# Cboe FX ECN ITCH Protocol-v1.65

# Contents

# 1 Itch Session Management Protocol

The Session Management Protocol provides login / logout and authentication facilities, as well as sequenced packet functionality which provides order information from the Cboe FX ECN book. Clients receive missing data (e.g. after a disconnect/reconnect) via a market data snapshot payload in the Sequenced Data Packet message.

## 1.1 Data Types

| Name | Description |
|---|---|
| Integer | ASCII coded integer. Integer fields are right justified and left padded with spaces. |
| Character | 1 ASCII coded character. Must not be LF (0x0A) or ETX (0x03). |
| String | Multiple ASCII coded characters. Must not contain LF (0x0A) or ETX (0x03). |

## 1.2 Server to Client Messages

### 1.2.1 Login Accepted Packet

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘A’ (0x41) |
| Sequence Number | 1 | 10 | Integer (Reserved field, currently set to 1). |
| TLF | 11 | 1 | ASCII LF (0x0A) |

### 1.2.2 Login Rejected Packet

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘J’ (0x4A) |
| Reason | 1 | 20 | String |
| TLF | 21 | 1 | ASCII LF (0x0A) |

### 1.2.3 Sequenced Data Packet

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘S’ (0x53) |
| Time | 1 | 9 | String (HHMMSSmmm) |
| Payload | 10 | variable | String |
| TLF | variable | 1 | ASCII LF (0x0A) |

The payload contains a single message defined in 2. Cboe FX Book Protocol.

### 1.2.5 Server Heartbeat Packet

Sent to the connected client once every second.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘H’ (0x48) |
| TLF | 1 | 1 | ASCII LF (0x0A) |

### 1.2.5 End of Session

A session is closed with a zero-length sequenced data packet (0x53 0x0A). No more sequenced data packets may be sent after the session is closed. A client that receives such a packet may disconnect knowing that there are no more messages in that particular session.

### 1.2.6 Error Notification Packet

Indicates an error condition in response to an invalid request from the connected client.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘E’ (0x45) |
| Error explanation | 1 | 100 | String |
| TLF | 101 | 1 | ASCII LF (0x0A) |

### 1.2.7 Instrument Directory Message

Lists currency pairs supported by the server. Requested by sending an Instrument Directory Request Packet (1.3.9).

| Field Name | Offset | Size | Type | Comment |
|---|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘R’ (0x52) | |
| Number of Currency Pairs | 1 | 4 | Integer | |
| Currency Pair | 5 | 7 | String | This field is repeated the number of times indicated by the preceding field. |
| TLF | variable | 1 | ASCII LF (0x0A) | |

## 1.3 Client to Server Messages

### 1.3.1 Login Request Packet

Login Name and Password fields are left justified and right-padded with spaces. The Reserved field is right justified and left-padded with spaces. When the Market Data Unsubscribe field is set to True (‘T’), upon logging in the client will not be subscribed to market data for any currency pairs. The client then needs to subscribe to either specific currency pairs or to the entire market by sending one or more of the Market Data Subscribe Request Packet (1.3.7). The default behavior with an uninitialized Market Data Unsubscribe field is to subscribe to all currency pairs.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘L’ (0x4C) |
| Login Name | 1 | 40 | String |
| Password | 41 | 40 | String |
| Market Data Unsubscribe | 81 | 1 | Character<br>ASCII ‘T’ (0x54) or<br>ASCII ‘F’ (0x46) |
| Protocol Mode | 82 | 1 | ASCII<br>space(0x20) for default,<br>1(0x31) for additional features<br>configured in the remaining 8 bytes |
| Reserved | 83 | 7 | String (all space characters 0x20) |
| Price Modify Support | 90 | 1 | Price modify requires Protocol Mode set to 1 in addition to setting this field to 1.<br>Price Modify message: ASCII 1 (0x31)<br>Cancel/New message: ASCII 0 (0x31) |
| TLF | 91 | 1 | ASCII LF (0x0A) |

### 1.3.2 Logout Request Packet

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘O’ (0x4F) |
| TLF | 1 | 1 | ASCII LF (0x0A) |

### 1.3.3 Client Heartbeat Packet

This message should be sent once every second. If the server does not receive a heartbeat or any other message in 15 seconds, the client is disconnected by the server.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘R’ (0x52) |
| TLF | 1 | 1 | ASCII LF (0x0A) |

### 1.3.4 Market Snapshot Request Packet

This message is sent to the server in order to request the missing market data in the form of a Market Snapshot Message (2.2.4) either for a specific currency pair, or for all currency pairs relevant to the user. Currency Pair field is left justified and right-padded with spaces. If a request is made for all currency pairs at once, the Currency Pair field should be set to “ALL” without quotes. The Market Snapshot in response to this packet will not contain currency pairs which the client is not subscribed to.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘M’ (0x4D) |
| Currency Pair | 1 | 7 | String |
| TLF | 8 | 1 | ASCII LF (0x0A) |

### 1.3.5 Ticker Subscribe Request Packet

This message is sent to the server in order to turn on ticker data for either a specific currency pair, or for all currency pairs at once. To subscribe to all currency pairs, the Currency Pair field should be set to “ALL” without quotes. To subscribe only to certain currency pairs, multiple request packets should be sent, one for each desired currency pair. Ticker subscriptions are not maintained across sessions. Ticker data is off by default and must be explicitly subscribed to.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘T’ (0x54) |
| Currency Pair | 1 | 7 | String |
| TLF | 8 | 1 | ASCII LF (0x0A) |

### 1.3.6 Ticker Unsubscribe Request Packet

This message is sent to the server in order to turn off previously enabled ticker data for either a specific currency pair, or for all currency pairs at once. To unsubscribe from all currency pairs, the Currency Pair field should be set to “ALL” without quotes. To unsubscribe only from certain currency pairs, multiple request packets should be sent, one for each desired currency pair. Ticker subscriptions are not maintained across sessions. Ticker data is off by default and must be explicitly subscribed to.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘U’ (0x55) |
| Currency Pair | 1 | 7 | String |
| TLF | 8 | 1 | ASCII LF (0x0A) |

### 1.3.7 Market Data Subscribe Request Packet

Turns ON subscription to the entire market or to a specific currency pair. For subscription to the entire market, the Currency Pair field must be set to "ALL" without quotes. For subscription to specific currency pairs, multiple requests packets must be sent, one for each currency pair. Market data subscriptions are not maintained across sessions. By default, the client is subscribed to all currency pairs unless logging in with the Market Data Unsubscribe field in the Login Request Packet set to true.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII 'A' (0x41) |
| Currency Pair | 1 | 7 | String |
| TLF | 8 | 1 | ASCII LF (0x0A) |

### 1.3.8 Market Data Unsubscribe Request Packet

Turns OFF subscription to the entire market or to a specific currency pair. To disable subscription to the entire market, the Currency Pair field must be set to "ALL" without quotes. To disable subscription for specific currency pairs, multiple requests packets must be sent, one for each currency pair. Market data subscriptions are not maintained across sessions. By default, the client is subscribed to all currency pairs unless logging in with the Market Data Unsubscribe field in the Login Request Packet set to true.

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII 'B' (0x42) |
| Currency Pair | 1 | 7 | String |
| TLF | 8 | 1 | ASCII LF (0x0A) |

### 1.3.9 Instrument Directory/Dictionary Request Packet

Requests a list of supported instruments from the server in the form of an Instrument Directory message (1.2.7)

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII 'I' (0x49) |
| TLF | 1 | 1 | ASCII LF (0x0A) |

## 1.4 Session Limitations

Within each session, certain limitations are in place. The goal of these limitations is to provide reliable service for all connected clients. If a session breaches a certain limiting condition, an action will occur depending on the condition. See table below for further details.

| Condition | Action |
|---|---|
| Login attempt frequency, more than 3 times within any 5 minutes window | Disconnect & Disabled Account |
| Sending a "Market Snapshot Request Packet" for the same currency pair(including "ALL") more than one time during a session | Disconnect & Disabled Account |
| Sending a "Market Data Unsubscribe Request Packet" for the same currency pair(including "ALL") more than once during a session | Disconnect |

| | |
|---|---|
| Sending a "Ticker Subscribe Request Packet" for the same currency pair(including "ALL") more than once during a session | Disconnect |
| Sending a "Ticker Unsubscribe Request Packet" for the same currency pair(including "ALL") more than once during a session | Disconnect |
| Sending a "Instrument Directory/Dictionary Request Packet" more than once during a session | Disconnect |
| Too many incoming msgs, 500 in 1 second, or 1000 in 5 seconds | Disconnect & Disabled Account |

# 2 Cboe FX Book Protocol

Book Protocol messages carry information about the Cboe FX ECN book.

To receive the Cboe FX ECN book feed, the client connects to the Cboe FX ECN Book Server using the ITCH Session Management protocol. Each Book Protocol message will be carried inside the payload field of a Session Management Protocol sequenced data packet, which is described in section 1.2.3.

## 2.1 Data Types

| **Name** | **Description** |
|---|---|
| Integer | ASCII coded integer. Right justified and left-padded with spaces. |
| Character | 1 ASCII coded character. |
| String | Multiple ASCII coded characters. Left justified, right-padded with spaces. |
| Double | ASCII coded decimalized number. Left justified, right-padded with spaces. |

## 2.2 Messages

### 2.2.1 New Order Message

| **Field Name** | **Offset** | **Size** | **Type** |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII 'N' (0x4E) |
| Buy or Sell Indicator | 1 | 1 | Character<br>Buy is ASCII 'B' (0x42)<br>Sell is ASCII 'S' (0x53) |
| Currency Pair | 2 | 7 | String |
| Order ID | 9 | 15 | String |
| Price | 24 | 10 | Double |
| Amount | 34 | 16 | Double |
| Minqty(optional) | 50 | 16 | Double |
| Lotsize(optional) | 66 | 16 | Double |

Price is presented as a decimal number in ASCII format, i.e. 123.456

Order ID is a decimal number, unique per currency pair.

Lotsize and Minqty restrictions are supplied to clients on a special port until all clients support these fields. Either '0', '0.0' or empty fields indicate no effective quantity restriction.

### 2.2.2 Modify Order Message

For users who are configured to see price modifies(see section 1.3.1 on how to configure for price modify), they will only use section 2.2.2.2, all others will refer to section 2.2.2.1.

#### 2.2.2.1 Modify Order Message - Amount Only

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘M’ (0x4D) |
| Currency Pair | 1 | 7 | String |
| Order ID | 8 | 15 | String |
| Amount | 23 | 16 | Double |
| Minqty(optional) | 39 | 16 | Double |
| Lotsize(optional) | 55 | 16 | Double |

#### 2.2.2.2 Modify Order Message - Price and/or Amount

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘M’ (0x4D) |
| Currency Pair | 1 | 7 | String |
| Order ID Active | 8 | 15 | String<br>This field replaces the order ID specified in<br>”Order ID Replaced” if populated. Otherwise,<br>it replaces itself. |
| Price | 23 | 10 | Double (spaces if no price modify) |
| Amount | 33 | 16 | Double |
| Order ID Replaced | 49 | 15 | String<br>This field is only populated if there is a price modify. |
| Minqty(optional) | 64 | 16 | Double |
| Lotsize(optional) | 80 | 16 | Double |

Lotsize and Minqty fields – reference section 2.2.1

### 2.2.3 Cancel Order Message

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘X’ (0x58) |
| Currency Pair | 1 | 7 | String |
| Order ID | 8 | 15 | String |

### 2.2.4 Market Snapshot Message

| Field Name | Offset | Size | Type | Comment |
|---|---|---|---|---|
| Message Type | 0 | 1 | ASCII ‘S’ (0x53) | |
| Length of Message | 1 | 6 | Integer | Length of market snapshot in bytes, starting with Number of Currency Pairs and incorporating all subsequent fields. |
| Number of Currency Pairs | 7 | 4 | Integer | |
| Currency Pair | 11 | 7 | String | This and all following fields are repeated the number of times indicated by the preceding field. |
| Number of bid prices | variable | 4 | Integer | |

| | | | | |
|---|---|---|---|---|
| Bid Price | variable | 10 | Double | This and all fields up to Number of Offer Prices is repeated the number of times indicated by the preceding field. |
| Number of Bid Orders | variable | 4 | Integer | |
| Amount<br><br>Minqty(optional) | variable<br><br>variable | 16<br><br>16 | Double<br><br>Double | These fields are repeated the number of times indicated by the preceding field. |
| Lotsize(optional) | variable | 16 | Double | |
| Order ID | variable | 15 | String | |
| Number of Offer Prices | variable | 4 | Integer | |
| Offer Price | variable | 10 | Double | This and all following fields are repeated the number of times indicated by the preceding field. |
| Number of Offer Orders | variable | 4 | Integer | |
| Amount<br><br>Minqty(optional) | variable<br><br>variable | 16<br><br>16 | Double<br><br>Double | These fields are repeated the number of times indicated by the preceding field. |
| Lotsize(optional) | variable | 16 | Double | |
| Order ID | variable | 15 | String | |

Lotsize and Minqty fields – reference section 2.2.1.

In case of a blank market snapshot in response to a Market Snapshot Request(section 1.3.4), the message payload comprises only two fields: a Message Type field of value 'S' and a Length of Message field of value '0'. Since such blank snapshots do not contain Currency Pair information, please match the response to the original request, as all responses are issued in the same sequence as the requests.

For users who are configured to receive Summary Depth, Number of Bid Orders and Number of Offer Orders will be equal to '3', subject to availability.

For users who are configured to receive Summary Depth and connect to the Cboe FX Top Feed, Number of Bid Orders and Number of Offer Orders will be equal to '1', subject to availability.

### 2.2.5 Ticker Message

| Field Name | Offset | Size | Type |
|---|---|---|---|
| Message Type | 0 | 1 | ASCII 'T' (0x54) |
| Aggressor Buy or Sell Indicator | 1 | 1 | Character<br>Buy is ASCII 'B' (0x42)<br>Sell is ASCII 'S' (0x53) |
| Currency Pair | 2 | 7 | String |
| Price | 9 | 10 | Double |
| Transaction Date | 19 | 8 | String (YYYYMMDD) |
| Transaction Time | 27 | 6 | String (HHMMSS) |

# 3 Message Examples

### Session Management Messages. Server to Client.

### Login accepted (1.2.1)

Successful login.

```
0000    41 20 20 20 20 20 20 20 20 20 31 0a              A         1.
```

### Login rejected (1.2.2)

Login rejected due to invalid username or password.

```
0000    4a 49 6e 76 61 6c 69 64 20 75 69 64 2f 70 77 20  JInvalid uid/pw 
0010    20 20 20 20 20 0a                                     .
```

### Sequenced Data Packet (1.2.3)

Refer to messages from Section 2

### Server Heartbeat Message (1.2.4)

```
0000    48 0a                                            H.
```

### End Of Session Message (1.2.5)

```
0000    53 0a                                            S.
```

### Error Notification Packet (1.2.6)

Error message in response to a Ticker Subscription Request for an invalid currency pair.

```
0000    45 49 6e 76 61 6c 69 64 20 63 75 72 72 65 6e 63  EInvalid currenc
0010    79 20 70 61 69 72 20 72 65 71 75 65 73 74 65 64  y pair requested
0020    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20                  
0030    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20                  
0040    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20                  
0050    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20                  
0060    20 20 20 20 20 0a                                     .
```

