



**International  
Standard**

**ISO/IEC 15424**

**Information technology —  
Automatic identification and data  
capture techniques — Data carrier  
identifiers (including symbology  
identifiers)**

*Technologies de l'information — Techniques automatiques  
d'identification et de capture des données — Identifiants de  
porteuses de données (y compris les identifiants de symbologie)*

**Third edition  
2025-02**

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Contents

Page

Foreword.....	v
Introduction.....	vi
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms, definitions and abbreviated terms.....</b>	<b>1</b>
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	2
<b>4 Requirements.....</b>	<b>2</b>
4.1 Applicability.....	2
4.2 Structure.....	2
4.3 Code characters.....	2
4.4 Modifier character.....	3
4.4.1 General.....	3
4.4.2 Code 39 — Code character: A.....	4
4.4.3 Telepen — Code character: B.....	4
4.4.4 Code 128 — Code character: C.....	4
4.4.5 Channel code — Code character: c.....	4
4.4.6 Code One — Code character: D.....	5
4.4.7 Data Matrix and DMRE — Code character: d.....	5
4.4.8 EAN/UPC — Code character: E.....	5
4.4.9 GS1 DataBar and GS1 Composite symbology — Code character: e.....	6
4.4.10 Codabar — Code character: F.....	6
4.4.11 Code 93 and 93i — Code character: G.....	6
4.4.12 Grid Matrix — Code character: g.....	7
4.4.13 Code 11 — Code character: H.....	7
4.4.14 Han Xin Code — Code character: h.....	7
4.4.15 Interleaved 2 of 5 — Code character: I.....	7
4.4.16 DotCode — Code character: J.....	8
4.4.17 JAB Code — Code character: j.....	8
4.4.18 Code 16K — Code character: K.....	8
4.4.19 PDF417 and MicroPDF417 — Code character: L.....	8
4.4.20 MSI — Code character: M.....	9
4.4.21 Modulated height postal — Code character: m.....	9
4.4.22 Anker Code — Code character: N.....	9
4.4.23 Codablock — Code character: O.....	9
4.4.24 OCR — Code character: o.....	10
4.4.25 Plessey Code — Code character: P.....	10
4.4.26 PosiCode — Code character: p.....	10
4.4.27 QR Code or rMQR — Code character: Q.....	10
4.4.28 Straight 2 of 5 (with two bar start/stop codes) — Code character: R.....	10
4.4.29 Datastrip 2D — Code character: r.....	11
4.4.30 Straight 2 of 5 (with three bar start/stop codes) — Code character: S.....	11
4.4.31 SuperCode — Code character: s.....	11
4.4.32 Code 49 — Code character: T.....	11
4.4.33 MaxiCode — Code character: U.....	11
4.4.34 Ultracode — Code character: u.....	12
4.4.35 DMRC Code — Code character: W.....	12
4.4.36 Other bar code — Code character: X.....	12
4.4.37 System expansion — Code character: Y.....	12
4.4.38 Non-bar code — Code character: Z.....	12
4.4.39 Aztec Code and Aztec Mesas — Code character: z.....	13
<b>Annex A (normative) Symbology emulation.....</b>	<b>14</b>

ISO/IEC 15424:2025(en)

<b>Annex B (normative) Symbology identifiers for GS1 application syntax or AIM application specification indicators</b> .....	<b>15</b>
<b>Annex C (informative) Reference documents</b> .....	<b>16</b>
<b>Annex D (normative) AIM application specification indicators</b> .....	<b>18</b>
<b>Bibliography</b> .....	<b>19</b>

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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](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

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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 15424:2008), which has been technically revised.

The main changes are as follows:

- several new symbologies have been added;
- references to AIM as a registration authority have been removed;
- the extension method has been simplified.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

## Introduction

There is a need to identify the data carrier that a reader detects in autodiscrimination environments. The symbology identifier concept provides a standardized way for a device receiving data from a reader to differentiate between the data carriers. This document deals mostly with bar code symbologies; the terms symbology identifier, symbology and bar code are therefore used throughout this document although they are intended to apply to other data carriers as well.

This identification is achieved by the addition of an optional feature to readers enabling the reader to prefix a standard string of characters to data messages. This preamble contains information about the decoded symbol (or other data carrier) and any processing the reader has done. The information is not encoded or otherwise explicitly or implicitly represented in the symbol, except that the presence of some optional features can be detected by the reading equipment, whereas others require the reader to be expressly configured to implement them.

