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**Javni prevoz – Sistemi za časovno razporejanje in nadzor cestnih vozil – 6. del:  
Vsebina sporočil CAN**

Public transport - Road vehicle scheduling and control systems - Part 6: CAN message content

Öffentlicher Verkehr - Planungs- und Steuerungssysteme für Straßenfahrzeuge - Teil 6:  
CAN Nachrichteninhalte

Transports publics - Systemes d'ordonnancement et de contrôle des véhicules routiers -  
Partie 6: Contenu de messages CAN

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**Ta slovenski standard je istoveten z: CEN/TS 13149-6:2005**

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**CEN/TS 13149-6**

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**Public transport - Road vehicle scheduling and control systems -  
Part 6: CAN message content**

Transports publics - Systèmes d'ordonnancement et de  
contrôle des véhicules routiers - Partie 6: Contenu de  
messages CAN

Straßentransport- und Verkehrstelematik - Planungs- und  
Steuerungssysteme für Straßenfahrzeuge - Teil 6: CAN  
Nachrichteninhalt

This Technical Specification (CEN/TS) was approved by CEN on 27 June 2004 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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**CEN/TS 13149-6:2005 (E)****Foreword**

This Technical Specification (CEN/TS 13149-6:2005) has been prepared by Technical Committee CEN/TC 278 "Road Transport and Traffic Telematics", the secretariat of which is held by NEN.

Annex A is informative.

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

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## Introduction

This Technical Specification is part 6 of EN 13149, which gives rules for on-board data transmission systems.

This part 6 together with part 4 and part 5 describes a complete solution independent from part 1, part 2 and part 3.

This document uses terms which are already used in other standards e.g. ENV 12896:1997 "Public transport - Reference data model", when applicable.

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**CEN/TS 13149-6:2005 (E)****1 Scope**

This Technical Specification specifies the choice and the general application's rules of an onboard data transmission bus between the different equipment for service operations and monitoring of the fleet. This applies to equipment installed onboard buses, trolley-buses and tramways only as part of a bus fleet operation. It excludes tramways when they are operated as part of a train, subway or metro operation. This equipment includes operation aid systems, automatic passenger information systems, fare collection systems, etc.

The equipment directly related to the safety-related functioning of the vehicle (propulsion management, brake systems, door opening systems, etc.) are excluded from the scope of the present standard and are dealt with in other standardisation bodies.

For the described application two bus systems are standardised. Part 1 to part 3 describe the WORLDIFIP bus system and part 4 to part 6 describe the CANopen bus system. There is no ranking between the two bus systems.

This Technical Specification covers the link between equipment inside a single vehicle. Although it could be applied to multiple vehicles, this application is not explicitly covered by this standard.

Part 4 of this European Standard specifies the CANopen-based network. This specification describes the general architecture in terms of hierarchical layers according to the ISO reference model for Open Systems Interconnection (OSI) specified in ISO 7498.

Part 5 of this European Standard specifies in detail the connectors and the connector pin assignment and the cabling.

Part 6 (this document), which will be published as a Technical Specification specifies in detail the application profiles for the virtual devices in public transport.

**2 Normative references**

The following referenced documents are indispensable for the application 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 13149-4, *Public transport - Road vehicle scheduling and control systems - Part 4: General application rules for CANopen transmission buses.*

EN 13149-5, *Public transport - Road vehicle scheduling and control systems - Part 5: CANopen cabling specifications.*

EN 50325-4, *Industrial communication subsystem based on ISO 11898 (CAN) for controller-device interfaces – Part 4: CANopen*

ENV 12896, *Road transport and traffic telematics - Public transport - Reference data model.*

ISO 11898-1, *Road vehicles - Controller area network (CAN) – Part 1: Data link layer and physical signalling.*

ISO 11992-3, *Road vehicles - Interchange of digital information on electrical connections between towing and towed vehicles - Part 3: Application layer for equipment other than braking and running gear.*

ISO 16844-7, *Road vehicles - Tachograph systems - Part 7: Parameters.*

ISO/IEC 646, *Information technology - ISO 7-bit coded character set for information interchange.*



ISO/IEC 8859-1, *Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1.*

ISO/IEC 8859-2, *Information technology - 8-bit single-byte coded graphic character sets - Part 2: Latin alphabet No. 2.*

ISO/IEC 8859-15, *Information technology - 8-bit single-byte coded graphic character sets - Part 15: Latin alphabet No. 9.*

### 3 Terms and definitions

For the purposes of this Technical Specification, the terms and definitions given in ENV 12896 apply.

