INTERNATIONAL STANDARD

ISO/IEC 18000-63

Third edition
2021-11

Information technology — Radio frequency identification for item management —

Part 63: Parameters for air interface communications at 860 MHz to 960 MHz Type C

Technologies de l'information — Identification par radiofréquence (RFID) pour la gestion d'objets —

Partie 63: Paramètres de communications d'une interface radio entre 860 MHz et 960 MHz, Type C

Reference number
ISO/IEC 18000-63:2021(E)

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Published in Switzerland

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Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **2**

4 Symbols, abbreviated terms and notation **5**
4.1 Symbols 5
4.2 Abbreviated terms 7
4.3 Notation 8

5 Conformance **9**
5.1 Claiming conformance 9
5.2 General conformance requirements 9
5.2.1 Interrogators 9
5.2.2 Tags 10
5.3 Command structure and extensibility 10
5.3.1 General 10
5.3.2 Mandatory commands 10
5.3.3 Optional commands 10
5.3.4 Proprietary commands 10
5.3.5 Custom commands 10
5.4 Reserved for Future Use (RFU) 11
5.5 Cryptographic Suite Indicators 11

6 Protocol requirements **11**
6.1 Protocol overview 11
6.1.1 Physical layer 11
6.1.2 Tag-identification layer 11
6.2 Protocol parameters 12
6.2.1 Signaling — Physical and media access control parameters 12
6.2.2 Logical — Operating procedure parameters 15
6.3 Description of operating procedure 15
6.3.1 Physical interface 16
6.3.2 Logical interface 37

7 Battery Assisted Passive (BAP) Interrogator Talks First systems (optional) **112**
7.1 Applicability 112
7.2 General overview, definitions, and requirements of BAP 113
7.3 BAP inventoried flag and state machine behaviour modifications 114
7.3.1 Modification to ready state and power-down support for BAP Tags 114
7.3.2 Signal loss tolerance via timer (mandatory) 115
7.3.3 Modified persistence of BAP PIE inventory flags (optional) 117
7.4 BAP PIE (optional) 119
7.4.1 Flex_Query command (optional) 119
7.4.2 BAP PIE detailed operation including optional Battery Saver Mode 121
7.5 Manchester mode Battery Assisted operation protocol extensions 126
7.5.1 General 126
7.5.2 Physical layer 127
7.5.3 Manchester activation 133
7.5.4 Commands summary 148

8 Sensor support (optional) **163**
8.1 Applicability 163
8.2 Overview 163
8.3 Real Time Clock (RTC) 164

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8.3.1 General ... 164
8.3.2 Setting the RTC ... 164
8.3.3 BroadcastSync command (optional) ... 165
8.3.4 Time synchronisation ... 165
8.4 HandleSensor command (optional) ... 166
8.5 Simple Sensors ... 167
8.5.1 Simple Sensor implementation ... 167
8.6 Full Function Sensors and Sensor Directory System ... 169
8.6.1 General ... 169
8.6.2 Sensor Access — General approach ... 170
8.7 Snapshot Sensors ... 176
8.7.1 General ... 176
8.7.2 Initiating Snapshot Sensor measurements ... 179
8.7.3 Reporting Snapshot Sensor Information ... 180

Annex A (normative) **Extensible bit vectors (EBV)** ... **182**

Annex B (normative) **State-transition tables** ... **183**

Annex C (normative) **Command-response tables** ... **240**

Annex D (informative) **Example slot-count (*Q*) selection algorithm** ... **267**

Annex E (informative) **Example Tag inventory and access** ... **268**

Annex F (informative) **Calculation of 5-bit and 16-bit cyclic redundancy checks** ... **269**

Annex G (normative) **Multiple- and dense-Interrogator channelized signaling** ... **271**

Annex H (informative) **Interrogator-to-Tag link modulation** ... **274**

Annex I (normative) **Error codes** ... **276**

Annex J (normative) **Slot counter** ... **278**

Annex K (informative) **Example data-flow exchange** ... **279**

Annex L (informative) **Optional Tag features** ... **282**

Annex M (informative) **Cryptographic-Suite checklist** ... **285**

Annex N (informative) **Battery Assisted Tag to Interrogator synchronization** ... **286**

Annex O (normative) **Simple Sensors Data Block** ... **289**

Annex P (normative) **Record structures and commands for Ported Simple Sensors** ... **300**

Annex Q (informative) **Battery Assisted Passive (BAP) PIE and Manchester mode tutorial guide** ... **316**

Annex R (informative) **Manchester mode RF power control** ... **327**

Bibliography ... **332**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

This third edition cancels and replaces the second edition (ISO/IEC 18000-63:2015), which has been technically revised.

