TECHNICAL SPECIFICATION

ISO/TS
17263

First edition
2003-06-01

Automatic vehicle and equipment identification — Intermodal goods transport — System parameters

Identification automatique des véhicules et des équipements — Transport intermodal de marchandises — Paramètres des systèmes

Reference number
ISO/TS 17263:2003(E)

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ISO/TS 17263 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 pre-Standard..." to mean "...this Technical Specification...".

Contents

Foreword

This Technical Specification (CEN ISO/TS 17263:2003) has been prepared by Technical Committee CEN/TC 278, "Road Transport and Traffic Telematics", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 204, "Intelligent transport systems".

This is the third part of a series of Technical Specifications defining Intermodal Goods Transport for AVI/AEI, and is the result from CEN/TC 278 Work Item 00278089. The following documents are published to form a series of standards for for AVI/AEI in intermodal goods transport AVI/AEI:

— CEN ISO/TS 17261   Architecture and terminology (under preparation)

— CEN ISO/TS 17262   Numbering and data structures

— CEN ISO/TS 17263   System parameters

— CEN ISO/TS 17264   AVI/AEI interfaces (under preparation)

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

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Introduction

This Technical Specification specifies parameters for a system for the automatic identification of equipment, vehicles and items (AEI) used in intermodal transport chains. This Technical Specification is designed to enable users and suppliers of AEI-Systems to specify or use a system or components of a system that will enable interoperability. Such systems are designed to read and transfer the identity and some further important data of equipment, vehicles and items used in intermodal transport to other partners in each possible transport chain to minimise the expenditure and to automate the process of transport observation and control. This pre standard is a part of a family of Standards for that purpose.

AEI systems are necessary as a basic tool for RTTT/TICS applications in intermodal transport operation. These information systems need real-time highly reliable data about the identity, status, time, location, etc. of the equipment, vehicles or items during the transport operation. The characteristics of an Intermodal Transport chain is that pieces of equipment or items will be loaded or unloaded more than once from *other* pieces of equipment or vehicles. AEI systems in such applications shall also be able to provide the identity of both units at the loading and unloading process. The purpose is to capture the event so that the information system reflects the real world.

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1 Scope

1.1 General

This Technical Specification establishes an AEI-System based on radio frequency technologies. This system is intended for general application in RTTT/TICS. It allows the transfer of the identification codes and further information about equipment and vehicles used in intermodal transport into such RTTT/TICS and information systems related to Intermodal Transport processes. Within the intermodal context of the RTTT/TICS Sector, AEI systems have the specific objective of achieving an unambiguous identification of an ITU or related equipment or vehicle or item used in intermodal transport, and to make that identification automatically. Vehicles will be considered and handled under Intermodal aspects as „Intermodal Equipment". Therefore a differentiation between AEI and AVI systems under the purpose of this standard is not required.

This Technical Specification is specifically aimed at DSRC-type air interfaces. The requirement and test methods may not apply for Intermodal AEI systems using long range communications such as Cellular Networks or Satellite, or vicinity communication such as inductively coupled antennas. The interoperability across the air interface (reference point Delta) is outside the scope of this Technical Specification. Please see CEN ISO/TS 17264 *Automatic Vehicle and Equipment Identification (AVI/AEI) - AVI/AEI Interfaces* (under preparation).

1.2 Aim

The aim of this standard is to define, describe and specify the System Parameters related to an intermodal AEI system to provide an enabling Standard, which, whilst allowing the system specifier to determine the performance levels and operating conditions, provides a framework for interoperability. Therefore this Technical Specification specifies:

a) parameters and requirements of the identification system itself

b) performance criteria necessary to ensure consistent and reliable operation of AEI systems within international transport processing

c) requirements of the performance and the position of the electronic devices (tag) when installed on intermodal equipment

d) requirements for the installation of readers, and performance data related to these components.

NOTE: These parameters of an AEI system shall be identical, compatible or interoperable world-wide in respect of systems complying to this Pre-Standard. Yet it is recognised that, at the implementation level, there may be requirements for regional or operational differences in the performance levels achieved against these parameters.

