

---

---

**Traffic and Travel Information (TTI) — TTI  
messages via traffic message coding —  
Part 3:  
Location referencing for ALERT-C**

*Informations sur le trafic et le tourisme (TTI) — Messages TTI via le  
codage de messages sur le trafic —  
Partie 3: Référence d'emplacement pour ALERT-C*

[ISO 14819-3:2004](https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 14819-3:2004](#)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published by ISO in 2005

Published in Switzerland

## 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 14819-3 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 204, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European Standard..." to mean "...this International Standard...".

This first edition of ISO 14819-3 cancels and replaces ISO/TS 14819-3:2000 which has been technically revised.

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

ISO 14819 consists of the following parts, under the general title *Traffic and Travel Information (TTI) — TTI messages via traffic message coding*:

- *Part 1: Coding protocol for Radio Data System — Traffic Message Channel (RDS-TMC) using ALERT-C*
- *Part 2: Event and information codes for Radio Data System — Traffic Message Channel (RDS-TMC)*
- *Part 3: Location referencing for ALERT-C*
- *Part 6: Encryption and conditional access for the Radio Data System — Traffic Message Channel ALERT C coding*

## Contents

	page
Foreword .....	v
Introduction .....	vi
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Abbreviations</b> .....	<b>1</b>
<b>4 Location coding</b> .....	<b>2</b>
4.1 General .....	2
4.2 Location tables .....	2
4.3 TMC Location categories, types and subtypes .....	6
4.4 Location table content .....	6
4.5 Detailed junction referencing .....	11
4.6 Detailed situation locations .....	11
4.7 One and two way locations .....	12
<b>Annex A (normative) TMC Location categorie, types and subtypes</b> .....	<b>15</b>
A.1 General .....	15
A.2 Area locations .....	15
A.3 Linear locations .....	18
A.4 Point locations .....	20
<b>Annex B (normative) Location table numbers</b> .....	<b>25</b>
<b>Annex C (informative) Background information</b> .....	<b>26</b>
C.1 Overall approach .....	26
C.2 Methods .....	28
<b>Bibliography</b> .....	<b>34</b>

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dbalacde1c/iso-14819-3-2004>

## Foreword

This document (EN ISO 14819-3:2004) has been prepared by Technical Committee CEN/TC 278, "Road transport and traffic telematics", the secretariat of which is held by NEN, in co-operation with ISO/TC 204 "Transport information and control systems".

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 September 2004, and conflicting national standards shall be withdrawn at the latest by September 2004.

This document supersedes ENV ISO 14819-3:2000

Annexes A and B are normative. Annex C is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 14819-3:2004](https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

## Introduction

This document sets out ways of specifying places and positions in traffic and travel information messages, including RDS-TMC messages (the Radio Data System - Traffic Message Channel).

It defines the structure and semantics of location tables for Traffic Information Centres (TICs) and receivers.

### b) TRAFFIC AND TRAVEL MESSAGES

- 1) Traffic and travel information is created and updated in an originating database, by human operators or automated systems. Information is transferred to one or more remote systems by means of messages.
- 2) In this context, a message is a collection of data which is exchanged to convey information for an agreed purpose between two or more parties. Traffic and travel messages are digitally coded sets of data exchanged by interested parties, which convey information about traffic, travel and/or transport networks. Digital coding can be alphanumeric, as in EDIFACT, or binary, as in RDS-TMC.
- 3) The traffic and travel messages developed in programmes of the European Union are open, non-proprietary proposals for standards intended to serve the public interest by facilitating interconnection and interoperability of the relevant information systems.

### c) LOCATION REFERENCING

- 1) Location references provide the means of saying *where* in traffic and travel messages.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**  
<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

## 1 Scope

This standard primarily addresses the needs of RDS-TMC ALERT-C messages, which are already being implemented. However, the modular approach used here is intended to facilitate future extension of the location referencing rules to other traffic and travel messaging systems.

The location referencing rules defined in this standard address the specific requirements of Traffic Message Channel (TMC) systems, which use abbreviated coding formats to provide TTI messages over mobile bearers (e.g. GSM, DAB) or via exchange protocols like DATEX. In particular, the rules address the Radio Data System - Traffic Message Channel (RDS-TMC), a means of providing digitally-coded traffic and travel information to travellers using a silent data channel (RDS) on FM radio stations, based on the ALERT-C protocol.

## 2 Normative references

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).

