Intelligent transport systems — Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles —

Part 3: Vehicle data

Systèmes de transport intelligents — Identification automatique des véhicules et des équipements — Identification d’enregistrement électronique (ERI) pour les véhicules —

Partie 3: Données du véhicule
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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO’s adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 204, Intelligent transport systems.

This second edition cancels and replaces the first edition (ISO 2453-3:2010), which has been technically revised.

ISO 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 within 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 ERI, such as legal proof of vehicle identity with potential mandatory usages. There is a commercial and economic justification both in respect of tags and infrastructure that a standard enables an interoperable solution.

Electronic registration identification (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 an enabling technology 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 users for a trusted electronic identification, including roaming vehicles.

This part of ISO 24534 specifies the vehicle-related data that can be exchanged between an onboard electronic registration tag (ERT) and an ERI reader/writer inside or outside the vehicle. The vehicle-related data consist of the vehicle identifier and may also include additional vehicle data as typically included in a vehicle registration certificate.

This part of ISO 24534 does not provide any accurate definitions for additional vehicle data items. This is left to the local registration authorities and/or local legislation. This part of ISO 24534 only provides the means for an unambiguous exchange of vehicle parameters registered by local registration authorities.

This part of ISO 24534 makes use of the basic automatic vehicle identification (AVI) definitions in ISO 14816.
Intelligent transport systems — Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles —

Part 3: Vehicle data

1 Scope

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

— 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. in case of international re-sales;
— safety-related purposes;
— crime reduction;
— commercial services;
— adhering to privacy and data protection regulations.

This part of ISO 24534 defines the vehicle identification data. This data is called the ERI data and includes the following:

— the vehicle identifier;
— possible additional vehicle-related information (as typically included in a vehicle registration certificate).

All additional vehicle data elements are defined as optional. It is left to local legislation and/or the discretion of a registration authority to use or not to use a particular data element. If used, the value is assumed to be the one registered by the registration authority in accordance with local legislation. This part of ISO 24534 only provides the syntax for all these data elements.

NOTE The secure application layer interfaces for the exchange of ERI data with an ERI reader or writer are specified in ISO 24534-4 and in ISO 24534-5.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.


ISO 1176:1990, Road vehicles — Masses — Vocabulary and codes

ISO 3779, Road vehicles — Vehicle identification number (VIN) — Content and structure

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3 Terms and definitions

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

3.1 additional vehicle data
ERI data (3.5) in addition to the vehicle identifier

3.2 attribute
type (3.12) with an associated identifier

3.3 distinguishing identifier
information which unambiguously distinguishes an entity

3.4 electronic registration identification
ERI
action or act of identifying a vehicle with electronic means for purposes as mentioned in the scope of this part of ISO 24534

3.5 ERI data
vehicle identifying data which can be obtained from an ERT (3.6)

Note 1 to entry: ERI data consist of the vehicle identifier and possible additional vehicle data (3.1).

3.6 electronic registration tag
ERT
onboard ERI device that contains the ERI data (3.5) including relevant security provisions and one or more interfaces to access that data

Note 1 to entry: In case of high security, the ERT is a secure application module (SAM).

Note 2 to entry: The ERT may be a separate device or may be integrated into an onboard device that also provides other capabilities (e.g. DSRC communications).

3.7 periodic motor vehicle test
compulsory periodic (e.g. annual) test of the roadworthiness of a motor vehicle of above a specified age or a certificate of passing such a test

EXAMPLE The MOT test in the United Kingdom is an example.
3.8
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

[SOURCE: ISO 7498-2, 3.3.43]

Note 1 to entry: Since this term relates to the right of individuals, it cannot be very precise and its use should be avoided except as a motivation for requiring security.

3.9
registration authority
<for vehicles> authority responsible for the registration and maintenance of vehicle records

Note 1 to entry: The authority may provide vehicle records to accredited organizations.

3.10
registration authority
<for ERI data> organization responsible for writing ERI data (3.5) and security data according to local legislation

Note 1 to entry: The registration authority for ERI data may be the same as the registration authority (3.9) for vehicles. This part of ISO 24534, however, does not require this.

3.11
registration certificate
vehicle registration document (paper or smart card) issued by the registration authority (3.9) for vehicles in which the vehicle and its owner or lessee are registered

3.12
type
named set of values

[SOURCE: ISO/IEC 8824-1, 3.8.86]

4 Abbreviations

AEI Automatic Equipment Identification
ASN.1 Abstract Syntax Notation One [as defined in ISO 8824 (all parts)]
AVI Automatic Vehicle Identification
EEA European Economic Area
EFC Electronic Fee Collection
EN Europäische Norm (German), English: European Standard
ENV Europäische Norm Vorausgabe (German), English: European Pre-Standard
ERI Electronic Registration Identification
ERT Electronic Registration Tag
EU European Union
IEC International Electrotechnical Commission
ISO International Organization for Standardization
VIN Vehicle Identification Number

5 Requirements

5.1 Vehicle identification data

This subclause is informative only.
The secure onboard environment in which the vehicle identification data is stored is called the electronic registration tag (ERT).

