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INTERNATIONAL STANDARD

ISO/IEC 15962

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Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions

Technologies de l'information — Identification par radiofréquence (RFID) pour la gestion d'ojects — Protocole de données: règles d'encodage des données et fonctions logiques de mémoire

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Contents

Page

Foreword vii

Introduction viii

1 Scope 1

2 Normative references 1

3 Terms, definitions and conventions 2
3.1 Terms and definitions 2
3.2 Conventions 2

4 Conformance 2
4.1 Conformance with the air interface 2
4.2 Conformance with the application interface 2
4.3 Conformance with the Access-Method 3

5 Protocol model 4
5.1 Overview 4
5.2 Layered protocol 4
5.3 Flexible implementation configurations 6
5.4 Functional processes – interrogator implementation 6
5.5 ISO/IEC 15962 and the Data Processor 9

6 Data and presentation conventions 9
6.1 Data types in ISO/IEC 15961-1 commands and responses 10
6.2 Extensible bit vector (EBV) 10
6.3 Object Identifier presentation in the application interface 10
6.4 The Object 12
6.5 The 8-bit byte 12
6.6 N-bit encoding 12

7 Data Processor – high level processing 12

8 Data Processor and the application interface 13
8.1 Application commands – overview 13
8.2 Application commands and responses– write 15
8.3 Application commands and responses– read 31
8.4 Application commands and responses– other 40
8.5 Air interface support for application commands 49

9 Data Processor and the air interface 49
9.1 Air interface services 49
9.2 Defining the system information 50
9.3 Configuring the Logical Memory 58

10 The Command/Response Unit: processing of command and response arguments 58
10.1 Process arguments 59
10.2 Completion-Codes 71
10.3 Execution-Codes 74

11 Access-Method 74
11.1 No-Directory structure 75
11.2 Directory structure 77
11.3 Packed-Objects structure 79
11.4 Tag Data Profile 80
11.5 Multiple-Records 80

Withdrawn

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12 ISO/IEC 15434 direct encoding and transmission method using Access-Method 0 and Data-Format 3 86
12.1 General rules for ISO/IEC 15434 direct encoding 86
12.2 Specific support for ISO TC122 standards 87

13 Monomorphic-UII encoding 87
13.1 6-bit encoding 88
13.2 7-bit encoding 88
13.3 URN Code 40 encoding 88
13.4 8859-1 octet encoding 89
13.5 Application-defined 8-bit coding 89

Annex A (informative) Air interface support for application commands 90
A.1 Overview 90
A.2 ISO/IEC 18000-3 Mode 1 support 90
A.3 ISO/IEC 18000-6 Type C support 91
A.4 ISO/IEC 18000-6 Type D support 93

Annex B (normative) Pro forma description for the Tag Driver 96
B.1 Defining the Singulation-Id 96
B.2 System information : AFI 96
B.3 System information: DSFID 96
B.4 Memory-related parameters 96
B.5 Support for commands 97

Annex C (normative) ISO/IEC 18000 Tag Driver Descriptions 98
C.1 Tag Driver for ISO/IEC 18000-2: Parameters for air interface communications below 135 kHz 98
C.2 Tag Driver for Mode 1 of ISO/IEC 18000-3: Parameters for air interface communications at 13,56 MHz 99
C.3 Tag Driver for Mode 2 of ISO/IEC 18000-3: Parameters for air interface communications at 13,56 MHz 101
C.4 Tag Driver for ISO/IEC 18000-4: Parameters for air interface communications at 2,45 GHz - Mode 1 102
C.5 Tag Driver for ISO/IEC 18000-4: Parameters for air interface communications at 2,45 GHz - Mode 2 104
C.6 Tag Driver for ISO/IEC 18000-6 Type A: Parameters for air Interface Communications at 860 MHz to 960 MHz 104
C.7 Tag Driver for ISO/IEC 18000-6 Type B: Parameters for air Interface Communications at 860 MHz to 960 MHz 105
C.8 Tag Driver for ISO/IEC 18000-6 Type C: Parameters for air Interface Communications at 860 MHz to 960 MHz 107
C.9 Tag Driver for ISO/IEC 18000-6 Type D: Parameters for air Interface Communications at 860 MHz to 960 MHz 108

