

**Intelligent transport systems - Traffic and travel
information messages via traffic message coding - Part
1: Coding protocol for Radio Data System - Traffic
Message Channel (RDS-TMC) using ALERT-C (ISO/FDIS
14819-1:2013)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 14819-1:2013 sisaldab Euroopa standardi EN ISO 14819-1:2013 inglisekeelset teksti.	This Estonian standard EVS-EN ISO 14819-1:2013 consists of the English text of the European standard EN ISO 14819-1:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks .	Date of Availability of the European standard is .
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 03.220.20, 35.240.60

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

Intelligent transport systems - Traffic and travel information
messages via traffic message coding - Part 1: Coding protocol
for Radio Data System - Traffic Message Channel (RDS-TMC)
using ALERT-C (ISO 14819-1:2013)

Systèmes intelligents de transport - Informations sur le trafic
et le tourisme via le codage de messages sur le trafic -
Partie 1: Protocole de codage pour le système de
radiodiffusion de données (RDS) - Canal de messages
d'informations sur le trafic (RDS-TMC) avec ALERT-C (ISO
14819-1:2013)

Intelligente Transportsysteme - Verkehrs- und
Reiseinformationen über Verkehrsmeldungskodierung - Teil
1: Kodierungsprotokoll für den digitalen Radiokanal für
Verkehrsmeldungen (RDS-TMC) unter Nutzung von
ALERT-C (ISO 14819-1:2013)

This European Standard was approved by CEN on 26 October 2013.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 14819-1:2013) has been prepared by Technical Committee ISO/TC 204 “Intelligent transport systems” in collaboration with Technical Committee CEN/TC 278 “Road transport and traffic telematics” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 14819-1:2003.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 14819-1:2013 has been approved by CEN as EN ISO 14819-1:2013 without any modification.

Contents

Page

Foreword	v
Introduction	vii
1 Scope	1
1.1 General scope	1
1.2 Content	1
1.3 Message management	2
1.4 Transmission	2
1.5 Event list	2
2 Normative references	2
3 Terms, definitions and abbreviated terms	2
3.1 Terms and definitions	2
3.2 Abbreviated terms	5
4 Application	7
4.1 General	7
4.2 Definition of the TMC "travel service"	7
4.3 TMC virtual terminal	8
4.4 Event-oriented end-user information messages	8
4.5 Strategic and tactical information	8
4.6 Geographic relevance	9
4.7 Transmitted message priority	9
4.8 Event List	10
4.9 Future extensions	10
5 Presentation	10
5.1 General	10
5.2 TMC virtual language	10
5.3 Message content	11
5.3.1 General	11
5.3.2 Event Description (11 bits)	11
5.3.3 Primary Location (16 bits)	11
5.3.4 Direction and Extent (4 bits)	12
5.3.5 Duration (3 bits)	13
5.3.6 Diversion Advice (1 bit)	14
5.4 Implicit information	15
5.4.1 Road class and road number	15
5.4.2 Road segment	15
5.4.3 Area, region and country	15
5.4.4 Pre-assigned diversion advice	15
5.4.5 Urgency within the terminal	15
5.4.6 Directionality	15
5.4.7 Duration type	16
5.4.8 Nature	16
5.4.9 Update class	16
5.4.10 Quantifier type	16
5.5 Optional message content	16
5.5.1 General	16
5.5.2 Combination of additional information	17
5.5.3 Control codes (label 1)	18
5.5.4 Length of route affected (label 2)	18
5.5.5 Speed limit (label 3)	18

