



**International
Standard**

ISO/IEC 16022

**Information technology —
Automatic identification and data
capture techniques — Data Matrix
bar code symbology specification**

*Technologies de l'information — Techniques automatiques
d'identification et de capture des données — Spécification de
symbologie de code à barres Data Matrix*

**Third edition
2024-05**

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Published in Switzerland

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 Mathematical or logical notations	2
6 Symbol description	2
6.1 Basic characteristics.....	2
6.2 Summary of additional features.....	3
6.3 Symbol structure.....	3
6.3.1 General.....	3
6.3.2 Finder pattern.....	4
6.3.3 Symbol sizes and capacities.....	4
7 Data Matrix code requirements	4
7.1 Encode procedure overview.....	4
7.1.1 General.....	4
7.1.2 Step 1: data encodation.....	4
7.1.3 Step 2: error checking and correcting codeword generation.....	4
7.1.4 Step 3: module placement in matrix.....	5
7.2 Data encodation.....	5
7.2.1 Overview.....	5
7.2.2 Default character interpretation.....	5
7.2.3 ASCII encodation.....	5
7.2.4 Symbology control characters.....	6
7.2.5 C40 encodation.....	7
7.2.6 Text encodation.....	9
7.2.7 ANSI X12 encodation.....	9
7.2.8 EDIFACT encodation.....	10
7.2.9 Base 256 encodation.....	11
7.3 ECI.....	11
7.3.1 General.....	11
7.3.2 Encoding ECIs.....	12
7.3.3 ECIs and Structured Append.....	12
7.3.4 Post-decode protocol.....	12
7.4 Data Matrix symbol attributes.....	13
7.4.1 Symbol sizes and capacity.....	13
7.4.2 Insertion of Alignment Patterns into larger symbols.....	14
7.5 Structured Append.....	14
7.5.1 Basic principles.....	14
7.5.2 Symbol sequence indicator.....	14
7.5.3 File identification.....	15
7.5.4 FNC1 and Structured Append.....	15
7.5.5 Buffered and unbuffered operation.....	15
7.6 Error detection and correction.....	15
7.6.1 Reed-Solomon error correction.....	15
7.6.2 Generating the error correction codewords.....	15
7.6.3 Error correction capacity.....	16
7.7 Symbol construction.....	17
7.7.1 General.....	17
7.7.2 Symbol character placement.....	17
7.7.3 Alignment Pattern module placement.....	17

7.7.4	Finder Pattern module placement	18
8	Symbol dimensions	18
9	Symbol quality	18
9.1	General	18
9.2	Symbol quality parameters	18
9.2.1	Fixed pattern damage	18
9.2.2	Overall symbol grade	18
9.2.3	Decode	18
9.2.4	Grid non-uniformity	18
9.3	Process control measurements	19
10	Reference decode algorithm for Data Matrix	19
11	User guidelines	30
11.1	Human readable interpretation	30
11.2	Autodiscrimination capability	30
11.3	System considerations	30
12	Transmitted data	30
12.1	General	30
12.2	Protocol for FNC1	30
12.3	Protocol for FNC1 in the second position	30
12.4	Protocol for Macro characters in the first position	31
12.5	Protocol for ECIs	31
12.6	Symbology identifier	31
12.7	Transmitted data example	31
Annex A (normative)	Data Matrix interleaving process	33
Annex B (normative)	Data Matrix pattern randomising	37
Annex C (normative)	Data Matrix encodation character sets	39
Annex D (normative)	Data Matrix alignment patterns	42
Annex E (normative)	Data Matrix Reed-Solomon error detection and correction	44
Annex F (normative)	Symbol character placement	48
Annex G (normative)	Data Matrix print quality – symbology-specific aspects	64
Annex H (normative)	Symbology identifier	75
Annex I (informative)	Encode example	76
Annex J (informative)	Encoding data using the minimum symbol data characters	79
Annex K (informative)	Autodiscrimination capability	83
Annex L (informative)	System considerations	84
Annex M (informative)	User considerations	85
Bibliography		86

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 documents 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 16022:2006), which has been technically revised.

The main changes are as follows:

- the extended channel interpretations and rectangular formats have become a mandatory feature;
- the historic data matrix variant "ECC 000" to "ECC 140" has been removed;
- continuous grading according to ISO/IEC 15415 has been introduced to all quality measurements;
- transition ratio grading has been changed;
- new quality parameter "print growth" has been added;
- the reference decode algorithm has been revised;
- the interleaving blocks for 144 x 144 matrix size have been clarified.

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 and www.iec.ch/national-committees.

Introduction

Data Matrix is a two-dimensional matrix symbology which is made up of nominally square modules arranged within a perimeter finder pattern. Though primarily shown and described in this document as a dark symbol on light background, Data Matrix symbols can also be printed to appear as light on dark.

Manufacturers of bar code equipment and users of the technology need publicly available standard symbology specifications to which they can refer when developing equipment and application standards. The publication of standardised symbology specifications is designed to achieve this.

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Information technology — Automatic identification and data capture techniques — Data Matrix bar code symbology specification

1 Scope

This document defines the requirements for the symbology known as Data Matrix. It specifies the Data Matrix symbology characteristics, data character encodation, symbol formats, dimensions and print quality requirements, error correction rules, decoding algorithm, and user-selectable application parameters.

It applies to all Data Matrix symbols produced by any printing or marking technology.

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*

ISO/IEC 15415, *Information technology — Automatic identification and data capture techniques — Bar code symbol print quality test specification — Two-dimensional symbols*

ISO/IEC 646, *Information technology — ISO 7-bit coded character set for information interchange*

ISO/IEC 8859-1, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

ISO/IEC 29158, *Information technology — Automatic identification and data capture techniques — Direct Part Mark (DPM) Quality Guideline*

3 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

codeword

symbol character value

intermediate level of coding between source data and the graphical encodation in the symbol

3.2

module

single cell of element in a matrix symbology symbol used to encode one bit of the *codeword* (3.1)

[SOURCE: ISO/IEC 19762:2016, 04.02.06]