FREEDOM 24

FIX
Connectivity
Manual

Introduction

This manual describes the way Freedom Finance Europe ("FFEU") implements industry standard Financial Information Exchange (FIX™) Protocol as specific for FFEU clients and vendors who connect to FFEU using "FIX". FFEU currently supports FIX version 4.4. This manual documents messages supported by FFEU and their particular implementation.

For a complete guide to the FIX standard please refer to the official FIX home page at the following URL: http://www.fixprotocol.org This document assumes the default definition of the FIX standard unless otherwise noted. Only message types and fields (tags and values) which are supported by FFEU FIX engine are included in this manual.

Not supported fields are not guaranteed to be included in FIX messages sent by FFEU. If an unsupported field is received by FFEU, it is not validated for processing purposes.

FIX messages with unknown tags are not rejected as long as they include all necessary supported tags. Messages of types that are not supported are rejected.

Quick Start Guide

In order to get an access to FIX getaway, Client must:

1) register an account at https://tradernet.com/api-fix-connection .
   By Clicking **Sign Up** you will be required to enter your e-mail address (`FIX auth Login = <Username>Tag553` and `<SenderCompID>Tag49` if client has one account), create a password
   (`<Password>Tag554`) and fill all the relevant fields.

2) Once registration is done, the Demo-FIX request form becomes available at https://freedom24.com/fix

FIX-connection

The Freedom Finance industry standard FIX connection lets institutions with advanced technical resources create trading systems that take advantage of our high-speed order routing and broad market depth.

Key Features:

- Robust industry standard solution
- Provides direct access to the Freedom Finance trading system
- Industry standard RESTful API
- Available via VPN, cross-connect or internet

Demo-FIX request
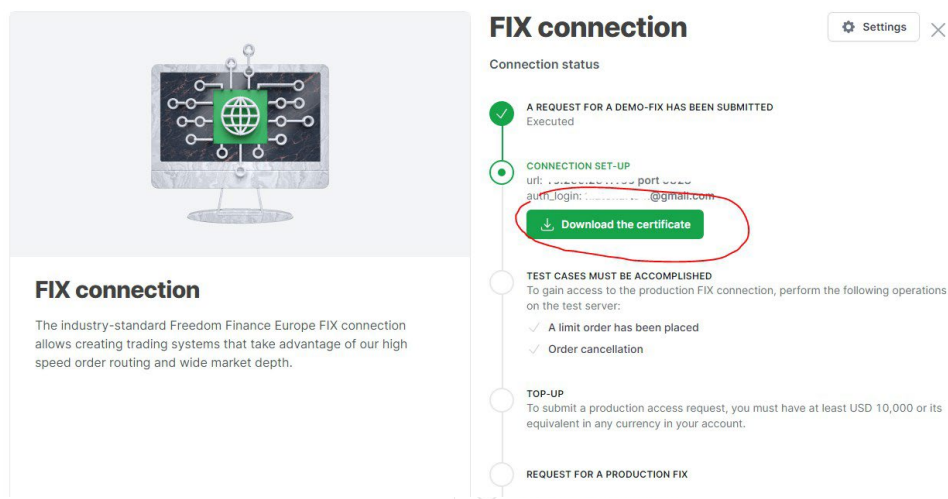Enter your static IP address

| 000.000.000.000 | Submit |

3) Please fill in your external static IP address, that you would like to use for FIX-connection and click "Submit" button.
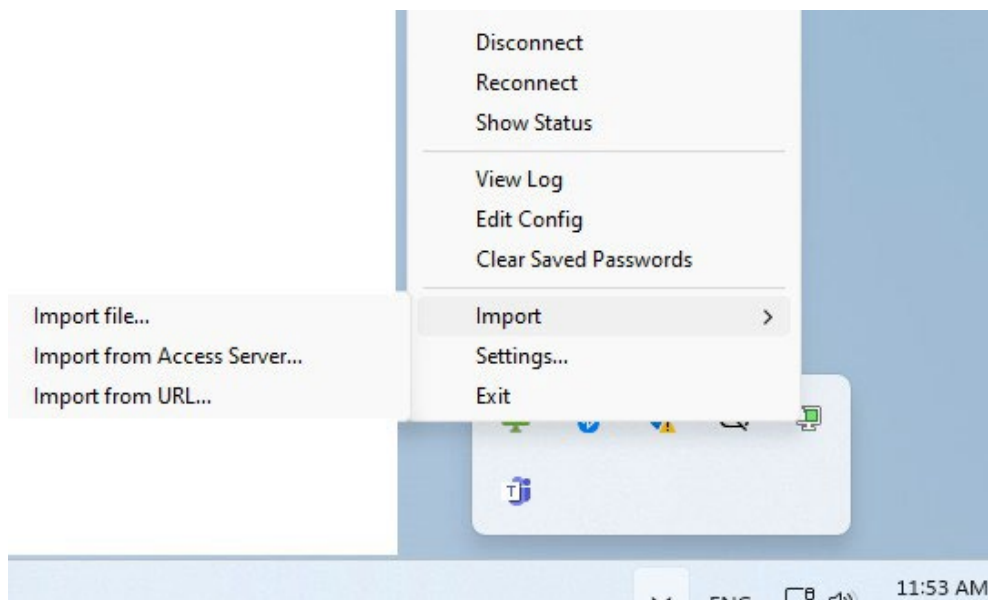
Demo-FIX request
Enter your static IP address

| 000.000.000.000 | Submit |

4) Once the request has been processed your VPN-connection certificate becomes available for download. In order to set up a VPN tunnel connection, please click "download certificate" and save VPN configuration file on your PC.

5) Please install OpenVPN using the following link https://openvpn.net/community-downloads/ and Import downloaded configuration file with right click on the OpenVPN Icon in the system tray.