IEC 62106	<i>Specification of the radio data system (RDS) for VHF/FM sound broadcasting in the frequency range from 87,5 to 108,0 MHz (IEC 62106:2000)</i>
EN ISO 14819-1	<i>Traffic and Travel Information (TTI) - TTI Messages via traffic message coding - Part 1: Coding protocol for Radio Data System - Traffic Message Channel (RDS-TMC) using ALERT - C (ISO 14819-1:2003)</i>
ENV ISO 14825	<i>Geographic Data Files (ISO 14825:1996)</i>

## 3 Abbreviations

For the purposes of this European Standard, the following abbreviations apply:

CENELEC	Comité Européen de Normalisation <b>ELEC</b> trotechnique
DATEX	<b>DATA</b> Exchange protocol for exchange of traffic and travel information between traffic centres
ECC	<b>Extended Country Code</b> (an RDS feature)
EDIFACT	<b>Electronic Data Interchange For Administration Commerce and Transport</b>
GDF	<b>Geographic Data Files</b> (ENV ISO 14825 for modelling and exchange of geographic data for transport telematics applications.)
RDS	<b>Radio Data System</b> (digital information channel on FM sub carrier)
TIC	<b>Traffic Information Centre</b>
TMC	<b>Traffic Message Channel</b>
TTI	<b>Traffic and Travel Information</b>

## 4 Location coding

### 4.1 General

Location references used by RDS-TMC are covered by the location referencing rules defined in this section. The ALERT-C coding protocol for RDS-TMC is defined in EN ISO 14819-1.

ALERT-C supports a digital, silent data broadcast service for motorists, providing information about many kinds of traffic situations. This includes roadwork, weather and traffic incident information relating to major national and international roads, regional roads and local or urban roads.

### 4.2 Location tables

#### 4.2.1 General

Within RDS-TMC, locations are identified and referenced by their location code. A given RDS-TMC service uses a pre-defined location table, containing the pre-stored details of the locations that can be referenced in messages from that service.

A location code in such a message refers and serves as a tabular 'address' of the pre-stored location details in the location table used by the service. A real world location may have more than one location code within the same location table. However, within a given location table, each location code refers to one and only one location. A location code has a number in the range 1 to 63,487.

Note: In ALERT-C, a further 2048 numbers are reserved for INTER-ROAD (see EN ISO 14819-1) and other forms of referencing.

A table may contain a maximum number of 65,536 codes allocated in the following way:

Location code	Use
0	reserved
1 - 63,487	free for normal location coding
63,488 - 64,511	for special purposes
64,512 - 65,532	for INTER-ROAD
64,533 - 65,535	special functions

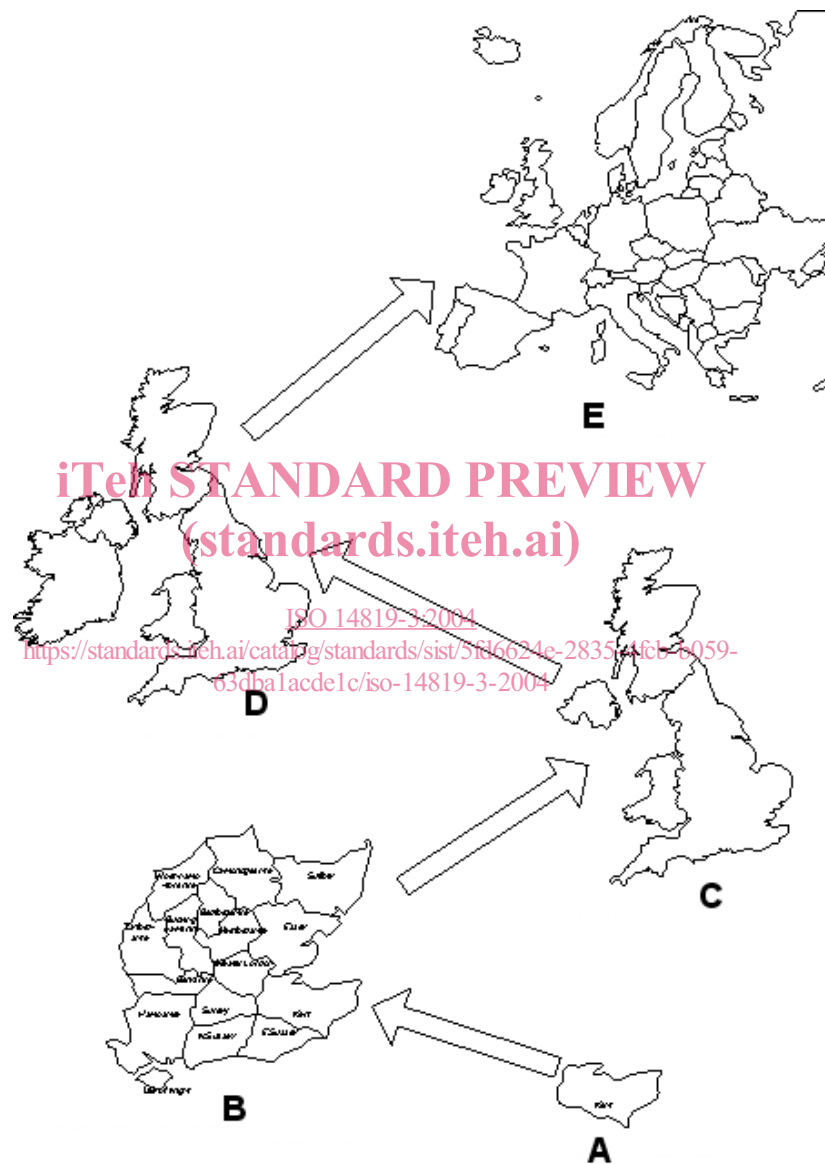
Note: INTER-ROAD is a coding mechanism within ALERT-C to reference in a specific type of ALERT-C message (the INTER-ROAD message) a location belonging to a different location table. This can be a table in the same country as well as a table in another country.



