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Cestna transportna in prometna telematika - E-Safety - Minimalni nabor podatkov za elektronski klic v sili

Road transport and traffic telematics - ESafety - ECall minimum set of data

Intelligente Transportsysteme - Elektronische Sicherheit - Minimaler Datensatz für Notrufe (MSD)

Systèmes de transport intelligente - ESafety - ECall ensemble minimum de données (MSD)

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43.040.15	Avtomobilska informatika. Vgrajeni računalniški sistemi	Car informatics. On board computer systems

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Road transport and traffic telematics - ESafety - ECall minimum set of data

Systèmes de transport intelligente - ESafety - ECall
ensemble minimum de données (MSD)

Intelligente Transportsysteme - Elektronische Sicherheit -
Minimaler Datensatz für Notrufe (MSD)

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

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Contents		Page
Foreword		3
Introduction		3
1	Scope	4
2	Conformance	4
3	Normative reference	4
4	Terms and definitions	5
5	Symbols and abbreviated terms	5
6	Requirements	5
6.1	Concepts and formats	5
6.1.1	MSD data concepts	5
6.1.2	Format definition of MSD data concepts	5
6.1.3	Sequence of MSD data concepts	6
6.1.4	Data presentation of MSD	6
6.2	Minimum set of data (MSD)	6
6.2.1	Order of bits and bytes	6
6.2.2	Contents of MSD	7
6.2.3	MSD acknowledgement and requests	12
Annex A (normative)	ASN.1 PER representation of MSD	13
Annex B (informative)	ASN.1 Data representation PER and BER explained	17
B.1	Introduction to ASN.1 and the 'Packed Encoding Rules'	17
B.2	Basic encoding rules	18
B.3	Packed encoding rules	19
Annex C (informative)	Formal XML format description for the MSD	20
Bibliography		27

Foreword

This document (prEN 15722:2010) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 15722:2009.

Introduction

The scale of death and injury on roads around the world needs to be fully comprehended to understand the need for "Emergency Call" (eCall). There are around 41,600 deaths and more than 1.7 million injured in 2005. Roads remain unsafe, and further efforts are needed. The pan-European in-vehicle emergency call, eCall, is estimated to have the potential to save up to 2.500 fatalities annually in EU-25 when fully deployed, and furthermore to reduce the severity of injuries, to bring significant savings to the society in healthcare and other costs 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 a normal mobile phone may not be available for use, or the car occupants may not be in a position to call.

The situation is worse for those travelling abroad: For example, in EU there are over 100 million trips to another EU country per year (EU-15) -65 % 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 prohibit proper communication.

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 "Road Traffic and Transport Telematics" (otherwise known as "Intelligent Transport Systems" or "ITS") , 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 ". This Technical Specification defines 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 The communications media and means of transferring the eCall MSD are not defined in this European Standard.

prEN 15722:2010 (E)**1 Scope**

This European Standard defines the standard data concepts that comprise the "Minimum Set of Data" 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 session.

NOTE 1 The communications media protocols and methods for the transmission of the eCall message are not specified in this Standard.

NOTE 2 Additional data concepts may also be transferred, and any such data concepts should be registered using a data registry as defined in EN ISO 24978.

2 Conformance

In order to claim conformance with this Technical Specification, communication shall be established using accepted wireless communication standards, and it shall be able to demonstrate that the minimum set of data (MSD) transferred together with any standardised optional data elements defined herein comply with the specifications of this Technical Specification, to the extent that such data is available from the vehicle.

3 Normative reference

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 6709; *Standard representation of latitude, longitude and altitude for geographic point locations*

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

prEN 278220¹; Intelligent transport systems - Pan European eCall - Operating requirements

prEN 278244²; Intelligent transport systems - eCall - Operating requirements for third party support

¹ Under development

² Under development

4 Terms and definitions

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

4.1

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 standardised *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*'

5 Symbols and abbreviated terms

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
EU-27	27 countries that formed the European Union from 2007
GSM	global standard mobile
GNSS	global navigation satellite system
ID	identity
IP	Internet protocol
LPG	liquid propane gas
M	mandatory
MSD	minimum set of data
O	optional
PER	packed encoding rules (ASN.1)
PSAP	public safety answering point

6 Requirements

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.