Annex D (normative) Encoding rules for No-Directory Access-Method 112
D.1 Object processing 112
D.2 Encoding the length of the compacted Object 114
D.3 Processing the Object-Identifier 114
D.4 Processing the Relative-OID 116
D.5 Encoding the length and Object-Identifier or Relative-OID 119
D.6 The Precursor 120
D.7 The Offset byte 121
D.8 The Precursor expansion byte 121
D.9 Decoding the Logical Memory 122

Annex E (normative) Basic Data Compaction Schemes 125
E.1 Integer compaction 125
E.2 Numeric compaction 125
E.3 5-bit compaction 126
E.4 6-bit compaction 126
E.5 7-bit compaction 127
E.6 Octet encodation 129

Withdrawn

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Annex F (normative) **ISO/IEC 646 Characters Supported by the Compaction Schemes** 130

Annex G (informative) **Encoding example for No-Directory structure** 133
G.1 Starting position 133
G.2 Encoding the Object-Identifiers 133
G.3 The initial state of the entry for the Logical Memory 133
G.4 The Logical Memory after data compaction 134
G.5 The Logical Memory after formatting for a No-Directory Access-Method 134

Annex H (informative) **Encoding example for Directory structure** 136
H.1 The base data 136
H.2 Encoding the first Directory entry 136
H.3 Encoding the second Directory entry 137
H.4 Encoding the remaining Directory entries 137
H.5 Decoding the Directory and reading the target Object-Identifier 138

Annex I (normative) **Packed-Objects structure** 139
I.1 Overview 139
I.2 Overview of associated Annexes 139
I.3 High-level Packed-Objects format design 139
I.4 Format Flags section 142
I.5 Object Info section 144
I.6 Secondary ID Bits section 150
I.7 Aux Format section 150
I.8 Data section 152
I.9 ID Map and Directory encoding options 155

Annex J (normative) **Packed Objects ID Tables** 161
J.1 Packed Objects Data Format registration file structure 161
J.2 Mandatory and Optional ID Table columns 163
J.3 Syntax of OIDs, IDString, and FormatString columns 166
J.4 OID input/output representation 168

Annex K (normative) **Packed Objects Encoding tables** 170

Annex L (informative) **Encoding example for Packed Objects** 175

Annex M (informative) **Decoding Packed Objects** 179
M.1 Overview 179
M.2 Decoding Alphanumeric data 180

Annex N (normative) **Tag Data Profile encoding** 183
N.1 Scope 183
N.2 The Registered Table 183
N.3 Encoding the Tag Data Profile on the RFID tag 184
N.4 Decoding the Tag Data Profile 186
N.5 Modifying Data 187

Annex O (normative) **Tag Data Profile ID tables** 188
O.1 Tag-Data-Profile Data-Format registration file structure 188
O.2 File Header section 189
O.3 Table Header section 189
O.4 Table Trailer section 190
O.5 Mandatory ID Table columns 190

Annex P (informative) **Encoding example for Tag Data Profile** 192
P.1 Encoded data segment 192
P.2 Encoding the header segment 195

Annex Q (normative) **Basic encoding rules for Multiple-Records Access-Method** 196
Q.1 Overview 196
Q.2 Encoding the Multiple-Records header 196
Q.3 Encoding the preamble of an individual record that is not part of a hierarchical structure 200
Q.4 The record 203
Q.5 The directory 203

Withdrawn

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Q.6 Appending a new record 207
Q.7 Modifying an existing record 208
Q.8 Deleting an existing record 208
Q.9 Constructing the Object-Identifier from the MR-header, preamble and individual record 209

Annex R (normative) Multiple-Records encoding rules for hierarchical records 212
R.1 Overview 212
R.2 Encoding the Multiple-Records header 213
R.3 Encoding the preamble of hierarchical record 214
R.4 The hierarchical record 216
R.5 Data element list 216
R.6 The directory 218
R.7 Appending a new record 218
R.8 Modifying an existing record 218
R.9 Deleting a record 218

Annex S (informative) Encoding example for the Multiple-Records Access-Method 219
S.1 The heterogeneous multiple record example 219
S.2 An encoding example of a homogeneous multiple record 226
S.3 An encoding example of a hierarchical multiple record 229