### Instrument Directory Message (1.2.7)

Instrument Directory with 52 supported currency pairs.

```
0000    52 20 20 35 32 5a 41 52 2f 4a 50 59 47 42 50 2f  R  52ZAR/JPYGBP/
0010    4a 50 59 41 55 44 2f 43 41 44 55 53 44 2f 43 41  JPYAUD/CADUSD/CA
0020    44 45 55 52 2f 48 55 46 41 55 44 2f 55 53 44 41  DEUR/HUFAUD/USDA
0030    55 44 2f 4a 50 59 55 53 44 2f 4a 50 59 55 53 44  UD/JPYUSD/JPYUSD
0040    2f 4e 4f 4b 58 41 55 2f 55 53 44 41 55 44 2f 48  /NOKXAU/USDAUD/H
0050    4b 44 45 55 52 2f 43 41 44 55 53 44 2f 48 4b 44  KDEUR/CADUSD/HKD
0060    55 53 44 2f 5a 41 52 55 53 44 2f 53 47 44 45 55  USD/ZARUSD/SGDEU
0070    52 2f 55 53 44 45 55 52 2f 4a 50 59 45 55 52 2f  R/USDEUR/JPYEUR/
0080    4e 4f 4b 55 53 44 2f 4d 58 4e 45 55 52 2f 47 42  NOKUSD/MXNEUR/GB
0090    50 45 55 52 2f 48 4b 44 45 55 52 2f 5a 41 52 47  PEUR/HKDEUR/ZARG
00a0    42 50 2f 4e 5a 44 55 53 44 2f 44 4b 4b 41 55 44  BP/NZDUSD/DKKAUD
00b0    2f 4e 5a 44 47 42 50 2f 43 48 46 47 42 50 2f 41  /NZDGBP/CHFGBP/A
00c0    55 44 4e 5a 44 2f 55 53 44 4e 5a 44 2f 4a 50 59  UDNZD/USDNZD/JPY
```

```
00d0    47 42 50 2f 43 5a 4b 41 55 44 2f 43 48 46 55 53  GBP/CZKAUD/CHFUS
00e0    44 2f 43 48 46 45 55 52 2f 44 4b 4b 47 42 50 2f  D/CHFEUR/DKKGBP/
00f0    50 4c 4e 45 55 52 2f 4e 5a 44 43 41 44 2f 4a 50  PLNEUR/NZDCAD/JP
0100    59 55 53 44 2f 43 5a 4b 55 53 44 2f 53 45 4b 4e  YUSD/CZKUSD/SEKN
0110    4f 4b 2f 53 45 4b 47 42 50 2f 48 55 46 43 48 46  OK/SEKGBP/HUFCHF
0120    2f 4a 50 59 55 53 44 2f 50 4c 4e 45 55 52 2f 43  /JPYUSD/PLNEUR/C
0130    48 46 45 55 52 2f 41 55 44 55 53 44 2f 48 55 46  HFEUR/AUDUSD/HUF
0140    48 4b 44 2f 4a 50 59 47 42 50 2f 43 41 44 45 55  HKD/JPYGBP/CADEU
0150    52 2f 43 5a 4b 45 55 52 2f 53 45 4b 58 41 47 2f  R/CZKEUR/SEKXAG/
0160    55 53 44 47 42 50 2f 55 53 44 45 55 52 2f 50 4c  USDGBP/USDEUR/PL
0170    4e 0a                                            N.
```

**Session Management Messages. Client to Server.**

**Login Request (1.3.1)**

UserID: test

Password: hotspot

Market Data Unsubscribe: True

Price Modify: False

```
0000    4c 74 65 73 74 20 20 20 20 20 20 20 20 20 20 20  Ltest
0010    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0020    20 20 20 20 20 20 20 20 20 68 6f 74 73 70 6f 74           hotspot
0030    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0040    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0050    20 54 20 20 20 20 20 20 20 20 30 0a               T        0.
```

UserID: test

Password: hotspot

Market Data Unsubscribe: True

Price Modify: True

```
0000    4c 74 65 73 74 20 20 20 20 20 20 20 20 20 20 20  Ltest
0010    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0020    20 20 20 20 20 20 20 20 20 68 6f 74 73 70 6f 74           hotspot
0030    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0040    20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0050    20 54 31 20 20 20 20 20 20 20 31 0a               T1       1.
```

**Logout Request (1.3.2)**

```
0000    4f 0a                                            O.
```

**Client Heartbeat (1.3.3)**

```
0000    52 0a                                            R.
```

**Market Snapshot Request (1.3.4)**

Market Snapshot Request for currency pair GBP/JPY.

```
0000   4d 47 42 50 2f 4a 50 59 0a                        MGBP/JPY.
```

**Ticker Subscribe Request (1.3.5)** Ticker subscribe request for all currency pairs.

```
0000   54 41 4c 4c 20 20 20 20 0a                        TALL    .
```

**Ticker Unsubscribe Request (1.3.6)**

Ticker unsubscribe request for all currency pairs.

```
0000   55 41 4c 4c 20 20 20 20 0a                        UALL    .
```

**Market Data Subscribe Request (1.3.7)**

Market data subscribe request for currency pair USD/CAD.

```
0000   41 55 53 44 2f 43 41 44 0a                        AUSD/CAD.
```

