



## FIX Taker API Protocol Specification

Version 1.0.5

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## Release Notes

Version	Changes	UAT Release	Production Release
1.0	Initial Version	2020-11-18	2020-12-07
1.0.1	Added missing ExecType and ExecTransactionType value.	2020-12-15	2020-12-16
1.0.2	Updated addresses and SSL Updated operating hours	2021-04-19	2021-04-19
1.0.3	Added AggregatedBook in MarketDataRequest	2021-07-16	2021-07-16
1.0.4	Added Security Definition List request and response messages Added optional SenderSubID tag to header	2021-11-02	2021-12-01
1.0.5	Fix incorrect message specs	NA	NA

## Introduction

### Overview

BlockFills operates a FIX Market Data and Order Entry gateway which allows users to receive Market Data, Send and Modify Orders, and Receive Order Execution and Status messages using FIX 4.4 messages. Note, however, that like many market participants, **BlockFills does NOT follow the FIX 4.4 specification exactly, so users should read this specification document carefully when building their applications to ensure compliance.** In particular, many off the shelf third party FIX libraries will require user modification in order to ensure compatibility with the BlockFills FIX protocol.

### Environments

BlockFills provides both Production and UAT environments for connection. UAT will provide a simulated market experience and can be used for testing new applications.

In order to connect to either environment, please contact the BlockFills technical team at [techsupport@blockfills.com](mailto:techsupport@blockfills.com) to retrieve credentials.

Environment	Address	Port	BlockFills Comp ID	Client Comp ID
UAT	fixuat.blockfills.com	<in credentials>	BLOCKFILLS	<in credentials>
Production	fix.blockfills.com	<in credentials>	BLOCKFILLS	<in credentials>

### SSL

SSL is available in production for those who desire it. This must be pre-arranged with the BlockFills team.

## Operating Hours

Production and UAT are each available 24/7/365.

## Message Limits

The BlockFills FIX gateway imposes a limit on incoming messages of 65535 bytes. Any message over this size will be ignored.

## Recovery

BlockFills does not support FIX recovery protocol. Out of order or skipped sequence numbers from the client will lead to a disconnection of the client session and cancel of all client orders and market data requests.

BlockFills will not respond to any Resend Request (35=2) message it receives.

## Sequence Number Reset

By default, all sequence numbers (for both sides) for a client session will be reset upon each new logon. Client logon messages with a sequence number other than 1 will be ignored.

Should a client require the ability to logon with a sequence number other than 1, they must inform BlockFills ahead of time, and this will result in the client only being able to use a given sender comp id with one connection at a time.

## Cancel on Disconnect

All client orders and market data requests will be cancelled upon logoff or disconnection of a FIX session.

## Session Protocol

### Logon

Upon connecting to the FIX gateway, the first message sent by the client must be a Logon message, as described below. Any other type of message or an invalid logon message will cause the client connection to be dropped.

### Heartbeat

Once connected and logged on, each side (the client and BlockFills) must send at least one message every 30 seconds. If no other message has been sent during such a period, a Heartbeat message as described below must be sent. BlockFills will disconnect any client connection that does not send a message for 2 such periods (i.e. after 60 seconds).

## Logoff

Before disconnecting from the FIX Gateway, the client should send a Logoff message to the FIX Gateway. BlockFills will respond with a Logoff message of its own and disconnect the client connection.

All orders and market data requests will be canceled upon logoff.

## Sequence Numbers

Each message sent in either direction must have a sequence number on it. Each sequence number must be exactly one higher than the sequence number of the previous message.

## Market Data Retrieval Protocol

The procedure for receiving market data is as follows.

1. Connect and establish a new session as described above.
2. Send to the FIX gateway a series of Market Data Request (35=V) messages describing the data desired.
  - a. Each message *\*must\** have a unique value for tag 262 (MDReqID). Entries with duplicate values will be rejected.
  - b. Each message *\*must\** request market data for only 1 symbol.
3. If the request is valid and accepted, BlockFills will begin streaming Market Data Snapshot Full (35=W) messages to the session.
4. If the request is invalid, BlockFills will respond with a Market Data Request Reject (35=Y) message.
5. If the client wishes to stop receiving a Market Data Snapshot Full stream, they must send a new Market Data Request (35=V) message with the same MDReqID, and with tag 263 (SubscriptionRequestType) equal to 2 (Unsubscribe).

