

ISO/IEC 25390:2025-04 (E)

Information technology - Financial information exchange - Simple binary encoding

| Contents | Page |
|---|-------------|
| Table of Contents | iii |
| Foreword | vii |
| Introduction | viii |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 3.1 datatype..... | 1 |
| 3.2 encoding..... | 1 |
| 3.3 field..... | 1 |
| 3.4 message schema | 1 |
| 3.5 message template..... | 2 |
| 3.6 session protocol..... | 2 |
| 3.7 XML schema..... | 2 |
| 3.8 Specification terms..... | 2 |
| 4 Objectives | 2 |
| 4.1 General..... | 2 |
| 4.2 Binary type system..... | 2 |
| 4.3 Design principles..... | 2 |
| 4.4 Message schema | 3 |
| 4.5 Documentation..... | 3 |
| 4.5.1 General..... | 3 |
| 4.5.2 Document format..... | 3 |
| 5 Field Encoding | 3 |
| 5.1 Field aspects | 3 |
| 5.1.1 General..... | 3 |
| 5.1.2 Semantic datatype | 3 |
| 5.1.3 Encoding | 4 |
| 5.1.4 Metadata | 4 |
| 5.1.5 Field presence | 4 |
| 5.1.6 Default value | 4 |
| 5.2 FIX datatype summary..... | 4 |
| 5.3 Common field schema attributes | 7 |
| 5.3.1 General..... | 7 |
| 5.3.2 Inherited attributes..... | 8 |
| 5.3.3 Non-FIX types | 8 |
| 5.4 Integer encoding..... | 8 |
| 5.4.1 General..... | 8 |
| 5.4.2 Primitive type encodings..... | 8 |
| 5.4.3 Range attributes for integer fields | 8 |
| 5.4.4 Byte order | 9 |
| 5.4.5 Integer encoding specifications..... | 9 |
| 5.4.6 Examples of integer fields..... | 9 |
| 5.5 Decimal encoding..... | 10 |
| 5.5.1 General..... | 10 |
| 5.5.2 Composite encodings | 10 |
| 5.5.3 Range attributes for decimal fields..... | 10 |

| | | |
|----------|---|-----------|
| 5.5.4 | Encoding specifications for decimal types | 11 |
| 5.5.5 | Composite encoding padding | 11 |
| 5.5.6 | Examples of decimal fields | 11 |
| 5.6 | Float encoding | 11 |
| 5.6.1 | General..... | 11 |
| 5.6.2 | Primitive types..... | 12 |
| 5.6.3 | Null values..... | 12 |
| 5.6.4 | Byte order | 12 |
| 5.6.5 | Float encoding specifications | 12 |
| 5.6.6 | Examples of floating point fields..... | 12 |
| 5.7 | String encodings | 12 |
| 5.7.1 | General..... | 12 |
| 5.7.2 | Character | 12 |
| 5.7.3 | Fixed-length character array..... | 13 |
| 5.7.4 | Variable-length string encoding..... | 14 |
| 5.7.5 | Range attributes for string Length..... | 14 |
| 5.7.6 | Encoding specifications for variable-length string..... | 14 |
| 5.7.7 | Example of a variable-length string field | 15 |
| 5.8 | Data encodings | 15 |
| 5.8.1 | General..... | 15 |
| 5.8.2 | Fixed-length data | 15 |
| 5.8.3 | Variable-length data encoding..... | 15 |
| 5.8.4 | Range attributes for variable-length data Length..... | 16 |
| 5.8.5 | Encoding specifications for variable-length data | 16 |
| 5.8.6 | Example of a data field | 16 |
| 5.9 | MonthYear encoding..... | 16 |
| 5.9.1 | General..... | 16 |
| 5.9.2 | Composite encoding padding..... | 17 |
| 5.9.3 | Encoding specifications for MonthYear | 17 |
| 5.10 | Date and time encoding..... | 17 |
| 5.10.1 | General..... | 17 |
| 5.10.2 | Epoch..... | 17 |
| 5.10.3 | Time unit..... | 17 |
| 5.10.4 | Encoding specifications for date and time..... | 18 |
| 5.10.5 | Examples of date/time fields..... | 18 |
| 5.11 | Local date encoding..... | 19 |
| 5.12 | Local time encoding | 19 |
| 5.12.1 | General..... | 19 |
| 5.12.2 | TZTimestamp encoding | 19 |
| 5.12.3 | Composite encoding padding | 20 |
| 5.12.4 | TZTimeOnly encoding..... | 20 |
| 5.12.5 | Composite encoding padding | 20 |
| 5.13 | Enumeration encoding | 21 |
| 5.13.1 | General..... | 21 |
| 5.13.2 | Primitive type encodings..... | 21 |
| 5.13.3 | Value encoding..... | 21 |
| 5.13.4 | Encoding specification of enumeration | 21 |
| 5.13.5 | Enumeration examples | 21 |
| 5.13.6 | Constant field of an enumeration value | 22 |
| 5.13.7 | Boolean encoding..... | 22 |
| 5.14 | Multi-value choice encoding | 23 |
| 5.14.1 | General..... | 23 |
| 5.14.2 | Primitive type encodings..... | 23 |
| 5.14.3 | Value encoding..... | 23 |
| 5.14.4 | Encoding specification of multi-value choice..... | 23 |
| 5.14.5 | Multi-value example | 23 |
| 5.15 | Field value validation | 24 |
| 6 | Message Structure | 24 |
| 6.1 | Message Framing..... | 24 |
| 6.1.1 | General..... | 24 |
| 6.1.2 | Simple Open Framing Header | 24 |
| 6.2 | SBE Message Encoding Header | 25 |
| 6.2.1 | General..... | 25 |
| 6.2.2 | Message header schema | 25 |
| 6.2.3 | Root block length | 26 |
| 6.2.4 | Template ID | 26 |

