BS ISO/IEC 24730-1:2014

BSI Standards Publication

Information technology — Real-time locating systems (RTLS)

Part 1: Application programming interface (API)

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National foreword

This British Standard is the UK implementation of ISO/IEC 24730-1:2014. It supersedes BS ISO/IEC 24730-1:2006 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee IST/34, Automatic identification and data capture techniques.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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ISBN 978 0 580 79172 7

ICS 35.040

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2014.

Amendments issued since publication

Date	Text affected

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INTERNATIONAL STANDARD

ISO/IEC 24730-1

Second edition
2014-02-15

Information technology — Real-time locating systems (RTLS) —

Part 1: Application programming interface (API)

Technologies de l'information — Systèmes de localisation en temps réel (RTLS) —

Partie 1: Interface de programmation d'application (API)

Reference number
ISO/IEC 24730-1:2014(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national 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/IEC 24730-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This second edition cancels and replaces the first edition (ISO/IEC 24730-1:2006), which has been technically revised.

ISO/IEC 24730 consists of the following parts, under the general title *Information technology — Real time locating systems (RTLS)*:

— *Part 1: Application programming interface (API)*

— *Part 2: Direct Sequence Spread Spectrum (DSSS) 2,4 GHz air interface protocol*

— *Part 21: Direct Sequence Spread Spectrum (DSSS) 2,4 GHz air interface protocol: Transmitters operating with a single spread code and employing a DBPSK data encoding and BPSK spreading scheme*

— *Part 22: Direct Sequence Spread Spectrum (DSSS) 2,4 GHz air interface protocol: Transmitters operating with multiple spread codes and employing a QPSK data encoding and Walsh offset QPSK (WOQPSK) spreading scheme*

— *Part 5: Chirp spread spectrum (CSS) at 2,4 GHz air interface*

— *Part 61: Low rate pulse repetition frequency Ultra Wide Band (UWB) air interface*

— *Part 62: High rate pulse repetition frequency Ultra Wide Band (UWB) air interface*

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Introduction

ISO/IEC 24730 defines several air interface protocols and a single Application Programming Interface (API) for Real Time Locating Systems (RTLS) for use in asset management and is intended to allow for compatibility and to encourage interoperability of products for the growing RTLS market.

This part of ISO/IEC 24730, the RTLS Application Programming Interface, establishes a technical standard for Real Time Locating Systems. To be fully compliant with ISO/IEC 24730, Real Time Locating Systems (RTLS) shall comply with this part of ISO/IEC 24730 and at least one air interface protocol defined in ISO/IEC 24730.

Real Time Locating Systems are wireless systems with the ability to locate the position of an item anywhere in a defined space (local/campus, wide area/regional, global) at a point in time that is, or is close to, real time. Position is derived by measurements of the physical properties of the radio link.

Conceptually there are four classifications of RTLS:

— Locating an asset via satellite - requires line-of-sight - accuracy to 10 meters

— Locating an asset in a controlled area, e.g., warehouse, campus, airport - area of interest is instrumented - accuracy to 3 meters

— Locating an asset in a more confined area - area of interest is instrumented - accuracy to tens of centimetres

— Locating an asset over a terrestrial area using terrestrial mounted receivers over a wide area, cell phone towers for example – accuracy 200 meters

With a further two methods of locating an object which are really RFID rather than RTLS:

— Locating an asset by virtue of the fact that the asset has passed point A at a certain time and has not passed point B

— Locating an asset by virtue of providing a homing signal whereby a person with a handheld can find an asset

Method of location is through identification and location, generally through multi-lateration, of various types

— Time of Flight Ranging Systems

— Amplitude Triangulation

— Time Difference of Arrival (TDOA)

— Cellular Triangulation

— Satellite Multi-lateration

— Angle of Arrival

The location information of an asset may further be enhanced with information on its spatial orientation.

This part of ISO/IEC 24730 defines an application programming interface (API) needed for utilizing an RTLS system.

An API is a boundary across which application software uses facilities of programming languages to invoke services. These facilities may include procedures or operations, shared data objects and resolution of identifiers. A wide range of services may be required at an API to support applications. Different methods may be appropriate for documenting API specifications for different types of services.

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The information flow across the API boundary is defined by the syntax and semantics of a particular programming language, such that the user of that language may access the services provided by the application platform on the other side of the boundary. This implies the specification of a mapping of the functions being made available by the application platform into the syntax and semantics of the programming language. An API specification documents a service and/or service access method that is available at an interface between the application and an application platform.

This API describes the RTLS service and its access methods, to enable client applications to interface with the RTLS system. This RTLS service is the minimum service that shall be provided by a RTLS system to be API compatible with this standard.

This part of ISO/IEC 24730 uses a “full stop” as the decimal point separator since an API file is being created with an output in a .csv file format which uses the comma to separate values.

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INTERNATIONAL STANDARD ISO/IEC 24730-1:2014(E)

Information technology — Real-time locating systems (RTLS) —

Part 1: Application programming interface (API)

1 Scope

This part of ISO/IEC 24730 enables software applications to utilize an RTLS infrastructure to locate assets with RTLS transmitters attached to them. It defines a boundary across which application software uses facilities of programming languages to collect information contained in RTLS tag blinks received by the RTLS infrastructure.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

IEEE Guidelines for use of a 48-bit Extended Unique Identifier (EUI-48™)

IEEE Guidelines for 64-bit Global Identifier (EUI-64™) Registration Authority

Extensible Markup Language (XML) 1.0, (Third Edition), W3C Recommendation, World Wide Web Consortium (W3C), 4 February 2004[1)]

SOAP Version 1.2 Part 1: Messaging Framework (Second Edition), W3C Recommendation, World Wide Web Consortium (W3C), 27 April 2007[2)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 (all parts), and the following apply

3.1
field
element of a data record in which information is stored, which may contain one or more properties of a tag blink

3.2
XML tag
marker that qualifies content in a XML document

1) http://www.w3.org/TR/REC-xml/

2) http://www.w3.org/TR/2007/REC-soap12-part1-20070427/

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