6) Connect the OpenVPN, using your credentials.
7) Once VPN tunnel is ON, - connection to the Demo FIX server can be established.

Session Management

Supported Telecommunication Link Types

FFEU requires that FIX customers/vendors use one of the following telecommunication link types:

• **Cross-Connect**. Freedom Finance Europe has a point of presence in datacenters in the US (DC10) and Netherlands (AMS17). With management approval, FFEU allows clients who are hosted in these datacenters to cross-connect with FFEU. Clients who cross-connect with FFEU are responsible for the datacenter costs associated with the connectivity.

• **Virtual Private Network (VPN).** This network connection type allows for connection over public Internet using secure tunnel. VPN allows for a private peer-to-peer telecommunication connection without a need for a dedicated leased line or an extranet provider.

For cross connects and VPN clients the authentication is accomplished by cross checking the source IP of the client, SenderCompID (FIX tag 49) and dedicated TCP port assigned to the client. No additional authentication is required due to the private nature of telecommunication link

Sequence Number Management

A FIX session consists of a series of messages with a continuous set of sequence numbers. Resetting the inbound and outbound sequence numbers back to 1 establishes a new FIX session. A client can establish a new FIX session by setting tag 141 (ResetSeqNumFlag) to "Y" in the login message. FFEU does not initiate sequence number resets.

Inbound and outbound sequence numbers should be tracked independently. This is to identify gaps in message delivery. After authentication, the client and host must synchronize their message sequence numbers before any new messages can be sent. In the event that the received sequence number is higher than the expected sequence number, the client should respond with a Resend Request specifying the range of missing sequence numbers in tag 7 (BeginSeqNo) and tag 16 (EndSeqNo) tags. FFEU supports the value of 0 in tag 16 which would indicate the highest available sequence number.

If the sequence number received is less than the expected sequence number and tag 43 (PosDupFlag) is not set to "Y", it will not be possible to establish a FIX session until the sent sequence number is equal to or greater than the one expected. A reject message will be sent with the expected sequence number sent in the text tag.

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dated 20 May 2015

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By default, FFEU does FIX-server hard reset each night. Sequence numbers would then be reset to 1 (inbound and outbound) each night during system restart.

Client and FFEU agree to a hard nightly reset of seq #. In the US and Europe, FFEU will reset seq #s at ~00:00am UTC. Initial logons each day for both clients and FFEU will be at 1/1, without the use of tag 141.
This is our default method

Orders Eligible Only During Regular Trading Hours

FFEU will configure all FIX sessions such that orders routed to FFEU via FIX are eligible for execution only during Regular Trading Hours (RTH) as determined by the exchange.

UTC time is used as default. Client has to ensure that time on his software corresponds to UTC.

Account Management.

In case client has multiple accounts at FFEU, there is possibility to send trade orders for all the related accounts via single FIX-connection, access to which was obtained from a specific account at FFEU, the same way as all the accounts are accessible via TraderNet.

To send orders on behalf of multiple related accounts, user must use `<Username>Tag553`, `<SenderCompID>Tag49` and `<Password>Tag554`, as provided during registration, of the Account-1 for **Logon**, and place `<Username>` corresponding to the Account-2 in the `<Account>Tag1` of the NewOrderSingle message.

Example:

```
Client  8=FIX.4.4  9=191  35=D  34=271  49=<Username-1>  52=20221019-
06:31:12.047  56=TRDNET  1=<Username-2>  11=A8978  38=200  40=2  44=7.5  54=1
55=XIAO.1810.AS  59=0  60=20221019-06:31:12.033  77=O  10=168
```

Session Protocol

Message Format and Field Delimiter

FFEU currently supports the standard "Tag=Value" FIX syntax. The general format of a FIX message applies. Messages consist of a series of "Tag=Value" fields separated by a field delimiter. The delimiter is ASCII 1 (SOH) symbol. Examples in this manual will represent that delimiter with a space. All messages begin with a standard header and are terminated with a standard trailer.

Message Recovery

Message gaps may occur during login or in the middle of a FIX session that require message recovery. When this occurs, a Resend Request message can be sent requesting a range of missing messages. The re-sender will then respond with a Sequence Reset message that has tag 123 (GapFillFlag) set to "Y" and tag 43 (PossDupFlag) set to "Y". Tag 36 (NewSeqNo) will be set to the sequence number of the message to be redelivered next. Following this, the missing Application level messages will be resent. Most Administrative messages will not be resent. The administrative messages that will not be resent are: Logon, Logout, ResendRequest, Heartbeat, TestRequest and SeqReset-Reset and SeqReset-GapFill. This process of Sequence Reset / message delivery will continue until all of the relevant messages within the specified range have been delivered.

Standard Message Header

Every administrative or application message must begin with a standard header. FFEU Supports the fields listed below.

Tag#	Field Name	Req'd	Comments
8	BeginString	Y	FIX.4.4 is supported in this tag
9	Body Length	Y	Message length, in bytes, forward to checksum field
35	MsgType	Y	FFEU Supports the following values: 0 = Heartbeat 1 = Test Request 2 = Resend Request 3 = Reject 4 = Sequence Reset 5 = Logout 8 = Execution Report 9 = Order Cancel Reject A = Logon D = New Order Single F = Order Cancel Request

49	SenderCompID	Y	By default, this is the FFEU username. Alternatively, a different value may be agreed upon with FFEU FIX Integration Group
50	SenderSubID	N	Optional
56	TargetCompID	Y	Default is "TRDNET" for LiveFIX and "TRDNETTEST" for DemoFIX
57	TargetSubID	N	Per Standard
34	MsgSeqNum	Y	Per Standard. Please note that FFEU currently supports sequence numbers up to 2 147 483 647. Sequence numbers must be reset once they reach that value. FFEU does FIX-server hard reset each night. Sequence numbers would then be reset to 1.
43	PossDupFlag	N	Per Standard
97	PossResend	N	Per Standard
52	SendingTime	Y	Per Standard
122	OrigSendingTime	N	Per Standard
10	CheckSum	Y	3 byte simple checksum. Always represented as 3 ASCII characters.