## Market Data Book Format

By default, BlockFills sends “Aggregated” books to clients. In this case, an aggregated book means that each quote represents the volume weighted average price that a client would be able to sell to (for bids) or buy from (for asks) BlockFills any amount up to the quantity quoted. Note that these quotes are independent and cannot themselves be aggregated. This means that if you see a bid for 1 BTC at 22000 and a bid for 2 BTC at 20000, you could sell 1 BTC for 22000 *\*OR\** 2 BTC for 20000, *\*NOT\** 1 BTC for 22000 and an additional 2 for 20000.

If you prefer to receive a market data stream that is more similar to a typical public exchange feed, where each quote represents a separate order, you should use AggregatedBook (Tag266) = “N” in your market data request.

## Client Orders

Please note that as an OTC broker, BlockFills does not display client orders in its market data stream, so you will not be able to see your own orders in the stream.

## Order Entry Protocol

The procedure for entering and canceling orders and receiving status and fill messages is as follows.

1. To send a new order, the client should send a New Order Single (35=D) message as described below.
2. If this order is valid and accepted, BlockFills will respond with an Execution Report (35=8) message, with ExecType (150) equal to 0 and OrdStatus (39) equal to 0.
3. If this order is invalid, BlockFills will also respond with an Execution Report (35=8) message, but the ExecType (150) will be 8 and OrdStatus (39) will be 8. Reasons for the rejection will be given in the Text (58) field.
4. If the order is filled, BlockFills will send an Execution Report (35=8) message, with ExecType(150) of either 1 (if some of the order remains pending) or 2 (if the order is completely filled and no longer pending)
5. If the order is no longer pending for a reason other than a fill or rejection, BlockFills will send an Execution Report (35=8) message, with ExecType(150) and OrdStatus(39) of 4. This can happen in response to a client initiated or BlockFills initiated cancel of the order.
6. If the client wishes to cancel a pending order, they should send an Order Cancel Request (35=F) message as described below.

## Order Entry Restrictions

All clients will have restrictions on the size and frequency of orders that can be sent into the system. These are periodically updated by BlockFills to best accommodate current market conditions. Size limits are set per-asset and available by request. As-of this writing frequency limits are 50 order per second or 100 orders per 10 seconds.

## Message Definitions

### Supported Message Types

Type	Name	Description
0	Heartbeat	Send periodically to show you are still connected.
5	Logout	Used to terminate a session
8	Execution Report	Used to give status of a pending order
A	Logon	Used to initiate a session
D	New Order Single	Used to send a new order
F	Order Cancel Request	Used to cancel a pending order
V	Market Data Request	Used to request a market data stream
W	Market Data Snapshot	Used to give the current snapshot of a book
Y	Market Data Reject	Used to reject a market data stream request

x	Security List Request	Used to request the list of instruments traded
y	Security List Response	Used to convey the list of instruments traded to the client

## Standard Message Portions

### Message Header

Tag	Tag Name	Description	Required	Data Type
8	BeginString	The FIX version to use. Always "FIX.4.4"	Y	String
9	BodyLength	The number of bytes in the message.	Y	Integer
35	MsgType	The type of the message	Y	String
49	SenderCompID	The unique identifier of the party sending	Y	String
56	TargetCompID	The unique identifier of the party sent to	Y	String
34	MsgSeqNum	The unique sequence number	Y	Integer
52	SendingTime	The time the message was sent (in UTC)	Y	Timestamp
50	SenderSubID	Used to identify a specific message originator within a larger entity indicated by the SenderCompID	N	String

### Message Trailer

Tag	Tag Name	Description	Required	Data Type
10	Checksum	Checksum of the message contents	Y	String

## Message Descriptions

### Logon

This must be the first message that the client sends after establishing a new TCP connection. Any other message type or an invalid logon message will cause the connection to terminate.

