



SLOVENSKI STANDARD
oSIST prEN 15722:2019
01-april-2019

Inteligentni transportni sistemi - e-Varnost - Minimalni nabor podatkov za elektronski klic v sili

Intelligent transport systems - ESafety - ECall minimum set of data

Intelligente Transportsysteme - ESicherheit - Minimaler Datensatz für den elektronischen Notruf eCall

Systèmes de transport intelligents - ESafety - Ensemble minimal de données (MSD) pour l'eCall

[SIST EN 15722:2020](https://standards.iteh.ai/catalog/standards/sist/329c2067-bf4d-45c2-af07-ac7ffa912507/sist-en-15722-2020)

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Ta slovenski standard je istoveten z: prEN 15722

ICS:

03.220.20	Cestni transport	Road transport
13.200	Preprečevanje nesreč in katastrof	Accident and disaster control
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

oSIST prEN 15722:2019

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 15722

February 2019

ICS 03.220.20; 13.200; 35.240.60

Will supersede EN 15722:2015

English Version

Intelligent transport systems - ESafety - ECall minimum set of data

Systèmes de transport intelligents - ESafety - Ensemble
minimal de données (MSD) pour l'eCall

Intelligente Transportsysteme - ESicherheit -
Minimaler Datensatz für den elektronischen Notruf
eCall

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 278.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 15722:2019) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15722:2015 and differs from that document in that the vehicleCategory enumeration now provides for additional UNECE vehicle categories, some typing errors were corrected and additional clarifications are added to solve frequently asked questions.

In comparison with the previous edition, the following technical modifications have been made:

The number of vehicle categories supported by this standard has been expanded through revision of the enumeration values to enable support for additional categories of vehicles, which now covers the full UNECE categorization, and the privacy requirements have been updated to include EU 2016/679 GDPR.

EN 15722:2015 is a document referenced in EU regulations for eCall. This revision does not bring any inconsistency to that reference, but simply enables the benefits of eCall to any category of vehicle.

iTeh STANDARD PREVIEW
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SIST EN 15722:2020

<https://standards.iteh.ai/catalog/standards/sist/329c2067-bf4d-45c2-af07-ac7ffa912507/sist-en-15722-2020>

Introduction

The pan-European in-vehicle emergency call, 'eCall', is estimated to have the potential to save up to 2 500 fatalities annually in the EU when fully deployed, and furthermore to reduce the severity of injuries, to bring significant savings to the society in and to reduce human suffering.

Emergency calls made from vehicles or mobile telephones using wireless technologies, can assist with the objectives of significantly reducing road deaths and injuries, but drivers often have poor (imprecise) location awareness, especially on interurban roads or abroad. Additionally, in many situations the car occupants may not be in a position to call using a normal mobile phone.

The situation is worse for those travelling abroad. A high (and increasing) number of vehicles travelling outside their home country is thus also contributing to the need for automated emergency call system in vehicles. In EU there are over 100 million trips to another EU country per year, 65 % of the people feel less protected while abroad and most do not know which number to call in an emergency (in some countries over 60 %). Language problems are pertinent and may render proper communication difficult. Yet, in the most crucial cases, the victim(s) may not be able to call because they have been injured/trapped, do not know the local number to call, and in many cases, particularly in rural situations and late at night, there may be no witnesses who happen to have a mobile phone and a sense of community.

eCall, in the context of "Intelligent Transport Systems" or "ITS", (previously known as "Road Traffic and Transport Telematics") can be described as a "user instigated or automatic system to provide notification to public safety answering points, by means of wireless communications, that a vehicle has crashed, and to provide coordinates and a defined minimum set of data, and where possible a voice link to the PSAP".

The objective of implementing the pan-European in-vehicle emergency call system (eCall) is to automate the notification of a traffic accident, wherever in the European Union and associated countries, with the same technical standards and the same quality of services objectives of other emergency services (for example the TS12 emergency call of GSM/UMTS).

