INTERNATIONAL STANDARD

ISO 11784

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Radio-frequency identification of animals — Code structure

Identification des animaux par radiofréquence — Structure du code

Reference number
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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.

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.

International Standard ISO 11784 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, subcommittee SC 19, *Agricultural electronics*.

This second edition cancels and replaces the first edition (ISO 11784:1994), which has been technically revised.

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Radio-frequency identification of animals — Code structure

1 Scope

This International Standard specifies the structure of the radio-frequency (RF) identification code for animals.

RF identification of animals requires that the bits transmitted by a transponder are interpretable by a transceiver. Usually the bit stream contains data bits, defining the identification code and a number of bits to ensure correct reception of the data bits. This International Standard specifies the structure of the identification code.

This International Standard does not specify the characteristics of the transmission protocols between transponder and transceiver. These characteristics are the subject of ISO 11785.

NOTE — A procedure for the allocation of the manufacturer's code is under study.

2 Conformance

The unique individual identification codes transmitted by a transponder are in conformance with this International Standard provided they meet the requirements of clause 5.

3 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3166:1993, *Codes for the representation of names of countries.*

4 Definitions

For the purposes of this International Standard, the following definitions apply.

4.1 animal code: Bit pattern to identify an animal.

4.2 bit pattern: Sequence of binary digits or bits [0, 1].

4.3 code field: Group of bits in the identification code with a specific meaning.

4.4 country code: Bit pattern to define the country where the transponder was issued.

4.5 data block: Additional group of bits with a specific meaning.

4.6 flag: Single bit with a specific meaning.

4.7 identification code: Part of the code that is used for identification (control codes such as header, trailer and checksum are excluded).

4.8 manufacturer's code: Bit pattern identifying the manufacturer of the transponder.

4.9 national identification code: Code field with a unique number within a country.

4.10 transceiver: Device used to communicate with a transponder.

4.11 transponder: Device which transmits its stored information when activated by a transceiver and may be able to store new information.

5 Description of code structure

The code in the transponder is split up into a number of code fields, each with its own meaning. Each field is coded in natural binary with the high-order bit being leftmost. The structure of the code shall be as specified in table 1. Bit number 1 in the code is the most significant bit (MSB); bit number 64 is the least significant bit (LSB).

The combination of country code and national identification code provides a unique worldwide identification number.

Table 1 — Code structure

Bit No.	Information	Combinations	Description
1	Flag for animal (1) or non-animal (0) application	2	This bit signals whether the transponder is used for animal identification or not. In all animal applications this bit shall be 1.
2 - 15	Reserved field	16 384	Fourteen bits of code are reserved for future use.
16	Flag indicating the existence of a data block (1) or no data block (0)	2	This bit signals that additional data is to be received (e.g. physiological data, measured by a device which combines identification and monitoring). This bit shall be 1 if additional information is appended to the identification code, otherwise it shall be 0.
17 - 26	ISO 3166 numeric-3 country code	1 024	Country codes from 900 to 998 may be used to refer to individual manufacturers of transponders. Country code 999 is used to indicate that the transponder is a test transponder and need not contain a unique identification number.
27 - 64	National identification code	274 877 906 944	Unique number within a country.

NOTES

1 The method to distinguish between animal and non-animal applications using bit No. 1 allows the code structure to be recognized electronically. However, this requires that future standards on RF identification in other fields will adhere to this convention.

2 The length of the national identification code was chosen to have enough combinations available for all animals in a large country. Moreover, the uniqueness of a code is expected to be maintained over thirty years.

3 It is a national responsibility to ensure the uniqueness of the national identification code. If necessary number series may be allocated to species and/or manufacturers, but this will not be standardized. Ideally every country should maintain a central database in which all issued codes are stored, together with a reference to the database where the information concerning the associated animal can be retrieved.

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Descriptors: agricultural equipment, radiocommunications, electronic equipment, livestock equipment, livestock, domestic animals, identification methods, radiolocation, information interchange, codes, data codes.

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