Clients must wait to receive a Logon message back from BlockFills before sending any other messages.

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=A
108	HeartBtInt	The maximum time to wait before a Heartbeat message is sent in the absence of any other activity on the connection. Should always be set to 30	Y	Integer
553	Username	The username assigned to the client by BlockFills.	Y	String
554	Password	The password assigned to the client by BlockFills	Y	String
Message Trailer			Y	

### Logout

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=5
58	Text	If BlockFills initiates a logout, this may contain information on why	N	String
Message Trailer			Y	

## Heartbeat

Tag	Tag Name	Description	Required	Data Type
	Message Header		Y	MsgType=0
	Message Trailer		Y	

## Security Definition List Request

Tag	Tag Name	Description	Required	Data Type
	Message Header		Y	MsgType=x
320	SecurityRequestID	Unique Security Definition List request ID. This will be used in responses from BlockFills on Security List responses.	Y	Int
559	SecurityListRequestType	Always set to "4" (All Securities)	Y	Int
	Message Trailer			

## Security List Response

Tag	Tag Name	Description	Required	Data Type
	Message Header		Y	MsgType=y
320	SecurityRequestID	The request ID passed in the Security Definition List Request	Y	Int
322	SecurityResponseID	An ID generated by BlockFills	Y	Int
560	SecurityRequestResult	0 – Successful Request 1 – Invalid or unsupported request	Y	Int
Repeated Group <Instrument>				
146	NoRelatedSym	Number of instrument definitions in message	Y	Integer
	55	Symbol	Y	String
	1208	TickIncrement	Y	decimal
	110	MinQty	Y	Int
End Repeated Group <Instrument>				
	Message Trailer		Y	

## Market Data Request

Tag	Tag Name	Description	Required	Data Type
	Message Header		Y	MsgType=V
262	MDReqID	Unique Market Data Request ID. This will be used in responses from BlockFills on MD responses. Must be unique in the current FIX session. To unsubscribe, use this ID with tag 263=2 on a new Market Data Request Message	Y	String
263	SubscriptionRequestType	The type of subscription. Valid Values: 1 – Snapshot + Updates (Subscribe) 2 – Disable Snapshot + Updates (Unsubscribe)	Y	String
266	AggregatedBook	Y – Show Book as VWAP price for a given size (default) N – Show Book as single orders at prices.	N	String
Repeated Group <MdReqGrp>				
267	NoMDEntryTypes	Number of MDEntryTypes requested (Should always be 2)	Y	Integer
	269	MDEntryType	Y	String
		Type of MD requested. Valid Values: 0 – Bid 1 – Offer (Should always contain both 0 and 1)		
End Repeated Group <MdReqGrp>				
Repeated Group <InstrumentMDReqGrp>				
146	No Related Sym	Number of symbols requested (Should always be 1)	Y	Integer
	55	Symbol	Y	String
End Repeated Group <InstrumentMDReqGrp>				
	Message Trailer		Y	



## Market Data Snapshot

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=W
262	MDReqID	Unique Market Data Request ID. This is the same as the ID sent when requesting the data	Y	String
55	Symbol	The symbol (e.g. BTC/USD)	Y	String
Repeated Group <MDEntryGrp>				
268	NoMDEntries	Number of market data entries	Y	Integer
269	MDEntryType	Type of entry Valid Values: 0 – Bid 1 – Offer (Should always contain both 0 and 1)	Y	String
270	MDEntryPx	Price of the entry	Y	Price
271	MDEntrySize	Size of the entry	Y	Quantity
End Repeated Group < MDEntryGrp >				
Message Trailer			Y	

## Market Data Reject

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=Y
262	MDReqID	Unique Market Data Request ID. This is the same as the ID sent when requesting the data	Y	String
281	MDReqRejReason	Reason for rejection Valid Values: 0 – Unknown Symbol 1 – Duplicate MdReqID 3 – Insufficient Permissions	N	String
58	Text	Explanation of the rejection	N	String
Message Trailer			Y	