This European Standard specifies the "Minimum Set of Data" (MSD) to be transferred by such an in-vehicle eCall system in the event of a crash or emergency.

NOTE <http://www.its-standards.it> The communications media and means of transferring the eCall MSD are not defined in this European Standard. See list of referenced standards.

1 Scope

This document specifies the standard data concepts that comprise the "Minimum Set of Data" (MSD) to be transferred from a vehicle to a 'Public Safety Answering Point' (PSAP) in the event of a crash or emergency via an 'eCall' communication transaction.

Optional additional data concepts may also be transferred.

The communications media protocols and methods for the transmission of the eCall message are not specified in this document.

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.

EN 16062, *Intelligent transport systems — ESafety — eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16102, *Intelligent transport systems — eCall — Operating requirements for third party support*

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

NOTE Communications standards required for transmission of eCall using GSM/UMTS wireless communications networks are referenced in EN 16062 and EN 16072.

3 Terms and definitions (standards.iteh.ai)

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

ASN.1/Abstract Syntax Notation 1.

notation that describes rules and structures for representing, encoding, transmitting, and decoding data enabling representation of objects that are independent of machine-specific encoding techniques; see Annex B

3.2

eCall

emergency call generated either automatically via activation of in-vehicle sensors or manually by the vehicle occupants; when activated it provides notification and relevant location information to the most appropriate 'Public Safety Answering Point', by means of mobile wireless communications networks, carries a defined standardized 'Minimum Set of Data' notifying that there has been an incident that requires response from the emergency services, and establishes an audio channel between the occupants of the vehicle and the most appropriate 'Public Safety Answering Point'

3.3

minimum set of data (MSD)

direct, timely data content of an eCall message to the PSAP operator receiving the emergency call containing information about the location of the incident, providing detail characterising the vehicle, and potentially sometimes also providing additional data that is deemed relevant

prEN 15722:2019 (E)**3.4****public safety answering point**

'first level' responder to whom an emergency call/eCall is directed

4 Symbols and abbreviated terms

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

ASN.1	abstract syntax notation one (ISO/IEC 8824/ISO/IEC 8825)
3G	third generation mobile cellular network system, defined by 3GPP standards
3GPP	third generation partnership protocol
BCD	binary coded decimal
BER	basic encoding rules (ASN.1)
CNG	compressed natural gas
ETSI	European telecommunications standards institute
EC	European Commission
EU	European Union
GSM	global system mobile
GNSS	global navigation satellite system
ID	identity
IP	Internet protocol
IVS	in-vehicle system
LPG	liquid propane gas
M	mandatory
MSD	minimum set of data
O	optional
OID	object identifier (ISO/IEC 8824)-see Annex E
PER	packed encoding rules (ASN.1)
PSAP	public safety answering point
UMTS	universal mobile telecommunications system
UPER	unaligned packet encoding rules (ASN.1)

5 Requirements**5.1 Concepts and formats****5.1.1 MSD data concepts**

NOTE The minimum set of data is important information to assist the provision of the most appropriate services to the crash or emergency site and to speed up the response. The minimum set of data makes it possible for the PSAP operator to respond to the eCall even without the voice connection.

The "Minimum Set of Data" shall be a direct, timely message to the PSAP operator receiving the emergency call.

The information elements in the MSD have been selected on the basis of their relevance in an emergency rescue situation.

The MSD has an 'optional additional data' block that can be used to add information elements that are relevant to a specific situation. See 5.1.5.

5.1.2 Representation of MSD data concepts

The message shall be sent in the sequence defined within the ASN.1 definition defined in Annex A.

The transferred MSD for Pan-European eCall shall be represented in Abstract Syntax Notation (ASN.1) using the 'Unaligned Packed Encoding Rules' (UPER) as defined in ISO/IEC 8825-2, using the ASN1 definitions found in Annex A. See also 5.1.4.

The transfer of the MSD for Pan-European eCall using other wireless communications media (for example E-UTRAN) may be specified in future standards for 'high level application protocols' for that wireless media.

