

IDX FIX 5.0 SPECIFICATION

Technical Specifications

Version 1.13.0



Indonesia Stock Exchange

member of  **WORLD FEDERATION
OF EXCHANGES**

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1 Introduction to X-stream INET FIX

This document provides the Financial Information Exchange (FIX) specification for the X-stream INET trading platform.

As part of the project, market participant feedback will be solicited for this specification. Comments received will be reviewed by IDX and Nasdaq and as a result, this specification may change.

X-stream FIX supports the 5.0 (SP1) protocol. The X-stream FIX server will also support FIX 4.4 clients. However, deprecated FIX 4.4 fields will be replaced with the equivalent FIX 5.0 fields.

It is assumed that the user of this manual is familiar with the FIX protocol standard (which can be found at www.fixprotocol.org).

2 Session Information

X-stream FIX expects the client application to fully comply with the FIX 5.0 specification.

The first message should be a logon message. No additional message should be transmitted until validation of the logon message and SenderCompID (49) is complete.

X-stream FIX does not support encryption or compression.

2.1 FIX Admin and Infrastructure Messages Supported

The standard FIX administrative messages are supported by the X-stream FIX server.

Table 1 – FIX Admin Messages Supported

MESSAGE NAME	MSGTYPE
Heartbeat	0
Logon	A
Test Request	1
Resend Request	2
Reject	3
Sequence Reset	4
Logout	5

Additionally the Business Reject Message is supported to indicate an application message that cannot be processed by the X-stream FIX server that cannot be rejected by another more suitable message.

Table 2 – FIX Infrastructure Messages Supported

HEADING	MSGTYPE
Business Message Reject	J

2.2 SenderCompID and TargetCompID

FIX clients should send these tags in the message header.

Table 3 – FIX Client to X-stream FIX Server

TAG	NAME	REQUIRED	FORMAT	COMMENTS
49	SenderCompID	Y	String	The ID of the FIX client agreed with the Exchange.
56	TargetCompID	Y	String	The ID of the Exchange.

A FIX client should expect to receive these tags in the message header from the X-stream FIX server at the Exchange.

Table 4 – X-stream FIX server to FIX Client

TAG	NAME	REQUIRED	FORMAT	COMMENTS
49	SenderCompID	Y	String	The ID of the Exchange.
56	TargetCompID	Y	String	The ID of the FIX client agreed with the Exchange.

3 FIX Application Messages

X-stream FIX supports the following FIX protocol application messages for Order Management.

Table 5 – FIX Inbound Application Messages

MESSAGE NAME	MSGTYPE	COMMENTS
New Order Single	D	Used by participants to submit orders for execution.
Order Cancel Request	F	Request to cancel a live order.
Order Cancel / Replace Request	G	Request to amend or cancel a live order.
Mass Quote	i	Two sided quotes for Liquidity Providers.
Order Mass Action Request	CA	Supported for cancelling orders at a firm or orderbook level.
Trade Capture Report	AE	Used in NegDeal workflow.

Table 6 – FIX Outbound Application Messages

MESSAGE NAME	MSGTYPE	COMMENTS
Execution Report	8	Accept or reject for message D, F or G, order expiry, trade or restatement of overnight orders - if GTD or GTC orders supported.
Order Cancel Reject	9	Failure of message F or G.
Mass Quote Acknowledgement	b	Response to Liquidity Provider Mass Quote message.
Order Mass Action Report	BZ	Acknowledgement to an Order Mass Action Request.
Trade Capture Report	AE	Used in NegDeal workflow.
Trade Capture Report Ack	AR	Used to as an explicit acknowledgment of the corresponding Trade Capture Report message.
PositionReport	AP	Current trading limit value for a firm.

4 FIX Message Definitions

4.1 Session

4.1.1 Logon (A)

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.

Table 7 – Logon

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = A	
98	EncryptMethod	Y	(Always unencrypted)	Int
108	HeartBtInt	Y	Note same value used by both sides	Int
141	ResetSeqNumFlag	N	Indicates both sides of a FIX session should reset sequence numbers. Tag is currently not supported and will be ignored.	Boolean
553	Username	Y/N	The FIX connector username	String
554	Password	Y/N	The FIX connector password. No security exists without transport level encryption.	String
925	NewPassword	N	New password for the FIX connector	String
58	Text	Y/N	Information eg password expiry and password change required etc	String
1137	DefaultApplVerID	Y	Specifies the service pack release being applied by default to the message at the session level. The only valid value is '8' = FIX50SP1.	String
Standard Trailer		Y		

If client HeartBtInt is out of this range, the server will reply the default value (30) if it is the first logon of the day.

4.1.2 Logout (5)

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.

The logout format is as follows.

Table 8 – Logout

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 5	
58	Text	Y/N	Information eg error message etc	String
Standard Trailer		Y		

4.1.3 Reject (3)

The reject message should be issued when a message is received but cannot be properly processed due to a session-level rule violation. An example of when a reject may be appropriate would be the receipt of a message with invalid basic data (e.g. MsgType=&) which successfully passes de-encryption, CheckSum and BodyLength checks. As a rule, messages should be forwarded to the trading application for business level rejections whenever possible.

Rejected messages should be logged and the incoming sequence number incremented.

The reject format is as follows.

Table 9 – Reject

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 3	
45	RefSeqNum	Y	MsgSeqNum of rejected message	SeqNum
371	RefTagID	N	The tag number of the FIX field being referenced.	Int
372	RefMsgType	N	The MsgType of the FIX message being referenced.	String
373	SessionRejectReason	N	Code to identify reason for a session-level Reject message.	Int
58	Text	N	Free format text string	String
Standard Trailer		Y		

4.1.4 Resend Request (2)

The resend request is sent by the receiving application to initiate the retransmission of messages. This function is utilized if a sequence number gap is detected, if the receiving application lost a message, or as a function of the initialization process.

The resend request can be used to request a single message, a range of messages or all messages subsequent to a particular message.

The resend request format is as follows.

Table 10 – Resend Request

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 2	
7	BeginSeqNo	Y		SeqNum
16	EndSeqNo	Y		SeqNum
Standard Trailer		Y		

4.1.5 Sequence Reset (Gap Fill) (4)

The Sequence Reset message has two modes: Gap Fill mode and Reset mode.

Gap Fill mode

Gap Fill mode is used in response to a Resend Request when one or more messages must be skipped over for the following reasons:

During normal resend processing, the sending application may choose not to send a message (e.g. an aged order). During normal resend processing, a number of administrative messages are skipped and not resent (such as Heart Beats, Test Requests). Gap Fill mode is indicated by GapFillFlag (tag 123) field = "Y". If the GapFillFlag field is present (and equal to "Y"), the

MsgSeqNum should conform to standard message sequencing rules (i.e. the MsgSeqNum of the Sequence Reset GapFill mode message should represent the beginning MsgSeqNum in the GapFill range because the remote side is expecting that next message sequence number).

Reset mode

Reset mode involves specifying an arbitrarily higher new sequence number to be expected by the receiver of the Sequence Reset-Reset message, and is used to establish a FIX session after an unrecoverable application failure.

Reset mode is indicated by the GapFillFlag (tag 123) field = "N" or if the field is omitted. The Sequence Reset format is as follows.