Administrative Messages

Administrative messages are used for session management and address the utility needs of the protocol. FFEU uses the following Administrative messages:

- Logon

- Heartbeat

- Test Request

- Resend Request

- Reject (Session Level)

- Sequence Reset (Gap Fill)

- Logout

This section describes the administrative messages that FFEU uses and provides the layout for each message

Logon
The logon message is used to establish a FIX connection with FFEU. It therefore must be the first message sent.

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Tag #	Field	Req'd	Comments
Standard Header		Y	MsgType = A
98	EncryptMethod	Y	Valid Value = 0 (none, encryption is currently not supported)
108	HeartBtInt	Y	A heartbeat interval of 30 seconds is suggested. The initiator may set it to any value, but the acceptor (FFEU) may override this interval when necessary. That means that the initiator has to be prepared to receive and respond to Test Request and Heartbeat messages in any case.
141	ResetSeqNumFlag	N	This field is optionally required when a new session is to be opened, depending on seq # management configuration
553	Username	Y	SenderCompID Per Standard
554	Password	Y	Per Standard
Standard Trailer		Y	

Client 8=FIX.4.4 9=78 35=A 34=207 49=< Username> 52=20221019-05:59:16.383
56=TRDNETTEST 98=0 108=30 141=Y 553=<Username> 554=<Password> 10=..

Heartbeat

If either end of the connection has not sent any data in the amount of time specified in the heartbeat interval, a heartbeat message will be sent. If a heartbeat message is not received within the specified heartbeat interval, the connection should be considered lost. FFEU recommends a heartbeat interval of 30 seconds.

Tag #	Field	Req'd	Comments
Standard Header		Y	MsgType = 0
112	TestReqID	N	Required when the heartbeat is the result of a Test Request message.
Standard Trailer		Y	

Client 8=FIX.4.4 9=78 35=0 34=207 49=<SenderCompID> 52=20221019-
05:59:16.383 56=TRDNET 10=229 553=<Username> 554=<Password>

Broker 8=FIX.4.4 9=78 35=0 34=207 49=TRDNET 52=20221019-05:59:16.383
56=< SenderCompID > 10=229

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Test Request

The test request message forces a heartbeat from the opposing application. If either end of the connection has not received any data within the specified heartbeat interval a test request message will be sent. FFEU suggests the use of a timestamp in the TestReqID field as it is useful to verify that the Heartbeat is the result of the Test Request and not as the result of a regular timeout

Tag #	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 1
112	TestReqID	Y	A timestamp string is suggested for TestReqID
Standard Trailer		Y	

Resend Request

The Resend Request initiates the retransmission of messages. It can be used to request a single message, a range of messages, or all messages which follow a particular message.

Tag #	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 2
7		BeginSeqNo	Y
16	EndSeqNo	Y	EndSeqNo = "0" is currently not supported by FFEU. A specific sequence number must be specified.
Standard Trailer		Y	

```
Client  8=FIX.4.4  9=91  35=2  34=476  49=<SenderCompID>  52=20221019-
06:59:02.725  56=TRDNET  7=320  16=399  10=058
```

Sequence Reset and Gap Fill
The sequence reset message is used by the sending application to reset the incoming sequence number on the opposing side.

Tag #	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 4
123	GapFillFlag	N	Indicates that the Sequence Reset message is replacing administrative or application messages which will not be resent. Y = Gap Fill message, MsgSeqNum field valid N = Sequence Reset, ignore MsgSeqNum
36	NewSeqNo	Y	
Standard Trailer		Y	

```
Broker 8=FIX.4.4  9=122  35=4  34=323  43=Y  49=TRDNET  52=20221019-
06:58:59.665  56=<SenderCompID>  122=20221019-06:58:59.665  36=399  123=Y
10=164
```

Logout

The logout message initiates or confirms the termination of a FIX session. Disconnection without the exchange of logout messages should be interpreted as an abnormal condition

Tag #	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 5
58	Text	N	
Standard Trailer		Y	

```
Client 8=FIX.4.4  9=73  35=5  34=1  49=<SenderCompID>  52=20221019-
07:04:25.673
56=TRDNET  10=046

Broker 8=FIX.4.4  9=73  35=5  34=1  49=TRDNET  52=20221019-07:04:25.673
56=<SenderCompID> 10=046
```

Application Messages

! All the application messages can be sent not earlier than 3 seconds after successful Logon

FFEU supports the following Application Messages:

- New Order Single
- Execution Reports
- Order Cancel Request
- Order Cancel Reject
- Request for Position
- Position Report

New Order Single: Basic

This message is used to submit a new order. FFEU supports the following basic order types:

- Market.

- Limit.

The following tags are required on the new order single message for Basic orders. See Appendix B and C for further details on these fields.

Tag	Field Name	Req'd	Comments
Standard Header		Y	MsgType = D
1	Account	Y	
11	ClOrdID	Y	
15	Currency	N	
55	Symbol	Y	Instrument ticker
48	SecurityID	N	Either CUSIP or ISIN identifier
22	IDSource	N	4=ISIN
54	Side	Y	Allowed values 1 or 2
38	OrderQty	Y	
40	OrdType	Y	1 = Market 2 = Limit
44	Price	N	Required depending on order type specified in tag 40
59	TimeInForce	N	
60	TransactTime	Y	
58	Text	N	FFEU does not support tag 58 on orders. Orders containing tag 58 will reject.
77	OpenClose renamed PositionEffect	N	Not supported. Please avoid sending this tag in NewOrderSingle message
167	SecurityType	N	
231	ContractMultiplier	N	Can be used to identify option contracts in conjunction with tag 55
168	EffectiveTime	N	Use this field to specify a Good After time and date
100	ExDestination	N	
Standard Trailer		Y	

Client 8=FIX.4.4 9=191 35=D 34=271 49=<SenderCompID> 52=20221019-06:31:12.047 56=TRDNET 1=<SenderCompID> 11=A8978 38=200 40=2 44=7.5 54=1 55=XIAO.1810.AS 59=0 60=20221019-06:31:12.033 77=O 10=168

Stock Security and Derivative Contract Definition

Stock orders can be routed by ticker symbol using tag 55 (Symbol).