#### 3.1 Identifiers and numbers

##### 3.1.1 Vehicle related identifiers and numbers

The vehicle ID is assigned uniquely by the system designer to the vehicle. Usually it refers to the vehicle ID text object (611C<sub>n</sub>) containing the number given inside of the main computer or the number is coded by a fixed connector at the main computer (see Figure 1: x).

The body ID assigned by the system designer refers to the body ID text object (611D<sub>n</sub>) containing the readable identification on the vehicle body. Usually this text is printed on the vehicle body (see Figure 1: y).

The radio ID assigned by the system designer refers to the radio ID text object (611E<sub>n</sub>) containing the textual radio address of the bus. This address is necessary for selective calls to this bus (see Figure 1: z).

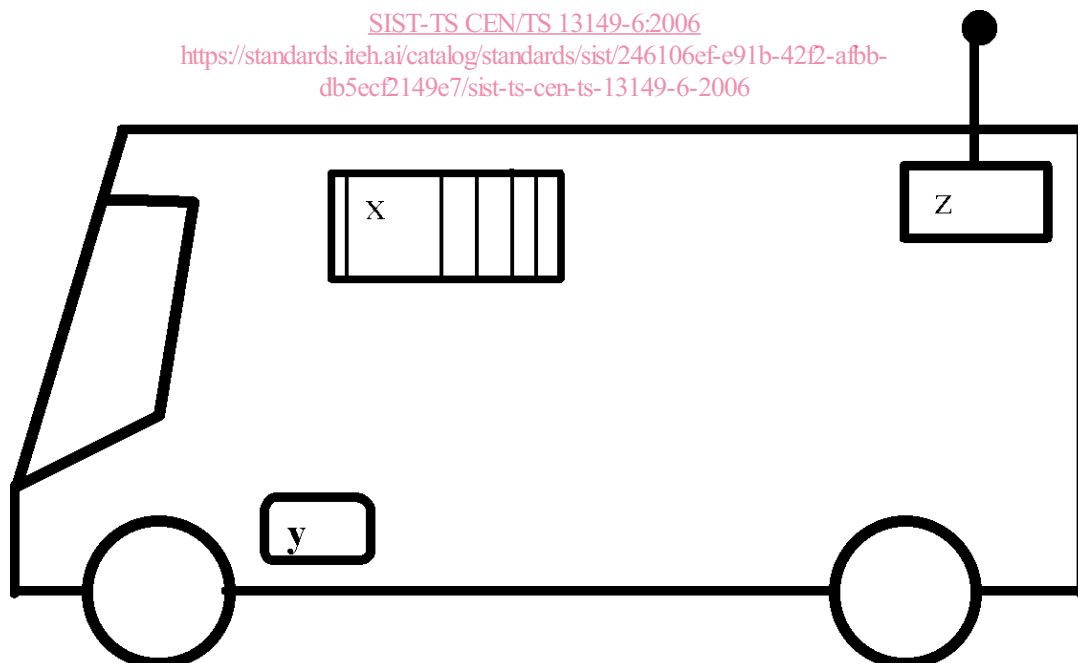


Figure 1 — Vehicle related identifiers and numbers

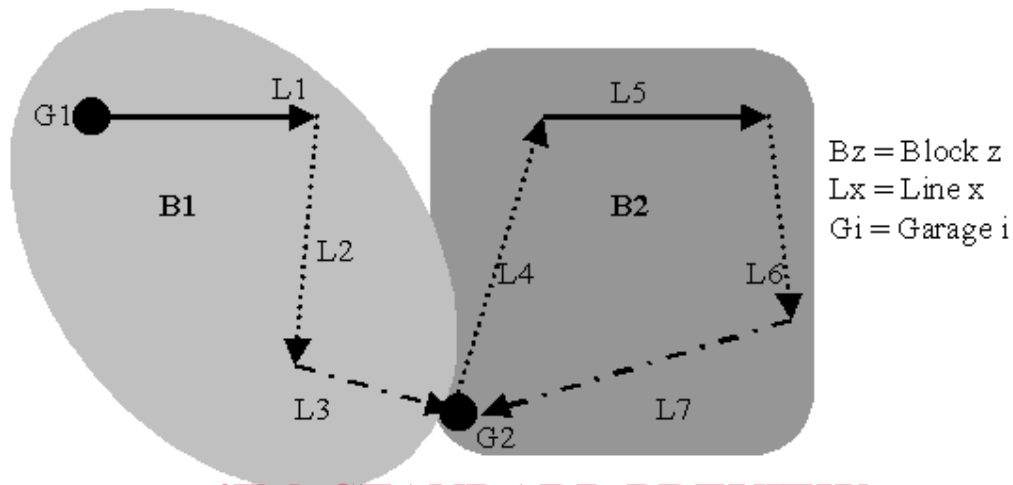
##### 3.1.2 Vehicle operation identifiers and numbers

