

LTSE

MEMO FIX (US Equities)

v2.0

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1 Overview

The MEMO FIX protocol is the application layer message standard used to facilitate the electronic exchange of information related to securities transactions placed on the exchange. MEMO FIX is a text key=value formatted protocol based on the FIX Trading Community FIX 5.0 SP2 specifications.

2 Transport Layer

The MEMO FIX protocol uses the Transmission Control Protocol (TCP) to provide reliable and ordered delivery of messages between clients and MEMO servers.

3 Session Layer

The MEMO FIX protocol uses the [FIXT 1.1 specification](#) session messages to establish and maintain a session.

4 Application Layer

MEMO FIX protocol application layer messages are based on the [Financial Information Exchange \(FIX\) Protocol version 5.0](#) and are key=value text encoded.

5 Headers and Trailers

All messages begin with a *Standard Header* and must end with a *Standard Trailer*.

5.1 Standard Header

The *Standard Header* must contain the required fields listed and can contain any of the non-required listed fields:

Tag	Field Name	Req'd	Meaning/Values
8	BeginString	Y	"FIXT.1.1" This must be the first field in the message.
9	BodyLength	Y	The length of the FIX message. This must be the second field in the message.
35	MsgType	Y	The type of message. This must be the third field in the message.
49	SenderCompID	Y	The sender's id, assigned at on-boarding time.
56	TargetCompID	Y	ISO 10383 Market Identifier Code
115	OnBehalfOfCompID	N	MPID of the originating firm if this message is being delivered by a third party(i.e. sponsored access).
128	DeliverToCompID	N	MPID of the firm targeted to receive this message. This tag will be sent on any responses where the original request contained a value in OnBehalfOfCompID(115).
34	MsgSeqNum	Y	The message sequence number.
52	SendingTime	Y	The time of message transmission in Universal Time coordinated. See UTCTimestamp in FIX 5.0 SP2 specification.
43	PossDupFlag	N	Always required for retransmitted messages, whether prompted by the sending system or as the result of a resend request.
97	PossResend	N	Required when message may be duplicate of another message sent under a different sequence number.

Tag	Field Name	Req'd	Meaning/Values
122	OrigSendingTime	N	Required for message resent as a result of a ResendRequest. If data is not available set to same value as SendingTime.

5.2 Standard Trailer

The *Standard Trailer* must contain the CheckSum field.

Tag	Field Name	Req'd	Meaning/Values
10	Checksum	Y	The message checksum. This must be the last field in the message.

6 Messages

This section defines the messages that make up the protocol. For each message, it lists the fields in the message by tag id and name, whether the field is required and acceptable values or description of the field. The exchange will reject any messages that contain unspecified tags.

6.1 Session Messages

This section defines the session level messages supported.

6.2 Heartbeat (Sent by exchange and client)

The Heartbeat message confirms the status of the communication link.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 0
112	TestReqID	N	Identifier included in Test Request message to be returned in resulting Heartbeat.
	Standard Trailer	Y	

6.3 Logon

The logon message is sent by the client to establish a connection to the exchange. The logon message must be the first message sent by the application requesting to initiate a FIX session.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = A
98	EncryptMethod	Y	Required to be 0.
108	HeartBtInt	Y	Heartbeat interval, in seconds. An interval of 0 indicates there are no heartbeats. The maximum supported interval is 90 seconds.
141	ResetSeqNumFlag	N	The exchange will reject logon if this flag is 'Y'. Market operations can reset the inbound and outbound sequence numbers upon request.
1137	DefaultApplVerID	Y	Required to be 9. ("FIX50SP2")

Tag	Field Name	Req'd	Meaning/Values
1408	DefaultCstmAppVerID	C	The schema version, required as of version 1.9, is used to ensure consistency across message formats.
	Standard Trailer	Y	

Note: In version 1.9 and beyond, if the DefaultCstmAppVerID (tag 1408) is invalid, the client connection is dropped.

