERI” applications,
- minimum data interoperability requirements between basic electronic registration tags (ERTs) and electronic registration readers (ERRs).

This International Standard allows, but does not require, vehicle-related data storage in addition to the unique vehicle identifier.

This International Standard is consistent with the ERI architecture defined in ISO/TS 24534-1 and data concepts defined in ISO/TS 24534-3, but is not necessarily interoperable with the more capable and “fully featured” ERI communication systems to be defined in ISO/TS 24534-4 or ISO/TS 24534-5.

This International Standard defines a “basic ERI” system with security adequate for information that is currently available manually (such as license plate and/or VIN data) but it does not purport to provide the high levels of security required for some administrative requirements. Those requiring high security are advised to follow the relevant parts of ISO/TS 24534.

Although not part of this International Standard, the employed technologies supporting this International Standard may enable additional non-standard security measures to be added for specific applications.

NOTE The “basic ERI” system implies the use of a basic ERT. Interrogators may or may not support both ISO/TS 24534-4 or ISO/TS 24534-5 and this International Standard, this being a commercial and not a standardization decision.

It is not the purpose of this International Standard to define “basic ERI” applications.

This International Standard requires the use of an air interface communication that complies with an international, regional, or national standard whose protocols are publicly defined and available in that standard, but this International Standard does not define such an air interface, nor specify which standard air interface is used for any particular implementation.

This International Standard limits its scope to

- the requirement that a standard air interface with publicly available protocols is used,
- the use of data concepts consistent with ISO/TS 24534-3,
- the ability to additionally use private data concepts.

2 Conformance

In order to claim compliance with this International Standard, successful compliance testing shall be certified by an Accredited Independent Testing Body (AIB) approved by the nation state.

Where ERT performance is specified in terms of existing International Standards that contain verification procedures, then those procedures shall be used for verification.

3 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 14815:2005, *Road transport and traffic telematics — Automatic vehicle and equipment identification — System specifications*

ISO 14816:2005, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure*

ISO/TS 24534-1, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 1: Architecture*

ISO/TS 24534-2, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 2: Operational requirements*

ISO/TS 24534-3, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 3: Vehicle data*

ISO/TS 24534-4, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 4: Secure communications using asymmetrical techniques*

ISO/TS 24534-5, *Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles — Part 5: Secure communications using symmetrical techniques*

ISO/IEC 8825-2, *Information technology — ASN.1 encoding rules — Part 2: Specification of Packed Encoding Rules (PER)*

IEC 60215, *Safety requirements for radio transmitting equipment*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*

EN 300 220-1, *Electromagnetic compatibility and radio spectrum matters (ERM) — Short range devices (SRD) — Technical characteristics and test methods for radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW — Part 1: Parameters intended for regulatory purposes*

EN 300 220-3, *Electromagnetic compatibility and radio spectrum matters (ERM) — Short range devices (SRD) — Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW — Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE directive*

EN 301 489-1, *Radio equipment and services — EMC — Part 1: Common technical requirements*

EN 301 489-3, *Radio equipment and services — EMC — Part 3: Specific conditions for short range devices (SRD) operating on frequencies between 9 kHz and 40 GHz*

ARIB T75, *Dedicated short-range communication system*, Association of Radio Industries and Businesses (ARIB), Japan

FCC Part 15, *Unlicensed RF devices*, USA Federal Communications Commission

4 Terms and definitions

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

4.1

authentication

assurance by interactive electronic means of device authenticity between communication partners

4.2

basic ERI system

system providing unique identification of a vehicle by wireless communications between an electronic registration tag carried on a vehicle and an electronic registration reader that can fulfil the requirements defined in this International Standard

4.3

basic ERR

electronic registration reader or interrogator that can fulfil the requirements defined in this International Standard

4.4

basic ERT

electronic registration tag that can fulfil the requirements defined in this International Standard

4.5

electronic registration identification ERI

unique identification of a vehicle by wireless communications between an electronic registration tag carried on a vehicle and an electronic registration reader

4.6

electronic registration reader

ERR

device used to read data by wireless communications from the electronic registration tag

4.7

electronic registration tag

ERT

on-board ERI device that contains the ERI data, including the relevant implemented security provisions and one or more interfaces to access that data

4.8

fully featured ERI system

system providing unique identification of a vehicle by wireless communications between an electronic registration tag carried on a vehicle and an electronic registration reader, and supporting features for a number of purposes and with a minimal to high level of security

4.9

Interrogator

device that can instigate and conduct a read-or-write transaction with a tag via the chosen air interface