Table 11 – Sequence Reset

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 4	
123	GapFillFlag	N		Boolean
36	NewSeqNo	Y		SeqNum
Standard Trailer		Y		

4.1.6 Test Request (1)

The test request message forces a heartbeat from the opposing application. The test request message checks sequence numbers or verifies communication line status. The opposite application responds to the Test Request with a Heartbeat containing the TestReqID.

The TestReqID verifies that the opposite application is generating the heartbeat as the result of Test Request and not a normal timeout. The opposite application includes the TestReqID in the resulting Heartbeat. Any string can be used as the TestReqID (one suggestion is to use a timestamp string). The test request format is as follows.

Table 12 – Test Request

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 1	
112	TestReqID	Y		String
Standard Trailer		Y		

4.1.7 Heartbeat (0)

The Heartbeat monitors the status of the communication link and identifies when the last of a string of messages was not received.

When either end of a FIX connection has not sent any data for [HeartBtInt] seconds, it will transmit a Heartbeat message. When either end of the connection has not received any data for (HeartBtInt + "some reasonable transmission time") seconds, it will transmit a Test Request message. If there is still no heartbeat message received after (HeartBtInt + "some reasonable transmission time") seconds then the connection should be considered lost and corrective action be initiated. If HeartBtInt is set to zero then no regular heartbeat messages will be generated. Note that a test request message can still be sent independent of the value of the HeartBtInt, which will force a Heartbeat message.

Heartbeats issued as the result of Test Request must contain the TestReqID transmitted in the Test Request message. This is useful to verify that the Heartbeat is the result of the Test Request and not as the result of a regular timeout.

The heartbeat format is as follows.

Table 13 – Heartbeat

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
Standard Header		Y	MsgType = 0	
112	TestReqID	N	Required when the heartbeat is the result of a Test Request message.	String
Standard Trailer		Y		

4.2 Infrastructure

4.2.1 Business Message Reject (j)

The Business Message Reject message can reject an application-level message which fulfils session-level rules and cannot be rejected via any other means. Note if the message fails a session-level rule (e.g. body length is incorrect), a session-level Reject message should be issued.

Table 14 – Business Message Reject

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = j (lowercase)	
45	RefSeqNum	N	MsgSeqNum of rejected message	SeqNum
372	RefMsgType	Y	The MsgType of the FIX message being referenced.	String
379	BusinessRejectRefID	N	The value of the business-level "ID" field on the message being referenced. Required unless the corresponding ID field (see list above) was not specified.	String
380	BusinessRejectReason	Y	Code to identify reason for a Business Message Reject message. Code to identify reason for a Business Message Reject message.	Int
58	Text	Y	Free format text string	String
Standard Trailer		Y		

4.3 Application

In this section, the *Quantity* fields have a quantity defined in 'lots'.

4.3.1 New Order Single (D)

The new order message type is used by institutions wishing to electronically submit securities orders for execution.

Table 15 – New Order Single

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = D	
11	ClOrdID	Y	Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.). Uniqueness must be guaranteed within a single trading day. Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close	String

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
			periods, should ensure uniqueness across days, for example by embedding a date within the ClOrdID field. Maximum length 20 characters.	
Component block <Instrument>		Y	Insert here the set of "Instrument" (symbology) fields.	
Component block <Parties>		Y	Insert here the set of "Parties" fields. Possible PartyRole: 5 = Investor ID (mandatory) – contains SID 3 = Client ID	
581	AccountType	Y	Account Type associated with the order.	Int
529	OrderRestrictions	Y/N	Restrictions associated with an order. If more than one restriction is applicable to an order, this field can contain multiple instructions separated by space. X-stream will not validate this value but will be echo to downstream backoffice.	MultipleCharValue
21	HandlInst	N	Instructions for order handling on Broker trading floor	Char
38	OrderQty	Y	Quantity ordered. Lot size or number of shares if HandlInst indicates advertisement.	Qty
40	OrdType	Y	Indicates the type of order.	Char
44	Price	Y/N	Required for all limit order types – not required for Market orders.	Price
54	Side	Y	Side of the market.	Char
60	TransactTime	Y	Time of order creation by Trader. This field is not processed by the Exchange nor is it used as a mechanism to place an order at a future time.	UTCTimeStamp
59	TimeInForce	N	Indicates time in force techniques that are valid for the specified market segment. Absence of this field indicates a 'day' order.	Char
58	Text	N	Free Text. Maximum length 30 characters.	String
Standard Trailer		Y		

4.3.2 Order Cancel Request (F)

The order cancel request message requests the cancellation of **all** of the remaining quantity of an existing order. Note that the Order Cancel/Replace Request should be used to partially cancel (reduce) an order. The request will only be accepted if the order can successfully be withdrawn from the Exchange without executing.

A cancel request is assigned a ClOrdID and is treated as a separate entity. If rejected, the ClOrdID of the cancel request will be sent in the Cancel Reject message, as well as the ClOrdID of the actual order in the OrigClOrdID field. The ClOrdID assigned to the cancel request must be unique amongst the ClOrdID assigned to regular orders and replacement orders.

The live order, to be cancelled, contains the Client ID from the parties block on the New Order Single Message (D).

The format of the cancel request message is:

Table 16 – Order Cancel Request

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = F	
11	ClOrdID	Y	Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.) This identifier represents the unique identifier for the Order Cancel Request. Uniqueness must be guaranteed within a single trading day. Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close periods, should ensure uniqueness across days, for example by embedding a date within the ClOrdID field. Maximum length 20 characters.	String
37	OrderID	Y/N	Unique order identifier as assigned by X-stream that identifies the Order to be changed. Maximum length 18 characters.	String
41	OrigClOrdID	Y/N	ClOrdID(11) of the previous non-rejected order (NOT the initial order of the day) when cancelling or replacing an order. Required when referring to orders that were electronically submitted over FIX or otherwise assigned a ClOrdID. Maximum length 20 characters. Mandatory if OrderID (37) is not set.	String
Component block <Instrument>		Y	Insert here the set of "Instrument" (symbology) fields.	
54	Side	Y	Side of the market. This is not validated by X-stream on cancelling an order if the ClOrderID or OrderID is valid for the FIX user.	Char
60	TransactTime	Y	Time this order request was initiated. This field is not processed by the Exchange nor is it used as a mechanism to cancel an order at a future time.	UTCTimeStamp
Standard Trailer		Y		

4.3.3 Order Cancel/Replace Request (G)

The order cancel/replace request is used to change the parameters of an existing order.

Do not use this message to cancel the remaining quantity of an outstanding order, use the Order Cancel Request message for this purpose.

Cancel/Replace will be used to change any valid attribute of an open order (i.e. reduce/increase quantity, change limit price, change instructions, etc.).