6.4 Logout

The logout message initiates or confirms the termination of a FIX session. This may be sent by the exchange or the client.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 5
58	Text	N	Text explaining reason for logout.
	Standard Trailer	Y	

6.5 Reject

The reject message should be issued when a message is received but cannot be properly processed due to a session-level rule violation.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 3
45	RefSeqNum	Y	Reference message sequence number.
371	RefTagID	N	The tag number of the FIX field that was rejected.
372	RefMsgType	N	The MsgType of the FIX message that was rejected.
58	Text	N	Explanatory reason.
	Standard Trailer	Y	

6.6 ResendRequest

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

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 2
7	BeginSeqNo	Y	Message sequence number of first message in range to be resent.
16	EndSeqNo	Y	Message sequence number of last message in range to be resent.
	Standard Trailer	Y	

6.7 SequenceReset

The sequence reset message is used to reset the incoming sequence number on the opposing side.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 4
123	GapFillFlag	N	Indicates that this message is replacing administrative or application messages which will not be resent.
36	NewSeqNo	Y	New sequence number
	Standard Trailer	Y	

6.8 TestRequest

The test request message forces a heartbeat from the opposing application. The opposite application responds to the Test Request with a Heartbeat containing the TestReqID.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 1
112	TestReqID	Y	Identifier included in Test Request message to be returned in resulting Heartbeat.
	Standard Trailer	Y	

6.9 BusinessMessageReject

The exchange will not send any BusinessMessageReject messages. Instead, a reject message for session level issues or the appropriate application reject message will be sent. The exchange does support receiving BusinessMessageReject messages from the client.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = j
45	RefSeqNum	N	Reference message sequence number.
380	BusinessRejectReason	Y	Code to identify reason for a Business Message Reject message.
372	RefMsgType	Y	The MsgType of the FIX message that was rejected.
58	Text	N	Explanatory reason.
	Standard Trailer	Y	

7 Message Field Types

7.1 Party Role Type(FIX tag 452)

Identifies the type or role of the PartyID in the parties repeating group.

Value (Tag 452)	Name (Tag 448)
1	Executing Firm (MPID)

7.2 Party ID Source Type(FIX tag 447)

PartyIDSource is encoded as a char type.

Value	Name
'C'	Generally Accepted MPID

7.3 Order Reject Reason Code(FIX tag 103)

Reason code for order rejection.

Value	Name
1	InvalidSymbol
2	ExchangeClosed
3	OrderExceedsLimit
6	DuplicateOrder
18	InvalidPriceIncrement
19	NoNBBOAvailable
20	NotionalValueExceedsThreshold
22	BlockSellShortRiskRuleViolated
23	HardToBorrowSecurityRiskRuleViolated
27	MaxNotionalValuePerOrderRiskRuleViolated
99	Other
100	MissingSymbol
101	MissingLocateReqd
102	InvalidLocateReqd
103	MissingClOrdId
104	InvalidClOrdId
105	MissingSide
106	InvalidSide
107	MissingOrderQty
108	InvalidOrderQty
109	MissingOrderType
110	InvalidOrderType
111	MissingTimeInForce
112	InvalidTimeInForce
113	MissingOrderCapacity
114	InvalidOrderCapacity
115	MissingExecInst
116	MissingLimitPrice
117	InvalidLimitPrice
118	MissingMaxFloor
119	InvalidMaxFloor
120	MissingReserveReplenishAmountType
121	InvalidReserveReplenishAmountType
122	MissingReserveReplenishTimeType
123	InvalidReserveReplenishTimeType
124	MissingRandomReplenishmentValue
125	InvalidRandomReplenishmentValue
126	InvalidRandomReplenishValueForReserveType
127	MissingRepriceFrequencyType
128	InvalidRepriceFrequencyType
129	MissingRepriceBehaviorType
130	InvalidRepriceBehaviorType
131	InvalidRepriceBehaviorForRepriceFrequency
132	MissingCustomerCapacityType
133	InvalidCustomerCapacityType