**Market Data Unsubscribe Request (1.3.8)**

Market data unsubscribe request for currency pair EUR/USD.

```
0000   42 45 55 52 2f 55 53 44 0a                        BEUR/USD.
```

**Instrument Directory Request (1.3.9)**

```
0000   49 0a                                             I.
```

### Book Protocol Messages

**New Order Message (2.2.1)**

Time: 14:24:09.777

Side: Buy

Currency Pair: EUR/USD

Order ID: 1

Price: 122.073

Quantity: 5,000,000

Note – this example does not contain quantity restriction fields

```
0000   53 31 34 32 34 30 39 37 37 37 4e 42 45 55 52 2f   S142409777NBEUR/
0010   4a 50 59 31 20 20 20 20 20 20 20 20 20 20 20 20   JPY1
0020   20 20 31 32 32 2e 30 37 33 20 20 20 35 30 30 30     122.073   5000
0030   30 30 30 20 20 20 20 20 20 20 20 20 0a            000         .
```

**Modify Order Message (2.2.2)**

Time: 14:37:34.930

Currency Pair: EUR/USD

Order ID: 6

Quantity: 3,000,000

Note – this example does not contain quantity restriction fields

```
0000   53 31 34 33 37 33 34 39 33 30 4d 45 55 52 2f 55  S143734930MEUR/U
0010   53 44 36 20 20 20 20 20 20 20 20 20 20 20 20 20  SD6
0020   20 33 30 30 30 30 30 30 20 20 20 20 20 20 20 20   3000000
0030   20 0a                                             .
```

**Cancel Order Message (2.2.3)**

Time: 14:24:10.543

Currency Pair: EUR/JPY

Order ID: 1

```
0000   53 31 34 32 34 31 30 35 34 33 58 45 55 52 2f 4a  S142410543XEUR/J
0010   50 59 31 20 20 20 20 20 20 20 20 20 20 20 20 20  PY1
0020   20 0a                                             .
```

**Market Snapshot Message (2.2.4)** Time: 11:20:39.800

Payload Length: 305 bytes

Number of Currency Pairs: 3

- Currency Pair: GBP/USD
  - Bid Price Levels: 0
  - Offer Price Levels: 1
    - Price Level: 1.50200
      - Orders at Price Level: 1
        - Amount: 6,500,000 OrderID: 1
- Currency Pair: USD/JPY
  - Bid Price Levels: 1
    - Price Level: 96.500
      - Orders at Price Level: 1
        - Amount: 500,000 OrderID: 2
  - Offer Price Levels: 1
    - Price Level: 96.515
      - Orders at Price Level: 1
        - Amount: 2,000,000 OrderID: 4
- Currency Pair: EUR/USD
  - Bid Price Levels: 0
  - Offer Price Levels: 2
    - Price Level: 1.26515
      - Orders at Price Level: 2
        - Amount: 1,500,000 OrderID: 8
        - Amount: 5,000,000 OrderID: 2