#### 4.2.2 Hierarchical structure

RDS-TMC location tables use a hierarchical structure of pre-defined locations. A system of pointers provides *upward references* to higher-level locations of which the specified location forms a part.

Example: Kent would have an upward **area reference** to south-east England. South-east England may be referenced up to the UK, then the British Isles, then Europe, etc. (Figure 1).



#### Key

- A County of Kent
- B South East England
- C United Kingdom
- D British Isles
- E Europe

Figure 1 — Upward Area Referencing

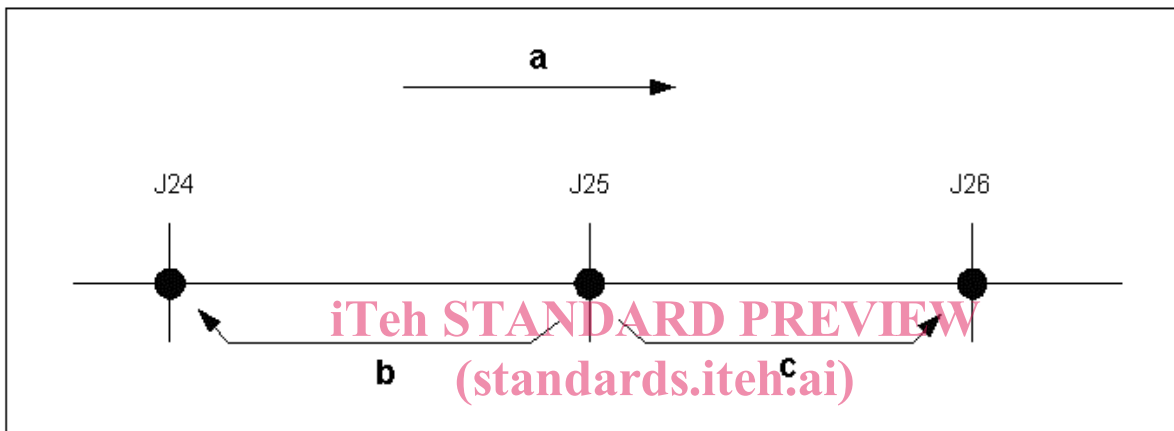
Junction 25 on the M1 motorway in UK would have a **linear reference** to a motorway segment, e.g. Leicester - Sheffield. This segment could then be referenced up to the whole road (the M1 Motorway).

Hierarchical tables help to make location referencing simple and unambiguous. A major benefit of hierarchical tables is that they facilitate automated sorting and selection of information for users. However, both hierarchical and unstructured tables are currently used in various applications.

#### 4.2.3 Offsets

Most point locations and certain linear locations point to previous and next locations of the same type. This is indicated by negative and positive offsets.

Example: Junction 25 on a motorway may be **offset** to Junction 26 in the positive direction, and to Junction 24 in the negative direction. A sign convention adopted at the time of coding locations specifies the **positive direction** of travel along each road (Figure 2).



[ISO 14819-3:2004](https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

#### Key

- a positive direction
- b negative offset
- c positive offset

Figure 2 — Offsets

#### 4.2.4 Location types

Location types and subtypes are required for language independence of the information given, and to tell the receiving system what data fields to expect.

At the highest level, locations fall into three categories:

- a) area locations
- b) linear locations
- c) point locations

Within each category, location types are distinguished (in principle) whenever a location is functionally distinct in the way it shall be handled by the message recipient. Therefore a set of predefined location types and subtypes is set out in annex A.