Table 17 – Order Cancel/Replace Request

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = G	
11	ClOrdID	Y	Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.) (identified by SenderCompID (49) or OnBehalfOfCompID (5) as appropriate). Uniqueness must be guaranteed within a single trading day. Note that this identifier will be used in ClOrdID field of the Cancel Reject message if the replacement request is rejected. Maximum length 20 characters.	String
37	OrderID	Y/N	Unique identifier of most recent order as assigned by the Exchange. Maximum length 18 characters.	String
41	OrigClOrdID	Y/N	ClOrdID(11) of the previous non-rejected order (NOT the initial order of the day) when cancelling or replacing an order. Required when referring to orders that were electronically submitted over FIX or otherwise assigned a ClOrdID. Maximum length 20 characters. Mandatory if OrderID (37) is not set.	String
Component block <Instrument>		Y	Insert here the set of "Instrument" (symbology) fields. Must match original order	
Component block <Parties>		Y	Insert here the set of "Parties" fields. Possible PartyRole: 5 = Investor ID (mandatory) map to SID 3 = Client ID	
581	AccountType	Y	Account type associated with the replacement order.	Int
38	OrderQty	Y	Quantity ordered. This value represents the number of shares for equities or par, face or nominal value for Fixed Income instruments.	Qty
40	OrdType	Y	Indicates the type of order to change to (must follow rules of the Exchange).	Char
44	Price	Y/N	Required for all limit order types.	Price
54	Side	Y	Side of the market.	Char
60	TransactTime	Y	Time of execution/order creation. This field is not processed by the Exchange nor is it used as a mechanism to amend an order at a future time.	UTCTimeStamp

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
59	TimeInForce	N	Indicates time in force techniques that are valid for the specified market segment. Absence of this field indicates a 'day' order.	Char
58	Text	N	Free Text. Maximum length 30 characters.	String
Standard Trailer		Y		

4.3.4 Mass Quote (i)

The Mass Quote message supports only one QuoteSet per Mass Quote message along with one QuoteEntry. This allows the Liquidity Provider to enter a single buy sell quote pair.

A quote maybe cancelled with bid or offer prices and sizes all set to zero.

Table 18 – Mass Quote

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT		
StandardHeader		Y	MsgType = i			
117	QuoteID	Y	Unique identifier for quote	String		
Component block <Parties>		Y	Insert here the set of "Parties" fields. Possible PartyRole: 5 = Investor ID (mandatory) – contains SID 3 = Client ID			
581	AccountType	Y	Account type associated with the order.	Int		
Start of Component block, expanded in line < QuotSetGrp >						
296	NoQuoteSets	Y	The number of sets of quotes in the message – must be set to 1.	NumInGrp		
→	302	QuoteSetID	Y	Sequential number for the Quote Set. For a given QuoteID – assumed to start at 1. Must be the first field in the repeating group.	String	
→	304	TotNoQuoteEntries	Y	Total number of quotes for the quote set across all messages. Should be the sum of all NoQuoteEntries in each message that has repeating quotes that are part of the same quote set.	Int	
→ Start of Component block, expanded in line < QuotEntryGrp >						
→	295	NoQuoteEntries	Y	The number of quotes for this QuotSet that follow in this message. Must be set to 1.	NumInGrp	
→	→	299	QuoteEntryID	Y	Uniquely identifies the quote across the complete set of all quotes for a given quote provider.	String

TAG	FIELDNAME		REQ'D	COMMENTS	FORMAT
→	→	Component block <Instrument>	Y	Insert here the set of "Instrument" (symbology) fields defined in "Common Components of Application Messages."	
→	→	132 BidPx	N	Bid price/rate.	Price
→	→	133 OfferPx	N	Offer price/rate.	Price
→	→	134 BidSize	N	Quantity of bid.	Qty
→	→	135 OfferSize	N	Quantity of offer	Qty
→	End of Component block, expanded in line < QuotEntryGrp >				
End of Component block, expanded in line < QuotSetGrp >					
Standard Trailer			Y		

4.3.5 Order Mass Action Request (CA)

The Order Mass Action Request message can be used to request the cancellation of a group of orders that match the criteria specified within the request.

Table 19 – Order Mass Action Request

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = CA	
11	ClOrdID	Y	Unique ID of Order Mass Action Request as assigned by the institution. Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.) (identified by SenderCompID (49) or OnBehalfOfCompID (5) as appropriate). Uniqueness must be guaranteed within a single trading day. Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close periods, should ensure uniqueness across days, for example by embedding a date within the ClOrdID field.	String
526	SecondaryClOrdID	Y	Value assigned by issuer of Order Mass Action Request to uniquely identify the request. This ID will be returned on the Execution report. This provides the means to reference the initiator of the mass cancel.	String
1373	MassActionType	Y	Specifies the type of action requested. 3 = Cancel Orders	Int
1374	MassActionScope	Y	Specifies the scope of the action. 1 = All orders for a security (firm level) 7 = All orders (for a firm) 8 = Cancel particular board (for a firm)	Int

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
Component block <Instrument>		N	Insert here the set of "Instrument" (symbology) fields.	
60	TransactTime	Y	Time of mass order action request by Trader. This field is not processed by the Exchange nor is it used to schedule an action at a future time.	UTCTimeStamp
Standard Trailer		Y		

4.3.6 Execution Report (8)

The execution report message is used to:

1. Confirm the receipt of an order
2. Confirm changes to an existing order (i.e. accept cancel and replace requests)
3. Report order status information
4. Report fill information on working orders
5. Report fill information on tradeable or restricted tradeable quotes
6. Report on rejected order
7. Report on orders activated/deactivated by Market Control

Table 19, entitled 'Execution Report Returned Tags Based On Scenario' follows the Execution Report message description and provides information on which tags are returned in an Execution Report message based on various order management scenarios.

If an Order Status Request is issued for an order with an OrdStatus(39) of either Cancelled, Expired or Filled, only mandatory fields will be provided in resulting Execution Reports. Non-mandatory fields will not be provided.

Table 20 – Execution Report

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = 8	
11	ClOrdID	Y/N	Unique identifier for Order as assigned by the buy-side (institution, broker, intermediary etc.). Uniqueness must be guaranteed within a single trading day. Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close periods, should ensure uniqueness across days, for example by embedding a date within the ClOrdID field. Required when referring to orders that were electronically submitted over FIX or otherwise assigned a ClOrdID(11).	String
17	ExecID	Y	Unique identifier of execution message as assigned by the Exchange (will be 0 (zero) for ExecType=I (Order Status)).	String
21	HandlInst	N	Instructions for order handling on Broker trading floor	char

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
37	OrderID	Y	OrderID is required to be unique for each chain of orders.	String
198	SecondaryOrderID	Y	OrderID used in combination with the ITCH market data	String
41	OrigClOrdID	Y/N	Conditionally required for response to a Cancel or Cancel/Replace request	String
150	ExecType	Y	Type of Execution being reported. Describes the specific ExecutionRpt (i.e. Pending Cancel) while OrdStatus (39) will always identify the current order status (i.e. Partially Filled) and Trade Amend so TradeCorrect = G	Char
Component block <Parties>		N	Insert here the set of "Parties" (firm identification) fields.	
Component block <Instrument>		Y	Insert here the set of "Instrument" (symbology) fields.	
581	AccountType	Y	Account type.	Int
14	CumQty	Y	Total matched quantity.	Qty
31	LastPx	N	Price of this fill.	Price
32	LastQty	N	Quantity (e.g. shares) bought/sold on this fill.	Qty
38	OrderQty	N	Quantity ordered.	Qty
39	OrdStatus	Y	Describes the current state of an order.	Char
40	OrdType	N	OrderType	Char
44	Price	N	Price on order.	Price
54	Side	Y/N	Side of order.	Char
59	TimeInForce	N	Indicates time in force techniques that are valid for the specified market segment. Absence of this field indicates a 'day' order.	Char
60	TransactTime	Y	Time of execution/order creation (expressed in Universal Time Coordinated (UTC)).	UTCTimeStamp
75	TradeDate	N	Indicates date of trade referenced in this message in YYYYMMDD format.	LocalMktDate
126	ExpireTime	Y/N	Conditionally required if TimeInForce = GTD and ExpireDate is not specified.	UTCTimeStamp
64	SettlDate	N	Specific date of trade settlement Settlement Date is in YYYYMMDD format.	LocalMktDate