Annex T (normative) ISO/IEC 15434 Direct Encoding and Transmission 232
T.1 DSFID 232
T.2 Precursor byte 232
T.3 Data byte-count indicator 232
T.4 Encoding and Decoding 233
T.5 Encoding and Decoding Example using Data Identifiers 234
T.6 Additional Code Values and other Precursor features 236

Annex U (informative) ISO/IEC 15434 Direct DI Encoding and Transmission for ISO TC122 Standards 238
U.1 DSFID 238
U.2 Precursor byte 238
U.3 Data byte-count indicator 238
U.4 Encoding and Decoding 239
U.5 Encoding and Decoding Example 241

Annex V (normative) URN Code 40 encoding 243
V.1 Basic Character Set 243
V.2 Extended Encoding 244
V.3 Encoding Example 245
V.4 Resolver Example 245

Bibliography 246

Withdrawn

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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 and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15962 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 15962:2004), which has been technically revised.

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Introduction

The technology of radio frequency identification (RFID) is based on non-contact electronic communication across an air interface. The structure of the bits stored on the memory of the RFID tag is invisible and accessible between the RFID tag and the interrogator only by the use of an air interface protocol, as specified in the appropriate part of ISO/IEC 18000. The result of the transfer of data between an application and an interrogator in open systems requires data to be encoded in a consistent manner on any RFID tag that is part of that open system. This is not only to allow equipment to be interoperable, but in the special case of data carriers, for the data to be encoded on the RFID tag in one systems implementation for it to be read at a later time in a completely different and unknown systems implementation. The data bits stored on each RFID tag must be formatted in such a way as to be reliably read at the point of use if the RFID tag is to fulfil its basic objective. This reliability is achieved through the specification of a data protocol using the application-defined arguments defined in ISO/IEC 15961-1 and the data encoding rules of this International Standard. Additionally, ISO/IEC 24791-1 specifies a software system infrastructure architecture that enables RFID system operations between business applications and RFID interrogators. Specific parts of ISO/IEC 24791 address data management requirements (ISO/IEC 24791-2) and device interface requirements (ISO/IEC 24791-5). These support defined implementations that incorporate the encoding rules of this International Standard and the functional rules of the commands and responses in ISO/IEC 15961-1.

Manufacturers of RFID equipment (interrogators, RFID tags, etc.) and the users of RFID technology require a standards-based data protocol for RFID for item management. ISO/IEC 15961-1 to ISO/IEC 15961-3, this International Standard, and ISO/IEC 24791 specify this protocol, which is layered above the air interface standards defined in ISO/IEC 18000.

The transfer of data to and from an application, supported by appropriate application commands, is the subject of ISO/IEC 15961-1. This International Standard specifies the overall process and the methodologies developed to format the application data into a structure to store on the RFID tag.

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Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions

1 Scope

The data protocol used to exchange information in an RFID system for item management is specified in ISO/IEC 15961 and in this International Standard. Both International Standards are required for a complete understanding of the data protocol in its entirety; but each focuses on one particular interface:

— ISO/IEC 15961 addresses the interface with the application system.

— This International Standard deals with the processing of data and its presentation to the RF tag, and the initial processing of data captured from the RF tag.

This International Standard focuses on encoding the transfer syntax, as defined in ISO/IEC 15961 according to the application commands defined in ISO/IEC 15961. The encodation is in a Logical Memory as a software analogue of the physical memory of the RFID tag being addressed by the interrogator.

This International Standard

— defines the encoded structure of object identifiers;

— specifies the data compaction rules that apply to the encoded data;

— specifies a Precursor for encoding syntax features efficiently;

— specifies formatting rules for the data, e.g. depending on whether a directory is used or not;

— defines how application commands, e.g. to lock data, are transferred to the Tag Driver;

— specifies processes associated with sensory information and the transfers to the Tag Driver;

— defines other communication to the application.

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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/IEC 15961-1, *Information technology — Radio frequency identification (RFID) for item management — Data protocol — Part 1: Application interface*

ISO/IEC 19762-1, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 1: General terms relating to AIDC*

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ISO/IEC 19762-3, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary — Part 3: Radio frequency identification (RFID)*

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