6.1 Concepts and formats

6.1.1 MSD data concepts

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

6.1.2 Format definition of MSD data concepts

The definitions shown in this Standard are shown below in semantic representation. Data presentation shall be as determined in 6.1.4.

prEN 15722:2010 (E)

The real position of the element in the data-stream is defined by the ASN1 definition in Annex A. Elements therefore do not necessarily start or end on a byte boundary.

NOTE The information elements in the minimum set of data have been selected on the basis of their relevance in an emergency rescue situation.

6.1.3 Sequence of MSD data concepts

The sequence of data presentation shall be as specified in 6.2, presented as defined in 6.1.4

6.1.4 Data presentation of MSD

The MSD shall be transmitted using one or more wireless communications media as defined in prEN 278220 (under development) which defines one or more ETSI air interface Standards suitable for the transmission of eCall, and shall be presented in Abstract Syntax Notation, ASN.1 Packed encoding rules (PER unaligned) as defined in ISO 8825-2 using the ASN1 definitions defined in Annex A.

The MSD is also referred to in prEN 278244 (under development).

NOTE In order to implement presentation in ASN.1 PER, readers are advised to also read Annex B "ASN.1 Data Representation PER and BER explained"; and also [1], [2], [3], [4].

NOTE It is assumed that the integrity of the transmitted data is assured by the underlying communication interface standard used.

6.2 Minimum set of data (MSD)

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.

6.2.1 Order of bits and bytes

The message shall be sent in the sequence defined within these sub-Clauses

The "Minimum Set of Data" (MSD) and the acknowledgment shall be transmitted by the network access device according to agreed European Standards. Figure 1 provides the order of the bits and bytes in the MSD frame.

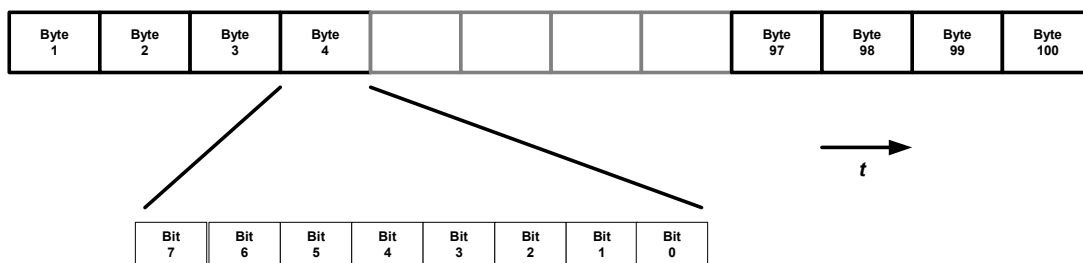


Figure 1 — Order of bits and bytes in MSD frame

6.2.2 Contents of MSD

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

The real position and type of the elements in the data stream is defined by the formal ASN1 definition in Annex A.

Table 1 — Contents/format of the MSD data concept

M – Mandatory data field

O – Optional data field, must be included even if no information is included.