5.5.6	Additional quantifiers (labels 4 and 5)	19
5.5.7	Supplementary information (label 6)	19
5.5.8	Start and stop times (labels 7 and 8)	19
5.5.9	Multi-event messages (label 9)	19
5.5.10	Detailed diversion instructions (label 10)	20
5.5.11	Destinations (label 11)	20
5.5.12	Precise location reference (label 12)	20
5.5.13	Cross linkage to source of problem (label 13)	21
5.5.14	Separator (label 14)	22
5.5.15	Other information as defined by sub-labels (label 15)	22
5.5.16	Reference to telephone services (label 15, sub-label 1-2)	22
6	Message management	25
6.1	General	25
6.2	System messages	26
6.2.1	General	26
6.2.2	Location table	26
6.2.3	Terminal requirements	26
6.2.4	Change of database numbers	27
6.3	Message repetition	27
6.4	Message updating	28
6.5	Message deletion	28
6.5.1	General	28
6.5.2	Message persistence	28
6.5.3	Detailed stop-time	29
6.5.4	Silent cancellation message	29
6.5.5	Null message	29
6.6	Message presentation	30
6.7	Out of area referencing	30
6.7.1	Structure of the INTER-ROAD concept	30
6.7.2	INTER-ROAD messages	31
6.7.3	Updating and cancellation of INTER-ROAD messages	31
7	Transmission	32
7.1	General	32
7.2	Format of type 8A groups	32
7.3	Immediate repetition	32
7.4	Single-group user messages	33
7.5	System messages	34
7.5.1	General	34
7.5.2	System information	34
7.5.3	Tuning information	38
7.6	Multi-group messages	40
7.6.1	First group	40
7.6.2	Subsequent groups	41
7.7	Summary of X-bit usage in RDS-TMC type 8A groups	43

Introduction

Traffic and traveller information (TTI) may be disseminated through a number of services and means of communication to the end user, including static displays (e.g. Variable Message Signs), broadcast audio to car radios, broadcast data services to in-vehicle equipment (e.g. installed navigation system) and to nomadic device terminals (e.g. portable navigation device).

For all such services, the data to be disseminated and the message structure involved in the various interfaces require clear definition and standard formats, in order to allow competitive products to operate with any received data.

This part of ISO 14819 describes the data specification for TTI messages, together with their network layer and their service layer, which shall be conveyed by the RDS-TMC feature, specified in IEC 62106 (Second edition - 2009).

The TTI information chain, from event to end-user is quite complex and the TISA (the Traveller Information Services Association) value chain shown in Figure 1 helps to understand the key components:



Figure 1 — The Traveller Information Services Association TTI value chain

A number of entities (e.g. companies, businesses) take part in one or more activities to complete the activities shown in the value chain. Two, in particular are described, for improved understanding:

Service Provider: An organisation that constructs a data service, by gathering data, processing data and supplying the data service. A Service Provider then negotiates for the use of the necessary data bandwidth with a Broadcaster and/or Transmission Operator. A Service Provider is responsible for the "quality" of the content to his customers and must provide suitable customer support.

Broadcaster: A traditionally incorporated organisation responsible for a continuous strand of audio programmes and their quality. A broadcaster may also be responsible for overall co-ordination of "broadcast transmissions" (often a Broadcaster is the licensee of a national regulator). A Broadcaster may also be a Service Provider.

TTI services for travellers, using spoken radio reports and in-vision reports occupy broadcast air-time and whilst valuable to some, they are considered less useful by others. Furthermore, only some are useful for travellers on the move. Due to the widespread adoption of the Radio Data System, in VHF/FM broadcasting on Band II there is the possibility of transmitting coded TTI messages digitally and "silently" using the RDS-TMC feature, which avoids the interruption of planned programmes. This TTI delivery method has a number of advantages: TTI messages can be decoded into the language of the end user, regardless of location, more messages can be made available and planned broadcast programme interruption is avoided, so make delivery of TTI messages more timely and topical.

The ALERT-C protocol defined in this part of ISO 14819 supports a data broadcasting service for travellers, providing information about many kinds of traffic and travel events. Messages include traffic incident information relating to national and regional routes and some urban roads and other information required by a traveller, such as roadworks and weather information.

This part of ISO 14819 is based on the ALERT-C traffic message coding protocol, which was a product of DRIVE Project V1029, "RDS Advice and Problem Location for European Road Traffic". The RDS-ALERT project aimed to define standards for RDS-TMC, working in conjunction with the European Broadcasting Union (EBU) and the European Conference of Ministers of Transport (ECMT).

The international standard has been implemented in many countries worldwide and, as a result of very extensive implementation experience, it has matured with many changes from the earliest version of the ALERT-C proposal of 1990. At that time CEN TC 278 Sub-working group (SWG) 4.1 developed the coding protocol, herein and the event list described in ISO 14819-2; meanwhile CEN TC 278 SWG 7.3 developed the location referencing method which is described in ISO 14819-3. Subsequently the TMC Forum was responsible for collecting specific additions and improvements intended for inclusion in this part of ISO 14819. Latterly, the Traveller Information Services Association (TISA) took over all responsibility (including TMC Forum legacy) for maintenance of this part of ISO 14819, which now includes an up to date set of industry supported enhancements to RDS-TMC.