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
103	OrdRejReason	N	For optional use with ExecType = 8 (Rejected). Code to identify reason for order rejection.	Int
151	LeavesQty	Y	Quantities open for further execution. If the OrdStatus is Cancelled, DoneForTheDay, Expired or Rejected (in which case the order is no longer active) then LeavesQty could be 0, otherwise LeavesQty = OrderQty - CumQty.	Qty
880	TrdMatchID	N	Identifier assigned by the trading system for a trade. This is the X-stream trade id.	String
1057	AggressorIndicator	N	Used to identify whether the order initiator is an aggressor or not in the trade. Valid during continuous trading only.	Boolean
58	Text	N	Free Text. On an error condition, this will specify X-stream generated error message.	String
529	OrderRestrictions	Y/N	Restrictions associated with an order. If more than one restriction is applicable to an order, this field can contain multiple instructions separated by space. X-stream will not validate this value but will be echo to downstream backoffice.	MultipleCharacterValue
526	SecondaryCLOrdID	N	Value assigned by issuer of Order Mass Action Request cancel.	String
797	CopyMsgIndicator	N	Drop Copy	Boolean
Standard Trailer		Y		

4.3.7 Order Cancel Reject (9)

The order cancel reject message is issued by the Exchange upon receipt of a cancel request or cancel/replace request message which cannot be honoured. Filled orders cannot be changed.

When rejecting a Cancel/Replace Request (or Cancel Request), the Cancel Reject message should provide the CLOrdID which was specified on the Cancel/Replace Request (or Cancel Request) message for identification, and the OrigCLOrdId should be that of the last accepted order except in the case of CxlRejReason = "Other".

Refer to the Text (58) field for specific information on the reason for the rejection.

The order cancel reject message format is as follows.

Table 21 – Order Cancel Reject

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = 9	

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
11	ClOrdID	Y	Unique identifier for Order as assigned by sell-side (e.g. exchange, ECN). If CxlRejReason="Unknown order" specify "NONE".	String
37	OrderID	Y	Unique identifier of most recent order as assigned by the Exchange. If CxlRejReason="Unknown order", specify "NONE".	String
39	OrdStatus	Y	Describes the current status of the order	Char
41	OrigClOrdID	Y/N	ClOrdID(11) of the previous non-rejected order (NOT the initial order of the day) when cancelling or replacing an order. Required when referring to orders that were electronically submitted over FIX or otherwise assigned a ClOrdID.	String
60	TransactTime	Y	Time of order cancellation request rejection by the Exchange.	UTTimeStamp
102	CxlRejReason	Y	Code to identify reason for cancel rejection. Only '99' (Other) will be returned. Refer to 'text' (58) for exact reason for rejection.	Int
434	CxlRejResponseTo	Y	Identifies the type of request that a Cancel Reject is in response to.	Char
58	Text	N	Specify X-stream generated error message.	String
Standard Trailer		Y		

4.3.8 Mass Quote Acknowledgement (b)

Mass Quote Acknowledgement is used as the application level response to a Mass Quote message. The Mass Quote Acknowledgement contains a field for reporting the reason in the event that the entire quote is rejected (QuoteRejectReason[300]).

Table 22 – Mass Quote Acknowledgement

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = b	
117	QuoteID	Y	Unique identifier for quote	String
300	QuoteRejectReason	N	Reason Quote was rejected. Valid values : 1 = Unknown Symbol 9 = Not authorized to quote security 99 = Other	Int
58	Text	N	Free format text string	String
Start of Component block, expanded in line < QuotSetAckGrp >				
296	NoQuoteSets	Y	The number of sets of quotes in the message Will be set to 1.	NumInGrp

TAG	FIELDNAME		REQ'D	COMMENTS	FORMAT	
→	302	QuoteSetID	Y	Sequential number for the Quote Set. For a given QuoteID – assumed to start at 1. Must be the first field in the repeating group.	String	
→	304	TotNoQuoteEntries	N	Total number of quotes for the quote set across all messages. Should be the sum of all NoQuoteEntries in each message that has repeating quotes that are part of the same quote set. Required if NoQuoteEntries > 0	Int	
→	Start of Component block, expanded in line < QuotEntryAckGrp >					
→	295	NoQuoteEntries	Y	The number of quotes for this QuotSetAck that follow in this message. Will be set to 1.	NumInGrp	
→	→	299	QuoteEntryID	Y	Uniquely identifies the quote across the complete set of all quotes for a given quote provider.	String
→	→	Component block <Instrument>		Y	Instrument component received in QuotEntryGrp	
→	→	132	BidPx	N	Bid price/rate.	Price
→	→	133	OfferPx	N	Offer price/rate.	Price
→	→	134	BidSize	N	Quantity of bid	Qty
→	→	135	OfferSize	N	Quantity of offer	Qty
→	End of Component block, expanded in line < QuotEntryAckGrp >					
End of Component block, expanded in line < QuotSetAckGrp >						
Standard Trailer			Y			

4.3.9 Order Mass Action Report (BZ)

The Order Mass Action Report is used to acknowledge an Order Mass Action Request. Note that each order that is affected by the Order Mass Action Request is acknowledged with a separate Execution Report for each order.

Table 23 – Order Mass Action Report

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = BZ	
11	ClOrdID	N	ClOrdID provided on the Order Mass Action Request.	String
526	SecondaryClOrdID	N	Assigned by order originator.	String

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
1369	MassActionReportID	Y	Unique Identifier for the Order Mass Action Report.	String
1373	MassActionType	Y	Specifies the type of mass action requested. 3 = Cancel Orders	Int
1374	MassActionScope	Y	Specifies scope of Order Mass Action Request. 1 = All orders for a security (firm level) 7 = All orders (firm level) 8 = All orders for board (firm level)	Int
1375	MassActionResponse	Y	Indicates the action taken by the counterparty order handling system as a result of the Action Request. 0 = Rejected – see MassActionRejectReason 1 = Accepted	Int
1376	MassActionRejectReason	N	Indicates why Order Mass Action Request was rejected. Required if MassActionResponse = 0 Reason Order Mass Action Request was rejected.	Int
60	TransactTime	N	Equal to time of Order Mass Action Request.	UTCTimeStamp

4.3.10 Request for Positions (AN)

The RequestForPositions message is used to enquire a snapshot for the current Trading Limit values for the User’s Firm.

Table 24 – RequestForPositions

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = AN	
710	PosReqID	Y	Unique identifier for the Request for Positions	String
724	PosReqType	Y	Only 1 (Trades) is supported	Int
263	SubscriptionRequestType	N	Only 0 (snapshot) is supported	Int
Component block <Parties>		Y	Ignored.	Parties
715	ClearingBusinessDate	Y	Ignored.	UTCDate
60	TransactTime	Y	Ignored.	Local Mkt Date
Standard Trailer		Y		

4.3.11 Position Report (AP)

A PositionReport(AP) reports the current trading limit value for a firm. An initial report or reports may be available at the start of the day when a connector first logs on.

When a Connector logs on the Logon reply will have a message sequence number that reflects any stored PositionReport(s) that have already been generated. The Connector can request these with a ResendRequest.

Table 25 – Position Report

TAG	FIELDNAME		REQ'D	COMMENTS	FORMAT
StandardHeader			Y	MsgType = AP	
721	PosMaintRptID		Y	Unique ID for Report	String
710	PosReqID		Y	As supplied in request	String
715	ClearingBusinessDate		Y	Today's date	UTCDate
Component block <Parties>			Y	EnteringFirm	Parties
Start of Component block < PositionAmountData >					
753	NoPosAmt		Y/N	Specifies the number of repeating Position Amounts. Set to max of 9.	NumInGrp
→	707	PosAmtType	N	POOL-LMT, EQTY-LMT and DRVS-LMT POOL-TRD, EQTY-TRD and DRVS-TRD POOL-USD, EQTY-USD and DRVS-USD Available = LMT - TRD - USD	String
→	708	PosAmt	N	Amount value	Int
End of Component block, expanded in line < LinesOfTextGroup >					
Standard Trailer			Y		

4.3.12 Trade Capture Report [AE]

The Trade Capture report will be used to facilitate the NegDeal process.

Table 26 – Trade Capture Report

TAG	FIELDNAME		REQ'D	COMMENTS	FORMAT
StandardHeader			Y	MsgType = AE	
571	TradeReportID		Y	Unique identifier for the Trade Capture Report.	String
17	ExecID		N	Exchanged assigned Execution ID	String
487	TradeReportTransType		N	Identifies Trade Report message transaction type 0 = New 1 = Cancel	Int
856	TradeReportType		N	Type of Trade Report 0 = Submit 1 = Alleged 2 = Accept 3 = Decline	Int

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
572	TradeReportRefID	Y/N	The TradeReportID that is being referenced for some action, such as confirmation or cancellation.	String
574	MatchType	N	The point in the matching process at which this trade was matched.	String
880	TrdMatchID	N	Identifier assigned by the trading system for a trade.	String
64	SettlDate	Y/N	T+3 (YYYYMMDD)	localMktDate
Component block <FinancingDetails>		Y	Insert here the set of "FinancingDetails"	
Component block <Instrument>		Y	Insert here the set of "Instrument" (symbology) fields.	
31	LastPx	Y	Trade Price.	Price
32	LastQty	Y	Trade Quantity	Qty
60	TransactTime	Y/N	Time the transaction represented by this Trade Capture Report occurred	UTCTime Stamp
Component block <TrdCapRptSideGrp>		Y	Insert here the set of "TrdCapRptSideGrp" fields.	
StandardTrailer		Y		

4.3.13 Trade Capture Report Ack [AR]

The Trade Capture Report Ack will be used by the Exchange to acknowledge or reject a Trade Capture Report from a counterparty.

Table 27 – Trade Capture Report Ack

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
StandardHeader		Y	MsgType = AR	
571	TradeReportID	Y	Unique identifier for the Trade Capture Report	String
487	TradeReportTransType	N	Identifies Trade Report message transaction type 0 = New 1 = Cancel	Int
856	TradeReportType	N	0 = submit 1 = Alleged 2 = Accept 3 = Decline 6 = Trade Report Cancel	Int
939	TrdRptStatus	N	0 = Accepted 1 = Rejected	Int

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
17	ExecID	N	Exchanged assigned Execution ID (Trade Identifier)	String
60	TransactTime	N	Time the transaction represented by this Trade Capture Report Ack occurred	UTCTime Stamp
751	TradeReportRejectReason	N	Reason for Rejection of Trade Report	Int
572	TradeReportRefID	N	The TradeReportID that is being referenced for some action, such as confirmation or cancellation	String
58	Text	N	If TradeReportRejectReason is set, text of reason	String
StandardTrailer		Y		

4.4 Unique ClOrderId (11)

X-stream will only check for uniqueness of ClOrdId(11) on New Order Single, Order Cancel/Replace Request and Order Cancel Request messages for open or traded orders. If a firm has multiple FIX connections, then ClOrdId(11) should be unique across all FIX connections for that firm.

4.5 Order Identification

A FIX order is identified by either by its current ClOrderId using OrigClOrdID (41) for each FIX connection, or by X-stream OrderID (37) for the whole system.

OrderID(37) should be used to identify an order between FIX connections, even if they belong to the same firm. The X-stream (Exchange) OrderID is guaranteed to be unique for all order durations including over-night orders.

If X-stream OrderID (37) is used, OrigClOrdID(41) should be set to "NONE". OrderID (37) is unique for every order.

Note: OrderID (37) will change after order amendment.

SecondaryOrderID (198) is an extension provided as part of the upgrade to X-stream INET Trading as it does not change if an order is amended and does not lose orderbook priority. It will correspond to the order id on the ITCH Total View feed.

4.6 Order Modification via Order Cancel/Replace Request

Order modification is accomplished through the use of the Order Cancel/Replace Request message. An order modification is not a delta change to order instructions. The values set in the Cancel Replace represent the requested new order state. An Execution Report will relay the new state of the order.

A new ClOrderId must be provided in the Order Cancel/Replace Request message.

4.7 Order Cancellation

- If the user wishes to cancel a single previously sent order, the Order Cancel Request message is used.
- Execution Reports are issued relaying the status of every canceled order.
- In some cases orders may be cancelled in the system without prior request by the user. These will be sent as unsolicited Execution Reports to the client.

- The system will generate cancel messages (Execution Report –IOC/Fok Order Cancel) for every IOC and FoK order.

4.8 On-Behalf Order Management

The FIX session may be used for Order Management in two ways:

- The FIX userId is both operator and user for the transaction.
- The FIX userId is the operator Id operates 'on-behalf of' the user given in SenderSubID (50).

Generally X-stream INET FIX connections operate in 'on-behalf of' mode.

A FIX order message with SenderSubID (50) will send two usernames to the X-stream backend – OperatorId and UserId. X-stream first checks that the OperatorId, the owner of the FIX session, has permission to enter messages 'on-behalf' of the UserId from the SenderSubID (50). The transaction is then processed with the permissions of UserId.

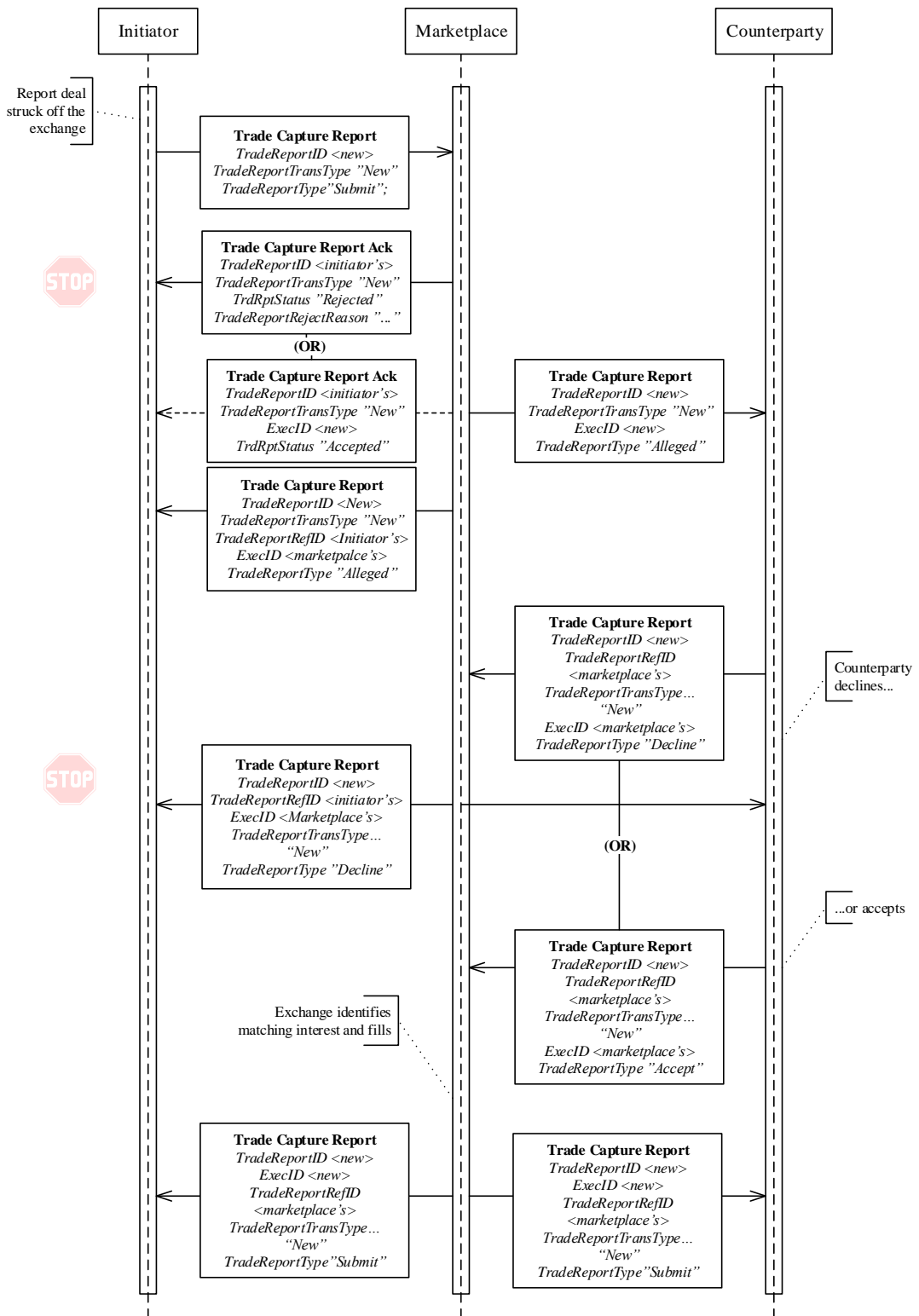
4.9 Trade Capture Workflow

The Trade Capture Report workflow in *Figure 1 - Trade Capture Report workflow diagram* is used to facilitate the NegDeal process for both two-sided and crossing.

In the two-sided Negotiation Deal, the initiator must specify Entering Firm, Contra Firm and Contra Trader in the Parties block.

In the Crossing Negotiation Deal, the initiator must specify Entering Firm and Contra Firm in the Parties block. Both Entering Firm and Contra Firm must be the same.

Figure 1 - Trade Capture Report workflow diagram



Appendix A - Standard Header and Trailer

A.1 Standard Header

The standard message header format is as follows.

Table 28 – Standard Message Header

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
8	BeginString	Y	Identifies beginning of new message and protocol version. ALWAYS FIRST FIELD IN MESSAGE.	String
9	BodyLength	Y	Message length, in bytes, forward to the CheckSum field. ALWAYS SECOND FIELD IN MESSAGE.	Int
35	MsgType	Y	Defines message type. ALWAYS THIRD FIELD IN MESSAGE.	String
1128	AppVerID	N	Specifies the service pack release being applied at message level.	String
49	SenderCompID	Y	Assigned value used to identify firm sending message.	String
56	TargetCompID	Y	Assigned value used to identify receiving firm.	String
115	OnBehalfOfCompID	N	Unused.	String
116	OnBehalfOfSubID	N	Unused.	String
144	OnBehalfOfLocationID	N	Unused.	String
128	DeliverToCompID	N	Unused.	String
34	MsgSeqNum	Y	Integer message sequence number.	Int
50	SenderSubID	N	Assigned value used to identify specific message originator (desk, trader, etc.).	String
142	SenderLocationID	N	Unused.	String
57	TargetSubID	N	Assigned value used to identify specific individual or unit intended to receive message.	String
143	TargetLocationID	N	Unused.	String
129	DeliverToSubID	N	Unused.	String
145	DeliverToLocationID	N	Unused.	String
43	PossDupFlag	N	Indicates possible retransmission of message with this sequence number. N = Original transmission. Y = Possible duplicate.	Boolean
97	PossResend	N	Indicates that message may contain information that has been sent under another sequence number. N = Original transmission. Y = Possible resend.	Boolean

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
52	SendingTime	Y	Time of message transmission (always expressed in UTC).	UTCTimestamp
122	OrigSendingTime	N	Original time of message transmission (always expressed in UTC) when transmitting orders as the result of a resend request.	UTCTimestamp
347	MessageEncoding	N	Unused.	String
369	LastMsgSeqNumProcessed	N	Unused.	Int

A.2 Standard Trailer

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

The standard message trailer format is as follows.

Table 29 – Standard Message Trailer

TAG	FIELD NAME	REQ'D	COMMENTS	FORMAT
10	Checksum	Y	(Always unencrypted, always last field in message)	String

Appendix B - Component Blocks

B.1 Instrument (symbology) Component Block

The Instrument component block contains all the fields commonly used to describe a security or instrument. Typically the data elements in this component block are considered the static data of a security which may be commonly found in a security master database (reference database). The Instrument component block can be used to describe any asset type supported by FIX.

The Instrument component, when part of a transaction that is inbound to the Exchange may only contain the following fields:

- Symbol (55)
- SecuritySubType (762)

X-stream may support a non-ASCII representation of a security. In such a case the tags EncodedSecurityDescLen (350) and EncodedSecurityDesc (351) are used with MessageEncoding (347) set in the FIX Standard Header.

Table 30 – Instrument Component with Block Symbol and SecuritySubType

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
55	Symbol	Y	Marketplace identifier for a security.	String
762	SecuritySubType	Y/N	In X-stream, this field is used to specify board on which Symbol is listed. Default is RG (regular), NG (negdeal), TN (cash) and RF (regular future) RO (regular option).	String

Table 31 – Instrument Component with X-stream Orderbook Identifier

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
48	SecurityID	Y	Unique marketplace assigned integer identifier for an order book. This provides a fast lookup for the orderbook.	String

B.2 Parties Component Block

The Parties component is used to provide identifiers for parties involved in the transaction (e.g. firm, trader, Exchange, etc.).

