

STN	Verejná doprava Referenčný dátový model Časť 4: Monitorovanie a riadenie prevádzky	STN EN 12896-4 01 8549
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Public transport - Reference data model - Part 4: Operations monitoring and control

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/19

Obsahuje: EN 12896-4:2019

129980

EUROPEAN STANDARD

EN 12896-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2019

ICS 35.240.60

English Version

Public transport - Reference data model - Part 4: Operations monitoring and control

Transports publics - Modèle de données de référence -
Partie 4 : suivi et contrôle de l'exploitation

Öffentlicher Verkehr - Referenzdatenmodell Teil 4:
Betriebsüberwachung und Steuerung

This European Standard was approved by CEN on 19 April 2019.

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EN 12896-4:2019 (E)**European foreword**

This document (EN 12896-4:2019) 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of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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.

The series is composed of the following documents:

- *Public transport – Reference data model – Part 1: Common concepts;*
- *Public transport – Reference data model – Part 2: Public transport network;*
- *Public transport – Reference data model – Part 3: Timing information and vehicle scheduling;*
- *Public transport – Reference data model – Part 4: Operations monitoring and control;*
- *Public transport – Reference data model – Part 5: Fare management;*
- *Public transport – Reference data model – Part 6: Passenger information;*
- *Public transport – Reference data model – Part 7: Driver management;*
- *Public transport – Reference data model – Part 8: Management information & statistics; and*
- *Public transport – Reference data model – Part 9: Informative documentation [CEN/TR].*

Together these create version 6 of the European Standard EN 12896, known as “Transmodel”, and thus replace EN 12896:2006, known as “Transmodel v5.1”.

In comparison with EN 12896:2006, the technical modifications made are presented in CEN/TR 12896-9, *Public transport – Reference data model – Part 9: Informative documentation*.

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.

Introduction

Part 1 of this European Standard presents the following items:

- Rationale for the Transmodel Standard;
- Use of the Transmodel Standard;
- Applicability of the Transmodel Standard;
- Conformance Statement;
- Transmodel Origins;
- Reference to the Previous Version and Other Documents.

The data structures represented in Part 1 are generic patterns that are referenced by different other parts.

Part 2 of this European Standard presents space-related data structures.

Part 3 presents time-related data structures and replaces the sections of EN 12896:2006 referring to the time-related Tactical Planning Components and to Vehicle Scheduling.

Part 4 (this part) presents data referring to daily operations (i.e. to operational days), different from those planned for day types (space-related data structures and tactical planning components) and including operational raw data referring to operations follow-up.

Part 5 presents fares structures including sales, validation and control.

Part 6 presents Passenger Information (planned and real-time).

Part 7 presents Driver Management including Driver Scheduling (day-type related driver schedules), Rostering (ordering of driver duties into sequences according to some chosen methods) and Driving Personnel Disposition (assignment of logical drivers to physical drivers and recording of driver performance).

Part 8 presents Management Information and Statistics.

EN 12896-4:2019 (E)**1 Scope****1.1 General Scope of the Standard**

The main objective of the present standard is to present the Reference Data Model for Public Transport, based on:

- the Reference Data Model, EN 12896, known as Transmodel V5.1;
- EN 28701:2012, *Intelligent transport systems – Public transport – Identification of Fixed Objects in Public Transport (IFOPT)*, although note that this particular standard has been withdrawn as it is now included within Parts 1 and 2 of this standard (EN 12896-1:2016 and EN 12896-2:2016) following their successful publication;

incorporating the requirements of:

- EN 15531-1 to -3 and CEN/TS 15531-4 and -5: *Public transport – Service interface for real-time information relating to public transport operations (SIRI)*;
- CEN/TS 16614-1 and -2: *Public transport – Network and Timetable Exchange (NeTEx)*, in particular the specific needs for long distance train operation.

Particular attention is drawn to the data model structure and methodology:

- the data model is described in a modular form in order to facilitate the understanding and the use of the model;
- the data model is entirely described in UML.

The following functional domains are considered:

- Network Description: routes, lines, journey patterns, timing patterns, service patterns, scheduled stop points and stop places;
- Timing Information and Vehicle Scheduling (runtimes, vehicle journeys, day type-related vehicle schedules);
- Passenger Information (planned and real-time);
- Fare Management (fare structure, sales, validation, control);
- Operations Monitoring and Control: operating day-related data, vehicle follow-up, control actions;
- Driver Management:
 - Driver Scheduling (day-type related driver schedules),
 - Rostering (ordering of driver duties into sequences according to some chosen methods),
 - Driving Personnel Disposition (assignment of logical drivers to physical drivers and recording of driver performance);
- Management Information and Statistics (including data dedicated to service performance indicators).

The data modules dedicated to cover most functions of the above domains will be specified.

Several concepts are shared by the different functional domains. This data domain is called “Common Concepts”.

1.2 Functional Domain Description

The different functional domains (enumerated above) taken into account in the present document, and of which the data have been represented as the reference model, are described in EN 12896-1:2016, *Public transport – Reference data model – Part 1: Common concepts*.

1.3 Particular Scope of this Document

The present document entitled *Public transport – Reference data model – Part 4: Operations monitoring and control* incorporates the following data packages:

- Dated Production Components MODEL;
- Call MODEL;
- Production Plan MODEL;
- Detecting and Monitoring MODEL;
- Control Action MODEL;
- Event and Incident MODEL;
- Messaging MODEL;
- Situation MODEL; and
- Facility Monitoring and Availability MODEL.

The data structures represented in this part form descriptions of data that are specific to operations for an operational day (as opposed to those planned for day types). They reference to structures as described in EN 12896-1:2016, such as version frames or generic grouping mechanisms, but also to EN 12896-2:2016 and EN 12896-3:2016.

This document itself is composed of the following parts:

- Main document (normative) presenting the data model for the domain Operations Monitoring and Control;
- Annex A (normative), containing the data dictionary, i.e. the list of all the concepts and attribute tables present in the main document together with the definitions;
- Annex B (normative), providing a complement to EN 12896-1:2016, particularly useful for parts 4 to 8 of the Public Transport Reference Data Model;
- Annex C (informative), indicating the data model evolutions; and
- Annex D (informative), providing a mapping between the Situation Publication model of DATEX II (EN 16157 and CEN/TS 16157 (all parts), *Situation Publication Data Model 2.2, 2013*), SIRI Situation Exchange (CEN/TS 15531-5:2016) and SIRI Facility Monitoring (CEN/TS 15531-4:2011).

EN 12896-4:2019 (E)**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 12896-1:2016, *Public transport – Reference data model – Part 1: Common concepts*

EN 12896-2:2016, *Public transport – Reference data model – Part 2: Public transport network*

EN 12896-3:2016, *Public transport – Reference data model – Part 3: Timing information and vehicle scheduling*

CEN/TS 15531-5:2016, *Public transport – Service interface for real-time information relating to public transport operations – Part 5: Functional service interfaces situation exchange: Situation Exchange*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN