



Fenics | **FX**

FX MAKER INTEGRATION

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1. About This Document

1. Introduction

This document describes the message communications required to use Fenics FX.

2. Intended Audience

This document is directed at users of Fenics FX. This is primarily suited to developers who will adapt this feed for use in connecting internal FX trading systems to Fenics FX.

3. Related Documents

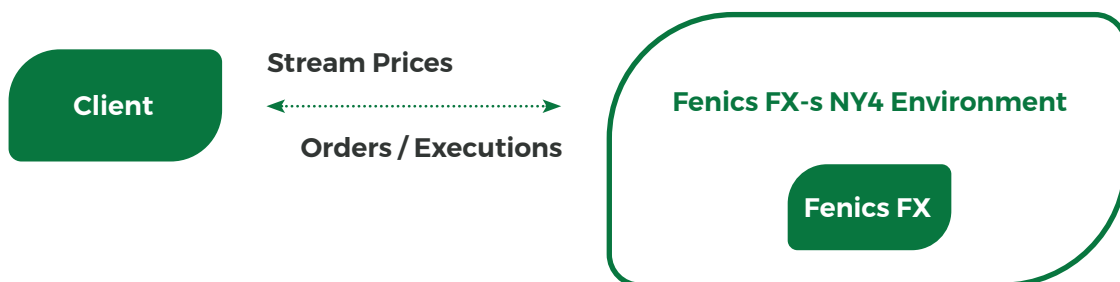
FIX 4.2 specification w/Errata dated May 1, 2001.

2. System Overview

Maker service allows Fenics FX to request prices and receive streaming prices from Counter-Party and send FX orders to Counter-Party.

The following diagram shows a client connecting via TCP to Fenics FX server.

2 TCP FIX Connections



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1. Physical Connectivity

Fenics FX offers the following connectivity options to our NY4 and LD4 datacenter:

- cross connect (for institutions that also have network presence in NY4 and in LD4)
- direct circuit
- internet VPN

2. FIX Connectivity

Connecting to Fenics FX will be achieved through two FIX sessions over TCP connections, one for market data and one for trading. To connect, the client's system will require the following connection details:

- Fenics FX IP address and port
- FIX SenderCompID
- FIX TargetCompID

3. FIX Connectivity Currency Quoting Convention

All of the quantity fields will be in terms of the Trading currency. For example, an order to buy 1M EUR/USD at 1.31112 with Trading Currency of EUR means buying 1M EUR with 1M * 1.31112 USD. Where as, an order to buy 1M EUR/USD at 1.30115 with Trading Currency of USD means buying 1M USD with 1M/1.30115 EUR.

3. Supported Messages

1. FIX 4.2

All message traffic uses FIX 4.2 standard messaging. Specific messages supported from the standard are outlined in the tables that follow.

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2. Session Messages

| FIX MESSAGE | MESSAGE TYPE | FENICS FX SENDS | CLIENT SENDS |
|----------------|--------------|-----------------|--------------|
| Heartbeat | 0 | Y | Y |
| Test Request | 1 | Y | Y |
| Resend Request | 2 | Y | Y |
| Reject | 3 | Y | |
| Sequence Reset | 4 | Y | Y |
| Logout | 5 | Y | Y |
| Logon | A | Y | Y |

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3. Application Messages

Market Data Session

| FIX MESSAGE | MESSAGE TYPE | FENICS FX SENDS | CLIENT SENDS |
|----------------------------|--------------|-----------------|--------------|
| Market Data Request | V | Y | |
| Market Data Request Reject | Y | | Y |
| Market Data Full Refresh | W | | Y |

Trading Session

| FIX MESSAGE | MESSAGE TYPE | FENICS FX SENDS | CLIENT SENDS |
|------------------|--------------|-----------------|--------------|
| New Order Single | D | Y | |
| Execution Report | 8 | | Y |
| DK | Q | Y | |

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4. Message Format

1. Header

The standard message header format is as follows:

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|--------------|-------|---------------|--|
| 8 | BeginString | Y | String | 4.2 |
| 9 | BodyLength | Y | Int | |
| 34 | MsgSeqNum | Y | Int | |
| 35 | Msg Type | Y | String | |
| 49 | SenderCompID | Y | String | as required |
| 56 | TargetCompID | Y | String | as required |
| 43 | PossDupFlag | N | Boolean | Set to "Y" to indicate this message may have already been sent |
| 97 | PossResend | N | Boolean | Set to "Y" to indicate this message may have already been sent under a different seqnum (tag 34) |
| 52 | SendingTime | Y | UTC Timestamp | |

2. Standard Message trailer

Each message, administrative or application, is terminated by a standard trailer containing the three digit checksum.

