

First edition
2022-05

Information technology — Automatic identification and data capture techniques — Rectangular Micro QR Code (rMQR) bar code symbology specification

Technologies de l'information — Techniques d'identification automatique et de capture des données — Spécification de la symbologie de code à barres Rectangular Micro QR Code (rMQR)



Reference number
ISO/IEC 23941:2022(E)

© ISO/IEC 2022



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of "ISO/IEC 23941:2022". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Mathematical and logical symbols, abbreviated terms and conventions	3
4.1 Mathematical and logical symbols.....	3
4.2 Abbreviated terms.....	3
4.3 Conventions.....	3
4.3.1 Module positions.....	3
4.3.2 Byte notation.....	3
4.3.3 Version references.....	3
5 Conformance	4
6 rMQR specifications	4
6.1 Basic characteristics.....	4
6.2 Summary of additional features.....	5
6.3 Symbol structure.....	5
6.3.1 General.....	5
6.3.2 Symbol Versions and sizes.....	8
6.3.3 Finder pattern.....	10
6.3.4 Separator.....	10
6.3.5 Timing pattern.....	10
6.3.6 Alignment patterns.....	11
6.3.7 Finder sub pattern.....	11
6.3.8 Corner finder pattern.....	12
6.3.9 Encoding region.....	12
6.3.10 Quiet zone.....	13
7 Requirements	13
7.1 Encode procedure overview.....	13
7.2 Data analysis.....	14
7.3 Modes.....	15
7.3.1 General.....	15
7.3.2 Extended channel interpretation (ECI) mode.....	15
7.3.3 Numeric mode.....	15
7.3.4 Alphanumeric mode.....	15
7.3.5 Byte mode.....	15
7.3.6 Kanji mode.....	16
7.3.7 Mixing modes.....	16
7.3.8 FNC1 mode.....	16
7.4 Data encoding.....	16
7.4.1 Sequence of data.....	16
7.4.2 Extended channel interpretation (ECI) mode.....	18
7.4.3 Numeric mode.....	20
7.4.4 Alphanumeric mode.....	21
7.4.5 Byte mode.....	22
7.4.6 Kanji mode.....	22
7.4.7 Mixing modes.....	23
7.4.8 FNC1 modes.....	24
7.4.9 Terminator.....	25
7.4.10 Bit stream to codeword conversion.....	25
7.5 Error correction.....	28
7.5.1 Error correction capacity.....	28

This is a preview of "ISO/IEC 23941:2022". [Click here to purchase the full version from the ANSI store.](#)

7.5.2	Generating the error correction codewords	31
7.6	Constructing the final message codeword sequence	32
7.7	Codeword placement in matrix	33
7.7.1	Symbol character representation	33
7.7.2	Function pattern placement	33
7.7.3	Symbol character placement	33
7.8	Data masking	37
7.8.1	General	37
7.8.2	Data mask patterns	37
7.9	Format information	37
8	Symbol printing and marking	39
8.1	Dimensions	39
8.2	Human-readable interpretation	39
8.3	Marking guidelines	40
9	Symbol quality	40
9.1	Methodology	40
9.2	Symbol quality parameters	40
9.2.1	Fixed pattern damage	40
9.2.2	Scan grade and overall symbol grade	40
9.2.3	Grid non-uniformity	40
9.3	Process control measurements	40
10	Decoding procedure overview	40
11	Reference decode algorithm	41
12	Auto-discrimination capability	52
13	Transmitted data	52
13.1	General principles	52
13.2	Symbology identifier	52
13.3	Extended channel interpretations	52
13.4	FNC1	53
Annex A (normative)	Error detection and correction generator polynomials	54
Annex B (normative)	Error correction decoding steps	56
Annex C (normative)	Format information	58
Annex D (normative)	Position of alignment patterns	61
Annex E (normative)	Symbology identifier	62
Annex F (normative)	rMQR print quality – symbology – specific aspects	63
Annex G (normative)	Byte mode character sets	69
Annex H (informative)	JIS8 and Shift JIS character sets	70
Annex I (informative)	Symbol encoding examples	72
Annex J (informative)	User guidelines for printing and scanning of rMQR symbols	74
Annex K (informative)	Autodiscrimination	76
Annex L (informative)	Process control techniques	77
Bibliography	79

This is a preview of "ISO/IEC 23941:2022". Click here to purchase the full version from the ANSI store.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*.

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

Rectangular Micro QR Code (rMQR) is a matrix symbology. The symbol consists of an array of nominally square modules, arranged in a rectangular pattern. Included is a unique finder pattern located at a single corner which is intended to assist in easy location of the symbols position, size, and inclination. A wide range of sizes of symbol is provided for, together with two levels of error correction. Module dimensions are user-specified to enable symbol production by a wide variety of techniques.