INTERNATIONAL STANDARD

ISO 17363

Second edition
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Supply chain applications of RFID — Freight containers

Applications RFID à la chaîne logistique — Conteneurs de fret

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

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 17363 was prepared by Technical Committee ISO/TC 122, *Packaging*.

This second edition cancels and replaces the first edition (ISO 17363:2007), which has been technically revised.

ISO 17363 has two annexes, Annexes A and B, which provide normative information.

Introduction

The 'Supply Chain' is a multi-level concept that covers all aspects of taking a product from raw materials to a final product to shipping to a final place of sale. Each of these levels covers many aspects of dealing with products and the business process for each level is both unique and overlapping with other levels.

This International Standard has been created with a vision of compatibility both at the physical and command level and the data level with the four other standards within the suite of International Standards, *Supply chain applications of RFID.* Due to the different data structures in each of these International Standards they cannot take the form of interchangeability. However, these International Standards are designed to be interoperable and non-interfering. They include:

— ISO 17363, *Supply chain applications of RFID — Freight containers*;

— ISO 17364, *Supply chain applications of RFID — Returnable transport items (RTIs) and returnable packaging items (RPIs);*

— ISO 17365, *Supply chain applications of RFID — Transport units*;

— ISO 17366, *Supply chain applications of RFID — Product packaging*;

— ISO 17367, *Supply chain applications of RFID — Product tagging*.

These International Standards define the technical aspects and data hierarchy of supply chain management information required in each layer of the supply chain. Air interface and communication protocol standards supported within these International Standards are ISO/IEC 18000 and ISO/IEC/IEEE 8802; commands and messages are supported by ISO/IEC 15961 and ISO/IEC 15962. The semantics of these International Standards are defined in ISO/IEC 15418 and their syntax is defined in ISO/IEC 15434.

Excluded, though embraced, is the work of:

— ISO/IEC JTC 1/SC 31 in the area of technical standards related to air interface, data semantic and syntax construction, and conformance standards;

— ISO/TC 104 in the area of freight container security, including electronic seals (e-seals) (ISO 18185), and container identification.

Supply chain applications of RFID — Freight containers

1 Scope

This International Standard defines the usage of read/write radio-frequency identification technology (RFID) cargo shipment-specific tags associated with containerized freight for supply chain management purposes ("manifest tags"). This International Standard defines the air interface communications, a common set of required data structures, and a commonly organized, through common syntax and semantics, set of optional data requirements.

This International Standard:

— makes recommendations about a second generation supply chain tag intended to monitor the condition and security of the freight resident within a freight container;

— specifies the implementation of sensors for freight resident in a freight container;

— makes specific recommendations about mandatory non-reprogrammable information on the shipment tag;

— makes specific recommendations about optional, re-programmable information on the shipment tag;

— makes specific recommendations about the data link interface for GPS or GLS services;

— specifies the reuse and recyclability of the RF tag;

— specifies the means by which the data in a compliant RF tag is "backed-up" by bar codes and two-dimensional symbols, as well as human-readable information.

2 Conformance and performance specifications

The underlying conformance requirements of this International Standard are to provide the structure necessary to raise the level of interoperability of components and systems built according to this International Standard, while leaving open opportunity for continued technical improvement and differentiation.

Implementation of a containerized cargo supply chain RFID system and its components shall be deemed in conformance with this International Standard if it meets, and supports, the following six requirements:

a) the required functional performance specified in Clause 6;

b) the data requirements specified in Clause 7;

c) the data security requirements specified in Clause 8;

d) the tag location requirements specified in Clause 9;

e) the tag operation requirements specified in Clause 10;

f) the security and privacy requirements specified in Clause 11.

3 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 6346:1995, *Freight containers — Coding, identification and marking*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO/IEC/IEEE 8802-15-4, *Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 15.4: Wireless medium access control (MAC) and physical layer (PHY) specifications for low-rate wireless personal area networks (WPANs)*

ISO 10374:1991, *Freight containers — Automatic identification*

ISO/IEC 15418, *Information technology — Automatic identification and data capture techniques — GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance*

ISO/IEC 15434, *Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media*

ISO/IEC 15459 (all parts), *Information technology — Automatic identification and data capture techniques — Unique identification*

ISO/IEC 15961, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: application interface*

ISO/IEC 15962, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions*

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

ISO 17364:2013, *Supply chain applications of RFID — Returnable transport items (RTIs)*

ISO/IEC 18000-7, *Information technology — Radio frequency identification for item management — Part 7: Parameters for active air interface communications at 433 MHz*

ISO/IEC 18046, *Information technology — Automatic identification and data capture techniques — Radio frequency identification device performance test methods*

ISO/IEC 19762 (all parts), *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

ISO/IEC/IEEE 21451-5 [IEEE 1451.5], *Information technology — Smart Transducer Interface for Sensors and Actuators — Wireless Communication Protocols and Transducer Electronic Data Sheet (TEDS) Formats*

ISO/IEC/IEEE 21451-7, *Information technology — Smart transducer interface for sensors and actuators — Part 7: Transducer to radio frequency identification (RFID) systems communication protocols and Transducer Electronic Data Sheet (TEDS) formats*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) — Part 4-3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test*