## New Order Single

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=D
11	ClOrdID	Client's order id for this request. Must be unique within a session	Y	String
60	TransactTime	Time the order was sent	Y	Timestamp
54	Side	Direction of the order Valid Values: 1 – Buy 2 – Sell	Y	String
55	Symbol	The symbol to trade (e.g. 'BTC/USD')	Y	String
38	OrderQty	Order quantity	Y	Quantity
40	OrdType	Type of order Valid Values: 1 – Market 2 – Limit	Y	String
44	Price	Price of order. Required for Limit orders	N	Price
59	TimeInForce	How long to keep order pending Valid values: 1 – Good till cancel 3 – Immediate or Cancel 4 – Fill or Kill	Y	String
Message Trailer			Y	

## Order Cancel Request

Message Header			Y	MsgType=F
11	ClOrdID	Client's order id for this cancel request. Must be unique within a session	Y	String

60	TransactTime	Time the cancel was sent	Y	Timestamp
41	OrigClOrdID	Order id of the order to be canceled.	Y	String
55	Symbol	The symbol to trade (e.g. 'BTC/USD')	Y	String
Message Trailer			Y	

## Execution Report

Tag	Tag Name	Description	Required	Data Type
Message Header			Y	MsgType=8
37	OrderID	BlockFills' order id for this order	Y	String
11	ClOrdID	Client's order id for this order. Must be unique within a session	Y	String
41	OrigClOrdID	Same as ClOrdID	Y	String
60	TransactTime	Time the execution transaction happened	Y	Timestamp
54	Side	Direction of the order Valid Values: 1 – Buy 2- Sell	Y	String
55	Symbol	The symbol to trade (e.g. 'BTC/USD')	Y	String
32	LastQty	Quantity transacted on this (last) fill for fill reports.	Y	Quantity
38	OrderQty	Original Order quantity	Y	Quantity
20	ExecTransType	Always "0" (New) - Note this is not a standard FIX4.4 Tag (it has been deprecated), but it WILL exist in ALL 35=8 Messages	Y	String
150	ExecType	Type of order execution report Valid Values: 0 - New 1 – Partial Fill 2 – Full Fill 4 – Canceled 8 – Rejected C - Expired	Y	String
39	OrdStatus	Current Status of the order Valid Values: 0 – New (pending) 1 – Partially Filled 2 – Filled 4 – Canceled 8 – Rejected C - Expired	Y	String
44	Price	Original Order price	N	Price
31	LastPx	Price transacted on this (last) fill for fill reports	Y	Price
151	LeavesQty	How much quantity remains pending on the order	Y	Quantity
Message Trailer			Y	

## Data Type Descriptions

Data Type	Description
String	String of UTF-8 characters. Can include any character except the field delimiter
Integer	Sequence of digits with no comma or decimal, and an optional sign (-) character
Timestamp	Point in time in UTC timezone with millisecond precision YYYYMMDD-HH:MM:SS.sss
Price	Sequence of digits and an optional single decimal point or negative with up to 10 digits after decimal.
Quantity	Same as price, but can't be negative

## Tag Value Descriptions

Tag	Tag Name	Description	Data Type
1	AvgPx	The volume weighted average of all execution prices on an order.	Price

8	BeginString	Always "FIX4.4" (without the quotes). Always the first token in the message.	String
9	BodyLength	Length of message from the third token onward. Always the second token.	Integer
10	Checksum	Sum of bytes of message up to check sum field, mod 256, in 3 digits.	String
34	MsgSeqNum	Monotonically increasing sequence number on each successive message	Integer
35	MsgType	<p>The type of message this is. Always the third token in the message.</p> <p>Valid Values:</p> <p>0 = Heartbeat</p> <p>5 = Logout</p> <p>8 = Execution Report</p> <p>A = Logon</p> <p>D = New Order Single</p> <p>F = Cancel Order Request</p> <p>V = Market Data Request</p> <p>W = Market Data Snapshot</p> <p>Y = Market Data Request Reject</p>	String