This document identifies symbologies for which a symbology specification

- is published in international standardization organisations, such as ISO, IEC and AIM Inc., or
- is proprietary but used in public applications.

In addition, there is a fixed number of symbologies which do not have a full standard but do have a reference document available from AIM Inc. These symbologies are included in this document because of their historical usage.

This document is intended to be read in conjunction with the relevant symbology specifications.

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# Information technology — Automatic identification and data capture techniques — Data carrier identifiers (including symbology identifiers)

## 1 Scope

This document specifies the preamble message generated by the reader and interpretable by the receiving system, which indicates the bar code symbology or other origin of transmitted data, together with details of certain specified optional processing features associated with the data message.

This document applies to automatic identification device communication conventions and standardizes the reporting of data carriers from bar code readers and other automatic identification equipment.

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

## 3 Terms, definitions and abbreviated terms

### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1.1

##### **code character**

second character in the symbology identifier string, which usually indicates to the host the bar code symbology of the symbol which has been read

#### 3.1.2

##### **flag character**

first character in the symbology identifier string, which indicates to the host that it and the characters following are the symbology identifier characters

#### 3.1.3

##### **modifier character**

character following the *code character* (3.1.1) in the symbology identifier string, indicating optional features or processing applied to the symbol

### 3.1.4

#### function 1

#### FNC1

special function character used for specific purposes in certain symbologies

Note 1 to entry: See [Annex B](#).

## 3.2 Abbreviated terms

ASCII American Standard Code for Information Interchange

DMRE data matrix rectangular extension

ECI extended channel interpretation

OCR optical character recognition

RF radio frequency

## 4 Requirements

### 4.1 Applicability

### 4.2 Structure

The symbology identifier shall be an ASCII character string prefixed by the reading equipment to the data contained in a bar code symbol.

The structure of the symbology identifier string shall be as follows:

]cm...

where

] (ASCII value 93) represents the symbology identifier flag character;

c represents the code character as defined in [Table 1](#);

m represents the single modifier character as defined for the symbology in question.

NOTE The sign ] is the character assigned to ASCII value 93 in the United States ASCII character set in according to ISO/IEC 646.

If a reader is enabled to transmit symbology identifiers, it shall always transmit a symbology identifier at the beginning of each message. The application must know whether or not the reader has symbology identifiers enabled. Therefore, the symbol data may start with a ] and still be interpreted unambiguously.

### 4.3 Code characters

Code characters shall be drawn from the set of upper- and lower-case alphabetic letters A through Z (ASCII values 65 through 90) and a through z (ASCII values 97 through 122). The currently assigned code characters are listed in [Table 1](#). These code characters are case sensitive, i.e. a capital "A" is a different code character from a lower case "a".

The code character Y has not been assigned to a specific symbology but is assigned to system extension in this document. The first character following Y will be the first code character of the future symbology followed by a one-character modifier. All code characters not given in this document are reserved for future use.

## ISO/IEC 15424:2025(en)

Certain symbologies emulate the data content of other symbologies, using their assigned symbology identifier, see [Annex A](#). For symbology description references, see [Annex C](#).

**Table 1 — Code characters**

Code character	Symbology	Code character	Symbology
A	Code 39	a	reserved
B	Telepen	b	reserved
C	Code 128	c	Channel Code
D	Code One	d	Data Matrix and DMRE
E	EAN/UPC	e	GS1 DataBar and GS1 Composite
F	Codabar	f	reserved
G	Code 93 and 93i	g	Grid Matrix
H	Code 11	h	Han Xin Code
I	Interleaved 2 of 5	i	reserved
J	DotCode	j	JAB Code
K	Code 16K	k	reserved
L	PDF417 and MicroPDF417	l	reserved
M	MSI	m	Modulated Height Postal
N	Anker	n	reserved
O	Codablock	o	OCR (Optical Character Recognition)
P	Plessey Code	p	PosiCode
Q	QR Code or rMQR	q	reserved
R	Straight 2 of 5 (with two bar start/stop codes)	r	Datastrip 2D
S	Straight 2 of 5 (with three bar start/stop codes)	s	SuperCode
T	Code 49	t	reserved
U	MaxiCode	u	Ultracode
V	reserved	v	reserved
W	DMRC Code	w	reserved
X	Other bar code	x	reserved
Y	System expansion	y	reserved
Z	Non-bar code	z	Aztec Code

### 4.4 Modifier character

#### 4.4.1 General

Some symbologies covered by this document contain optional features which need to be indicated to the receiving equipment to enable them to be correctly processed. This optional processing is indicated by the modifier character.