Derivative contract orders which include futures, options (including options on futures) can be routed by specifying Full exchange symbol in tag 55

Foreign Exchange Definition

Tags 55 (Symbol) and 15 (Currency) are used for identifying Foreign Exchange (a.k.a. FX) currency conversions. Tag 55 represents the currency being acquired. Tag 15 represents the base currency. For example, to purchase EUR with USD it would be tagged 55=EUR, 15=USD. Tag 38 (OrderQty) represents the number of destination currency units you wish to buy or sell. Tag 44 (Price) represents the price in base currency for one unit of destination currency.

Fixed Income Definition

Corporate, government, and other bonds on all orders must be identified using Symbol via tag 55.

Mutual Fund Definition
For all mutual fund orders, tag 55 (Symbol) must be used to identify the mutual fund being traded.

Execution Report

The execution report message is used to:
- Confirm the receipt of an order
- Confirm changes to an existing order (i.e. accept cancel and replace requests)
- Relay order status information
- Relay trade reports
- Reject orders
- Report trade busts or restatements

Tag	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 8
37	OrderID	Y	

11	ClOrdID	N	
17	ExecID	Y	Unique execution identifiers are provided for the following OrdStatus types (tag 39): Partially Filled Filled For OrdStatus types this field will contain 0
20	ExecTransType	Y	
19	ExecRefID	N	Provided for Cancel and Correct ExecTransType messages.
39	OrdStatus	Y	Identifies the current status of the order
103	OrdRejReason	N	Default value is: 0 = Broker Option
150	ExecType	Y	Identifies the type of Execution Report
151	Leaves Qty	Y	The amount of shares open for further execution.
63	SettlmntTyp	N	Only Regular type supported.
55	Symbol	Y	
54	Side	Y	Allowed values 1 or 2
38	OrderQty	Y	
40	OrdType	N	
44	Price	N	
99	StopPx	N	
59	TimeInForce	N	
32	LastShares	Y	Quantity of shares bought/sold on this (last) fill.
31	LastPx	Y	Price of this (last) fill
14	CumQty	Y	
6	AvgPx	Y	Calculated average price of all fills on this order.
60	TransactTime	N	
58	Text	N	FFEU returns the message as it was reported by the Execution venue. "UNSUPPORTED ORDERTYPE" "INCORRECT SYMBOL" "INCORRECT ACCOUNT" "UNSUPPORTED TIMEINFORCE" "DUBLICATE CLORDID" "UNSUPPORTED ORDER SIDE" "UNABLE TO CHECK MARGIN" "NOT ENOUGH MARGIN" "MISSING REQUIRED FIELD" "UNABLE TO LOAD MESSAGE" "EGate closed"
Standard Trailer		Y	

```
Broker 8=FIX.4.4  9=375  35=8  34=322  43=Y  49=TRDNET  52=20221019-
06:58:56.746  56=<SenderCompID>  122=20221019-06:55:11.439  1=<SenderCompID>
6=0  11=A9001  14=0  17=70ef10bf-af4d-32a6-a610-a2942721ce7e  31=0  32=0
37=43f1d011-31e8-4bf8-a3d4-de75811a37bf  38=200  39=0  40=2  44=7.5  54=1
55=XIAO.1810.AS  60=19700101-03:00:00.000  150=0  151=200  10=108
```

New Order Acknowledgement (150=0)

```
Broker  8=FIX.4.4 9=345 35=8 34=342 49=TRDNET 52=20220819-06:49:21.705
56=<SenderCompID>  115= <SenderCompID>  1=<trade_account_name> 6=0 11=A4645
14=0 15= 17=2793d825-7c0b-3da4-a01b-fc6bc0275953 31=0 32=0 37=2b0ca434-1060-
4953-80f7-a0be8d0224ea 38=100 39=0 40=2 44=88.9 54=1 55=BABA.9988.AS
60=19700101-03:00:00.000 77= 150=0 151=100 207= 10=203
```

Partial Fill (150=1)

```
Broker  8=FIX.4.4 9=361 35=8 34=182 49=TRDNET 52=20220819-05:57:22.569
56=<SenderCompID>  115=<SenderCompID> 1=<trade_account_name>
6=11.7 11=A4622 14=24200 15= 17=ec7d208b-e9fb-3bd7-8906-
8040314d09da 31=11.7 32=2000
37=1922a663-25da-4dd5-88bf-d2f89748a450 38=30000 39=1 40=2 44=11.7 54=1
55=XIAO.1810.AS 60=19700101-03:00:00.000 77= 150=1 151=5800 207= 10=090
```

Full Fill (150=2)

```
8=FIX.4.4 9=361 35=8 34=182 49=TRDNET 52=20220819-05:57:22.569
56=<SenderCompID>  115=<SenderCompID> 1=<trade_account_name>
6=11.7 11=A4622 14=24200 15= 17=ec7d208b-e9fb-3bd7-8906-
8040314d09da 31=11.7 32=2000
37=1922a663-25da-4dd5-88bf-d2f89748a450 38=30000 39=1 40=2 44=11.7 54=1
55=XIAO.1810.AS 60=19700101-03:00:00.000 77= 150=2 151=0 207= 10=090
```

Order Cancelled (150=4)

```
8=FIX.4.4 9=0252 35=8 34=004862 43=N 52=20190915-16:32:33 56=client1 49=TRDNET
37=0000007c.00003b0f.41073a2a.001 11=10004.0 41=100003.0 150=4 20=0 39=4 32=0
31=0 14=0 151=0 6=0 38=1000 55=IBM 38=100 54=1 40=2 44=10.10 59=0 15=USD
204=0
47=A 167=CS 10=182
```

Order Cancel Request

The order cancel request is used to transmit a cancel request for a pending order.