The garage ID assigned by the system designer refers to the garage ID text object (611F<sub>n</sub>) containing the textual description of the depot or garage, where a vehicle is going to be parked during the night (see Figure 2).

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The block ID assigned by the system designer indicates the work of a vehicle from the time it leaves a parking point (depot, garage) after parking until its next return to park at a parking point. Any subsequent departure from a parking point after parking marks the start of a new block. A block should consist of one or several lines (see Figure 2). The block ID refers to the block ID text object (6197<sub>n</sub>) containing the textual description of the block.

The line ID assigned by the system designer refers to the line ID text object (6196<sub>n</sub>) containing the textual or numerical name of the line, which is known from the public by. A line should consist of a single route or a group of routes.



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Figure 2 — Non-closed and closed block

A route is an ordered list of points defining one single path through the road (or rail) network. Stop points, timing points and points of other types should be used to define this path uniquely. The route number is related to a line (see Figure 3).

The stop point ID assigned by the system designer refers to the stop point ID text object (6120<sub>n</sub>) representing uniquely a stop point within a transportation network (see Figure 3).

The destination number is the reference to the route destination. The number may differ from stop point ID (see Figure 3).

The number of running in route representation is the running stop point number within a route (see Figure 3).

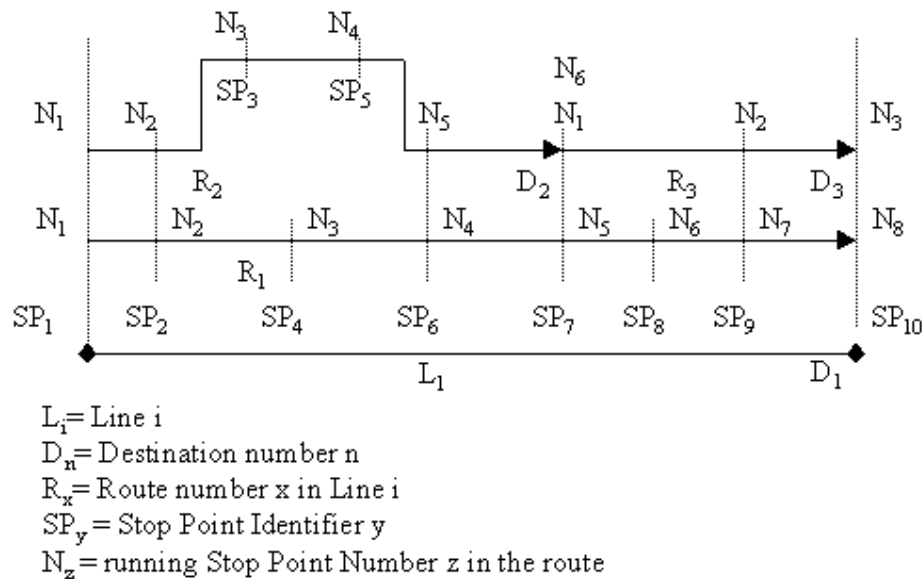


Figure 3 — Definition of a line

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The journey number refers to a journey (between one terminus to another terminus) related to a given time or time table (see Figure 4).