The main changes are as follows:

— incorporation of the Technical Corrigendum;

— incorporation of a new sensor class for snapshot sensors.

A list of all parts in the ISO/IEC 18000 series can be found on the ISO and IEC websites.

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Introduction

This document defines the physical and logical requirements for a passive-backscatter, Interrogator-talks-first (ITF), radio-frequency identification (RFID) system operating in the 860 MHz to 960 MHz frequency range. The system comprises Interrogators, also known as Readers, and Tags, also known as Labels or Transponders.

An Interrogator transmits information to a Tag by modulating an RF signal in the 860 MHz to 960 MHz frequency range. The Tag receives both information and operating energy from this RF signal. Tags are passive, meaning that they receive all of their operating energy from the Interrogator's RF signal.

An Interrogator receives information from a Tag by transmitting a continuous-wave (CW) RF signal to the Tag; the Tag responds by modulating the reflection coefficient of its antenna, thereby backscattering an information signal to the Interrogator. The system is ITF, meaning that a Tag modulates its antenna reflection coefficient with an information signal only after being directed to do so by an Interrogator.

Interrogators and Tags are not required to talk simultaneously; rather, communications are half-duplex, i.e. Interrogators talk and Tags listen, or vice versa.

The described backscatter radio frequency identification (RFID) system that supports the following system capabilities:

— identification and communication with multiple tags in the field;

— selection of a subgroup of tags for identification or with which to communicate;

— reading from and writing to or rewriting data many times to individual tags;

— user-controlled permanently lockable memory;

— data integrity protection;

— Interrogator-to-tag communications link with error detection;

— tag-to-Interrogator communications link with error detection;

— support for both passive back-scatter tags with or without batteries.

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Information technology — Radio frequency identification for item management —

Part 63:
Parameters for air interface communications at 860 MHz to 960 MHz Type C

1 Scope

This document defines the air interface for radio frequency identification (RFID) devices operating in the 860 MHz to 960 MHz industrial, scientific, and medical (ISM) band used in item management applications. It provides a common technical specification for RFID devices that can be used to develop RFID application standards. This document is intended to allow for compatibility and to encourage inter-operability of products for the growing RFID market in the international marketplace.

It defines the forward and return link parameters for technical attributes including, but not limited to, operating frequency, operating channel accuracy, occupied channel bandwidth, maximum effective isotropic radiated power (EIRP), spurious emissions, modulation, duty cycle, data coding, bit rate, bit rate accuracy, bit transmission order, and, where appropriate, operating channels, frequency hop rate, hop sequence, spreading sequence, and chip rate. It further defines the communications protocol used in the air interface.

This document specifies the physical and logical requirements for a passive-backscatter, Interrogator-Talks-First (ITF) systems. The system comprises Interrogators, also known as readers, and tags, also known as labels. An Interrogator receives information from a tag by transmitting a continuous-wave (CW) RF signal to the tag; the tag responds by modulating the reflection coefficient of its antenna, thereby backscattering an information signal to the Interrogator. The system is ITF, i.e. a tag modulates its antenna reflection coefficient with an information signal only after being directed to do so by an Interrogator.

This document specifies

— physical interactions (the signalling layer of the communication link) between Interrogators and tags;

— logical operating procedures and commands between Interrogators and Tags;

— the collision arbitration scheme used to identify a specific tag in a multiple-tag environment;

— optional security commands that allow the use of crypto suites of ISO/IEC 29167.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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/IEC 15961 (all parts), *Information technology — Data protocol for radio frequency identification (RFID) for item management*

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

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ISO/IEC 15963-1, *Information technology — Radio frequency identification for item management — Part 1: Unique identification for RF tags numbering systems*

ISO/IEC 18000-61, *Information technology — Radio frequency identification for item management — Part 61: Parameters for air interface communications at 860 MHz to 960 MHz Type A*

ISO/IEC 18000-62, *Information technology — Radio frequency identification for item management — Part 62: Parameters for air interface communications at 860 MHz to 960 MHz Type B*

ISO/IEC 18000-64, *Information technology — Radio frequency identification for item management — Part 64: Parameters for air interface communications at 860 MHz to 960 MHz Type D*

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

EPC Tag Data Standard available at https://www.gs1.org/standards/epc-rfid/tds

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