The Parties component block is used to identify and convey information on the entities both central and peripheral to the financial transaction represented by the FIX message containing the Parties Block. The Parties block allows many different types of entities to be expressed through use of the PartyRole field and identifies the source of the PartyID through the PartyIDSource. Entities can encompass:

Table 32 – Parties Component Block

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT	
453	NoPartyIDs	N	Repeating group below should contain unique combinations of PartyID, PartyIDSource, and PartyRole	NumInGrp	
→	448	PartyID	N	Used to identify source of PartyID. Required if PartyIDSource is specified. Required if NoPartyIDs > 0.	String

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT	
→	447	PartyIDSource	N	Used to identify class source of PartyID value. Required if PartyID is specified. Required if NoPartyIDs > 0.	Char
→	452	PartyRole	N	Identifies the type of PartyID (e.g. Executing Broker). Required if NoPartyIDs > 0.	Int

B.3 TrdCapRptSideGrp Component Block

The TrdCapRptSideGrp component block contains two Parties block for each side.

Table 33 – TrdCapRptSideGrp Component Block

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT	
552	NoSides	Y	Number of sides.	NumInGrp	
→	54	Side	Y	Side of order.	Char
→	581	AccountType	Y/N	Account Type associated with the order mandatory except for on the counterparty side in two-sided negdeal	int
→	Component block <Parties>	Y	Insert here the set of "Parties" fields. Possible PartyRole values are listed in <i>Table 35 – Field Enumerations Sorted By Tag Name</i> . When confirming a Trade Capture Report, it is required that one of the Parties fields contains the ContraTrader (37) PartyRole.		

B.4 FinancingDetails Component Block

The FinancingDetails component block contains DeliveryType to identify the settlement delivery type.

Table 34 – FinancingDetails Component Block

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
919	DeliveryType	Y	Identifies type of settlement: 1 = Delivery Versus Payment 2 = Delivery Free of Payment 3 – 5 reserved.	Int

Appendix C - Field Enumerations Sorted By Tag Name

Table 35 – Field Enumerations Sorted By Tag Name

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
581	AccountType	Y	1 = Customer (Indonesian) 3 = House (Indonesian) 100 = Asing (Foreigner) 101 = Asing House (Foreigner)	Int
529	OrderRestrictions	Y/N	q = Individual investor – Online r = Individual investor – Sharia s = Institutional investor – DMA t = Institutional Investor – Sharia u = Sales – Online v = Sales – Sharia w = Sales – Remote x = Dealer – Sharia y = Dealer – Remote z = House – Remote Q = Individual investor – Online – Automated Ordering R = Individual investor – Sharia – Automated Ordering S = Institutional investor – DMA – Automated Ordering T = Institutional Investor – Sharia – Automated Ordering U = Sales – Online – Automated Ordering V = Sales – Sharia – Automated Ordering W = Sales – Remote – Automated Ordering X = Dealer – Sharia – Automated Ordering Y = Dealaer – Remote – Automated Ordering Z = House – Remote – Automated Ordering	MultipleCharValue
1057	AggressorIndicator	N	Used to identify whether the order initiator is an aggressor or not in the trade. Valid values: Y = Order initiator is aggressor N = Order initiator is passive	Boolean

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
380	BusinessRejectReason	Y	Valid values: 0 = Other 1 = Unknown ID 2 = Unknown Security 3 = Unknown Message Type 4 = Application not available 5 = Conditionally required field missing 6 = Not Authorized	Int
102	CxlRejReason	N	Identifies the reason for the cancel rejection. Valid values: 1 = Unknown order 6 = Duplicate order (e.g. duplicate CLOrdID) '99' = Other. Refer to returned Text (58) field for exact reason for rejection.	Int
434	CxlRejResponseTo	Y	Identifies the type of request that a Cancel Reject is in response to. Valid values are: 1 = Order Cancel Request 2 = Order Cancel/Replace Request	Char
150	ExecType	Y	Type of Execution being reported. Describes the specific ExecutionRpt (i.e. Pending Cancel) while OrdStatus (39) will always identify the current order status (i.e. Partially Filled) Valid values: 0 = New 3 = Done for day 4 = Cancelled 5 = Replaced 6 = Pending Cancel (e.g. result of Order Cancel Request) 7 = Stopped 8 = Rejected C = Expired F = Trade (partial fill or fill) H = Trade Cancel	Char
574	MatchType	N	1 = One-Party Trade Report 2 = Two-Party Trade Report	String
103	OrdRejReason	N	For optional use with ExecType = 8 (Rejected). Code to identify reason for order rejection. Valid values are: 1 = Unknown symbol 5 = Unknown order 6 = Duplicate order (e.g. duplicate CLOrdID) 11 = Unsupported order characteristic 13 = Incorrect quantity	Int

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
			15 = Unknown account(s) 99 = Other. Refer to returned Text (58) field for exact reason for rejection.	
39	OrdStatus	Y	Describes the current state of an order. Valid values are: 0 = New 1 = Partially filled 2 = Filled 4 = Cancelled 5 = Replaced 8 = Rejected C = Expired *** Nasdaq Defined *** X = Order with trigger in the book but not active (e.g. Order has not been triggered).	Char
40	OrdType	Y	Indicates the type of order. Valid values are: 1 = Market – The Price (44) field is not used, the order executes against the best prices order on the opposite side. 2 = Limit – The Price (44) field is specified and the order will execute at this price or better.	Char
21	HandlInst	N	Instructions for order handling on Broker trading floor Valid values are: 2 = advertisement	Char
447	PartyIDSource	N	Used to identify class source of PartyID value. Required if PartyID is specified. Required if NoPartyIDs > 0. Valid values are: C = Participant identifier	Char
452	PartyRole	N	Identifies the type of PartyID (e.g. Executing Broker). Required if NoPartyIDs > 0. Valid values are: 3 = Client ID 5 = Investor ID (mandatory) – contains SID 7 = Entering Firm 17 = Contra Firm 36 = Entering trader 37 = Contra trader (for 2-sided NegDeal)	Int

TAG	FIELDNAME	REQ'D	COMMENTS	FORMAT
54	Side	Y	<p>Optional qualifier used to indicate the side of the market. Valid values are:</p> <p>1 = Buy</p> <p>2 = Sell</p> <p>5 = Short Sell</p> <p>M = Margin (only buy) – IDX custom value</p> <p>P = Price Stabilisation (only buy) – IDX custom value</p>	Char
59	TimeInForce	N	<p>Indicates time in force techniques that are valid for the specified market segment.</p> <p>Valid values are:</p> <p>0 = Day</p> <p>3 = Immediate or Cancel (IOC)</p> <p>4 = Fill or Kill (FoK)</p> <p>*** Nasdaq Defined ***</p> <p>S = Session</p>	Char

Appendix D - FIX Data Types

Data types (with the exception of those of type "data") are mapped to ASCII strings as follows.

Table 36 – FIX Data Types

int	<p>Sequence of digits without commas or decimals and optional sign character (ASCII characters "-", "0" - "9"). The sign character utilizes one byte (i.e. positive int is "99999" while negative int is "-99999"). Note that int values may contain leading zeros (e.g. "00023" = "23").</p> <p>Examples:</p> <p>723 in field 21 would be mapped int as 21=723 .</p> <p>-723 in field 12 would be mapped int as 12=-723 </p> <p>The following data types are based on int.</p>	
	Length	int field representing the length in bytes. Value must be positive.
	TagNum	int field representing a field's tag number when using FIX "Tag=Value" syntax. Value must be positive and may not contain leading zeros.
	SeqNum	int field representing a message sequence number. Value must be positive.
	NumInGrp	int field representing the number of entries in a repeating group. Value must be positive.
	DayOfMonth	int field representing a day during a particular month (values 1 to 31).
float	<p>Sequence of digits with optional decimal point and sign character (ASCII characters "-", "0" - "9" and "."); the absence of the decimal point within the string will be interpreted as the float representation of an integer value. All float fields must accommodate up to fifteen significant digits. The number of decimal places used should be a factor of business/market needs and mutual agreement between counterparties. Note that float values may contain leading zeros (e.g. "00023.23" = "23.23") and may contain or omit trailing zeros after the decimal point (e.g. "23.0" = "23.0000" = "23" = "23.").</p> <p>Note that fields which are derived from float may contain negative values unless explicitly specified otherwise. The following data types are based on float.</p>	
	Qty	float field capable of storing either a whole number (no decimal places) of "shares" (securities denominated in whole units) or a decimal value containing decimal places for non-share quantity asset classes (securities denominated in fractional units).
	Price	float field representing a price. Note the number of decimal places may vary. For certain asset classes, prices may be negative values. For example, prices for options strategies can be negative under certain market conditions (see FIX Specifications Volume 7: FIX Usage by Product for asset classes that support negative price values).
	PriceOffset	float field representing a price offset, which can be mathematically added to a "Price". Note the number of decimal places may vary and some fields such as LastForwardPoints may be negative.
	Amt	float field typically representing a Price times a Qty
	Percentage	float field representing a percentage (e.g. 0.05 represents 5% and 0.9525 represents 95.25%). Note the number of decimal places may vary.
char	<p>Single character value, can include any alphanumeric character or punctuation except the delimiter. All char fields are case sensitive (i.e. m != M).</p> <p>The following fields are based on char.</p>	
	Boolean	char field containing one of two values:

	'Y' = True/Yes 'N' = False/No
String	Alpha-numeric free format strings, can include any character or punctuation except the delimiter. All String fields are case sensitive (i.e. morstatt != Morstatt).
	MultipleCharValue string field containing one or more space delimited single character values (e.g. 18=2 A F).
	MultipleStringValue string field containing one or more space delimited multiple character values (e.g. 277=AV AN A).
	Country string field representing a country using ISO 3166 Country code (2 character) values (see FIX Specifications Volume 6 - Appendix 6-B).
	Currency string field representing a currency type using ISO 4217 Currency code (3 character) values (see FIX Specifications Volume 6 - Appendix 6-A).
	Exchange string field representing a market or exchange using ISO 10383 Market Identifier Code (MIC) values (see FIX Specifications Volume 6 - Appendix 6-C).
	MonthYear string field representing month of a year. An optional day of the month can be appended or an optional week code. Valid formats: YYYYMM YYYYMMDD YYYYMMWW Valid values: YYYY = 0000-9999; MM = 01-12; DD = 01-31; WW = w1, w2, w3, w4, w5.
	UTCTimestamp string field representing Time/date combination represented in UTC (Universal Time Coordinated, also known as "GMT") in either YYYYMMDD-HH:MM:SS (whole seconds), YYYYMMDD-HH:MM:SS.sss (milliseconds), or YYYYMMDD-HH:MM:SS.ssssss (microseconds) format. Colons, dash and period required. Valid values: * YYYY = 0000-9999, MM = 01-12, DD = 01-31, HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second) (without milliseconds). * YYYY = 0000-9999, MM = 01-12, DD = 01-31, HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), sss=000-999 (indicating milliseconds). * YYYY = 0000-9999, MM = 01-12, DD = 01-31, HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), ssssss=000000-999999 (indicating microseconds). Leap Seconds: Note that UTC includes corrections for leap seconds, which are inserted to account for slowing of the rotation of the earth. Leap second insertion is declared by the International Earth Rotation Service (IERS) and has, since 1972, only occurred on the night of Dec. 31 or Jun 30. The IERS considers March 31 and September 30 as secondary dates for leap second insertion, but has never utilized these dates. During a leap second insertion, a UTCTimestamp field may read "19981231-23:59:59", "19981231-23:59:60", "19990101-00:00:00". (see http://tycho.usno.navy.mil/leapsec.html)
UTCTimeOnly string field representing Time-only represented in UTC (Universal Time Coordinated, also known as "GMT") in either HH:MM:SS (whole seconds),	

	<p>HH:MM:SS.sss (milliseconds), or HH:MM:SS.ssssss (microseconds) format. Colons and period required. This special-purpose field is paired with UTCDateOnly to form a proper UTCTimestamp for bandwidth-sensitive messages.</p> <p>Valid values:</p> <p>HH = 00-23, MM = 00-60 (60 only if UTC leap second), SS = 00-59. (without milliseconds)</p> <p>HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), sss=000-999 (indicating milliseconds).</p> <p>HH = 00-23, MM = 00-59, SS = 00-60 (60 only if UTC leap second), sss=000000-999999 (indicating microseconds).</p>
UTCDateOnly	<p>string field representing Date represented in UTC (Universal Time Coordinated, also known as "GMT") in YYYYMMDD format. This special-purpose field is paired with UTCTimeOnly to form a proper UTCTimestamp for bandwidth-sensitive messages.</p> <p>Valid values:</p> <p>YYYY = 0000-9999, MM = 01-12, DD = 01-31.</p>
LocalMktDate	<p>string field representing a Date of Local Market (as opposed to UTC) in YYYYMMDD format. This is the "normal" date field used by the FIX Protocol.</p> <p>Valid values:</p> <p>YYYY = 0000-9999, MM = 01-12, DD = 01-31.</p>
Data	<p>string field containing raw data with no format or content restrictions. Data fields are always immediately preceded by a length field. The length field should specify the number of bytes of the value of the data field (up to but not including the terminating SOH).</p> <p>Caution: The value of one of these fields may contain the delimiter (SOH) character. Note that the value specified for this field should be followed by the delimiter (SOH) character as all fields are terminated with an "SOH".</p>

Appendix E - Field length

The recommended maximum length for String data type in the inbound FIX messages are as follows.

Table 37 – Field length

TAG	NAME	LENGTH
11	ClOrdID	20
37	OrderID	18
41	OrigClOrdID	20
49	SenderCompID	30
55	Symbol	21
56	TargetCompID	30
112	TestReqID	16
117	QuoteID	20
299	QuoteEntryID	20
448	PartyID	20
526	SecondaryClOrdID	20
529	OrderRestrictions	5
553	Username	30
554	Password	10
571	TradeReportID	21
572	TradeReportRefID	21
710	PosReqID	20
762	SecuritySubType	3
925	NewPassword	10