Value	Name
134	MissingExpireTime
135	InvalidExpireTime
136	MissingPegType
137	InvalidPegType
138	InvalidModifierForOrderType
139	InvalidModifiersCombination
140	InvalidTradingSessionForOrderType
141	InvalidTimeInForceForOrderType
142	InvalidModifierForPegType
143	InvalidMinQty
144	InvalidExecInst
145	InvalidMpid
146	SymbolHaltedOrPaused
147	BlockISORiskRuleViolated
148	BlockSessionRiskRuleViolated
149	BlockNonTestSymbolsRiskRuleViolated
150	MaxSharesPerOrderRiskRuleBreach
151	PricePercentCollarRiskRuleViolated
152	PriceValueCollarRiskRuleViolated
153	MaxADVPercentPerOrderRiskRuleBreach
154	DailyGrossNotionalExposureRiskRuleBreach
155	DailyNetNotionalExposureRiskRuleBreach
156	MaxNumDuplicateOrdersRiskRuleBreach
157	MaxOrderRateRiskRuleBreach
158	RestrictedSecurityRiskRuleViolated
159	InvalidSelfTradePreventionConfiguration
160	InvalidSelfTradePreventionType
161	InvalidRiskGroupId
162	FirmDisabled
163	MPIDDisabled
164	AccountDisabled
165	CannotTradeNonTestSymbol
166	MissingFirm
167	MissingAccount
168	MissingMPID
169	MissingRiskGroup
170	DailyMarketOrderGrossNotionalExposureRiskRuleBreach
171	DailyMarketOrderNetNotionalExposureRiskRuleBreach
172	MissingDispMethodType
173	MissingFirmRiskSetting
174	InvalidAccountMPIDToFirm
175	InvalidPegOffsetValue
176	InvalidDispMethodType
177	(Reserved)
178	(Reserved)
179	MissingSTPGroupId
180	InvalidSTPGroupId
181	InvalidLnkId
182	MissingLocateBroker
183	InvalidLocateBroker
184	InvalidExtendedExecInst

7.4 Last Liquidity Ind Type(FIX tag 851)

Indicator denoting whether the referenced order removed liquidity from or added liquidity to the book.

Value	Name
1	Add
2	Remove
3	Routed
4	Auction

7.5 Execution Details Type(custom FIX tag 21038)

Additional information about the execution. If more than one execution detail is included, then each character is separated by a space.

Value	Name	Details
'E'	OnEntry	The order immediately removed liquidity upon entry
'J'	NBBO Joiner	The order resulted in a quote that is joining the NBBO
'S'	NBBO Setter	The order resulted in a quote that is setting the NBBO
'H'	Hidden Quantity	The quantity executed on the order was hidden
'D'	Displayed Quantity	The quantity executed on the order was displayed
'M'	Midpoint Order	The order is a midpoint peg order
'I'	Immediate Order	The order is a non-bookable type that must interact immediately, e.g. a market or IOC order
'R'	RetailOrder	The order is a retail order
'm'	TradeAtMidpoint	The trade occurred at the midpoint price (note: this value may NOT be included with the 'M' indicator if the midpoint peg order was constrained to its limit price at the time of the trade and unable to execute at the midpoint)
'P'	PriceImprovement	The order received price improvement on this trade
'r'	TradedAgainstRetail	The trade executed on a retail order. NOTE: This value is only supported for some markets.
'h'	TradedAgainstHidden	The trade executed on a non-displayed order. NOTE: This value is only supported for some markets.

7.6 Auction Type(custom FIX tag 21039)

Identifies the auction type if an order was executed in an auction. Encoded as a character.

Value	Name
'O'	Open
'C'	Close
'I'	IPO
'H'	Halt
'P'	VolatilityPause

7.7 AuctionId (custom FIX tag 21040)

Unique identifier that identifies the auction for an auction trade.

7.8 Cxl Rej Reason Code(FIX tag 102)

Code to identify reason for cancel rejection.

Value	Name
0	TooLateToCancel
1	UnknownOrder
3	OrderAlreadyPendingCancelOrReplace
6	DuplicateClOrdID
18	InvalidPriceIncrement
99	Other
100	MissingSymbol
101	MissingLocate
102	MissingClOrdID
103	InvalidOrderQuantity
104	InvalidSymbol
105	InvalidLimitPrice
107	SymbolHaltedOrPaused
108	OrderSizeExceedsLimit
109	ExceededMaxOrderNotionalAmt
110	MissingOrigOrderIdentifiers
111	AmbiguousOrigOrderIdentifiers
112	OrigOrderSymbolNotMatchingRequestSymbol
113	UnsupportedDisplayQuantityChange
114	UnsupportedOrdTypeChange
115	UnsupportedSideChange
116	UnsupportedQuantityChange
117	InvalidLocate
118	ExchangeClosed
119	BlockSessionRiskRuleViolated
120	BlockSellShortRiskRuleViolated
121	MaxSharesPerOrderRiskRuleBreach
122	NoNBBOAvailable
123	MaxNotionalValuePerOrderRiskRuleBreach
124	MaxADVPercentPerOrderRiskRuleBreach
125	PricePercentCollarRiskRuleViolated
126	PriceValueCollarRiskRuleViolated
127	HardToBorrowSecurityRiskRuleViolate
128	InvalidSide
129	InvalidOrdType
130	InvalidClOrdId
131	InvalidLnkId
132	MissingLocateBroker
133	InvalidLocateBroker

7.9 Cancel Reason Code(custom FIX tag 21004)

Reason code for order cancellation.

Value	Name
0	Other
1	UserRequestedCancel
4	EndOfTrading

Value	Name
5	LimitUpLimitDown
6	Halted
7	ExchangeSupervisory
8	OrderExpired
9	LockOrCrossBook
10	SelfTradePrevention
11	InsufficientQuotes
12	NonCompliantRegNmsPrice
13	ParticipantDisconnect
14	OrderNotBookable
15	TradeProtectionLimits
16	UnableToRoute
17	FirmDisabled
18	MPIDDisabled
19	AccountDisabled
20	NotionalExposureRiskBreached
21	InvalidCLOrdId
22	NoContraLiquidity
23	OutsideCollarPriceRange
24	NonCompliantRegShoPrice

7.10 Extended Restatement Reason(custom FIX tag 21022)

If the Restatement is being sent because of Self Trade Prevention, this field contains the TYPE of Self Trade Prevention that caused the order to be reduced/canceled.

Value	Name
0	None
1	SetNBBO
2	JoinedNBBO
3	SelfTradeCancelNewest
4	SelfTradeCancelOldest
5	SelfTradeDecrementAndCancel
6	SelfTradeCancelBoth
7	SelfTradeCancelSmallest

7.11 RepriceFrequencyType (custom FIX tag 21020)

Defines the type of reprice used when marking an order for repricing.

RepriceFrequencyType is encoded as an int type.

Value	Name	Description
0	SingleReprice	An order will be repriced upon entry.
1	ContinuousReprice	An order will continuously be repriced after being booked.
2	None	No repricing will be done.

7.12 RepriceBehaviorType(custom FIX tag 21021)

Defines the market conditions for which to apply repricing for.

RepriceBehaviorType is encoded as an int type.

Value	Name	Description
1	RepriceLockCancelCross	An order will only be repriced if the market is locked, cancel if market is crossed.
2	RepriceLockRepriceCross	An order will be repriced if the market is locked or crossed.

7.13 SelfTradePreventionType (custom FIX tag 21001)

Defines the desired behavior in the event of a wash.

MatchTradePreventionType is encoded as an int type.

Value	Name
0	CancelNewest
1	CancelOldest
2	DecrementAndCancel
3	CancelBoth
4	CancelSmallest

7.14 SideType (FIX tag 54)

Defines the side of an order.

SideType is encoded as a char type.

Value	Name
'1'	Buy
'2'	Sell
'5'	SellShort
'6'	SellShortExempt

7.15 TimeInForceType (FIX tag 59)

Defines the time during which an order is eligible for execution.

TimeInForceType is encoded as a char type.

Value	Name
'0'	Day
'2'	At The Open
'3'	Immediate Or Cancel (IOC)
'4'	Fill Or Kill
'7'	At The Close
'A'	Good For Time
'F'	Regular Hours Only

7.16 OrdType (FIX tag 40)

Indicates the type of an order.

OrdType is encoded as a char type.

Value	Name
'1'	Market
'2'	Limit
'P'	Pegged

7.17 OrderCapacity (FIX tag 528)

Designates the capacity of the firm placing the order.

OrderCapacity is encoded as a char type.

Value	Name
'A'	Agency
'P'	Principal
'R'	RisklessPrincipal

7.18 CustOrderCapacity (FIX tag 582)

Capacity of the customer placing the order.

CustOrderCapacity is encoded as an int type.

Value	Name
1	Member trading for their own account
5	Retail Customer

7.19 ExecInst (FIX tag 18)

Instructions for order handling on the exchange. If more than one instruction is required then separate each character by a space.

Value	Name
6	ParticipateDoNotInitiate (Post only)
f	IntermarketSweep
h	ExternalRoutingNotAllowed (BookOnly)

7.20 ExtendedExecInst (FIX tag 21041)

Instructions for order handling on the exchange. If more than one instruction is required then separate each character by a space.

Value	Name
L	LateLimitAuction
H	NonAttestedRetail

7.21 Peg Price Type (FIX tag 1094)

Defines the type of peg.

Value	Name
2	MidPricePeg
5	Primary Peg

7.22 Display Method (FIX tag 1084)

Defines the replenishment size behavior for a reserve order. Selecting 'Undisclosed' will result in a fully hidden order. This tag should be specified for Pegged and Market orders. This tag should not be specified for fully displayed Limit orders. Currently if this tag is not specified for a Pegged or Market order the default value shall be Undisclosed. This is not recommended as this behavior may change in a future revision of the specification.

Value	Name
1	Initial
3	RandomizeBySize
4	Undisclosed (hidden)

7.23 Reserve Replenish Time Type (custom FIX tag 21006)

Defines the replenishment timing behavior for a reserve order.

Value	Name
1	Immediate
2	Random

7.24 StpGroupID (FIX tag 2362)

Unique identifier of self trade prevention group.

Value	Name
0	Prevents orders from the same firm trading with each other.
1	Prevents orders from the same MPID trading with each other.
2	Prevents orders from same SenderCompID trading with each other.
3 to 65534	Prevents orders with the same StpGroupID across a firm from trading with each other.

7.25 Exec Restatement Reason (FIX tag 378)

Value	Name
3	RepricingOrder
5	Partial decline of OrderQty (38)
99	Other (When value is 99 (Other), see the ExtendedRestatementReason for more information.)

7.26 CxlRejResponseTo (FIX tag 434)

Identifies the type of request that a Cancel Reject is in response to.

Value	Name
1	OrderCancelRequest
2	OrderCancelReplaceRequest

8 Session Management

The client establishes a session by opening a TCP connection to an exchange Memo FIX port, (server) and sending a FIX logon message with the appropriate credentials and MsgSeqNum set. Values for SenderCompID and TargetCompID will be provisioned by the exchange and will be verified by the server upon receipt of the Logon message. If the Logon message is accepted, the server will send a Logon response. If the MsgSeqNum on the inbound logon is less than expected by the server, the logon will be rejected.

If the MsgSeqNum on the inbound logon is greater than expected, the server will reply with a Logon and shall send a ResendRequest for the missing messages. The client application should gap fill any session level messages and may opt to resend any business level messages with the PossDup flag set (see [FIXT 1.1 specification](#) Message Recovery). For example, if a client opts to resend a stale NewOrderSingle during a gap fill, the server will process the message, and that order may become eligible for execution.

When the client application receives the Logon response it should compare the MsgSeqNum to the expected server sequence number. If a gap is detected, it should send a ResendRequest message to the server. The server will resend any missing business level messages with the PossDup flag set. Instead of resending session-level messages, the server will issue sequence reset messages with the GapFillFlag set.

If the session gets interrupted intra-day and cancel on disconnect is enabled for the port, the server will cancel all orders associated with that session. The Canceled execution reports generated by the cancel on disconnect shall be stored by the server, and will be available for resending when the client re-establishes the session. If cancel on disconnect is not provisioned, then any orders that were active when the connection was closed shall be eligible for execution. By default cancel on disconnect is enabled.

When the client terminates a session it should send a Logout message and wait for the Logout response from the server before closing the connection. This procedure facilitates gap detection and processing before the connection is closed.

At the end of the trading day, the FIX inbound and outbound sequence numbers are set to 1. All inbound FIX messages shall be rejected if a FIX session has not been established. The server will send a Logout if it receives a message without PossDup flag set, and with a MsgSeqNum less than the expected client sequence number. In the event of a failover to a backup port, the backup port will maintain the sequence numbers of the primary, and it will have the ability to replay any messages that the primary port sent.

The server will process any business level messages with the PossResend flag set. The server will reject any messages that it has already seen-- for example, NewOrderSingle or CancelReplace messages with duplicate ClOrdID.

9 Application Messages From Exchange to Client

9.1 OrderCancelReject

The order cancel reject message is used by the exchange to indicate a cancel or a cancel/replace request cannot be honored.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 9

Tag	Field Name	Req'd	Meaning/Values
37	OrderID	Y	Unique identifier for an Order as assigned by the exchange. Uniqueness must be guaranteed within a single trading day. If the ClOrdID on the CancelRequest is unknown this field will contain "Unknown".
11	ClOrdID	Y	Unique identifier from the cancel or cancel/replace message.
41	OrigClOrdID	C	As specified on cancel/replace request.
39	OrdStatus	Y	The status of the order after this reject was applied. 0 - New 1 - PartialFilled 2 - Filled 4 - Canceled 6 - PendingCancel 8 - Rejected C - Expired E - PendingReplace
434	CxlRejResponseTo	Y	Identifies the type of request that a Cancel Reject is in response to.
102	CxlRejReason	C	Code to identify reason for cancel rejection.
583	LnkID	N	As stated in the order as long as the order is a live order.
	Standard Trailer	Y	

9.2 ExecutionReport

The ExecutionReport message is used to communicate order events and the current state of an order.

9.2.1 New Order Acknowledge

The New Order Acknowledge execution report is a response to the [NewOrderSingle](#) message in the event the order was accepted by the exchange. This message echos back to the requester the accepted state of the order.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	As stated in the order.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	0 - New
39	OrdStatus	Y	0 - New
55	Symbol	Y	As stated in the order.
65	SymbolSfx	N	As stated in the order.
54	Side	Y	As stated in the order.
40	OrdType	Y	As stated in the order.
38	OrderQty	Y	As stated in the order.
44	Price	N	As stated in the order.
59	TimeInForce	Y	As stated in the order.
528	OrderCapacity	Y	As stated in the order.

Tag	Field Name	Req'd	Meaning/Values
582	CustOrderCapacity	N	As Stated in the order.
18	ExecInst	Y	As stated in the order.
21041	ExtendedExecInst	N	Additional instructions for order handling on exchange. If more than one instruction is required, then separate each character by a space.
211	PegOffsetValue	N	As stated in the order
1094	PegPriceType	N	As stated in the order.
126	ExpireTime	N	As stated in the order.
110	MinQty	N	As stated in the order.
1138	DisplayQty	N	As stated in the order.
1084	DisplayMethod	N	As stated in the order.
21006	ReserveReplenishTime	N	As stated in the order. This is a custom tag.
1087	DisplayMinIncr	N	As stated in the order.
114	LocateReqd	N	Must always be 'N' if present in the order.
21020	RepriceFrequency	N	As stated in the order. This is a custom tag.
21021	RepriceBehavior	N	As stated in the order. This is a custom tag.
2362	StpGroupID	N	As stated in the order.
21001	SelfTradePrevention	N	As stated in the order. This is a custom tag.
21005	RiskGroupID	N	As stated in the order. This is a custom tag.
151	LeavesQty	Y	Quantity open for further execution.
14	CumQty	Y	0
6	AvgPx	Y	0
60	TransactTime	Y	The time at which the transaction occurred. UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated in the order.
5700	LocateBroker	N	As stated on the order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.2 Rejected Order

The Rejected Order execution report is sent in response to a [NewOrderSingle](#) message that was rejected by the exchange.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
11	ClOrdID	Y	As stated in the order.
37	OrderID	Y	This will be the same value as ExecID.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	8 - Rejected
39	OrdStatus	Y	8 - Rejected
55	Symbol	Y	As stated in the order.
65	SymbolSfx	N	As stated in the order.
54	Side	Y	As stated in the order.

Tag	Field Name	Req'd	Meaning/Values
151	LeavesQty	Y	0
14	CumQty	Y	0
6	AvgPx	Y	0
44	Price	N	As stated in the order.
38	OrderQty	Y	As stated in the order.
40	OrdType	Y	As stated in the order.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
103	RejectReason	Y	Reason code for order rejection.
583	LnkID	N	As stated in the order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.3 Trade

The Trade execution report is sent when a trade occurs.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	Unique identifier for an Order as assigned by the client. Uniqueness must be guaranteed within a single trading day.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	F - Trade (partial fill or fill).
39	OrdStatus	Y	1 - Partially filled 2 - Filled
55	Symbol	Y	As stated in the order.
65	SymbolSfx	N	As stated in the order.
54	Side	Y	As stated in the order.
32	LastQty	Y	Quantity (e.g. shares) bought/sold on this (last) fill.
31	LastPx	Y	Price of this (last) fill.
151	LeavesQty	Y	Quantity open for execution.
14	CumQty	Y	Total quantity filled on the order.
6	AvgPx	Y	The calculated average price of all fills for the executed order.
60	TransactTime	Y	The time at which the transaction occurred.
851	LastLiquidityInd	Y	Indicator denoting whether the referenced order removed liquidity from or added liquidity to the book.
30	LastMkt	Y	Market of execution for last fill, or an indication of the market where an order was routed. Uses ISO 10383 (MIC).
880	TrdMatchID	Y	Identifier assigned to the Trade by the matching system.
583	LnkID	N	As stated in the order.
1151	SecurityGroup	Y	Security ListingTape indicator ("A", "B", "C").