The standard message trailer format is as follows:

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------|-------|-----------|---------------------------------|
| 10 | Checksum | Y | Int | Zero filled three digit integer |

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5. Administrative Message

1. Logon

The logon message authenticates a user establishing a connection to a remote system. The logon message must be the first message sent by the application requesting to initiate a FIX session.

The HeartBtInt (108) field is used to declare the timeout interval for generating heartbeats (same value used by both sides).

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = A |
| 98 | EncryptMethod | Y | Int | Always zero |
| 108 | HeartBtInt | Y | Int | Seconds; initiator will set the interval for both directions |
| 141 | ResetSeqNumFlag | N | Boolean | "Y" triggers both sides to reset sequence numbers |
| 96 | RawData | N | String | Fenics FX requires your password in tag 96 or tag 554; either is acceptable |
| 554 | Password | N | String | Fenics FX requires your password in tag 96 or tag 554 |
| | Standard Trailer | Y | | |

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2. Logout

The logout message initiates or confirms the termination of a FIX session.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|-----------------|
| | Standard Header | Y | | MsgType = 5 |
| 58 | Text | N | String | |
| | Standard Trailer | Y | | |

3. Heartbeat

The heartbeat message is sent by either send when that side has sent no other message for HeartBeatInt seconds. There is no required response to a Heartbeat message.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = 0 (zero) |
| 112 | TestReqID | N | String | Required when the heartbeat is the result of a Test Request message |
| | Standard Trailer | Y | | |

4. Test Request

The test request message elicits a heartbeat from the counter-party, who will now be compelled to send a Heartbeat containing the TestReqID.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = 1 |
| 112 | TestReqID | Y | String | Will be reflected in the Heartbeat response |
| | Standard Trailer | Y | | |

5. Resend Request

The resend request is sent by the receiving application to initiate the retransmission of messages.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|-------------------------|
| | Standard Header | Y | | MsgType = 2 |
| 7 | BeginSeqNo | Y | Int | |
| 16 | EndSeqNo | Y | Int | Zero indicates infinity |
| | Standard Trailer | Y | | |

6. Reject

The reject message will be sent if an invalid message is received.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|----------------------|-------|-----------|--|
| | Standard Header | Y | | MsgType = 3 |
| 45 | RefSeqNum | Y | Int | MsgSeqNum of rejected message |
| 371 | RefTagID | N | Int | The tag number of the FIX field being referenced |
| 372 | RefMsgType | N | String | The MsgType of the FIX message being referenced |
| 373 | SessionReject Reason | N | Int | Code to identify reason for a session-level Reject message |
| 58 | Text | N | String | Where possible, message to explain reason for rejection |
| | Standard Trailer | Y | | |

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7. Sequence Reset

The sequence reset can only increase the sequence number.

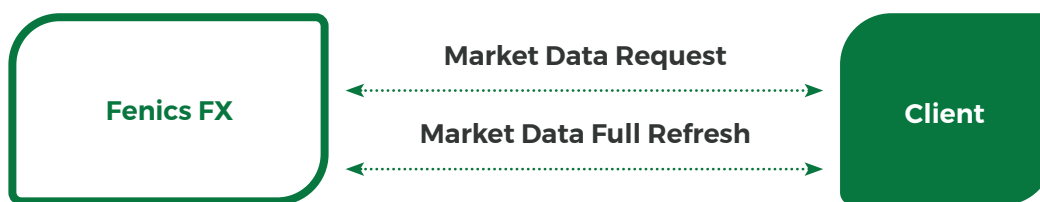
| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|-----------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = 4 |
| 123 | GapFillFlag | N | Boolean | |
| 36 | NewSeqNo | Y | Int | Sequence number following the gap fill or next expected sequence number if not a gap fill |

Message Resend Handling

In the event of a resend request being received from a Counter-party the FIX engine will reply by resending either the original messages, or a SequenceReset (gap fill) message in accordance with the FIX Protocol. All messages resent will be flagged as “possible duplicates”.

6. Market Data

Market data messages provide the ability to request market data and receive market data in a bidirectional conversation. The messages defined below define the contents of the messages required to elicit market data and the format of the replies.



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1. Market Data Request

Market Data Request returns one or more Market Data messages containing one or more Market Data Entries. This will be sent by the Fenics FX to start streaming market data.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|--------------------------|-------|-----------|--|
| | Standard Header | Y | | MsgType = V |
| 262 | MReqID | Y | String | Unique identifier for Market Data Request |
| 263 | Subscription RequestType | Y | Int | 1=Snapshot Plus Updates, 2=Disable Updates |
| 264 | MarketDepth | Y | Int | 0=Full Book, 1=Top of Book |
| 265 | MUpdateType | N | Int | Required if 263=1, 0=Full refresh |
| 110 | MinQty | N | Int | Used to limit minimum quote size shown; e.g., 10000000 to how 10million and above |
| 267 | NoMDEntryTypes | Y | Int | Number of MDEntryType fields requested |
| 269 | MDEntryType | Y | String | 0=Bid, 1=Offer |
| 146 | NoRelatedSym | Y | Int | Number of symbols requested |
| 55 | Symbol | Y | String | Must be the first field in the repeating group; symbol is the only required and only significant field in the repeating group; symbol uniquely and fully specifies instrument. In CCY1/CCY2 format |
| | Standard Trailer | Y | | |

For example,

```
8=FIX.4.2|9=136|35=V|34=2|49=FenicsFX|52=20090105-12:58:21.400|56= Counter-party | 262=req_2|263=1|265=0|264=0|267=2|269=0|269=1|146=1|55=EUR/USD|10=241
```

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2. Market Data - Full Refresh

In FIX, Market Data messages can take this form: Market Data Full Refresh (message type W - MDFull). All market data from Fenics FX will take the form of Full Refresh.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|-----------------------|-------|-----------|--|
| | Standard Header | Y | | MsgType = W |
| 262 | MDReqID | N | String | As given in request |
| 110 | MinQTY | N | Int | For optional use Min Qty on Market data |
| 55 | Symbol | Y | String | CCY1/CCY2 format |
| 268 | MDEntries | Y | Int | Number of entries following: |
| 269 | -> MDEntryType | Y | Int | 0=bid, 1=offer |
| 278 | -> MDEntryID | N | String | Must be Unique within this message |
| 270 | -> MDEntryPx | Y | Price | Price of the Market data entry |
| 271 | -> MDEntrySize | Y | Qty | Number of contracts represented by the Market Data Entry; required for Bid, Offer and Trade entries |
| 290 | -> MDEntry PositionNo | N | Int | Display position of a bid or offer, numbered from most competitive to least competitive, per market side, beginning with 1 |
| | Standard Trailer | Y | | |

For example,

```
8=FIX.4.2|9=157|35=W|49=Couter-party|56=LumeFX|34=2|52=20100226-12:40:01|262=req_2|55=EUR/USD|268=2|269=0|270=1.31112|271=1000000.0|269=1|270=1.31118|271=500000.0|10=234|
```

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7. Trading Messages

Fenics FX will send New Order messages to Maker and expect to receive Execution Report messages from Maker to indicate fills or rejects on the orders.

For example,

```
8=FIX.4.2|9=197|35=D|49=FenicsFX|56=Maker||34=372| 52=20160226-
01:06:57.267|11=61522_372|64=20160301|21=1|110=100000.00|55=USD/SEK|54=2|60=20160226-
01:06:57|38=100000.00|40=2|44=8.47310|15=USD|59=3|10=137|
```

1. New Order

The order message will be sent to Client.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|-----------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = D |
| 11 | ClOrdID | Y | String | Unique identifier |
| 21 | HandlInst | N | Char | 1=Auto; default is Auto; only allowed value |
| 1 | Account | N | String | |
| 55 | Symbol | Y | String | CCY1/CCY2 format |
| 38 | OrderQty | Y | Qty | Size in Terms of Deal CCY |
| 54 | Side | Y | Char | 1=Buy, 2=Sell (In Terms of Deal CCY) |
| 40 | OrdType | Y | Char | 1=Market, 2=Limit |
| 44 | Price | N | Price | Limit Price - Required when 40=2 |
| 15 | Currency | Y | Char | Currency of the trade; can be CCY1 (Base Currency) or CY2 (Term Currency) |

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| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|--------------|-------|-----------|--|
| 59 | TimeInForce | N | Char | 3=IOC, 4=FOK, 0=DAY, 1=GTC |
| 60 | TransactTime | Y | GMT | |
| 110 | MinQty | N | Qty | Qty (Can be less than or equal to OrderQty) |
| 109 | ClientID | N | String | Firm Identifier used in third party-transactions |

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2. Cancel Order

The Cancel Request will be sent from Fenics FX, and the Cancel request only applies to DAY and GTC orders.