Each symbology has a different set of optional features. These are listed in the following subclauses.

To determine the modifier character for an application, refer to the subclause corresponding to the symbology concerned. Listed in this subclause can be one or more processing options, each of which has an assigned option value. The precise interpretation of the option should be obtained by reference to the relevant symbology specification. The modifier character defines the options available for the code character. The modifier character and its meaning are defined for each of the code characters. The modifier character shall be from the set {0 to 9, A to Z, a to z}; in some instances, the character may represent a hexadecimal value (0 to F) corresponding to the sum of active processing options.

## ISO/IEC 15424:2025(en)

Where no options are indicated in the subclauses, the modifier character to be transmitted is 0. Values which are not included in the modifier values of a subclause are reserved for future use.

Check character options listed in the subclauses below indicate the basis of calculation of the check character, where a check character algorithm has been defined in the symbology specification or reference document.

Symbologies that support the ECI protocol have one or more modifiers to indicate that the ECI protocol is being used. Unless otherwise stated, the default ECI interpretation for these symbologies is \000003.

### 4.4.2 Code 39 — Code character: A

Modifier character value	Option
0	No check character validation nor full ASCII processing; all data transmitted as decoded
1	Modulo 43 check character validated and transmitted
3	Modulo 43 check character validated but not transmitted
4	Full ASCII character conversion performed; no check character validation
5	Full ASCII character conversion performed; modulo 43 check character validated and transmitted
7	Full ASCII character conversion performed; modulo 43 check character validated but not transmitted

### 4.4.3 Telepen — Code character: B

Modifier character value	Option
0	Full ASCII mode
1	Double density numeric only mode
2	Double density numeric followed by full ASCII
4	Full ASCII followed by double density numeric

### 4.4.4 Code 128 — Code character: C

Modifier character value	Option
0	Standard data packet; no FNC1 in first or second symbol character position after start character
1	GS1-128 data packet - FNC1 in first symbol character position after start character
2	FNC1 in second symbol character position after start character
4	Concatenation according to International Society for Blood Transfusion ISBT 128 <sup>[6]</sup> specifications has been performed; concatenated data follows

### 4.4.5 Channel code — Code character: c

Modifier character value	Option
3	Channel 3 decoded
4	Channel 4 decoded
5	Channel 5 decoded
6	Channel 6 decoded
7	Channel 7 decoded
8	Channel 8 decoded
9	Composite format

4.4.6 Code One — Code character: D

Modifier character value	Option
0	No special characters in first or second symbol character position
1	FNC1 implied in first symbol character position
2	FNC1 in second symbol character position
4	Pad character in first symbol character position. The first data character in the symbol will define the escape character. When this character is a “\”, it indicates that the symbol contains ECI escape sequences.

4.4.7 Data Matrix and DMRE — Code character: d

Modifier character value	Option
0	ECC 000 to ECC 140
1	ECC 200
2	ECC 200, FNC1 in first or fifth position
3	ECC 200, FNC1 in second or sixth position
4	ECC 200, ECI protocol implemented
5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented
6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented
7	Data matrix rectangular extension
8	Data matrix rectangular extension, FNC1 in 1 <sup>st</sup> or 5 <sup>th</sup> position
9	Data matrix rectangular extension, FNC1 in 2 <sup>nd</sup> or 6 <sup>th</sup> position
A	Data matrix rectangular extension supporting ECI protocol
B	Data matrix rectangular extension, FNC1 in 1 <sup>st</sup> or 5 <sup>th</sup> position plus supporting ECI protocol
C	Data matrix rectangular extension, FNC1 in 2 <sup>nd</sup> or 6 <sup>th</sup> position plus supporting ECI protocol
NOTE	Permissible values of m for data matrix rectangular extension: 7, 8, 9, A, B, C.

