



## **Quote MTF**

# **Fix Drop application interface specification**

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## 1. INTRODUCTION

This document describes specifically what functionality is available through Quote MTF Fix Drop application interface. It also describes how QMTF uses the FIX protocol v4.2 to achieve this functionality.

This document is intended to supplement QMTF FIX API Specification; the formats of supported messages and data types used in these messages are exactly same as defined in QMTF FIX API specification.

The QMTF FIX Drop interface is intended to be used by QMTF's client firms, in real time, to monitor the activity of their customers. Client order Execution Reports and Cancellation rejections are reported to the firm via the Fix Drop interface.

QMTF clients can only send session-level FIX messages to QMTF FIX Drop server. FIX DROP does not provide the ability to enter orders into Quote MTF. To enter orders into QMTF, client firms should use one of our connectivity protocols available separately (QMTF FIX API or QmtfDirect).

## 2. Architecture

Quote MTF FIX Drop format is transmitted using the Financial Information Exchange (FIX) protocol. QMTF client firms are required to log in to the FIX Drop application using a standard FIX **logon** message. Once logged in, the client will only need to send heartbeat message to FIX Drop Server to keep the session active. In the case when clients lost the connection to the FIX Drop host, they should reconnect to the session using the next sequence number. In the event that the sequence numbers are out of synch, the subscriber should send a resend request to retransmit any potentially lost data.



### 3. FIX Drop Configuration

Each QMTF customer may have multiple locations; each location may have multiple connections to QMTF Fix Gateway and multiple Fix Drop Copy connections to Fix Drop Server. Based on QMTF customer ID, Each FIX Drop connection can monitor their own firm's trading activities by receiving trade execution report and order cancel rejection messages.

#### 3.1 Connectivity

Clients' FIX Drop IP connectivity will be arranged with the extranet provider.

QMTF Fix Drop Server	IP Address	Address to be connected to	Supplied by QMTF
	TCP Port Number	Port to be connected to	Supplied by QMTF
SenderCompID			Assigned by QMTF
SenderSubID		For further use	
TargetCompID			Supplied by QMTF
TargetSubID		For further use	

#### 3.2 Sequence Numbers

Message Sequence Number (*MsgSeqNum*), both from client side and QMTF Fix Drop server side, will be reset to 1 at the start of each trading day.

Messages are processed in sequence order. If the *MsgSeqNum* in received message is lower than expected without *PossDupFlag* set to "Y" (Except *SequenceReset-Reset*) cause immediate logout. Ahead of sequence messages (other than a *Resend Request*) trigger a message recovery via a *Resend Request*.



## 4. Fix Protocol Messages

The general format of a FIX message is a standard header followed by the message body fields and terminated with a standard trailer.

### 4.1 Message Header

Format of Standard Message Header:

Tag	Field Name	Req'd	Contents	Description
8	BeginString	Y	String (FIX4.2)	FIX4.2 .Must be first field in message.
9	BodyLength	Y	Int	Length of message following <i>BodyLength</i> field up to and including the delimiter preceding the CheckSum field.  Must be second field in message.
34	MsgSeqNum	Y	Int	Message Sequence Number (Resets to 1 at the start of each trading day)
35	MsgType	Y	String	Must be third field in message  0 = HeartBeat  1 = TestRequest  2 = ResendRequest  3 = Reject  4 = SequenceReset  5 = Logout  8 = ExecutionReport  9 = OrderCancelReject  A = Logon  D = NewOrderSingle  F = OrderCancelRequest



43	PossDupFlag	N	Boolean	Indicates possible retransmission of message with this sequence number  Valid values:  Y=Possible duplicate  N=Original transmission
49	SenderCompID	Y	String	ID of sender. Assigned by QMTF for messages sent to QMTF.
50	SenderSubID	N	String	For further use
52	SendingTime	Y	GMT Date/Time	GMT date-time that message was sent.
56	TargetCompID	Y	String	ID of destination
57	TargetSubID	N	String	For further use
97	PossResend	N	Boolean	Indicates possible retransmission of message under a New sequence number
122	OrigSendingTime	N	GMT Date/Time	For messages with <i>PossDupFlag</i> = "Y", indicates time that message was first sent.
115	OnBehalfOfCompID	N	String	Trading partner company ID used when sending messages via a third party

## 4.2 Standard Message Trailer

Each message is terminated by a standard trailer. The trailer is used to segregate messages and contains the three digit character representation of the Checksum value.

Format of Standard Message Trailer:

Tag	Field Name	Req'd	Contents	Description
10	Checksum	Y	String	Modulo 256 checksum of all characters in message up to and including the delimiter preceding the Check Sum field.