The RDS system is fully described in IEC 62106 (Second edition, 2009) and it contains the 'hooks' to RDS-TMC, detailed in this part of ISO 14819. It employs a group structured data protocol. It uses type 3A groups defined to carry Open Data Application (ODA) identification and service and network layer information. This enables signalling of the TMC feature in other data groups. It uses type 8A groups defined to carry RDS-TMC messages and location information, together with TMC service tuning information.

Broadly, two types of RDS-TMC services are required: one that is, in effect, free of charge at the point of use by an end user and thus uses un-encrypted data, and one that is paid-for using encrypted data. The conditional access capability was developed by the TMC Forum and is described in ISO 14819-6.

Intelligent transport systems — Traffic and travel information messages via traffic message coding —

Part 1: Coding protocol for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C

1 Scope

1.1 General scope

The ALERT-C protocol is designed to provide mostly event-oriented road end-user information messages. Many "hooks" have been left for future development and a few status-orientated road end-user information messages were included.

1.2 Content

The presentation section of the ALERT-C protocol specifies messages that may be presented to the user in accordance with the general requirements set out above. It defines the message structure and content, and its presentation to the end-user.

RDS-TMC messages are language-independent, and can be presented in the language of the user's choice. The ALERT-C protocol utilises a standardised Event List (ISO 14819-2) of event messages with their code values, which also includes general traffic problems and weather situations.

ALERT-C defines two categories of information within messages: basic and optional items. In principle, basic information is present in all messages. Optional information can be added to messages where necessary.

Standard RDS-TMC user messages provide the following five basic items of explicit, broadcast information:

1. **Event description**, giving details of road event situations, general traffic problems and weather situations (e.g. congestion caused by accident) and where appropriate its severity (e.g. resulting queue length).
2. **Location**, indicating the area, road segment or point location where the source of the problem is situated.
3. **Direction and Extent**, identifying the adjacent segments or specific point locations also affected by the incident, and where appropriate the direction of traffic affected.
4. **Duration**, giving an indication of how long the problem is expected to last.
5. **Diversion advice**, showing whether or not end-users are recommended to find and follow an alternative route.

Optional information can be added to any message using one or more additional RDS data groups. This optional addition can give greater detail or can deal with unusual situations. Any number of additional fields can in principle be added to each basic message, subject only to a maximum message length of five RDS data groups.

1.3 Message management

The message management component deals with the message management functions of RDS-TMC. The ALERT-C protocol distinguishes between user messages and system messages. User messages are those potentially made known to the end-user, as defined in the presentation section. System messages are of use only to the RDS-TMC terminal, for message management purposes.

1.4 Transmission

The transmission component conveys the messages over-air. The ALERT-C protocol, which RDS-TMC uses, retains the fundamental approach of earlier work, which aims to code most messages entirely within a single RDS group.

RDS-TMC information comprises both 'system information' and 'user messages'. System information relates to the particular TMC service, and details the parameters that the terminal needs to be able to find identify and decode the TMC information. System information is transmitted in type 3A groups and in type 8A groups.

User messages contain the details of the traffic events; these may use one or more type 8A groups. Most messages may be transmitted using a single type 8A group, however messages with more detail (e.g. diversion advice) may use up to a total of five, type 8A groups.

1.5 Event list

The ALERT-C Event List contains all event descriptions. It is described in ISO 14819-2.

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 4217:2008, *Codes for the representation of currencies and funds*

ISO 8601:2004, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 14819-2, *Intelligent transport systems — Traffic and travel information messages via traffic message coding — Part 2: Event and information codes for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C*

ISO 14819-3, *Intelligent transport systems — Traffic and travel information messages via traffic message coding — Part 3: Location referencing for Radio Data System — Traffic message Channel (RDS-TMC) using ALERT-C*

IEC 62106:2009, *Specification of the radio data system (RDS) for VHF/FM sound broadcasting in the frequency range from 87.5 to 108.0 MHz*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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