Tag	Field Name	Req'd	Comments
Standard Header		Y	MsgType = F
1	Account	Y	
11	ClOrdID	Y	

41	OrigClOrdID	Y	
55	Symbol	Y	
48	SecurityID	N	
22	IDSource	N	
54	Side	Y	Has to be identical to original side.
38	OrderQty	Y	
58	Text	N	Taken as a comment only.
Standard Trailer		Y	

```
Client   8=FIX.4.4 9=180 35=F 34=276 49=<SenderCompID> 52=20221019-06:33:40.626
         56=TRDNET 1=<trade_account_name> 11=C0s6309 38=200 41=A8978 54=1
         55=XIAO.1810.AS 60=20221019-06:33:40.625 10=045
```

Order Cancel Reject

The Order Cancel Reject message is issued when a Cancel Request or Cancel / Replace Request cannot be honored.

Tag	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 9
37	OrderID	Y	
11	ClOrdID	Y	
41	OrigClOrdID	Y	
102	CxlRejReason	N	Provided
434	CxlRejResponseTo	Y	
58	Text	N	Reject reason (textual description).
Standard Trailer		Y	

```
Client    8=FIX.4.4  9=113 35=9 34=3 49=TRDNETTEST 52=20221202-14:39:50.270
          56=<SenderCompID>11=TEST2_Y004 39=8 41=TEST2_X002 434=1 10=227
```

Request for Position

The RequestForPositions (AN) message shall be sent when client requests information about available positions. In response to RequestForPositions message, FF-FIX server will send 1 or more PositionReport messages, or one Reject message in case the RequestForPositions message is invalid.

Tag	Field Name	Req'd	Comments
Standard Header		Y	MsgType = 9
710	PosReqID	Y	Request ID. String that must be unique for each request.
724	PosReqType	Y	Type of information requested. Supported value =0 (Positions).
263	SubscriptionRequestType	Y	Subscription type. Supported value =0 (Snapshot).

1	Account	Y	
581	AccountType	Y	Account type. Supported value =1 (Account is carried on customer Side of Books).
715	ClearingBusinessDate	Y	Clearing date for which positions are requested. Only current clearing date is supported. "YYYYMMDD"
453	NoPartyIDs	Y	The number of "parties" related to positions. Supported value =1
448	PartyID	Y	Positions Account. Can be own account or an account authorized for trading on behalf.
452	PartyRole	Y	Customer Account. Supported value =24
60	TransactTime	Y	Time when request was initiated. Format "20240311-14:40:45.000"
	Standard Trailer	Y	

```
Client  8=FIX.4.4  9=223  35=AN  34=157  52=20240311-14:40:45.507  56=TRDNET
710=R11_MAR_2024_POS_REQ_1  263=0  724=0  1=<session_account>
49=<session_account>  581=1  715=20240311  60=20240311-14:40:45.000  453=1
448=<account_of_interest>  452=24  10=255
```

Position Report (AP)

The PositionReport (AP) message will be sent by FF-FIX server as a response to the RequestForPositions request sent by the client.

Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = 9
721	PosMaintRptID	Y	PositionReport message ID
710	PosReqID	Y	The identifier of the original RequestForPositions request.
724	PosReqType	Y	Type of information contained by PositionReport. Supported value =0 (Positions)
728	PosReqResult	Y	Value =0 (Valid Request) value=2 (No positions found that match criteria).
1	Account	Y	
581	AccountType	Y	Account type. Supported value =1 (Account is carried on customer Side of Books).
727	TotalNumPosReports	Y	The total number of PositionReports that should be sent in response to the original RequestForPositions request. Supported value = numbers>1
715	ClearingBusinessDate	Y	Clearing date for which positions are requested. Only current clearing date is supported. "YYYYMMDD"
453	NoPartyIDs	Y	The number of "parties" related to positions. Supported value =1

448	PartyID	Y	Positions Account. Can be own account or an account authorized for trading on behalf.
452	PartyRole	Y	Customer Account. Supported value =24
55	Symbol	N	Instrument Identifier (ticker)
702	NoPositions	Y	Number of positions. Supported value= 1
703	PosType	Y	Type of quantitative position information. Supported value ='TQ' (Transaction Quantity).
704	LongQty	N	Long position quantity. (shall be blank if ShortQty is set)
705	ShortQty	N	Short position quantity. (shall be blank if LongQty is set)
753	NoPosAmt	Y	Number of cash position. Supported value= 1
707	PosAmtType	Y	Cash position Type. Supported value= 'CASH' (Cash Amount), or = 'FMTM' (Final Mark-to-Market Amount) value
708	PosAmt	Y	Value of position
15	Currency	Y	
730	SettlPrice	Y	Settlement price
731	SettlPriceType	Y	Settlement price type. Supported value =2 (Theoretical)
734	PriorSettlPrice	Y	Previous settlement price
Standard Trailer		Y	

```
Broker    8=FIX.4.4  9=327  35=AP  34=159  49=TRDNET  52=20240311-14:40:46.403
56=<session_account> 1=<session_account> 15=KZT 55=KZT 453=1
448=<account_of_interest>  452=24  581=1  702=1  703=TQ  704=411.98
710=R11_MAR_2024_POS_REQ_1  715=20240311  721=R11_MAR_2024_POS_REQ_1_report_2
724=0  727=24  728=0  730=1  731=2  734=1  753=1  707=CASH  708=411.98
10=189
```

Appendix B: FFEU Implementation of Standard FIX Tags

Tag	Tag Name	Data Type	FFEU Implementation	FIX Standard Definition	Used In
1	Account	String	Required for sessions which route orders to multiple FFEU accounts. The intended FFEU account number is used by default, although mapping can be implemented to replace the FFEU account designation with a unique user-specified value.	Account mnemonic as agreed between buy and sell sides, e.g. broker and institution or investor / intermediary and fund manager.	New Order Single New Order Multileg (combo) Position Report/ Request for Position
6	AvgPx	Float	Per Standard	Calculated average price of all fills on this order.	Execution Report
7	BeginSeqNo	Int	Per Standard	Message sequence number of first message in range to be resent	Resend Request
8	BeginString	String	Per Standard	Identifies beginning of new message and protocol version. ALWAYS FIRST FIELD IN MESSAGE. (Always unencrypted) Valid values: FIX.4.4	Standard Header
9	Body Length	Int	Message length must be 1 to 4 characters long	Message length, in bytes, forward to the CheckSum field. ALWAYS SECOND FIELD IN MESSAGE. (Always unencrypted)	Standard Header
10	Checksum	String	Per Standard	Three byte, simple checksum ALWAYS LAST FIELD IN MESSAGE; i.e. serves, with the trailing <SOH>, as the end-of-message delimiter. Always defined as three characters. (Always unencrypted)	Standard Trailer
11	ClOrdID	String	Per Standard	Unique identifier for Order as assigned by order routing firm. Uniqueness must be guaranteed within a single trading day. Firms which electronically submit multi-day orders should consider embedding a date within the ClOrdID field to assure uniqueness across days.	New Order-Single, Execution Report, Cancel, Cancel Replace, Cancel Reject
14	CumQty	Int	Per Standard	Total number of shares filled.	Execution Report
15	Currency	Currency	Valid Values: USD = US Dollar CHF = Swiss Franc EUR = Euros GBP = British Pound HKD = Hong Kong $ RUR= Russian Ruble	Identifies currency used for price. Absence of this field is interpreted as the default for the security. It is recommended that systems provide the currency value whenever possible. Valid Currency Codes for information on obtaining valid values.	Execution Report
16	EndSeqNo	Int	EndSeqNo = "0" is currently not supported by FFEU. A specific sequence number must be specified.	Message sequence number of last message in range to be resent. If request is for a single message BeginSeqNo = EndSeqNo.	Resend

17	ExecID	String	Per Standard	Unique identifier of execution message as assigned by broker (will be 0 (zero) for ExecTransType=3 (Status)). Uniqueness must be guaranteed within a single trading day.	Execution Report
19	ExecRefID	String	Provided for Cancel and Correct ExecTransType messages	Reference identifier used with Cancel and Correct transaction types.	Execution Report
20	ExecTransType	Char	Per Standard	Identifies transaction type Valid values: 0 = New 1 = Cancel 2 = Correct 3 = Status	Execution Report
22	IDSource	String	FFEU supports 4=ISIN	Identifies class of alternative SecurityID Valid values: 4 = ISIN number	Order, Execution Report, Cancel, Replace
31	LastPx	Float	Per Standard	Price of this (last) fill. Field not required for ExecTransType = 3 (Status)	Execution Report
32	LastShares	Qty	Per Standard	Quantity of shares bought/sold on this (last) fill. Field not required for ExecTransType = 3 (Status)	Execution Report
34	MsgSeqNum	Int	Per Standard	Integer message sequence number. Default max seq # is 999999. FFEU does FIX-server hard reset each night. Sequence numbers would then be reset to 1	Standard Header
35	MsgType	Int	FFEU Supports the following values: 0 = Heartbeat 1 = Test Request 2 = Resend Request 3 = Reject 4 = Sequence Reset 5 = Logout 8 = Execution Report 9 = Order Cancel Reject A = Logon D = Order Single F = Order Cancel Request H = Order Status Request	Defines message type. ALWAYS THIRD FIELD IN MESSAGE. (Always unencrypted) Note: A "U" as the first character in the MsgType field (i.e. U1, U2, etc) indicates that the message format is privately defined between the sender and receiver. Valid values: *** Note the use of lower case letters *** 0 = Heartbeat 1 = Test Request 2 = Resend Request 3 = Reject 4 = Sequence Reset 5 = Logout 8 = Execution Report 9 = Order Cancel Reject A = Logon D = Order – Single F = Order Cancel Request H = Order Status Request	Standard Header
36	NewSeqNo	Int	Per Standard	New sequence number	Sequence Reset
37	OrderID	String	Per Standard	Unique identifier for Order as assigned by broker. Uniqueness must be guaranteed within a single trading day. Firms which accept	Execution Report, Cancel/Replace Request, Order Cancel Reject