## 4.3 Logon-From FIX Drop Client and QMTF FIX Drop Server

The Logon message authenticates a client establishing a connection to QMTF Fix Drop server. The Logon message must be the first message sent by clients requesting to initiate a FIX



session. The *HeartBtInt* value should be agreed upon by the client and QMTF FIX Drop Server, specified by the Logon initiator and echoed back by the QMTF FIX Drop Server.

Upon receipt of a Logon message, QMTF Drop Server authenticates the party requesting connection and issues a Logon message as acknowledgment that the connection request has been accepted. The acknowledgment Logon message can also be used by QMTF Drop Server to validate that the connection was established with the correct party. The normal message delivery should start until after the return Logon message is received.

Format of Logon message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = A
98	EncryptMethod	Y	Int	Method of encryption. '0' = None
108	HeartBtInt	Y	Int	Client Heartbeat Interval (In seconds)

#### 4.4 *HeartBeat*- From FIX Drop Client and QMTF FIX Drop Server

Format of HeartBeat message:

Tag	Field	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 0
112	TestReqID	Y	String	Required in response to a Test Request

#### 4.5 *TestRequest* - From FIX Drop Client and QMTF FIX Drop Server

The *TestRequest* message forces a Heartbeat message from the opposite side. The Test Request message checks sequence numbers or verifies communication line status. The opposite application responds to the *TestRequest* message with a Heartbeat message containing the *TestReqID*. The *TestReqID* verifies that the opposite side is generating the Heartbeat message as the result of the *TestRequest* message and not a normal time out. The opposite side includes the *TestReqID* in the resulting Heartbeat message.

Format of TestRequest message:



Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 1
112	TestReqID	Y	String	Auto-Generated Request ID

#### 4.6 Resend Request- From FIX Drop Client and QMTF FIX Drop Server

Format of Resend Request message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 2
7	BeginSeqNo	Y	Int	Message sequence number of first message in range to be resent
16	EndSeqNo	Y	Int	0 means +infinity

#### 4.7 Reject- From FIX Drop Client and QMTF FIX Drop Server (session-level)

Issue a Reject message when a message is received but cannot be properly processed because of a session-level rule violation. The receiver should disregard any message that is garbled, cannot be parsed, or fails a data integrity check. If the sender chooses to retransmit the rejected message, it should be assigned a new sequence number and sent with *PossResend=Y*.

Format of Reject message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 3
45	RefSeqNum	Y	Int	Sequence Number of Rejected Message
58	Text	N	String	Where possible, message to explain reason for rejection

#### 4.8 SequenceReset-Reset/GapFill- From FIX Drop Client and QMTF FIX Drop Server

The Sequence Reset message is used by the sending side to reset the incoming sequence number on the opposite side. This message has two modes:



- 1) **Sequence Reset-Gap Fill:** when GapFillFlag is Y
- 2) **Sequence Reset-Reset:** when GapFillFlag is N or not present

Use the *SequenceReset-Reset* mode *only* to recover from a disaster situation that cannot be otherwise recovered from though the Gap Fill mode. The *SequenceReset* message can be used in the following situations:

- 1) During normal resend processing, the sender may choose not to send a message (for example, an aged order). Use the Sequence Reset – Gap Fill mode to mark the place of that message.
- 2) During normal resend processing, a number of administrative messages are not resent. Use the *SequenceReset – GapFill* message to fill the sequence gap created.
- 3) In the event of an application failure, it may be necessary to force synchronization of sequence numbers on the sending and receiving sides through the use of *SequenceReset –Reset*.

The sender initiates the sequence reset. The message in all situations specifies *NewSeqNo* to reset as the value of the **next** sequence number immediately following the messages and/or sequence numbers being skipped.

If the *GapFillFlag* field is not present (or set to N), it can be assumed that the purpose of the sequence reset message is to recover from an out-of-sequence condition. Ignore the *MsgSeqNum* in the header.

If the *GapFillFlag* field is set to Y, the *MsgSeqNum* of the *SequenceReset-GapFill* message should represent the beginning *MsgSeqNum* in the Gap Fill range. The sequence reset can only increase the sequence number. If a *SequenceReset* is received attempting to decrease the next expected sequence number, reject the message and treat it as a serious error.

