



NSAI
Standards

Irish Standard
I.S. EN 16157-4:2021&LC:2021

Intelligent transport systems - DATEX II
data exchange specifications for traffic
management and information - Part 4:
VMS publication

I.S. EN 16157-4:2021&LC:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

Published:

This document was published under the authority of the NSAI and comes into effect on:

2021-06-09

ICS number:

35.240.60

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN 16157-4:2021&LC:2021 is the adopted Irish version of the European Document EN 16157-4:2021, Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 4: VMS publication

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

Correction Notice

Reference: EN 16157-4:2021

Title: Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 4: VMS publication

Work Item: 00278503

Brussels, 2021-05-06

Please include the following minor editorial correction(s) in the document related to:

the following language version(s) :

- English
- French
- German

for the following procedure :

- PQ/UQ
- Enquiry
- 2nd Enquiry
- Parallel Enquiry
- 2nd Parallel Enquiry
- Formal Vote
- 2nd Formal Vote
- Parallel Formal Vote
- 2nd Parallel Formal Vote
- UAP
- TC Approval
- 2nd TC Approval
- Publication
- Parallel Publication

It has been brought to our attention that this document, issued on 2021-03-17, requires modification.

The incorrect headers have been updated.

Please find enclosed the updated English version.

We apologise for any inconvenience this may cause.

This page is intentionally left BLANK.

EUROPEAN STANDARD

EN 16157-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2021

ICS 35.240.60

Supersedes CEN/TS 16157-4:2014

English Version

**Intelligent transport systems - DATEX II data exchange
specifications for traffic management and information -
Part 4: VMS publication**

Intelligente Verkehrssysteme - DATEX II
Datenaustausch Spezifikation für
Verkehrsmanagement und Information - Teil 4:
Veröffentlichungen Variable Verkehrszeichen (VMS)

This European Standard was approved by CEN on 4 January 2021.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

Contents		Page
European foreword.....		5
Introduction		6
1	Scope	7
2	Normative references.....	7
3	Terms and definitions	7
4	Symbols and abbreviations	8
5	Conformance.....	8
6	UML notation	9
7	The “Vms” namespace	9
8	The “VmsTablePublication” model.....	10
8.1	Overview of the “VmsTablePublication” model.....	10
8.2	The “VmsTablePublication” package	11
8.2.1	Overview of the “VmsTablePublication” package	11
8.2.2	Semantics of the “VmsTablePublication” package.....	13
9	The VMS Publication model.....	14
9.1	Overview of the “VmsPublication” model	14
9.2	The “VmsPublication” package	14
9.2.1	Overview of the “VmsPublication” package	14
9.2.2	Semantics of the “VmsPublication” package	15
10	The “Classes” package.....	15
10.1	Overview of the “Classes” package.....	15
10.2	The “VmsConfiguration” package.....	16
10.2.1	Overview of the “VmsConfiguration” package.....	16
10.2.2	Semantics of the “VmsConfiguration” package.....	17
10.3	The “VmsStatus” package	18
10.3.1	Overview of the “VmsStatus” package	18
10.3.2	Semantics of the “VmsStatus” package	20
10.4	The “VmsMessage” package	21
10.4.1	Overview of the “VmsMessage” package.....	21
10.4.2	Semantics of the “VmsMessage” package	23
10.5	The “VmsFault” package	26
10.5.1	Overview of the “VmsFault” package	26
10.5.2	Semantics of the “VmsFault” package.....	27
10.6	The “GraphicDataDictionary” package.....	27
10.6.1	Overview of the “GraphicDataDictionary” package.....	27
10.6.2	Semantics of the “GraphicDataDictionary” package.....	28
Annex A (normative) Data Dictionary		30
A.1	Overview	30
A.2	Data Dictionary for “VMS”	31
A.2.1	“Classes” package	31