Block No.	Name	Type	Unit	Description
1	ID	Integer	M	MSD format version set to 1 to discriminate from later MSD formats
		Integer	M	Message identifier, starting with 1 and to be incremented with every MSD retransmission after the incident event
2	Control	Bit sequence	M	<p>activation: 1 = Automatic activation 0 = Manual activation</p> <p>call type: 1 = Test call 0 = Emergency</p> <p>position confidence: 1 = Low confidence in position 0 = Position can be trusted</p> <p>vehicle type encoding: 0001= passenger vehicle (Class M1) 0010= buses and coaches (Class M2) 0011= buses and coaches (Class M3) 0100= light commercial vehicles (Class N1) 0101= heavy duty vehicles (Class N2) 0110= heavy duty vehicles (Class N3) 0111= motorcycles (Class L1e) 1000= motorcycles (Class L2e) 1001= motorcycles (Class L3e) 1010= motorcycles (Class L4e) 1011= motorcycles (Class L5e) 1100= motorcycles (Class L6e) 1101= motorcycles (Class L7e)</p> <p>NOTE: Vehicle definitions class M, N according directive 2007/46/EC; class L according directive 2002/24/EC</p> <p>NOTE: The position confidence bit is to be set to "Low confidence in position" if the</p>

prEN 15722:2010 (E)

Block No.	Name	Type	Unit		Description
					position is not within the limits of +/-150m with 95% confidence
3	Vehicle identification	String		M	VIN number according ISO 3779 <i>World Manufacturer Index (WMI)</i> <i>Vehicle Type Descriptor (VDS)</i> <i>Vehicle Identification Sequence (VIS)</i>
4	Vehicle propulsion storage type	Integer		M	These parameters identify the type of vehicle energy storage(s) present: 0 = indicates a type of storage not present 1 = indicates type of storage which is present All bits set to zero indicates an unknown type of energy storage hydrogen storage present electric energy storage present (with more than 42v and 100Ah) liquid propane gas (LPG) present compressed natural gas (CNG) present diesel tank present gasoline tank present NOTE: This information may be unreliable if there has been a change of vehicle propulsion type (e.g. from gasoline to CNG) NOTE: More than one bit may be set if there is more than one type of energy storage present
5	Time stamp	Integer	UTC sec	M	Timestamp of incident event As seconds elapsed since midnight January 1 st , 1970 UTC.
6	Vehicle Location	Integer	milliarcsec	M	Position latitude (ISO 6709) Value range (-324000000 to 324000000) Maximum value Latitude = 90°00'00.000" = 90*60*60.000" = 324000.000" = 324 000 000 Miliarcseconds = 0x134FD900 Minimum value Latitude = - 90°00'00.000" = -90*60*60.000" = -324000.000" = -324 000 000 Miliarcseconds = 0xECB02700

Block No.	Name	Type	Unit		Description
					<p><i>EXAMPLE</i> 48°18'1.20" N = 48.3003333 lat = (48*3600)+(18*60)+1.20}'' = 173881,200'' which encodes to the following value: = 173881200d = 0x0A5D3770</p> <p>If latitude is invalid or unknown, the value 0xFFFFFFFF shall be transmitted</p>
		Integer	miliarcsec	M	<p>Position longitude (ISO 6709) Value range (-648000000 to 648000000) Maximum value Longitude = 180°00'00.000" = 180*60*60.000" = 648000.000" = 648 000 000 Miliarcseconds = 0x269FB200</p> <p>Minimum value Longitude = - 180°00'00.000" = -180*60*60.000" = - 648000.000" = -648 000 000 Miliarcseconds = 0xD9604E00</p> <p><i>EXAMPLE.</i> 11°37'2.52" E = 11.6173666 long = (11*3600)+(37*60)+2.52}'' = 41822.520'' which encodes to the following value: = 41822520d = 0x027E2938</p> <p>If longitude is invalid or unknown, the value 0xFFFFFFFF shall be used</p>
	Vehicle direction	Integer	2°-Degree	M	Direction of travel in 2°-degrees steps from magnetic north (0–358, clockwise)
7	Recent Vehicle Location n-1	Integer	100 miliarcsec	O	<p>Latitude Delta (+ for North and – for South) with respect to Current Vehicle position in Block 6.</p> <p>1 Unit = 100 miliarcseconds, which is approximately 3m</p> <p>Coded value range -512..511) representing -51200 to +51100 miliarcseconds, or from 51,2''S to 51,1''N from the current position</p>
		Integer	100	O	Longitude Delta (+ for East and – for West) with respect to Current