				multi-day orders should consider embedding a date within the OrderID field to assure uniqueness across days.		
38	OrderQty	Qty	Per Standard	Number of shares ordered	New Order-Single, Execution Report, Cancel, Cancel Replace	
39	OrdStatus	Char	FFEU Supports the following values: 0 = New 1 = Partially filled 2 = Filled 4 = Canceled 5 = Replaced 6 = Pending Cancel 8 = Rejected A = Pending New C = Expired	Identifies current status of order. Valid values: 0 = New 1 = Partially filled 2 = Filled 4 = Canceled 5 = Replaced 6 = Pending Cancel (e.g. result of Order Cancel Request) 8 = Rejected A = Pending New C = Expired	Execution Report	
40	OrdType	String	FFEU Supports the following values: 1 = Market 2 = Limit	Order type. Valid values: 1 = Market 2 = Limit	New Order-Single, Execution Report, Cancel/Replace Request	
41	OrgClOrdID	String	Per Standard	ClOrdID of the previous order (NOT the initial order of the day) as assigned by the institution, used to identify the previous order in cancel and cancel/replace requests.	Cancel/replace Request, Order Cancel Request, Order Cancel Reject	
43	PossDupFlag	Boolean	Per Standard	Indicates possible retransmission of message with this sequence number	Standard Header	
44	Price	Price	Per Standard	Price per share. Should not be present for market orders.	New Order-Single, Execution Reports, Cancel/Replace Request	
48	SecurityID	String	Only FFEU ticker is supported.	Security identifier	New Order Single, Execution Reports, Cancel/Replace Request, Order Cancel Request	
49	SenderCompID	String	Per Standard	Assigned value used to identify firm sending message.	Standard Header	
50	SenderSubID	String	Per Standard	Assigned value used to identify specific message originator (desk, trader, etc.)	Standard Header	
52	SendingTime	UTC Time Stamp	Per Standard	Time of message transmission (always expressed in UTC (Universal Time Coordinated, also known as "GMT")	Standard Header	
54	Side	Char	FFEU supports the following values: 1 = Buy 2 = Sell	Side of order Valid values: 1 = Buy 2 = Sell	New Order-Single, Execution Report, Cancel/Replace Request, Order Cancel Request	
55	Symbol	String	For Options, FFUE ticker symbol should be used as a default.	Ticker Symbol	New Order-Single, Execution Report, Cancel/Replace Request, Order Cancel Request	
56	TargetCompID	String	Default is "TRDNET"	Assigned value used to identify receiving firm	Standard Header	

			If required the value can be determined by the client, please notify FIX Integration Group.		
57	TargetSubID	String	Per Standard	Assigned value used to identify specific individual or unit intended to receive message. "ADMIN" reserved for administrative messages not intended for a specific user.	Standard Header
58	Text	String	Not supported on orders to FFEU. On execution reports, text returned from FFEU depends on the message type. See the various tables in the Application Messages documentation section	Free format text string (Note: this field does not have a specified maximum length)	Reject, Sequence Reset, New Order-Single, Execution Report, order Cancel Request, Order Cancel Reject
59	TimeInForce	Char	If specified, the valid values are 0 = Day 1 = GTC 4 = Fill or Kill (FOK)	Specifies how long the order remains in effect. Absence of this field is interpreted as DAY. Valid values: 0 = Day 1 = Good Till Cancel (GTC) 4 = Fill or Kill (FOK)	New Order-Single, Execution Report, Cancel/Replace Request
60	TransactTime	UTC Time Stamp	Per Standard	Time of execution/order creation (expressed in UTC (Universal Time Coordinated, also known as "GMT")	Execution Reports Position Report/ Request for Position
63	SettlmntTyp	Char	FFEU supports the following value only: 0 = Regular	Indicates order settlement period. Absence of this field is interpreted as Regular. Regular is defined as the default settlement period for the particular security on the exchange of execution. Valid values: 0 = Regular	Execution Reports, Cancel/Replace Request
77	OpenClose renamed PositionEffect	Char	Valid Values: O=Open C=Close	Indicates whether the resulting position after a trade should be an opening position or closing position. Used for omnibus accounting - where accounts are held on a gross basis instead of being netted together. Valid Values: O = Open C = Close R = Rolled (FIX 4.3)	New Order-Single
97	PossResend	Boolean	Per Standard	Indicates that message may contain information that has been sent under another sequence number. Y = Possible resend N = Original transmission	Standard Header
98	EncryptMethod	Int	FFEU does not currently support encryption. Valid value = 0	Method of encryption. Valid values: 0 = None / other	Logon
99	StopPx	Price	Price per share. Valid Values: 0 - 99999999.9999 (number of decimal places may vary and not limited to four). Specify the trailing amount in the StopPx field when creating a Trailing Stop order.	Price per share	New Order-Single, Execution Report, Cancel/Replace Request

100	ExDestination	Exchange		Execution destination as defined by institution when order is entered.	New Order-Single
102	CxlRejReason	Int	Per Standard	Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel 1 = Unknown order 2 = Broker Option 3 = Order already in Pending Cancel or Pending Replace status	Order Cancel Reject
103	OrdRejReason	Int	Supported Values: 0 = Broker Option (default if omitted) 3 = Order exceeds limit	Code to identify reason for order rejection. Valid values: 0 = Broker option 1 = Unknown symbol 2 = Exchange closed 3 = Order exceeds limit 4 = Too late to enter 5 = Unknown Order 6 = Duplicate Order (e.g. dupe ClOrdID) 7 = Duplicate of a verbally communicated order 8 = Stale Order	Execution Reports
108	HeartBtInt	Int	A heartbeat interval of 30 seconds is suggested. The initiator may set it to any value, but the acceptor (FFEU) may override this interval when necessary. That means that the initiator has to be prepared to receive and respond to Test Request and Heartbeat messages in any case.	Heartbeat interval (seconds)	Logon
112	TestReqID	String	A timestamp string is suggested for TestReqID	Identifier included in Test Request message to be returned in resulting Heartbeat	Test Request
122	OrigSendingTime	UTC Time Stamp	Per Standard	Original time of message transmission (always expressed in UTC (Universal Time Coordinated, also known as "GMT") when transmitting orders as the result of a resend request.	Message Header
123	GapFillFlag	Boolean	Per Standard	Indicates that the Sequence Reset message is replacing administrative or application messages which will not be resent. Valid values: Y = Gap Fill message, MsgSeqNum field valid N = Sequence Reset, ignore MsgSeqNum	Sequence Reset
141	ResetSeqNumFlag	Boolean	This field is required when a new session is to be opened, if the client is managing seq # resets.	Indicates that the both sides of the FIX session should reset sequence numbers. Valid values: Y = Yes, reset sequence numbers N = No	Logon

