PUBLICLY AVAILABLE SPECIFICATION

ISO/PAS 18186

First edition
2010-07-01

Freight containers — RFID cargo shipment tag system

Conteneurs pour le transport de marchandises — Système de tag d'expédition de fret par radiofréquence

Reference number
ISO/PAS 18186:2010(E)

© ISO 2010

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/PAS 18186:2010
https://standards.iteh.ai/catalog/standards/sist/8d072460-e2bb-4eb7-9941-
dcb4f6cee42a/iso-pas-18186-2010

Contents

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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/PAS 18186 was prepared by Technical Committee ISO/TC 104, *Freight containers*, Subcommittee SC 4, *Identification and communication*.

Introduction

This Publicly Available Specification describes the composition, application requirements and operational procedures of an RFID cargo shipment tag and its relevant system used for improving transparency of the freight container transportation process. It identifies data content and format as well as operational characteristics of an RFID cargo shipment tag. It also provides a solution for electronic transfer of relevant information between an RFID cargo shipment tag and its associated information system platform.

The overall purpose of this Publicly Available Specification is to improve freight container logistic transparency and efficiency by using an RFID cargo shipment tag and an associated, Internet-based information management system.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Freight containers — RFID cargo shipment tag system

1 Scope

This Publicly Available Specification specifies how freight container logistic transparency and efficiency can be improved through use of an RFID cargo shipment tag system and an Internet-based software package. Such an RFID cargo shipment tag system can co-exist with, but is separate from, a container security and identification RFID framework using container "license plate" tags, as specified in ISO 10374 and ISO/TS 10891, and electronic seals ("e-seals"), as specified in ISO 18185. In all cases, operation of and information from ISO/TS 10891 and ISO 18185 devices must be independent from the operation and information of the cargo shipment tag and information from these devices must be passed in discrete messages that are not routed via the RFID cargo shipment tag.

This Publicly Available Specification is applicable to freight containers as defined in ISO 668 as well as other associated containers and transport equipment.

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.

ISO 668, *Series 1 freight containers — Classification, dimensions and ratings*

ISO 10374, *Freight containers — Automatic identification*

ISO/TS 10891, *Freight containers — RF automatic identification (RFID) — Licence plate tag*

ISO 6346, *Freight containers — Coding, identification and marking*

ISO/TS 14816, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure*

ISO/IEC 15963, *Information technology — Radio frequency identification for item management — Unique identification for RF tags*

ISO 18185-3:2006, *Freight containers — Electronic seals — Part 3: Environmental characteristics*

IEC 60068-2:2007, *Environmental testing — Part 2: Tests*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
RFID cargo shipment tag
read-write tag into which data specific to a containerized cargo shipment can be stored

NOTE   The tag and the data uploaded in it are the responsibility of the shipper. The tag is to be affixed to the container by the shipper or, as per the shipper's instructions, by the party that physically performs the loading ("stuffing") of the container. Data capabilities are flexible and can, at the shipper's discretion, include destination, routing, conveyance or other transportation information, time and location of the interrogation, cargo information (including hazardous material information, where applicable) or other trip-specific information. The tag must perform reliably from the point of stuffing of the container to delivery destination, and is to be removed by the consignee upon final delivery.

3.2
reader
device that can exchange information with RFID cargo shipment tags by wireless communication methods and move information to and from an Internet-based information system

3.3
network platform
information processing system through which data from an RFID cargo shipment tag is communicated, processed and viewed

NOTE   A network platform is a subset within/of the cargo shipment tag system. The network platform system includes a wireless radio network, a server, terminal(s), database, middleware, etc. Information from the cargo shipment tag system is accessible, according to predetermined access criteria, to authorized users through a dedicated Internet website.

3.4
network operator
neutral entity/organization/party that operates the network platform of the RFID cargo shipment tag system

NOTE 1   A network operator is sometimes referred to as an operator of network platform.

NOTE 2   This entity operates/maintains the web server, database server and/or the middleware.

3.5
RFID cargo shipment tag system
system consisting of the RFID cargo shipment tag, its associated reader(s) and the network platform

4   RFID cargo shipment tag system

4.1   System composition

The RFID cargo shipment tag system is composed of the following basic elements: RFID cargo shipment tag, reader(s) and network platform (including database, operational system and related system software). The system is open and distributed, which can achieve management efficiencies in different geographical areas. Components of the RFID cargo shipment tag system operate in a manner described later in this Publicly Available Specification.

4.2   System operator

The shipper, or its authorized representative, is the only one who may affix and remove the RFID cargo shipment tag. The shipper is responsible for the supply, placement and ultimate removal of the physical tag as well as all operations using it, including uploading, maintaining, altering, deleting and reading cargo shipment tag data.

4.3   System authorization

The shipper may, at its discretion and in accordance with 5.1.2, write any relevant container transport and shipping data onto the cargo shipment tag. The shipper shall enter into an agreement with the network operator of the cargo shipment tag system before dispatching the shipment. As part of this agreement, the network operator shall provide access credentials which allow the shipper to upload tag, cargo and other information to the network platform and query the network platform for journey information as needed.

4.4   System functions

4.4.1   Reading from and writing to the RFID cargo shipment tag may only be done by the shipper, or its authorized representative, using access credentials supplied by the network operator. Each shipper, or its authorized representative, shall only have access to data on its own shipment tags.

4.4.2   Container transport and shipping data, or any other allowed information, can be transferred by the shipper between network memory locations, including the RFID cargo shipment tags themselves. Use of access credentials, and/or other security measures, shall prevent one shipper from accessing the tag information or network information of another shipper.

4.4.3   Search capabilities are available to the shipper, or an authorized party identified by it, through the network platform using access credentials supplied by the network operator. A shipper shall only have the ability to search through its own information and its own tags.

4.5   System internal data transmission

Except for wireless transmissions between cargo shipment tags and readers, all internal EDI data transmissions through the network platform should use HTTP protocol, data format to be described by XML. For more detailed data, refer to Annex A.

4.6   System safeguard measures

4.6.1   A shipper, using its unique access credentials, shall set up the reading and writing authority levels of RFID cargo shipment tags through the network platform according to its own requirements.

4.6.2   A shipper, using its unique access credentials, shall set up the inquiry and search authority levels for shipment information through the network platform according to its own requirements.

4.6.3   Information within the RFID cargo shipment tag shall be encrypted or otherwise secured at the point and time when it is first written into the tag and during any subsequent modifications, alterations, changes and/or erasures. The tag shall be capable of having encrypted or otherwise secure data written to it and read from it without interference from the tag design or structure. Further, the system shall not write to the tag cargo shipment-specific data that is not encrypted or otherwise secured.

4.6.4   All parts of the cargo shipment tag system, especially the network platform and associated information systems, shall implement suitable disaster tolerance and protections from hostile attacks, including hacking, viruses and denial of service.

5   RFID cargo shipment tag

5.1   General requirements

5.1.1   The RFID cargo shipment tag shall have its own unique tag identification number in permanent memory. The container serial number (see ISO 6346), as well as any other desired container transport and shipping data, may be programmed into the volatile memory of the tag.

5.1.2   Information written to the RFID cargo shipment tag shall be encoded using formats defined in Annex A for transmission between tags and readers.

5.1.3   A clock chip shall be built into each RFID cargo shipment tag and it shall be set to UTC time. The RFID cargo shipment tag system shall automatically record all interrogation events, including each trip's initial activation and deactivation of the tag, including the date and time of these events. The time error shall be less than 5 seconds per day.