Format of SequenceReset message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 4
36	NewSeqNo	Y	Int	Next expected Sequence Number
123	GapFillFlag	N	Boolean	N = Sequence Reset, ignore MsgSeqNum



				Y = Gap Fill message, MsgSeqNum field valid
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#### 4.9 Logout- From FIX Drop Client and QMTF FIX Drop Server

Format of Logout message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 5
58	Text	N	String	Indicates reason for logout

#### 4.10 Execution Report -From QMTF to FIX Drop Client

Format of Execution Report message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 8
1	Account	N	String	10 char long, starts with "H" or "C" followed by ":", and account name.(Character without the quote).  Valid value start with "H" means house account; start with "C" means client account.  Default value is "H" without account name.
6	AvgPx	Y	Price	Calculated average price of all fills on this order. The number of decimal digits is up to 5.
11	ClOrdID	Y	String	Unique identifier for client's order within a trading day.
14	CumQty	Y	Qty	Total number of shares filled.
17	ExecID	Y	String	Unique identifier of Execution Report
20	ExecTransType	Y	Char	0 = New 1 = Cancel
22	IDSource	Y	String	Identifies class of alternative Security ID  Valid values:



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				4 = ISIN
30	LastMkt	N	Exchange	Market of execution for the last fill  (Default value is QMTF Exchange Code:79)
31	LastPx	N	Price	Price of this (last) fill. The number of decimal digits is up to 5.
32	LastShare	Y	Qty	Quantity of shares bought/sold on this (last) fill
37	OrderID	Y	String	QMTF Generated OrderID, will be unique for the day.
38	OrderQty	Y	Qty	Order Quantity
39	OrdStatus	Y	Char	Identifies current status of order.  Valid values: 0 = New 1 = Partial fill 2 = Fill 3 = Done for day 4 = Canceled 6 = Pending Cancel (e.g. result of Order Cancel Request) 7 = Stopped( Administrative action on an order) 8 = Rejected 9 = Suspended
41	OrigClOrdID	N	String	ClOrdID of the previous order (NOT the initial order of the day) as assigned by the QMTF, used to identify the previous order in cancel requests.
44	Price	Y	Price	Order execution price. The number of decimal digits is up to 5.
47	Rule80A	N	Char	Valid value:  A=Agency P=Principal. Default value is :P
48	SecurityID	Y	String	ISIN (IDSource =4)
54	Side	Y	Char	Valid values:  1 = Buy 2 = Sell



				5 = Sell short 8 = Cross (A broker executes a trade between 2 of its clients this will allow the broker to “print the trade”)
55	Symbol	Y	Char	QMTF published Uniform MTF Security Symbol or “[N/A]” string (without the quote).
58	Text	N	String	Free format text string
150	ExecType	Y	Char	Describes the specific Execution Report (i.e. PendingCancel) 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 6 = Pending Cancel (e.g. result of Order Cancel Request) 7 = Stopped ( Administrative action on an order) 8 = Rejected 9 = Suspended
151	LeavesQty	Y	Qty	Amount of shares open for further execution. LeavesQty = OrderQty - CumQty.
207	SecurityExchange	N	Exchange	Market Codes of the Exchanges (Reuters Exchange Codes)where the Security listed on, See <i>Appendix A</i>
9730	Liquidity Flag	N	Char	Required for Fill and Partial Fill Valid Value: Y=Added N=Remove

#### 4.11 Cancel Reject-From QMTF to FIX Drop Client

Format of Order Cancel Reject message:

Tag	Field Name	Req'd	Contents	Description
	<i>Standard Header</i>	Y		MsgType = 9



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11	ClOrdID	Y	String	Alphanumeric and Unique within a trading day.  Validation is case insensitive, so reusing an ID differing in case only will cause rejection.
37	OrderID	Y	String	Unique identifier for order as assigned by QMTF within a trading day. If CxlRejReason= "Unknown order", specify "NONE".
39	OrdStatus	Y	Char	Identifies current status of order. Valid values: 0 = New 1 = Partial fill 2 = Fill 3 = Done for day 4 = Canceled 6 = Pending Cancel (e.g. result of Order Cancel Request) 7 = Stopped( Administrative action on an order) 8 = Rejected 9 = Suspended
41	OrigClOrdID	Y	String	ClOrdID of the previous order (NOT the initial order of the day) as assigned by the QMTF, used to identify the previous order in cancel and cancel/replace requests.
58	Text	N	String	Free format text string
102	CxlRejReason	N	Int	Code to identify reason for cancel rejection 0= too late to cancel 1= unknown order 2= broker option 3= order already in Pending Cancel
434	CxlRejResponse to	N	Char	Identifies the type of request that this message is in response to.  Valid values:  1= Order Cancel Request



## **5 Appendix**

### **5.1 Market Codes**

For more detail about Reuters Exchange Code, please check:

<http://www.fixprotocol.org/specifications/exchanges.shtml>

### **5.2 ISO Currency Codes**

For more details about 3 letter ISO currency codes, please check:

[http://www.iso.org/iso/support/faqs/faqs\\_widely\\_used\\_standards/widely\\_used\\_standards\\_other/currency\\_codes/currency\\_codes\\_list-1.htm](http://www.iso.org/iso/support/faqs/faqs_widely_used_standards/widely_used_standards_other/currency_codes/currency_codes_list-1.htm)