Tag	Field Name	Req'd	Meaning/Values
21038	ExecutionDetails	Y	Identifies execution details.
21039	AuctionType	N	Identifies the auction type if the order was executed in an auction.
21040	AuctionId	N	Identifies the auction for an auction trade.
44	Price	N	As stated in the order.
38	OrderQty	Y	As stated in the order.
40	OrdType	Y	As stated on the previous order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.4 Pending Replace

The Pending Replace execution report is sent in response to a replace request.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	As stated in the replace request.
41	OrigClOrdID	Y	As stated in the replace request.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	E - PendingReplace
39	OrdStatus	Y	E - PendingReplace
55	Symbol	Y	As stated on the previous order.
65	SymbolSfx	N	As stated on the previous order.
54	Side	Y	As stated on the previous order.
151	LeavesQty	Y	Quantity open for further execution.
14	CumQty	Y	Quantity filled on the order.
6	AvgPx	Y	The calculated average price of all fills for the executed portion of the order.
44	Price	N	Limit price of the previous order if applicable.
38	OrderQty	Y	As stated on the previous order.
40	OrdType	Y	As stated on the previous order.
59	TimeInForce	N	As stated on the previous order.
1138	DisplayQty	N	As stated on the previous order.
114	LocateReqd	N	As stated on the previous order.
60	TransactTime	Y	The time at which the transaction occurred. UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated on the replace request, or the original order if not supplied on the replace request.
5700	LocateBroker	N	As stated on the previous order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.

Tag	Field Name	Req'd	Meaning/Values
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.5 Replaced

The Replaced execution report is sent when an order has been replaced.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	As stated in the replace request.
41	OrigClOrdID	Y	The ClOrdID associated with the replaced order.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	5 - Replaced
39	OrdStatus	Y	0 - New 1 - PartiallyFilled 2- Filled
55	Symbol	Y	As stated in the replace request.
65	SymbolSfx	N	As stated in the replace request.
54	Side	Y	As stated in the replace request.
151	LeavesQty	Y	Quantity open for execution.
14	CumQty	Y	Total quantity filled on the order
6	AvgPx	Y	The calculated average price of all fills for the executed order.
44	Price	N	As stated in the replace request.
38	OrderQty	Y	As stated in the replace request.
40	OrdType	Y	As stated in the replace request.
59	TimeInForce	Y	As stated in the replace request.
1138	DisplayQty	N	As stated in the replace request.
114	LocateReqd	N	As stated in the replace request.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated on the replace request, or the original order if not supplied on the replace request.
5700	LocateBroker	N	As stated in the replace request.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.6 Pending Cancel

The Pending Cancel execution report is sent in response to a cancel request.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	Unique identifier for an Order as assigned by the client. Uniqueness must be guaranteed within a single trading day.
41	OrigClOrdID	Y	The ClOrdID associated with the order being canceled.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	6 - PendingCancel
39	OrdStatus	Y	6 - PendingCancel
55	Symbol	Y	As stated on the order.
65	SymbolSfx	N	As stated on the order.
54	Side	Y	As stated on the order.
151	LeavesQty	Y	The quantity open for execution on the order.
14	CumQty	Y	Total quantity filled on the order
6	AvgPx	Y	The calculated average price of all fills for the executed order.
44	Price	N	As stated on the order.
38	OrderQty	Y	As stated on the order.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated on the order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.7 Canceled

The Canceled execution report is sent when an order has been canceled. This may be because of a client requested cancel, a replace, or a cancel initiated by the exchange. Orders that are canceled by the exchange because of Time in Force instructions shall have an ExecType and OrdStatus as Expired. All other cases shall have ExecType and OrdStatus as Canceled.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
11	ClOrdID	Y	As stated in the cancel request or the ClOrdID of the order if an unsolicited cancel.
41	OrigClOrdID	Y	The ClOrdID associated with the canceled order.
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.