NOTE 1 An XML encoding of the MSD data representation can be used in TPSP-to-PSAP applications (EN 16102). Annex C contains the derived XSD for such encoding.

NOTE 2 In order to implement presentation in ASN.1 UPER, readers are advised to also read Annex B "ASN.1 Data Representation PER and BER explained"; and also the relevant normative referenced documents.

5.1.3 Different versions of MSD data

It is foreseen that, over time, new versions of the MSD data definition will occur. Wherever possible, later versions of the MSD shall be backwards compatible with existing versions.

If a future version of the MSD is defined which is not backwards compatible (i.e. cannot be automatically interpreted by receiving systems) then its deployment shall be coordinated to ensure that all receiving systems are ready before IVS adopt this new MSD format.

The main structure of an MSD shall, in any version, contain two elements, the first of which is known as the MSD version (msdVersion) which designates the encoding rules that have been used to create the second element.

Systems receiving an MSD shall support all standardized MSD versions, which are each uniquely identified using this msdVersion parameter.

5.1.4 Distribution of MSD data

The MSD shall be transmitted using one or more communications media as defined in other eCall Standards

In order to enable interpretation by the PSAP, the MSD shall always be presented in an ASN.1 encoded module: either ASN.1 'Unaligned Packet Encoding Rules' (UPER) or ASN.1 'Extended XML Encoding Rules' (EXER) encoding shall be used.

The ASN.1 module shall contain the MSD as defined in this European Standard plus none or more 'optional additional data' concepts presented as defined in 5.1.5 and whose name, content and presentation has been made available in a data registry as required by this European Standard (See 5.1.5).

In the case of an MSD for pan-European eCall it shall be encoded using 'Unaligned Packed Encoding Rules' (UPER) as defined in ISO/IEC 8825-2. The length of this encoded MSD (including any 'optional additional data') shall not exceed 140 bytes (as specified in EN 16062). Any payload bytes received outside of the ASN.1 message length shall be ignored by the receiving entity.

The maximum length of data presented by an MSD for pan-European eCall sent via another wireless media shall be defined in the eCall "High Level Application Protocol" standard for that specific wireless media

NOTE 1 It is assumed that the integrity of the transmitted data is assured by the underlying communication interface standard used. For example EN 16072 which defines the operating requirements for the transmission of Pan-European eCall and EN 16062 (eCall high level application protocols for GSM/UMTS) which provide the high level application protocols for sending a Pan-European eCall via a circuit switched GSM/UMTS wireless phone network.

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EN 16102 defines provisions for Third Party supported eCall.

NOTE 2 If the MSD is transferred using another means of communication that has no, or less stringent, data limits, XML encoding rules can be used if preferred. Annex C contains the derived XSD for such encoding.

5.1.5 Additional data

The MSD message has a provision for 'optional' additional data. This European Standard specifies the presentation of any such data within an MSD message. The nature and content of such additional data is not part of this standard.

EXAMPLE Additional data may contain a reference to an external source of relevant information (such as a phone number, a website URL, etc. where further information may be found, or additional data specific to the vehicle or incident (e.g. battery temperature in the case of an electric or hybrid vehicle; number of rollovers; URL to the technical specifications to a particular vehicle model; etc.)

Optional additional data shall not include any data concerning or identifying a person (personal data) unless the transfer of such data has been explicitly and expressly prior instructed and authorized by the person who is identified by the data and its provision shall in any event only be provided only in accordance with European Union and National privacy regulations pertaining at the time of the transfer of any such personal data and in accordance with the provisions of EU 2016/679 'General Data Protection Requirements'.

Any additional data element(s) shall each consist of two parts:

1. A relative 'object identifier' (OID)
2. the data content.

The relative OID shall be allocated by CEN TC278 WG15 or a body nominated by it. For further information see Annex E.

CEN/TC 278/WG15 or a body nominated by it shall allocate an 'Object Identifier' (OID) for each 'Optional Additional Data concept'. Within the MSD the 'Optional Additional Data concept' used shall be identified by a 'relative OID', i.e. it will only contain the arcs of the object identifier of the concept starting below the eCall MSD 'Optional Additional Data concept' object identifier. See 5.2 below.