4.4.8 EAN/UPC — Code character: E

Modifier character value	Option
0	Standard 13 digit data packet for EAN-13, UPC-A and UPC-E (does not include add-on data)
1	Two digit add-on data only
2	Five digit add-on data only
3	Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from add-on symbol
4	EAN-8 data packet

EAN/UPC symbols with supplements should be considered as two separate symbols. The first symbol is the main data packet, and the second symbol is the 2 or 5 digit supplement. These two symbols should be transmitted separately, each with its own symbology identifier. Provision is, however, made for the option of transmission of both symbols as a single data packet.

4.4.9 GS1 DataBar and GS1 Composite symbology — Code character: e

Modifier character value	Option
0	Standard data packet
1	Data packet containing the data following an encoded symbol separator character
2	Data packet containing the data following an escape mechanism character; the data packet does not support the ECI protocol
3	Data packet containing the data following an escape mechanism character; the data packet supports the ECI protocol

NOTE 1 The protocol for “]e2” corresponds to the protocol defined for PDF417 using symbology identifier “]L2”, and the protocol for “]e3” corresponds to the protocol defined for PDF417 using symbology identifier “]L1”.

NOTE 2 For modifier character value 3, the default interpretative ECI is \000003.

4.4.10 Codabar — Code character: F

Modifier character value	Option
0	Standard Codabar symbol; no special processing
1	American Blood Commission (ABC) Codabar concatenate/message append performed
2	Reader has validated the check character
4	Reader has stripped the check character before transmission

4.4.11 Code 93 and 93i — Code character: G

4.4.11.1 Options applicable to Code 93 only

Modifier character value	Option
0	No options specified at this time; always transmit 0

4.4.11.2 Options applicable to 93i

m	Associated data carrier	FNC1 1 <sup>st</sup>	FNC1 2d,3d	Word mode	ECI	Lnk'd Seq'n	m	Associated data carrier	FNC1 1 <sup>st</sup>	FNC1 2d,3d	Word mode	ECI	Lnk'd Seq'n
0	No	No	No	No	No	No							
1	No	No	No	No	No	No	P	Yes	No	No	No	No	No
2	No	No	No	No	No	Yes	Q	Yes	No	No	No	No	Yes
3	No	No	No	No	Yes	No	R	Yes	No	No	No	Yes	No
4	No	No	No	No	Yes	Yes	S	Yes	No	No	No	Yes	Yes
5	No	No	No	Yes	No	No	T	Yes	No	No	Yes	No	No
6	No	No	No	Yes	No	Yes	U	Yes	No	No	Yes	No	Yes
7	No	No	No	Yes	Yes	No	V	Yes	No	No	Yes	Yes	No
8	No	No	No	Yes	Yes	Yes	W	Yes	No	No	Yes	Yes	Yes
9	No	No	Yes	No	No	No	X	Yes	No	Yes	No	No	No
A	No	No	Yes	No	No	Yes	Y	Yes	No	Yes	No	No	Yes
B	No	No	Yes	No	Yes	No	Z	Yes	No	Yes	No	Yes	No
C	No	No	Yes	No	Yes	Yes	a	Yes	No	Yes	No	Yes	Yes
D	No	No	Yes	Yes	No	No	b	Yes	No	Yes	Yes	No	No

NOTE 1 If the entry in the ECI column is “Yes” and the entry in the word mode column is “No”, then the default interpretative ECI is \000003.

NOTE 2 If the entry in the ECI column is “Yes” and the entry in the word mode column is also “Yes”, then the default interpretative ECI is \000025.

## ISO/IEC 15424:2025(en)

m	Associated data carrier	FNC1 1 <sup>st</sup>	FNC1 2d,3d	Word mode	ECI	Lnk'd Seq'n	m	Associated data carrier	FNC1 1 <sup>st</sup>	FNC1 2d,3d	Word mode	ECI	Lnk'd Seq'n
E	No	No	Yes	Yes	No	Yes	c	Yes	No	Yes	Yes	No	Yes
F	No	No	Yes	Yes	Yes	No	d	Yes	No	Yes	Yes	Yes	No
G	No	No	Yes	Yes	Yes	Yes	e	Yes	No	Yes	Yes	Yes	Yes
H	No	Yes	No	No	No	No	f	Yes	Yes	No	No	No	No
I	No	Yes	No	No	No	yes	g	Yes	Yes	No	No	No	yes
J	No	Yes	No	No	Yes	No	h	Yes	Yes	No	No	Yes	No
K	No	Yes	No	No	Yes	Yes	i	Yes	Yes	No	No	Yes	Yes
L	No	Yes	No	Yes	No	No	j	Yes	Yes	No	Yes	No	No
M	No	Yes	No	Yes	No	Yes	k	Yes	Yes	No	Yes	No	Yes
N	No	Yes	No	Yes	Yes	No	l	Yes	Yes	No	Yes	Yes	No
O	No	Yes	No	Yes	Yes	Yes	m	Yes	Yes	No	Yes	Yes	Yes