Subtypes can be used to give further details of (for example) facilities available at a particular location, such as a service area. The current list, in annex A, will be added to as further needs are agreed.

Official translations of the language-independent terms that describe location types and subtypes should be agreed on a national level.

#### 4.2.5 Direction of the road

The predefined direction of the road (see 4.2.3) is reflected in the positive and negative offsets in the location table and in the order of the names of the end points of a road or road segment (see Table 1).

When newly specifying positive directions along roads within pre-defined tables, it is recommended to use geographic positive directions relative to the co-ordinate system, i.e. on the Northern Hemisphere from south to north and from west to east.

For ring roads the clockwise travel direction is recommended positive.

In any case it is not allowed to reverse the direction along continuous and / or connecting segments of a road, e.g. at administrative borders.

#### 4.2.6 Country codes and location table numbers

With ALERT-C, it is assumed that RDS-TMC service and location tables are organised and defined on a country-by-country basis. Therefore each service and each location table is associated to a country code in the range 1-15 (hexadecimal 1-F) as described in IEC 62106. A service and the location table it uses shall have the same country code. There can be more than 1 location table per country. They are distinguished by an additional location table number in the range 1-63. In non-European countries, the full range of location tables per country code can be used provided that the Extended Country Code (ECC) is in use and transmitted (see IEC 62106)

In Europe a different approach is in use for historical reasons, as the ECC is not in use in all countries. Country codes are shared by more than one country within Europe and the surrounding territories. To avoid ambiguity in European RDS-TMC location referencing, ranges of location table numbers are allocated to specific countries, in accordance with the table given in annex B. In this way, each location table is identified uniquely by its country code and location table number. As can be concluded from annex B, a country like e.g. Austria can have at most 8 location tables.

#### 4.2.7 Unique location code

The combination of extended country code (8 bits), country code (4 bits) location table number (6 bits) and location code (16 bits) defines an extended location code, which is unique worldwide.

In Europe the combination of country code (4 bits), location table number (6 bits) and location code (16 bits) is unique.

#### 4.2.8 Constraints

Constraints on location coding may in future be agreed, modelled and documented. At present, however, national authorities and/or service providers are free to allocate location codes, as they wish, to locations specified in accordance with these rules.

#### 4.2.9 Future developments

Within each location table, space (unallocated location codes) shall be left to accommodate future requirements for additional locations (to deal with new construction, and location referencing requirements not originally foreseen).

Once a location has been allocated, it cannot easily be re-allocated (in an RDS-TMC/ALERT-C environment). Therefore, all existing locations and their associated location codes should be regarded as fixed. However, other attributes of a location may, within certain constraints, sometimes change (e.g. name, positive offset, negative offset).

Many location table numbers are not yet allocated. The responsible agency in a country can apply for additional location table numbers in future, to support further applications or more detailed, regional location tables. New tables can also be issued occasionally to allow for complete updates to existing tables. Such major changes will however be very disruptive for users, and should be avoided as far as possible or at least not be done too frequently.

### **4.3 TMC Location categories, types and subtypes**

Location categories, types and location subtypes are standardised, and specified in annex A. Exceptionally, new subtypes may be proposed to ISO TC204 and CEN TC278 for approval, registration and publication. Each location is described by a code, which is composed of:

- a character (A, L or P), indicating the location category (area, linear or point),
- a number indicating the type,
- a dot,
- a number indicating a subtype.

EXAMPLE 1 *P1.8 - roundabout* (P = point, P1 = junction)

For types for which not a subtype is defined, the subtype code 0 (zero) has to be used to define the type as a subtype.

EXAMPLE 2 A3.0 – country

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>

### **4.4 Location table content**

#### **4.4.1 General**

The location table content is fixed only for the purposes of definition and exchange. The information used within specific applications or by individual manufacturers is not fixed, and is not within the scope of these specifications.

For international consistency, one single location table content shall be adhered to for definition and exchange purposes. In this structure, some items are mandatory; some items are mandatory where they exist; and some items are optional.

#### **4.4.2 Nominal record content**

The nominal content of each record in the location table is as follows:

- location code,
- code of location (sub) type,
- road/junction number,
- road name,
- first name,

- second name,
- area reference,
- linear reference,
- negative offset,
- positive offset,
- urban,
- intersection reference,
- WGS 84 co-ordinates (longitude and latitude).

Not all of these items shall be present in every record. Table 1 indicates which references are required and/or allowed, according to location type.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 14819-3:2004](https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004)

<https://standards.iteh.ai/catalog/standards/sist/5fd6624e-2835-4fcb-b059-63dba1acde1c/iso-14819-3-2004>