150	ExecType	Char	FFEU supports the following values: 0 = New 1 = Partial Fill 2 = Fill 4 = Canceled 5 = Replace 6 = Pending Cancel/Replace A = Pending New 8 = Rejected C = Expired D = Restated E = Pending Replace	Describes the specific ExecutionRpt (i.e. Pending Cancel) while OrdStatus will always identify the current order status (i.e. Partially Filled) Valid values: 0 = New 1 = Partial fill 2 = Fill 3 = Done for day 4 = Canceled 5 = Replace 6 = Pending Cancel (e.g. result of Order Cancel Request) 7 = Stopped 8 = Rejected 9 = Suspended A = Pending New B = Calculated C = Expired D = Restated (ExecutionRpt sent unsolicited by sellside, with ExecRestatementReason set) E = Pending Replace (e.g. result of Order Cancel/Replace Request)	Execution Reports
151	LeavesQty	Qty	Per Standard	Amount of shares open for further execution. If the OrdStatus is Canceled, DoneForTheDay, Expired, Calculated, or Rejected (in which case the order is no longer active) then LeavesQty could be 0, otherwise LeavesQty = OrderQty - CumQty. (Prior to FIX 4.2 this field was of type int)	Execution Reports
167	SecurityType	String	CS = Common stock, can also be sent as STK. FUT = Future OPT = Option, except for options on futures. FOP = Options on Futures WAR = Warrant MLEG = Multi-leg component, can also be sent as MULTILEG. CASH = Foreign exchange. BOND = Bonds CFD = Contract for difference CMDTY = Spot FUND = Mutual fund	Indicates type of security (ISITC spec) Valid values: CS = Common stock, can also be sent as STK. FUT = Future OPT = Option, except for options on futures. FOP = Options on Futures WAR = Warrant MLEG = Multi-leg component, can also be sent as MULTILEG. CASH = Foreign exchange. BOND = Bonds CFD = Contract for difference CMDTY = Spot FUND = Mutual fund	New Order-Single, Execution Reports
168	EffectiveTime	UTCTimeStamp	To be entered in the format: yyyymmdd-hh:mm:ss	Time the details within the message should take effect (always expressed in UTC (Universal Time Coordinated, also known as "GMT")	New Order-Single
231	ContractMultiplier	Float	This tag should be used to identify option contracts if the underlying symbol is used in tag 55	Specifies the ratio or multiply factor to convert from contracts to shares (e.g. 1.0, 100, 1000, etc). Applicable For Fixed Income, Convertibles Bonds, Derivatives, etc. Note: If used, quantities	

				should be expressed in the "nominal" (e.g. contracts vs. shares) amount.	
434	CxlRejResponseTo	Int	Per Standard	Identifies the type of request that a cancel replace request is in response to. Valid Values: 1 = Order Cancel Request 2 = Order Cancel/Replace Request	Cancel Reject
553	Username	String	Per Standard	UserID or username (email, used during account registration process)	New Order- Single
554	Password	String	Per Standard	Password or passphrase (password provided during account registration)	New Order- Single
263	SubscriptionRequestType	Int	Per Standard	Subscription type. Supported value =0 (Snapshot).	Position Report/ Request for Position
721	PosMaintRptID	String	Per Standard	PositionReport message ID	
710	PosReqID	String	Per Standard	The identifier of the original RequestForPositions request.	Position Report/ Request for Position
724	PosReqType	Int	Per Standard	Type of information contained by PositionReport. Supported value =0 (Positions)	Position Report/ Request for Position
728	PosReqResult	Int	Per Standard	Value =0 (Valid Request) value=2 (No positions found that match criteria).	
581	AccountType	Int	Per Standard	Account type. Supported value =1 (Account is carried on customer Side of Books).	Position Report/ Request for Position
727	TotalNumPosReports	Int	Per Standard	The total number of PositionReports that should be sent in response to the original RequestForPositions request. Supported value = numbers>1	Position Report
715	ClearingBusinessDate	String	Per Standard	Clearing date for which positions are requested. Only current clearing date is supported. "YYYYMMDD"	Position Report/ Request for Position
453	NoPartyIDs	Int	Per Standard	The number of "parties" related to positions. Supported value =1	Position Report/ Request for Position
448	PartyID	String	Per Standard	Positions Account. Can be own account or an account authorized for trading on behalf.	Position Report/ Request for Position
452	PartyRole	Int	Per Standard	Customer Account. Supported value =24	Position Report/ Request for Position
702	NoPositions	Int	Per Standard	Number of positions. Supported value= 1	Position Report
703	PosType	String	Per Standard	Type of quantitative position information. Supported value ='TQ' (Transaction Quantity).	Position Report
704	LongQty	Qty	Per Standard	Long position quantity. (shall be blank if ShortQty is set)	Position Report
705	ShortQty	Qty	Per Standard	Short position quantity. (shall be blank if LongQty is set)	Position Report
753	NoPosAmt	Int	Per Standard	Number of cash position. Supported value= 1	Position Report
707	PosAmtType	String	Per Standard	Cash position Type. Supported value= 'CASH' (Cash Amount), or = 'FMTM' (Final Mark-to-Market Amount) value	Position Report
708	PosAmt	Int	Per Standard	Value of position	Position Report
730	SettlPrice	Price	Per Standard	Settlement price	Position Report
731	SettlPriceType	Price	Per Standard	Settlement price type. Supported value =2 (Theoretical)	Position Report
734	PriorSettlPrice	Price	Per Standard	Previous settlement price	