Price Level: 1.26525

Orders at Price Level: 1

Amount: 10,000,000 OrderID: 10

Note – this example does not contain quantity restriction fields

*Extracted orders:*

Offer 6,500,000 GBP/USD @ 1.50200, OrderID: 1

Bid 500,000 USD/JPY @ 96.500, OrderID: 2

Offer 2,000,000 USD/JPY @ 96.515, OrderID: 4

Offer 1,500,000 EUR/USD @ 1.26515, OrderID: 8

Offer 5,000,000 EUR/USD @ 1.26515, OrderID: 2

Offer 10,000,000 EUR/USD @ 1.26525, OrderID: 10

```
0000   53 31 31 32 30 33 39 38 30 30 53 20 20 20 33 30   S112039800S   30
0010   35 20 20 20 33 47 42 50 2f 55 53 44 20 20 20 30   5   3GBP/USD   0
0020   20 20 20 31 31 2e 35 30 32 30 30 20 20 20 20 20      11.50200
0030   20 31 36 35 30 30 30 30 30 20 20 20 20 20 20 20    16500000
0040   20 20 31 20 20 20 20 20 20 20 20 20 20 20 20 20     1
0050   20 55 53 44 2f 4a 50 59 20 20 20 31 39 36 2e 35    USD/JPY   196.5
0060   30 30 20 20 20 20 20 20 20 31 35 30 30 30 30 30   00       1500000
0070   20 20 20 20 20 20 20 20 20 20 32 20 20 20 20 20             2
0080   20 20 20 20 20 20 20 20 20 20 20 20 31 39 36 2e               196.
0090   35 31 35 20 20 20 20 20 20 20 31 32 30 30 30 30   515       120000
00a0   30 30 20 20 20 20 20 20 20 20 20 34 20 20 20 20   00         4
00b0   20 20 20 20 20 20 20 20 20 20 45 55 52 2f 55 53             EUR/US
00c0   44 20 20 20 30 20 20 20 32 31 2e 32 36 35 31 35   D   0   21.26515
00d0   20 20 20 20 20 20 32 31 35 30 30 30 30 30 20 20         21500000
00e0   20 20 20 20 20 20 20 38 20 20 20 20 20 20 20 20          8
00f0   20 20 20 20 20 20 35 30 30 30 30 30 30 20 20 20         5000000
0100   20 20 20 20 20 20 32 20 20 20 20 20 20 20 20 20         2
0110   20 20 20 20 20 31 2e 32 36 35 32 35 20 20 20 20        1.26525
0120   20 20 31 31 30 30 30 30 30 30 30 20 20 20 20 20     110000000
0130   20 20 20 31 30 20 20 20 20 20 20 20 20 20 20 20      10
0140   20 20 0a                                            .
```

**Ticker Message (2.2.5)**

Message Time: 15:13:14.408

Side: Sell

Currency Pair: GBP/USD

Price: 1.46295

Timestamp: 02/05/2009 15:13:13

```
0000   53 31 35 31 33 31 34 34 30 38 54 53 47 42 50 2f   S151314408TSGBP/
0010   55 53 44 31 2e 34 36 32 39 35 20 20 20 32 30 30   USD1.46295   200
0020   39 30 32 30 35 31 35 31 33 31 33 0a               90205151313.
```

# 4 Revision History

1.00 (2007-10-08)

Initial Revision

1.01 (2007-12-05)

Reversed order of ‘Amount’ and ‘Order ID’ in Market Snapshot Message for Bid Orders.

1.02 (2007-12-07)

Changed bid/offer character in New Order Message.

1.10 (2007-12-12)

Added Ticker Subscribe Packet, Ticker Unsubscribe Packet, Error Notification Packet, and Ticker Message.

1.11 (2007-12-17)

Changed time format in Sequenced Data Packet.

1.12 (2008-01-03)

Changed order of fields in New Order Message.

Added ‘Length of Message’ field to Market Snapshot Message

Changed field sizes in Market Snapshot Message

1.20 (2008-04-04)

Changed Login Request Packet

Added Instrument Directory Request Packet, Instrument Directory Message, Market Data Subscribe Request Packet, and Market Data Unsubscribe Request Packet

1.30 (2009-01-22)

Added lotsize and minqty fields in New Order, Reduced Order, and Market Snapshot Messages

1.31 (2009-02-06)

Added sample messages section.

1.40 (2009-12-08)

Added binary protocol messages.

1.41 (2010-05-27)

Added a disclaimer for Binary Sequence Message.

1.50 (2011-02-01)

Added aggregated sessions.

1.51 (2011-06-13)

Clarified some data types.

1.52 (2011-10-05)

Fixed incorrect ASCII codes.

1.53 (2011-12-15)

Removed support for binary.

1.54 (2011-12-20)

Removed support for aggregated sessions.

1.55 (2012-01-12)

Typo correction in 1.3.9

1.56 (2012-01-24)

Added note to section 2.2.4

1.57 (2012-01-30)

Added note to section 1.2.3

1.58 (2012-12-18)

Typo correction in 1.2.1

1.59 (2014-01-31)

Added comment to 1.2.1 Login Accepted Message.

1.60 (2017-01-20)

Added Session Limitations section

1.61 (2017-06-13)

Update for price modify.

1.62 (2017-07-14)

Added more descriptive usage for price modify.

1.63 (2017-08-02)

Adjusted text for price modify support in section 1.3.1.

1.64 (2017-09-21)

Changed summary depth to 3 levels. Added text for Itch Top Feed.

1.65 (2017-09-26)

Added ticker subscribe to session limitations.