

Fintech DevCon ISO 8583 Specification

This specification defines a simplified ISO 8583 message format for educational and demonstration purposes at [Fintech DevCon](#).

Encoding Notes

- **ASCII:** Standard ASCII character encoding for all alphanumeric and special characters
- **Binary:** Raw binary data encoding
- **Fixed Length:** Field has a predetermined, unchanging length
- **Variable Length:** Field length is indicated by a length prefix
 - **LL:** 2-digit decimal length indicator
 - **LLL:** 3-digit decimal length indicator

Message Types

0100 / 0110 - Authorization Request / Response

Field	Element Name	Req/Resp	Format	Length	Description
0	Message Type Indicator	Req	ANS	4	Fixed: "0100"
1	Bitmap	Req / Res	B, HEX	8	Presence indicator
2	Primary Account Number (PAN)	Req	ANS	16	Card number
3	Amount	Req	N	6	Transaction amount
4	Transmission Date & Time	Req	ANS	20	Message timestamp
5	Approval Code	Resp	ANS	2	Authorization result
6	Authorization Code	Resp	ANS	6	Issuer auth code
7	Currency	Req	ANS	3	Currency code
8	Card Verification Value (CVV)	Req	ANS	4	Security code
9	Card Expiration Date	Req	ANS	4	Card expiry
10	Acceptor Information	Req	COMP	VAR	Merchant details
11	Systems Trace Audit Number (STAN)	Req / Res	ANS	6	Trace number
55	Chip Data	Req	B	999	EMV chip data

0110 - Authorization Response

Legend:

- Req = Request, Resp = Response
- ANS = Alphanumeric and Special, N = Numeric, B = Binary, COMP = Composite
- VAR = Variable length

Data Elements

Field 0 - Message Type Indicator

- **Type:** String
- **Length:** 4 characters (fixed)
- **Encoding:** ASCII
- **Description:** Identifies the message type and function

Field 1 - Bitmap

- **Type:** Bitmap
- **Length:** 8 bytes (fixed)

- **Encoding:** HEX(ASCII)
- **Description:** Indicates which data elements are present in the message

Field 2 - Primary Account Number (PAN)

- **Type:** String
- **Length:** 16 characters (fixed)
- **Encoding:** ASCII
- **Description:** The primary account number associated with the card

Field 3 - Amount

- **Type:** Numeric
- **Length:** 6 digits (fixed)
- **Encoding:** ASCII
- **Padding:** Left-padded with zeros
- **Description:** Transaction amount

Field 4 - Transmission Date & Time

- **Type:** String
- **Length:** 20 characters (fixed)
- **Encoding:** ASCII
- **Description:** Date and time when the message was transmitted
- **Format:** YYYY-MM-DDTHH:MM:SSZ (UTC time), in Go - time.RFC3339. Example: `2009-11-10T23:00:00Z`

Field 5 - Approval Code

- **Type:** String
- **Length:** 2 characters (fixed)
- **Encoding:** ASCII
- **Description:** Authorization approval code

List of approval codes:

- 00 - Approved
- 05 - Declined
- 10 - Invalid Request
- 14 - Invalid/Unknown Card
- 51 - Insufficient Funds
- 99 - System Error

Field 6 - Authorization Code

- **Type:** String
- **Length:** 6 characters (fixed)
- **Encoding:** ASCII
- **Description:** Authorization code from the issuer

Field 7 - Currency

- **Type:** String
- **Length:** 3 characters (fixed)
- **Encoding:** ASCII
- **Description:** Transaction currency code

Field 8 - Card Verification Value (CVV)

- **Type:** String
- **Length:** 4 characters (fixed)
- **Encoding:** ASCII
- **Description:** Card verification value for security

Field 9 - Card Expiration Date

- **Type:** String
- **Length:** 4 characters (fixed)
- **Encoding:** ASCII
- **Description:** Card expiration date, formatted as YYMM (e.g., 2401 for January 2024)

Field 10 - Acceptor Information

- **Type:** Composite
- **Length:** Variable (up to 999 characters)
- **Encoding:** ASCII
- **Length Prefix:** LLL (3-digit length indicator)
- **Tag Format:** 2-digit ASCII tags, sorted by integer value
- **Description:** Information about the merchant/acceptor

Subfields:

Tag 01 - Merchant Name

- **Type:** String
- **Length:** Variable (up to 99 characters)
- **Encoding:** ASCII
- **Length Prefix:** LL (2-digit length indicator)
- **Description:** Name of the merchant

Tag 02 - Merchant Category Code (MCC)

- **Type:** String
- **Length:** 4 characters (fixed)
- **Encoding:** ASCII
- **Description:** Merchant category classification code

Tag 03 - Merchant Postal Code

- **Type:** String
- **Length:** Variable (up to 10 characters)
- **Encoding:** ASCII
- **Length Prefix:** LL (2-digit length indicator)
- **Description:** Merchant's postal/ZIP code

Tag 04 - Merchant Website

- **Type:** String
- **Length:** Variable (up to 299 characters)
- **Encoding:** ASCII
- **Length Prefix:** LLL (3-digit length indicator)
- **Description:** Merchant's website URL

Field 11 - Systems Trace Audit Number (STAN)

- **Type:** String
- **Length:** 6 characters (fixed)
- **Encoding:** ASCII
- **Description:** Unique sequence number for transaction tracking

Field 55 - Chip Data

- **Type:** Binary
- **Length:** Variable (up to 999 bytes)
- **Encoding:** Binary
- **Length Prefix:** LLL (3-digit length indicator)
- **Description:** Contains EMV chip data for card transactions

Network Connection

Transport Protocol

The client should establish a TCP connection to the server/issuer for message transmission.

Message Framing

Each ISO 8583 message must be prefixed with a **message length header**:

- **Size:** 2 bytes
- **Encoding:** Big-endian binary
- **Content:** Length of the ISO 8583 message payload (excluding the header itself)

The length header allows the receiver to know exactly how many bytes to read for the complete message, enabling proper message boundary detection over the TCP stream.