| | | |
|----------|--|-----------|
| 6.2.5 | Schema ID..... | 26 |
| 6.2.6 | Schema version..... | 26 |
| 6.2.7 | Number of repeating groups..... | 26 |
| 6.2.8 | Number of variable-length fields..... | 26 |
| 6.3 | Message Body..... | 26 |
| 6.3.1 | General..... | 26 |
| 6.3.2 | Data only on the wire..... | 27 |
| 6.3.3 | Direct access..... | 27 |
| 6.3.4 | Field position and padding..... | 27 |
| 6.4 | Repeating Groups..... | 28 |
| 6.4.1 | General..... | 28 |
| 6.4.2 | Schema specification of a group..... | 28 |
| 6.4.3 | Group block length..... | 28 |
| 6.4.4 | Padding at end of a group entry..... | 28 |
| 6.4.5 | Entry counter..... | 29 |
| 6.4.6 | Empty group..... | 29 |
| 6.4.7 | Multiple repeating groups..... | 29 |
| 6.4.8 | Nested repeating group specification..... | 29 |
| 6.4.9 | Nested repeating group wire format..... | 29 |
| 6.4.10 | Empty group means nested group is empty..... | 29 |
| 6.4.11 | Group dimension encoding..... | 30 |
| 6.5 | Sequence of message body elements..... | 31 |
| 6.5.1 | Root level elements..... | 31 |
| 6.5.2 | Repeating group elements..... | 31 |
| 6.6 | Message structure validation..... | 31 |
| 7 | Message Schema..... | 32 |
| 7.1 | XML schema for SBE message schemas..... | 32 |
| 7.2 | XML namespace..... | 32 |
| 7.3 | Naming convention..... | 32 |
| 7.3.1 | General..... | 32 |
| 7.3.2 | Capitalization..... | 32 |
| 7.4 | Root element..... | 32 |
| 7.4.1 | General..... | 32 |
| 7.4.2 | <messageSchema> attributes..... | 32 |
| 7.4.3 | Schema versioning..... | 33 |
| 7.5 | Data encodings..... | 33 |
| 7.5.1 | Encoding sets..... | 33 |
| 7.5.2 | Encoding name..... | 33 |
| 7.5.3 | Simple encodings..... | 33 |
| 7.5.4 | General..... | 33 |
| 7.5.5 | Composite encodings..... | 35 |
| 7.5.6 | Reference to reusable types..... | 36 |
| 7.5.7 | Enumeration encodings..... | 37 |
| 7.5.8 | Multi-value choice encodings (bitset)..... | 38 |
| 7.6 | Message template..... | 40 |
| 7.6.1 | General..... | 40 |
| 7.6.2 | Reserved space..... | 40 |
| 7.6.3 | Message members..... | 40 |
| 7.6.4 | Member order..... | 40 |
| 7.6.5 | <message> element attributes..... | 40 |
| 7.7 | Field attributes..... | 41 |
| 7.8 | Repeating group schema..... | 42 |
| 7.9 | Schema validation..... | 43 |
| 7.9.1 | General..... | 43 |
| 7.9.2 | Message with a repeating group..... | 44 |
| 7.9.3 | Message with raw data fields..... | 44 |
| 7.10 | Reserved element names..... | 44 |
| 7.10.1 | Composite types..... | 44 |
| 7.10.2 | Composite type elements..... | 44 |

| | | |
|-----------|--|-----------|
| 8 | Schema Extension Mechanism | 45 |
| 8.1 | Objective | 45 |
| 8.1.1 | General | 45 |
| 8.1.2 | Constraints | 45 |
| 8.2 | Message schema features for extension | 46 |
| 8.2.1 | Schema version | 46 |
| 8.2.2 | Since version | 46 |
| 8.2.3 | Block length | 46 |
| 8.2.4 | Deprecated elements | 46 |
| 8.3 | Wire format features for extension | 46 |
| 8.3.1 | Block size | 46 |
| 8.3.2 | Number of repeating groups and variable data | 46 |
| 8.4 | Compatibility strategy | 46 |
| 8.5 | Message schema extension example | 47 |
| 8.5.1 | Initial version of a message schema | 47 |
| 8.5.2 | Second version - a new message is added | 47 |
| 8.5.3 | Third version - a field is added | 47 |
| 9 | Usage Guidelines | 48 |
| 9.1 | Identifier encodings | 48 |
| 10 | Examples | 48 |
| 10.1 | General | 48 |
| 10.2 | Flat, fixed-length message | 48 |
| 10.2.1 | General | 48 |
| 10.2.2 | Sample order message schema | 48 |
| 10.2.3 | Wire format of an order message | 50 |
| 10.3 | Message with a repeating group | 51 |
| 10.3.1 | General | 51 |
| 10.3.2 | Sample execution report message schema | 51 |
| 10.3.3 | Wire format of an execution message | 52 |
| 10.3.4 | Interpretation | 52 |
| 10.4 | Message with a variable-length field | 53 |
| 10.4.1 | Sample business reject message schema | 53 |
| 10.4.2 | Wire format of a business reject message | 53 |
| 10.4.3 | Interpretation | 54 |
| | Bibliography | 55 |