NOTE 1 If the entry in the ECI column is "Yes" and the entry in the word mode column is "No", then the default interpretative ECI is \000003.

NOTE 2 If the entry in the ECI column is "Yes" and the entry in the word mode column is also "Yes", then the default interpretative ECI is \000025.

### 4.4.12 Grid Matrix — Code character: g

Modifier character value	Option
0	ECI protocol not implemented
1	ECI protocol implemented
3	ECI protocol not implemented and FNC1 implies GS1 application
4	ECI protocol implemented and FNC1 implies GS1 application
5	ECI protocol not implemented and FNC1 implies AIM application

### 4.4.13 Code 11 — Code character: H

Modifier character value	Option
0	Single modulo 11 check character validated and transmitted
1	Two modulo 11 check characters validated and transmitted
3	Check character(s) validated but not transmitted

### 4.4.14 Han Xin Code — Code character: h

Modifier character value	Option
0	Generic data, no special features set
1	ECI protocol enabled

NOTE For modifier character value 1, the default interpretative ECI is \000003.

### 4.4.15 Interleaved 2 of 5 — Code character: I

Modifier character value	Option
0	No check character validation
1	Modulo 10 symbol check character validated and transmitted
3	Modulo 10 symbol check character validated but not transmitted

4.4.16 DotCode — Code character: J

Modifier character value	Option
0	Neither Case A nor Case B (see below) – "generic" data
1	Case A – GS1-formatted data
2	Case B – application-specific data indicated by opening letter or digits
3	Neither Case A nor Case B, with an ECI in the segment and "\"s doubled
4	Case A with ECI in the segment and "\"s doubled
5	Case B with ECI in the segment and "\"s doubled

4.4.17 JAB Code — Code character: j

Modifier character value	Option
0	No options
1	ECI protocol implemented
2	FNC1 preceding 1 <sup>st</sup> message character
3	FNC1 following an initial letter or pair of digits
4	FNC1 preceding 1 <sup>st</sup> message character, ECI protocol implemented
5	FNC1 following an initial letter or pair of digits, ECI protocol implemented

4.4.18 Code 16K — Code character: K

Modifier character value	Option
0	No special characters in first or second symbol character position after start character
1	FNC1 implied or explicit in first symbol character position after start character
2	FNC1 in second symbol character position after start character
4	Pad character in first symbol character position after start character

4.4.19 PDF417 and MicroPDF417 — Code character: L

Modifier character value	Option
0	Reader set to conform with protocol defined in 1994 PDF417 symbology specifications
1	Reader set to follow protocol of ISO/IEC 15438 for extended channel interpretation (all data characters 92 doubled)
2	Reader set to follow protocol of ISO/IEC 15438 for basic channel interpretation (data characters 92 are not doubled)
3	Code 128 emulation: implied FNC1 in first position
4	Code 128 emulation: implied FNC1 after initial letter or pair of digits
5	Code 128 emulation: no implied FNC1

NOTE 1 Modifier values 3, 4 and 5 are applicable only to MicroPDF417 symbols.

NOTE 2 For modifier character value 1, the default interpretative ECI is \000003.

4.4.20 MSI — Code character: M

Modifier character value	Option
0	Modulo 10 symbol check character validated and transmitted
1	Modulo 10 symbol check character validated but not transmitted

4.4.21 Modulated height postal — Code character: m

Modifier character value	Option
0	Australian Post
1	Canada Post
2	China Post
3	Dutch Post
4	InfoMail
5	Japan Post
6	Korean Post
7	Sweden Post
8	UK Post BPO
9	US Intelligent Mail
A	US Planet Code
B	US Postnet
C	Brazil CEPNet
D	Singapore Post

NOTE Modulated height postal symbologies are generally controlled by a government entity and do not have specifications developed by or available from AIM.