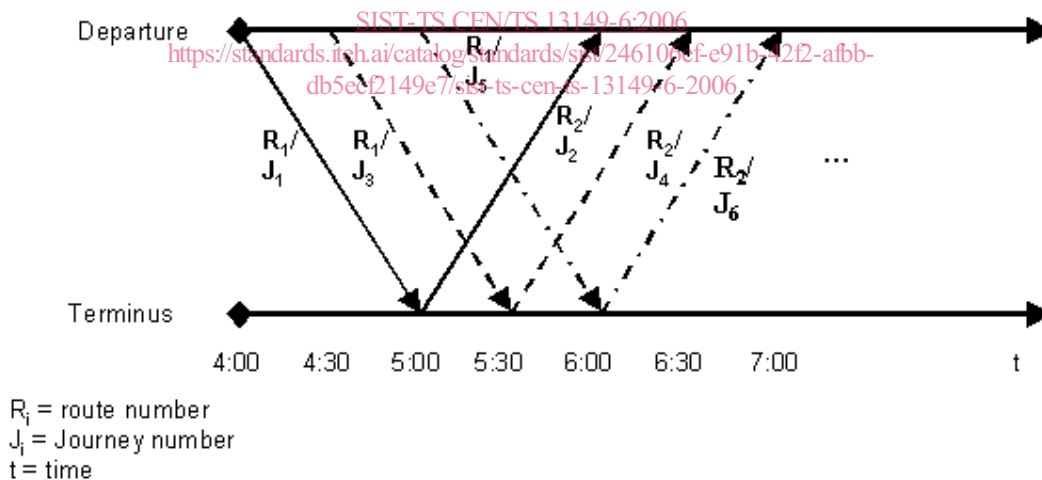
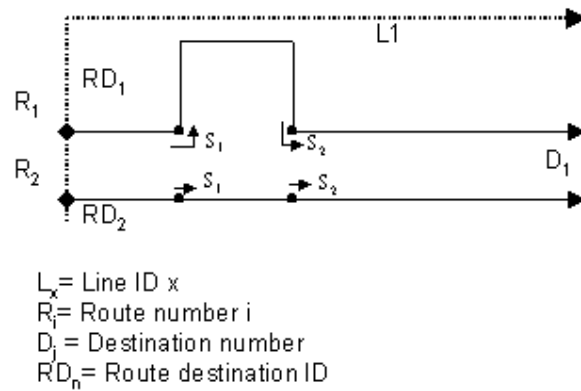


Figure 4 — Definition of a journey

The route destination ID identifies a unique route and line. With this identifier the path and the rail track of this line/route is defined for a vehicle. For example, this is used for the controlling of rail switches in the track (see Figure 5)



**Figure 5 — Description of the use of Route Destination ID**

### 3.1.3 Fare terms and related identifiers and numbers

The route segment number indicates a set of consecutive links on a given route and is unique for a fare zone (see Figure 6).

The fare zone indicates the current fare zone number (see Figure 6).

The previous fare zone indicates the number of the last/previous crossed fare zone (see Table 1).

The previous route segment number is the number of the last/previous crossed route segment (see Table 1).

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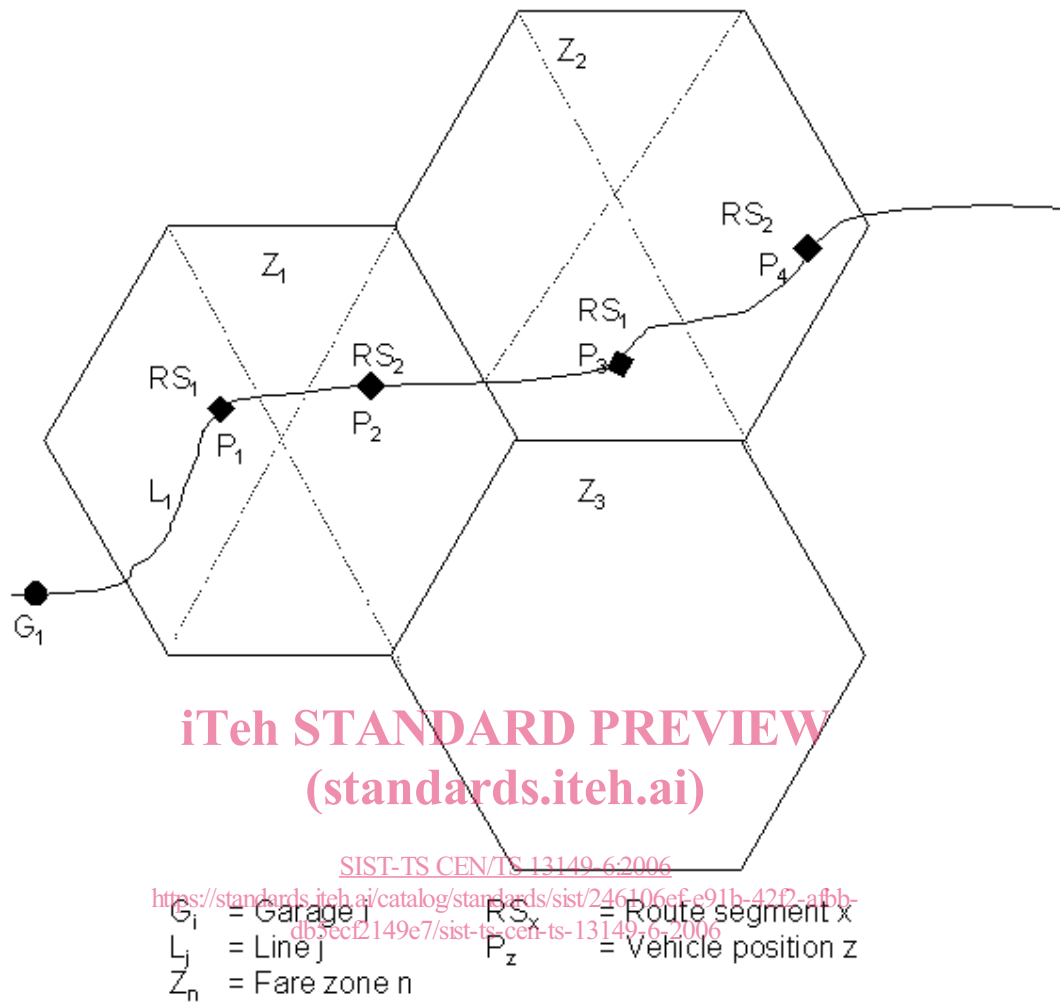


