

ISO/IEC 24778:2024-04 (E)

Information technology - Automatic identification and data capture techniques - Aztec Code bar code symbology specification

Contents

Page

- Foreword..... vi
- Introduction..... vii
- 1 Scope..... 1**
- 2 Normative references..... 1**
- 3 Terms, definitions, symbols and functions..... 1**
 - 3.1 Terms and definitions..... 1
 - 3.2 Symbols and functions..... 2
 - 3.2.1 Mathematical symbols..... 2
 - 3.2.2 Mathematical functions and operations..... 2
- 4 Symbology characteristics..... 3**
 - 4.1 Basic characteristics..... 3
 - 4.2 Summary of additional features..... 3
- 5 Symbol description..... 4**
 - 5.1 Basic Aztec Code properties..... 4
 - 5.2 Symbol structure..... 4
 - 5.2.1 Aztec code layout..... 4
 - 5.2.2 Core Symbol..... 6
 - 5.2.3 Data fields..... 7
 - 5.3 Symbol character structure and sequence..... 7
 - 5.4 Symbol size and capacity..... 9
- 6 General encodation procedures..... 10**
- 7 Symbol structure..... 11**
 - 7.1 Fixed pattern structures..... 11
 - 7.1.1 Fixed pattern types..... 11
 - 7.1.2 Finder..... 11
 - 7.1.3 Orientation bits..... 11
 - 7.1.4 Reference grid..... 11
 - 7.2 Mode message encoding and structure..... 11
 - 7.2.1 Mode message..... 11
 - 7.2.2 Symbol size designator..... 11
 - 7.2.3 Message length designator..... 12
 - 7.2.4 Error encodation for the mode message..... 12
 - 7.2.5 Module placement for the mode message..... 12
 - 7.3 Data message encoding and structure..... 12
 - 7.3.1 Data message..... 12
 - 7.3.2 Source message encoding..... 13
 - 7.3.3 Error encodation for the data message..... 15
 - 7.3.4 Module placement for the data message..... 15
- 8 Structured Append..... 16**
- 9 Reader initialization symbols..... 16**
- 10 Extended Channel Interpretation (ECI)..... 16**
 - 10.1 ECI basic information and references..... 16
 - 10.2 Encoding ECIs in Aztec Code..... 17
 - 10.3 Code sets and ECIs..... 17
 - 10.4 ECIs and Structured Append..... 17
 - 10.5 Post-decode protocol..... 17

11	User considerations	17
11.1	Choice of data and error correction level	17
11.2	User selection of encoded message	17
11.3	User selection of minimum error correction level	18
11.4	User selection of Structured Append	18
11.5	User selection of optional symbol formats	18
12	Dimensions	18
13	User guidelines	18
13.1	Human readable interpretation	18
13.2	Autodiscrimination capability	19
13.3	User-defined application parameters	19
14	Reference decode algorithm	19
14.1	General	19
14.2	Finding candidate symbols	20
14.3	Processing the bullseye image	20
14.4	Decoding the Core Symbol	20
14.4.1	Bullseye mapping of module centres	20
14.4.2	Mapping and sampling module centres	20
14.4.3	Determining video sign and symbol format	21
14.4.4	Determining symbol orientation and mirror image reversal	21
14.4.5	Decoding the mode message	21
14.5	Decoding the data message	21
14.5.1	General	21
14.5.2	Mapping the data layers	21
14.5.3	Assembling the codewords	21
14.5.4	Checking the codewords	22
14.6	Translating the datawords	22
14.6.1	Bit stream conversion and interpretation	22
14.6.2	Creating the data bit stream	22
14.6.3	Interpreting the bit stream	22
15	Symbol quality	22
15.1	Quality assessment method	22
15.2	Symbol quality parameters	22
15.2.1	Fixed pattern damage (FPD)	22
15.2.2	Axial non-uniformity (AN)	23
15.2.3	Unused error correction	23
15.2.4	“Print” growth	23
15.2.5	Grid non-uniformity	23
15.3	Symbol print quality grading	23
15.3.1	Symbol grade	23
15.4	Additional print process control measurements	23
16	Transmitted data	23
16.1	Basic interpretation	23
16.2	Protocol for FNC1	24
16.3	Protocol for ECIs	24
16.4	Symbology identifier	24
16.5	Transmitted data example	24
	Annex A (normative) Aztec Runes	26
	Annex B (normative) Error detection and correction	28
	Annex C (normative) Topological bullseye search algorithm	31
	Annex D (normative) Linear crystal growing algorithm	35
	Annex E (normative) Fixed pattern damage (FPD) grading	36
	Annex F (normative) Symbology identifiers	38
	Annex G (informative) Aztec Code symbol encoding example	39
	Annex H (informative) Achieving minimum symbol size	43
	Annex I (informative) Useful process control techniques	46
	Bibliography	48