A.2.1.1 Location of “Classes” package	31
A.2.1.2 Classes of the “Classes” package.....	32
A.2.1.3 Associations of the “Classes” package	32
A.2.1.4 Attributes of the “Classes” package.....	33
A.2.2 “GraphicDataDictionary” package.....	35
A.2.2.1 Location of “GraphicDataDictionary” package.....	35
A.2.2.2 Classes of the “GraphicDataDictionary” package	35
A.2.2.3 Associations of the “GraphicDataDictionary” package	36
A.2.2.4 Attributes of the “GraphicDataDictionary” package.....	36
A.2.3 “VmsConfiguration” package.....	37
A.2.3.1 Location of “VmsConfiguration” package.....	37
A.2.3.2 Classes of the “VmsConfiguration” package	37
A.2.3.3 Associations of the “VmsConfiguration” package	38
A.2.3.4 Attributes of the “VmsConfiguration” package	38
A.2.4 “VmsFault” package	41
A.2.4.1 Location of “VmsFault” package	41
A.2.4.2 Classes of the “VmsFault” package	41
A.2.4.3 Associations of the “VmsFault” package.....	41
A.2.4.4 Attributes of the “VmsFault” package	42
A.2.5 “VmsMessage” package.....	42
A.2.5.1 Location of “VmsMessage” package	42
A.2.5.2 Classes of the “VmsMessage” package.....	42
A.2.5.3 Associations of the “VmsMessage” package	43
A.2.5.4 Attributes of the “VmsMessage” package.....	44
A.2.6 “VmsPublication” package.....	50
A.2.6.1 Location of “VmsPublication” package	50
A.2.6.2 Classes of the “VmsPublication” package.....	50
A.2.6.3 Associations of the “VmsPublication” package	50
A.2.6.4 Attributes of the “VmsPublication” package.....	50
A.2.7 “VmsStatus” package	50
A.2.7.1 Location of “VmsStatus” package	50
A.2.7.2 Classes of the “VmsStatus” package	51
A.2.7.3 Associations of the “VmsStatus” package.....	51
A.2.7.4 Attributes of the “VmsStatus” package	52
A.2.8 “VmsTablePublication” package	53
A.2.8.1 Location of “VmsTablePublication” package.....	53

EN 16157-4:2021 (E)

A.2.8.2 Classes of the “VmsTablePublication” package..... 53

A.2.8.3 Associations of the “VmsTablePublication” package..... 53

A.2.8.4 Attributes of the “VmsTablePublication” package..... 54

A.3 Data Dictionary of < <D2Datatype> > for “VMS” 54

A.3.1 Introduction 54

A.3.2 The < <D2Datatype> > “GddPictogramCategoryCode” 54

A.4 Data Dictionary of < <D2Enumeration> > for “VMS” 54

A.4.1 Introduction 54

A.4.2 The < <D2Enumeration> > “ColourEnum” 54

A.4.3 The < <D2Enumeration> > “CompositePictogramEnum” 54

A.4.4 The < <D2Enumeration> > “DedicatedUsageEnum” 55

A.4.5 The < <D2Enumeration> > “DisplayedNumericalInformationTypeEnum” 55

A.4.6 The < <D2Enumeration> > “GddServiceCategoryEnum” 56

A.4.7 The < <D2Enumeration> > “ImageFormatEnum” 56

A.4.8 The < <D2Enumeration> > “InformationTypeEnum” 56

A.4.9 The < <D2Enumeration> > “MessageInformationTypeEnum” 57

A.4.10 The < <D2Enumeration> > “PhysicalSupportEnum” 58

A.4.11 The < <D2Enumeration> > “PictogramEnum” 58

A.4.12 The < <D2Enumeration> > “PositionXAbsoluteEnum” 62

A.4.13 The < <D2Enumeration> > “PositionXRelativeEnum” 62

A.4.14 The < <D2Enumeration> > “PositionYAbsoluteEnum” 62

A.4.15 The < <D2Enumeration> > “PositionYRelativeEnum” 63

A.4.16 The < <D2Enumeration> > “SettingReasonEnum” 63

A.4.17 The < <D2Enumeration> > “SupplementalPictogramEnum” 64

A.4.18 The < <D2Enumeration> > “UnitOfMeasureEnum” 65

A.4.19 The < <D2Enumeration> > “VmsControllerFaultEnum” 65

A.4.20 The < <D2Enumeration> > “VmsFaultEnum” 65

A.4.21 The < <D2Enumeration> > “VmsTypeEnum” 66

A.4.22 The < <D2Enumeration> > “WorkingStatusEnum” 67

Annex B (normative) Referenced XML Schema for Vms related Publications 68

B.1 Overview 68

B.2 Schema 68

Annex C (informative) Full-matrix VMS configuration 97

C.1 Introduction 97

C.2 Example of encoding 97

Bibliography 99

European foreword

This document (EN 16157-4:2021) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, 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 September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.

This document supersedes CEN/TS 16157-4:2014.

The major differences introduced in the new edition of this document are:

- renaming of some classes (e.g. currently renamed *Vms*, *VmsController*, *VmsControllerStatus*, *VmsStatus*) to improve the understanding and the usage of the modelled information;
- merging of VMS characteristics and VMS configuration in a same model to address static and dynamic configuration as well as *VmsMessage* package restructured enhancing the model flexibility for inclusion of dynamic configured VMS, e.g. “Full-Matrix” VMS;
- Compliance to ISO 14823:2017 - Intelligent transport systems – Graphic data dictionary, for description of Pictogram graphical information;
- correction of several bugs.

This document - EN 16157-4 - is the fourth part of a multi-part standard under the general title *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information*. A list of all parts in the CEN 16157 series can be found on the CEN website.

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

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

EN 16157-4:2021 (E)

Introduction

This document defines a common set of data exchange specifications to support the vision of a seamless interoperable exchange of traffic and travel information across boundaries, including national, urban, interurban, road administrations, infrastructure providers and service providers. Standardization in this context is a vital constituent to ensure interoperability, reduction of risk, reduction of the cost base, promotion of open marketplaces and many social, economic and community benefits to be gained from more informed travellers, network managers and transport operators.

Delivering European Transport Policy in line with the White Paper issued by the European Commission requires co-ordination of traffic management and development of seamless pan European services. With the aim to support sustainable mobility in Europe, the European Commission has been supporting the development of information exchange mainly between the actors of the road traffic management domain for a number of years. In the road sector, DATEX II has been long in fruition, with the European Commission being fundamental to its development through an initial contract and subsequent co-funding through the Euro-Regional projects. With the standardization of DATEX II, there is a real basis for common exchange between the actors of the traffic and travel information sector.

This document includes the framework and context for exchanges, the modelling approach, data content, data structure and relationships. This European Standard supports a methodology that is extensible.

This document specifies the informational structures, relationships, roles, attributes and associated data types required for publishing variable message sign information within the DATEX II framework. It specifies the structures and definitions of information that can be exchanged to convey details of the messages displayed on variable message signs, the current configuration, characteristics and status of the variable message signs that are currently deployed on the road network.

This is specified in two publications, a DATEX II VMS Table Publication sub-model and a VMS Publication sub-model, which are part of the DATEX II platform independent model, but this document excludes those elements that relate to:

- location information which are specified in EN 16157-2
- common information elements, which are specified in EN 16157-7
- situation information which are specified in EN 16157-3.

The VMS Table Publication supports the occasional exchange of tables containing generally static reference information about deployed VMS which enable subsequent efficient references to be made to pre-defined static information relating to those VMS.

The VMS Publication supports the exchange of the graphic and textual content of one or several VMS plus any status information on device configuration that aid the comprehension of the informational content. This content is potentially subject to rapid change.

These publications are not intended to support the control or configuration of VMS equipment. Each is part of the DATEX II platform independent model.

1 Scope

This document is the fourth part of the DATEX II European Standard which deals with the publication sub-models within the DATEX II model that support the exchange of variable message sign information.

These publications are intended to support the exchange of status and informational content concerning VMS from the organization controlling the VMS to other organisations providing ITS services or onward information exchange. It is not intended to support the control or configuration of VMS equipment.

This is specified in two sub-models, a DATEX II VMS Table Publication sub-model and a DATEX II VMS Publication sub-model.

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 16157-1:2018, *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 1: Context and framework*

EN 16157-2:2019, *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 2: Location referencing*

EN 16157-3:2018, *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 3: Situation Publication*

EN 16157-7:2018, *Intelligent transport systems - DATEX II data exchange specifications for traffic management and information - Part 7: Common data elements*

EN ISO 14823:2017, *Intelligent transport systems - Graphic data dictionary (ISO 14823:2017)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16157-7:2018, EN 16157-2:2019 and the following apply.

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

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

3.1

display area

physically or logically defined area of a VMS used to display a specific type of content -- instead of representing a specific type of content

EXAMPLE A pictogram display area is used for displaying a pictogram representing a road sign.

Note 1 to entry: Such areas can be defined permanently or allocated dynamically as for full-matrix VMS."

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-