Figure 6 — Fare terms and related identifiers and numbers

Table 1 — Contents of the objects at the different vehicle positions  $p_x$ 

Positions	$P_1$	$P_2$	$P_3$	$P_4$
Fare zone	$Z_1$	$Z_1$	$Z_2$	$Z_2$
Route segment	$RS_1$	$RS_2$	$RS_1$	$RS_2$
Previous fare zone	-	-	$Z_1$	$Z_1$
Previous route segment	-	$RS_1$	$RS_2$	$RS_1$

**CEN/TS 13149-6:2005 (E)****4 Abbreviations****4.1****AAS**

Acoustic Announcement System

System that controls the acoustic announcements on a vehicle.

**4.2****CAN**

Controller Area Network

Data link layer protocol for serial communication as specified in ISO 11898-1.

**4.3****CiA**

CAN in Automation

International users and manufacturers group promoting CAN.

**4.4****COB**

Communication Object

Data transportation unit in a CAN network mapped to one or more CAN frames.

**4.5****COB-ID**

COB Identifier

Identifies a COB uniquely in a network and determines the priority of that COB in the network.

**4.6****DRCC**

Data Radio Communication Control

Controls data radio transmission between vehicle and central station.

**4.7****DSRC**

Dedicated Short Range Communication

Controls radio or infrared short distance communicator.

**4.8****GIF**

Graphics Interchange Format

The data stream-oriented file format maintained by CompuServe, defines the transmission protocol of bitmap data.

**4.9****HMI**

Human Machine Interface

Device providing input and/or output capability for human users.

**4.10****IAM**

IBIS Application Manager

Main on-board computer controlling the IBIS system.

**4.11****IBIS**

Integrated Board information system

Integrated on-vehicle information system for passengers and drivers.

**4.12****JPEG**

Joint Photographic Experts Group

The best known standard from JPEG is ISO 10918-1, which is the first of the multi-part set of standards for still image compression.

**4.13****PDO**

Process Data Object

Unconfirmed COB containing process data and mapped to one CAN data frame.

**4.14****rffu**

Reserved for future use

Place holder for future definitions

**4.15****RPDO**

Receive PDO

PDO received by one node or several nodes depending on the configuration.

**4.16****SDO**

Service Data Object (SDO)

Confirmed and Optionally segmented COB providing peer-to-peer communication with access to the Object Dictionary of a device.

**4.17****SRCR**

Short Range Command Radio

SRCR is a radio short distance command communication link

**4.18****TPDO**

Transmit PDO

PDO transmitted by one node.

**4.19****UTC**

Universal Time Coordinated (UTC)

International time base previously known as GMT.

**4.20****VRCC**

Voice Radio Communication Control

Controls voice radio transmission between vehicle and central station.

**4.21****XML**

Extensible Markup Language

Formatting language for text (<http://www.w3.org/TR/2000/WD-xml-2e-20000814>).

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