For example,

```
8=FIX.4.2\9=167\35=F\49=FenicsFX\56=Maker
\34=2684\52=20160226-15:41:11.303\41=61532_2683\11=61532_2683_C\1=Test\55=EUR/NOK
\38=100000\54=2\60=20160226-15:41:11\10=073\
```

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|--|
| | Standard Header | Y | | MsgType = F |
| 11 | ClOrdID | Y | String | Unique identifier |
| 41 | OrigClOrdID | Y | String | ClOrdID of the original order request |
| 1 | Account | N | String | |
| 55 | Symbol | Y | String | CCY1/CCY2 format |
| 38 | OrderQty | Y | Qty | Quantity (should be same as the original order quantity) |
| 54 | Side | Y | Char | 1=Buy, 2=Sell |
| 60 | TransactTime | Y | GMT | |
| | Standard Trailer | Y | | |

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3. Execution Report

The Execution Report will be sent from Maker

For example,

```
8=FIX.4.2|9=311|35=8|34=381|49=Maker|52=20160226-01:06:57.209|56=FenicsFX-
|6=8.47531|11=61522_371|14=100000|15=USD|17=UAT_201602251702_34|20=0|31=8.475-
31|32=100000|37=UAT_20160225_27572781|38=100000|39=2|40=2|44=8.47531|54=1|55=USD/
SEK|58=LP(s): UAT_395|59=3|60=20160226-01:06:57.208|64=20160301|110=100000|150=2|151=0|10=127|
```

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|-----------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = 8 |
| 37 | OrderID | Y | String | Maker's unique identifier for the order |
| 11 | ClOrdID | Y | String | Value from New Order |
| 17 | ExecID | Y | String | Maker's unique identifier |
| 21 | HandInst | Y | Char | 1=Auto; default is Auto Only allowed value |
| 1 | Account | Y | String | |
| 20 | ExecTransType | Y | Char | 0=new |
| 150 | ExecType | Y | Char | 1=partial, 2=fill, 4=canceled, 8=rejected |
| 39 | OrdStatus | Y | Char | 1=partial, 2=fill, 4=canceled, 8=rejected |
| 55 | Symbol | Y | String | CCY1/CCY2 format |
| 15 | Currency | Y | String | Trade currency |
| 38 | OrderQty | Y | Qty | Size in Terms of Deal CCY |
| 54 | Side | Y | Char | 1=Buy, 2=Sell |

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| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|--|
| 40 | OrdType | Y | | 1=Market, 2=Limit |
| 44 | Price | N | Price | Limit price of new order |
| 60 | TransactTime | Y | GMT | |
| 64 | SettlDate | Y | Date | Date (YYYYMMDD) for settlement |
| 32 | LastQty | N | Int | Quantity of execution bought/sold on last fill |
| 31 | LastPx | N | Price | Must be present for 150=1, 150=2 |
| 151 | LeavesQty | Y | Qty | Amount of shares open for further execution |
| 14 | CumQty | Y | Qty | Contains the cumulated traded quantity for the order through its life |
| 6 | AvgPx | Y | Price | Calculated average price of all the fills on |
| 103 | OrdRejReason | N | Int | 1=unknown symbol, 6=duplicate order, 99=other; required for ExecType 8, rejected |
| 58 | Text | N | String | Free text |
| | Standard Trailer | Y | | |

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4. Don't Know

The DK message can be sent from Fenics FX to indicate a problem with a received execution. The message raises an alert at Fenics FX but does not guarantee any action from Fenics FX. Further corrective action should be taken by the Counter-party to remedy this error condition.

| TAG | FIELD NAME | REQ'D | DATA TYPE | SUPPORTED VALUE |
|-----|------------------|-------|-----------|---|
| | Standard Header | Y | | MsgType = Q |
| 37 | OrderID | Y | String | Value from the problem execution report |
| 17 | ExecID | Y | String | Value from the execution report |
| 127 | DKReason | Y | String | |
| 55 | Symbol | Y | String | CC1/CC2 format |
| 38 | OrderQty | Y | Qty | Qty of Order |
| 54 | Side | Y | Char | 1=Buy, 2=Sell |
| 58 | Text | N | Char | Free text describing the problem |
| | Standard Trailer | Y | | |

For example,

```
8=FIX.4.2|9=151|35=Q|34=6536|52=20160226-16:37:42.821|49=FenicsFX|56=Maker|55=EUR/US-
D|37=LD03:022616:00776257|17=x1456504662819880_41_4|127=D|54=1|10=025|
```

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