

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	VAR, 19 Max	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:** Variable (up to 19 characters)
- **Length Prefix:** LL (2-digit length indicator)
- **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)

Example

For a 45-byte ISO 8583 authorization request:

```
Request:  [0x00, 0x2D][45 bytes of ISO 8583 message]
Response: [0x00, 0x1F][31 bytes of ISO 8583 response]
```

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.