4.4.22 Anker Code — Code character: N

Modifier character value	Option
0	No options specified at this time; always transmit 0

4.4.23 Codablock — Code character: O

Modifier character value	Option
0	Codablock 256: FNC1 not used
1	Codablock 256: FNC1 in first data character position; subsequent occurrences converted to ASCII 29 (GS)
4	Codablock F: FNC1 not used
5	Codablock F: FNC1 in first data character position; subsequent occurrences converted to ASCII 29 (GS)
6	Codablock A

4.4.24 OCR — Code character: o

Modifier character value	Option
0	Unspecified font
1	OCR-A
2	OCR-B
3	Other font

4.4.25 Plessey Code — Code character: P

Modifier character value	Option
0	CRC check character validated and transmitted
1	CRC check character validated and not transmitted

4.4.26 PosiCode — Code character: p

Modifier character value	Option
0	Standard data packet; no FNC1 in first or second symbol character position after start character
1	FNC1 preceding the first data character
2	FNC1 immediately following an AIM application indicator

4.4.27 QR Code or rMQR — Code character: Q

Modifier character value	Option
0	QR Code Model 1 symbol (in accordance with AIM ITS/97-001)
1	QR Code or rMQR symbol, ECI protocol not implemented
2	QR Code or rMQR symbol, ECI protocol implemented
3	QR Code or rMQR symbol, ECI protocol not implemented, FNC1 implied in first position
4	QR Code or rMQR symbol, ECI protocol implemented, FNC1 implied in first position
5	QR Code or rMQR symbol, ECI protocol not implemented, FNC1 implied in second position
6	QR Code or rMQR symbol, ECI protocol implemented, FNC1 implied in second position

NOTE 1 Modifier character values 1 to 6 correspond to Model 2 symbols in ISO/IEC 18004, or ISO/IEC 23941.  
 NOTE 2 For modifier character values 2, 4 and 6, the default Interpretative ECI is \000003.

4.4.28 Straight 2 of 5 (with two bar start/stop codes) — Code character: R

Modifier character value	Option
0	No check character validation
1	Modulo 7 check character validated and transmitted
3	Modulo 7 check character validated but not transmitted

4.4.29 Datastrip 2D — Code character: r

Modifier character value	Option
0	Datastrip logical level contents are transmitted without decompressing the data
1	Datastrip logical level contents have been decompressed

4.4.30 Straight 2 of 5 (with three bar start/stop codes) — Code character: S

Modifier character value	Option
0	No options specified at this time; always transmit 0

4.4.31 SuperCode — Code character: s

Modifier character value	Option
0	Symbol conforming to LLD0 (null interpretation), using the obsolete SuperCode specification
1	Symbol conforming to LLD1, using the obsolete SuperCode specification
2	Basic channel mode operation: symbol conforming to LLD2 or 3
3	Extended channel mode operation: symbol conforming to LLD2 or; reader automatically set to follow the extended channel interpretation protocol
4	Symbol conforming to a closed system LLD. Decoder set for all functions of symbol structure header, including error correction. For option 4, the value of the reserved LLD (4 to 14) shall be transmitted as a two-digit decimal value as fourth and fifth characters of the symbology identifier.

4.4.32 Code 49 — Code character: T

Modifier character value	Option
0	No special characters in the first or second data character positions
1	FNC1 in the first data character position
2	FNC1 in the second data character position
4	FNC2 in the first data character position

4.4.33 MaxiCode — Code character: U

Modifier character value	Option
0	Symbol in Mode 4 or 5
1	Symbol in Mode 2 or 3
2	Symbol in Mode 4 or 5, ECI protocol implemented
3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message

4.4.34 Ultracode — Code character: u

Modifier character value	Option
0	8-bit ISO/IEC 8859-1
1	8-bit ISO/IEC 8859-1; GS1 Digital Link URI symbol
2	8-bit ISO/IEC 8859-1; GS1 FNC1 in 1 <sup>st</sup> position
3	8-bit Explicit non-language fixed length ECI invoked; AIM ECI protocol in use
4	8-bit ISO/IEC 8859-1; URL Start Character
5	8-bit ISO/IEC 8859-1 ; AIM ECI protocol in use
6	8-bit UTF-8 Unicode encoding of ISO/IEC 10646
7	8-bit ECI-defined language, including various encodings of ISO/IEC 10646 and also all multibyte Oriental languages. AIM ECI protocol in use
8	8-bit Byte mode data; AIM ECI protocol not in use

4.4.35 DMRC Code — Code character: W

Modifier character value	Option
0	Digital watermark symbol FNC1 implied in the first position
1	Digital watermark symbol follows AI parsing rules

NOTE DMRC symbology does not have a specification developed by or available from AIM.

