

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