1.3 Pre-requisite

Any system to read identity and related data has to be based on a standardised system to allocate an unambiguous identity to each item, vehicle, load unit or equipment as defined in CEN ISO/TS 17262 *Automatic vehicle and equipment identification - Intermodal goods transport - Numbering and data structures.*

2 Normative references

This Technical Specification 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 Technical Specification only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13044, Swap Bodies - Coding, Identification and Marking

ISO 10374, Freight containers – Automatic identification

ISO/IEC 8824-1, Information processing systems - Open Systems Interconnection - Specification of abstract syntax notation one (ASN.1) - Part 1: Specification of the Basic Notation

ISO/IEC 8824-2, Information processing systems - Open Systems Interconnection - Specification of abstract syntax notation one (ASN.1) - Part 2: Information Object Specification

ISO/IEC 8824-3, Information processing systems - Open Systems Interconnection - Specification of abstract syntax notation one (ASN.1) - Part 3: Constraint Specification

ISO/IEC 8824-4, Information processing systems - Open Systems Interconnection - Specification of abstract syntax notation one (ASN.1) - Part 4: Parameterisation of the ASN.1 Specifications

ISO/IEC 8825-1, Information processing systems - Open Systems Interconnection - Specification of ASN.1 Encoding Rules – Part 1: Basic Encoding Rules

ISO/IEC 8825-2, Information processing systems - Open Systems Interconnection - Specification of ASN.1 Encoding Rules – Part 2: Packed Encoding Rules

ISO/IEC 8825-3, Information processing systems - Open Systems Interconnection - Specification of ASN.1 Encoding Rules – Part 3: Distinguished Encoding Rules

ENV ISO 14815, Road Traffic and Transport Telematics - Automatic Vehicle and Equipment Identification – System specification

CEN ISO/TS 17261: Road Transport and Traffic Telematics - Automatic vehicle and equipment identification - Intermodal goods transport - Architecture and terminology

CEN ISO/TS 17262: Road Transport and Traffic Telematics – Automatic vehicle and equipment identification - Intermodal goods transport - Numbering and data structures

CEN ISO/TS 17264: Road Transport and Traffic Telematics - Automatic Vehicle and Equipment Identification (AVI/AEI) - AVI/AEI Interfaces

3 Terms and definitions

For the purposes of this Technical Specification, the following terms and definitions apply:

3.1
AEI Reader
complete equipment even if it consist of more than one components required to interrogate, receive and interpret the data in the tag in order to present the identification.

3.2
AEI System
AEI application in a RTTT/TICS system either as a stand-alone system or as part of a RTTT/TICS application.

3.3
category
grouping of common class requirements to support interoperability between AEI systems of common purpose

EXAMPLE: a "Ruggedised" category versus a "Standard" category.

3.4
class
term used to differentiate between system components with different "grades" of requirements for parameters.

3.5
intermodal Transport
movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves when changing modes.

3.6
interoperability
stands for „ Application Area Interoperability" in a region spanning two or more areas with cross-border operation between operator domains, districts or nations. The capability for an AEI Reader to operate with a AEI System tag.

3.7
load unit
containers, swap bodies and semi-trailers suitable for intermodal transport.

3.8
transport means
vehicle used for the transport of goods, e.g. vessel, train, truck.

3.9
operational parameter
term used to describe different operational component properties/specifications

3.10
shadowing
condition where the close proximity of a vehicle/equipment interposed between Reader and tag obscures the signals thus preventing a successful AEI transaction.

3.11
small container unit
Intermodal Transport Units which are smaller than a standard 20-foot-ISO-Standard container or CEN-swap body. Small containers are also called medium containers or "less than container" (LCU). The size of such LCU´s will be at least one ISO- or Euro- palette.

3.12
tag
equipment fitted to the unit, vehicle or item to be identified and containing the unambiguous identification, and if required some further data. For special purposes the tag can be installed in a fixed position with a mobile reader.