Additional data shall be represented using an ASN.1 representation definition that itself is made available to emergency services/PSAPs.

When sending an MSD containing this additional data, using GSM/UMTS (EN 16062), the addition of such data shall never cause the total (UPER encoded) MSD message length to exceed the maximum available number of bytes (total message length = 140 bytes).

In order to ensure that the above requirement is met with any combination of optional parameters within the main MSD message, the total length of additional data concepts may not exceed 94 bytes of data encoded in ASN.1 UPER.

5.2 ISO Object identifier

ISO/ITU "Object Identifiers" are explained in informative Annex E.

The full eCall MSD, or any optional additional data concept, is preceded by its ISO object identifier. When eCall data is stored or used outside of the eCall context this OID shall be prefixed onto all representations of the MSD or any eCall data concept.

In eCall context, when data is being sent to a specific receiver (e.g. PSAP), the OID may be assumed to be known and is not transmitted. Thus the OID is not transferred over the air between the IVS and PSAP.

eCall has been allocated the OID: 1.0.14817.106.2.1

EXPLANATION

1. identifies the data concept as an ISO parent route standard

0. identifies the arc as being identified by a Standards reference number.

14817 In this case ISO 14817 being the parent standard for ITS data registry

106 emergency-service

2 pre-harmonisation-automated-calls

1 cen-15722

Below this OID three nodes are defined:

1.0.14817.106.2.1.1 for 'Mandatory Data Concepts'

1.0.14817.106.2.1.2 for 'Optional Data Concepts'

1.0.14817.106.2.1.3 for eCall data elements

5.3 Contents of the 'Minimum Set of Data' (MSD)

5.3.1 General

The following sub-clauses provide the definition of the minimum set of data that shall be sent from the vehicle in case of an emergency call.

5.3.2 Basic contents of MSD version 2

Table 1 provides a summary of the semantic contents of the MSD.

The sequence of data presentation shall be as specified in Table 1, represented as described in 5.1.2 and distributed as described in 5.1.4.

For clarity the 'type' used in Table 1 is a semantic representation of the type used in the ASN.1 definition. The exact representation is defined in Annex A.

The real position of the element in the data-stream is defined by the ASN.1 'unaligned packet encoding rules (UPER)', following the definition in Annex A. Elements therefore do not necessarily start or end on a byte boundary.

Table 1 — Contents/format of the MSD data concept

M – Mandatory data field

O – Optional data field.

MSD				
msdVersion	INTEGER (1..255)	-	M	MSD format version The format described in this document carries version 2 <i>See 5.1.4 for detailed information.</i>
Msd				
msdStructure				
messageIdentifier	INTEGER (1..255)		M	Message identifier, starting with 1 for each new eCall transaction and to be incremented with every application layer MSD retransmission following a new 'Send MSD' request after the incident event
Control			M	
automaticActivation	BOOLEAN			true = Automatic activation false = Manual activation
testCall	BOOLEAN			true = Test call false = Emergency
positionCanBeTrusted	BOOLEAN			true = Position can be trusted false = Low confidence in position "Low confidence in position" shall mean that there is less than 95% confidence that exact position is within a radius of ± 150 m of reported position
vehicleType	ENUM			The category of the vehicle according to UNECE Vehicle classification ECE-TRANS-WP29-78-r4e for type approval according to Directive 2007/46/EC of the European Parliament and of the Council as referenced in eCall Regulations, esp Commission Delegated Regulation (EU) 2017/79. The supported vehicle categories are: (Category M - Power-driven vehicles having at least four wheels and used for the carriage of passengers) - Category M1 passenger vehicle - Category M2 buses and coaches - Category M3 buses and coaches (Category N - Power-driven vehicles having at least four wheels and used for the carriage of goods) - Category N1 light commercial vehicles - Category N2 heavy duty vehicles - Category N3 heavy duty vehicles