Clause 5 provides an abstract definition of the ERI data to be exchanged between the ERT and an ERI reader or writer. The abstract definitions are defined using abstract syntax notation one (ASN.1) as defined in ISO 8824 (all parts).

The identifier used to identify a vehicle is called the vehicle identifier or vehicleId. The preferred vehicle identifier is the VIN that is assigned to the vehicle by its manufacturer in accordance with ISO 3779. However, in order to make this part of ISO 24534 also applicable in countries where the VIN is not used, an alternative is also supported (see 5.2). The fundamental requirement is that the combination of a registration authority and a vehicle identifier should be globally distinguishing.

NOTE 1 As two vehicles built 30 years after each other may have the same VIN, the VIN is not 100% unique.

NOTE 2 Empirical data has shown that a database of a registration authority may contain duplicate VIN numbers.

NOTE 3 In this part of ISO 24534, the combination of the almost unique vehicleId and a unique ERT number may be used as the unambiguous distinguishing identifier. The ERT number is a unique read-only identifier that is written into the ERT during ERT manufacturing time (see EN ISO 24534-4 and ISO 24534-5 for details).

Apart from the vehicle identifier, this part of ISO 24534 also supports the use of additional vehicle data as typically included in a vehicle registration certificate. This additional vehicle data may, for example, be used as

- additional identification information to improve the trust in a vehicle identifier, and
- certified vehicle information for other applications (e.g. for tolling to determine a tariff).

5.2 Vehicle identifier

The VehicleId type shall be used for the vehicle identifier according to local legislation and is defined as follows.

VehicleId ::= CHOICE {
  vin                        VIN,             -- preferred choice
  raSpecificVehicleId        RaSpecificVehicleId,
  ...
}

VIN ::= CS5

NOTE 1 The ‘...’ at the end of the definition designates that the type VehicleId may be extended with additional components at the end of the type definition in new versions of this part of ISO 24534, e.g. to cope with a new VIN standard.

The vehicle identifier should be a globally distinguishing identifier.

NOTE 2 When identifying a vehicle, the ERT always delivers the VehicleId in combination with the identifier of the registration authority and the ERT number. The identifier of the registration authority may be used to obtain additional information about the vehicle. The ERT number is an extra unique identifier from another source that may be used to resolve potential disputes about the VIN of a vehicle.

NOTE 3 The choice of which alternative is used is outside the scope of this part of ISO 24534. It may, for example, depend on local legislation.

The VIN alternative, if used, shall be of type VIN and is the preferred vehicle identifier. The type VIN is identical to the type CS5 as defined in ISO 14816. The value of the VIN alternative shall be the value of the VIN as assigned conforming to ISO 3779 by a manufacturer or a registration authority.

The RaSpecificVehicleId alternative, if used, shall contain a globally distinguishing identifier for the vehicle and shall be of type raSpecificVehicleId as defined below.
RaSpecificVehicleId ::= SEQUENCE {
  wmi UTF8String (SIZE(3)),
  nonIsoStandardId UTF8String (SIZE (1..20))
}

The wmi component shall contain the world manufacturer identifier (WMI) code of the organization that assigned the nonIsoStandardId value and the WMI code shall be assigned to this organization according to ISO 3780.

The nonIsoStandardId component shall be of type UTF8String with a maximum length of 20 characters.

NOTE Any additional meaning conveyed in the value of a nonIsoStandardId component is outside the scope of this part of ISO 24534.

5.3 ERI data type

The EriData type shall be used for the ERI data and is defined as follows:

EriData ::= SEQUENCE {
  vehicleId VehicleId,
  additionalEriData AdditionalEriData OPTIONAL
}

The vehicleId component shall contain the vehicle's identifier as defined in 5.2.

The additionalEriData component, if present, shall contain the additional ERI data.

5.4 Additional ERI data type

The type AdditionalEriData type is used for the additional ERI data and is defined as follows:

AdditionalEriData ::= CHOICE {
  additionalEriRegistrationData AdditionalEriRegistrationData, -- preferred choice
  raSpecificAdditionalEriData OCTET STRING (SIZE (0..1024))
-- only to be used if AdditionalEriRegistrationData is not supported
}

The additionalEriRegistrationData alternative is the preferred alternative and shall be chosen whenever a value of the type AdditionalEriRegistrationData can be used.

The raSpecificAdditionalEriData alternative is of type OCTET STRING with a maximum length of 1 024 octets and shall only be used if a value of additionalEriRegistrationData cannot be used.

NOTE The ‘...’ in the definition designates that the type AdditionalEriData may be extended with additional alternatives at the end of the type definition in new versions of this part of ISO 24534, e.g. to cope with a new version of the alternative ERI registration data.

5.5 Additional ERI registration data

5.5.1 Additional ERI registration data type

5.5.1.1 Definition of the additional ERI registration data type

The AdditionalEriRegistrationData type contains the vehicle related data typically found in a vehicle registration certificate and is defined as follows.

AdditionalEriRegistrationData ::= SEQUENCE {
  registrationAuthority RegistrationAuthority OPTIONAL,
  vehicleIdStatus VehicleIdStatus OPTIONAL,
  dateOfFirstRegistration DateOfFirstRegistration OPTIONAL,
  dateOfRegistration DateOfRegistration OPTIONAL,
}