4.4.36 Other bar code — Code character: X

Modifier character value	Option
0 to F	May be assigned by the decoder manufacturer

For symbologies or symbology options not covered by this document, the code character X with the above options may be assigned by the decoder manufacturer to identify those symbologies and options implemented in the reader.

4.4.37 System expansion — Code character: Y

See [4.3](#).

4.4.38 Non-bar code — Code character: Z

Modifier character value	Option
0	Keyboard
1	Magnetic stripe
2	Radio frequency (RF) tag
3 to 9	May be assigned by device manufacturer
A to Z	May be assigned by the decoder manufacturer
a to z	May be assigned by the decoder manufacturer

Where it is necessary to identify the source of data originating from a device other than a bar code reader, the code character Z together with the above options may be assigned by the device manufacturer.

4.4.39 Aztec Code and Aztec Mesas — Code character: z

Modifier character value	Option
0	No options
1	FNC1 preceding 1 <sup>st</sup> message character
2	FNC1 following an initial letter or pair of digits
3	ECI protocol implemented
4	FNC1 preceding 1 <sup>st</sup> message character, ECI protocol implemented
5	FNC1 following an initial letter or pair of digits, ECI protocol implemented
6	Structured Append header included
7	Structured Append header included, FNC1 preceding 1 <sup>st</sup> message character
8	Structured Append header included, FNC1 following an initial letter or pair of digits
9	Structured Append header included, ECI protocol implemented
A	Structured Append header included, FNC1 preceding 1 <sup>st</sup> message character, ECI protocol implemented
B	Structured Append header included, FNC1 following an initial letter or pair of digits, ECI protocol implemented
C	Aztec Rune decoded

NOTE For modifier character values 3, 4, 5, 9, A and B, the default interpretative ECI is 000003.

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## Annex A (normative)

# Symbology emulation

### A.1 General

Symbology identifiers generally provide a one-to-one relationship between a specific symbology and a symbology identifier code character. Symbology emulation defines the relationship between symbologies and code characters that are not a one-to-one relationship. Symbology emulation is allowed for three specific instances.

### A.2 Inherent symbology specific emulation

Whenever a symbology specification specifies the use of a code character assigned to another symbology as the native code character, this relationship is defined as inherent symbology specific emulation. The symbologies which share the same code character should be defined with common data character sets and features.

As an example, MicroPDF417 specifies the same code character “L” be used as PDF417.

### A.3 Optional application-specific emulation

Certain symbologies offer a feature whereby some or all symbols emulate the data content of another symbology and decoders transmit the data to an application as though it had been decoded from the emulated symbology.

When transmitting such data, decoders should prefix the data with the symbology identifier appropriate either to the emulated symbology or to the symbology used for encoding.

The transmission of the symbology identifier for the emulated symbology shall be subject to the following conditions.

- The application specification shall explicitly permit the emulation feature to be used and shall define which symbologies may be used.
- The application specification shall define which symbology identifier is to be transmitted, either the symbology identifier for the emulated symbology or the symbology identifier for the symbology used for encoding.
- The data content of the symbol shall correspond to a valid symbol for the application in the emulated symbology.
- Emulation cannot be generically applied to all symbols of the emulating symbology; the reader shall only transmit emulated data from symbols encoded with a unique symbology-specific feature denoting that this symbol is meant to be transmitted as an emulation of another symbology, as defined in the symbology specification.

As an example, MicroPDF417 allows the emulation of Code 128 and GS1-128. It has assigned codewords which indicate that the MicroPDF417 symbol's data output shall conform with the Code 128 specification. If symbology identifiers are enabled, then the application shall specify whether each such symbol's transmission will be prefixed by either “]Cm” or “]Lm”.