Tag	Field Name	Req'd	Meaning/Values
150	ExecType	Y	4 - Canceled C - Expired
39	OrdStatus	Y	4 - Canceled C - Expired
55	Symbol	Y	As stated in the cancel request.
65	SymbolSfx	N	As stated in the cancel request.
54	Side	Y	As stated in the cancel request.
151	LeavesQty	Y	0
14	CumQty	Y	Total quantity filled on the order
6	AvgPx	Y	The calculated average price of all fills for the executed order.
44	Price	N	As stated on the order.
38	OrderQty	Y	As stated on the order.
21004	CancelReason	Y	Reason code for order cancellation. This is a custom FIX tag.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated in the order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.8 Restatement

The Restatement execution report is an unsolicited event to notify the client that an open order has been updated by the exchange. This message may be sent for orders configured for automatic repricing via the RepriceFrequency instruction. A restatement message will be sent if the order quantity is partially or fully cancelled because of Self Trade Prevention. This message will not be sent for Pegged Orders. In version 1.9 and beyond, clients can elect to receive an optional Restatement execution report when an order is booked and it either sets a new NBBO, or joins the existing NBBO.

NOTE: This message will be sent in the case of an order entered with the SingleReprice instruction, when the system is able to display the order at the booking price, if the order was repriced and displayed away from its booking price upon entry. In this case, the lastPx field will be the same as the previous Restatement, to indicate that the position on order book has not changed, but the message still will be sent to allow for correlation with the displayed orders on the MEMOIR Depth feed.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	The ClOrdID associated with the order.
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
150	ExecType	Y	D - Restated

Tag	Field Name	Req'd	Meaning/Values
39	OrdStatus	Y	0 - New 1 - Partially filled 4 - Canceled
55	Symbol	Y	As stated in the order.
65	SymbolSfx	N	As stated in the order.
54	Side	Y	As stated in the order.
151	LeavesQty	Y	Quantity open for execution.
14	CumQty	Y	Total quantity filled on the order.
6	AvgPx	Y	The calculated average price of all fills for the executed order.
44	Price	N	As stated in the order.
38	OrderQty	Y	The quantity after the restatement.
31	LastPx	Y	For ExecRestatementReason (3): The updated booked price. For ExecRestatementReason (5): The match price if this order had not been prevented from executing due to STP restrictions.
32	LastQty	N	For ExecRestatementReason (5): The number of shares that would have matched if this order had not been prevented from executing due to STP restrictions.
378	ExecRestatementReason	Y	The reason for the restatement.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
21022	ExtendedRestatementReason	N	If the Restatement is being sent because of Self Trade Prevention, this field contains the TYPE of Self Trade Prevention that caused the order to be reduced/canceled.
583	LnkID	N	As stated in the order.
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

9.2.9 Trade Cancel/Correct

The Trade Cancel/Correct execution report is sent to indicate that the price or quantity of a trade has been corrected. A trade cancel execution report is sent to bust a previous trade.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = 8
37	OrderID	Y	Unique identifier for an Order assigned by the exchange. This is guaranteed to be unique for a trading day.
11	ClOrdID	Y	The ClOrdID associated with the order.

Tag	Field Name	Req'd	Meaning/Values
17	ExecID	Y	Unique identifier of execution message as assigned by the exchange. Uniqueness is guaranteed within a single trading day.
19	ExecRefID	Y	The execID of the trade been referenced.
880	TrdMatchID	Y	Identifier assigned to the Trade by the matching system
150	ExecType	Y	G - TradeCorrect H - TradeCancel
39	OrdStatus	Y	1 - Partially filled 2 - Filled 4 - Canceled
55	Symbol	Y	As stated in the order.
65	SymbolSfx	N	As stated in the order.
54	Side	Y	As stated in the order.
151	LeavesQty	Y	Quantity open for execution.
14	CumQty	Y	Total quantity filled on the order.
44	Price	N	As stated on the order
38	OrderQty	Y	As stated in the order.
31	LastPx	N	The corrected price. Required if Trade Correct.
32	LastQty	N	The corrected quantity. Required if Trade Correct.
6	AvgPx	Y	The calculated average price of all fills for the executed order.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
583	LnkID	N	As stated in the order.
1151	SecurityGroup	Y	Security ListingTape indicator ("A", "B", "C").
75	TradeDate	Y	Indicates the date of trade in YYYYMMDD format.
21038	ExecutionDetails	Y	Identifies execution details.
21039	AuctionType	N	Identifies the auction type if the order was executed in an auction.
21040	AuctionId	N	Identifies the auction for an auction trade.
453	NoPartyIDs	Y	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID as stated in the order, or the default MPID for the Account if not specified in the order.
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

10 Application Messages from Client to Exchange

10.1 NewOrderSingle

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

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = D
11	ClOrdID	Y	Unique identifier of the order as assigned by the client. The ClOrdID length must be <= 16.
55	Symbol	Y	CMS symbol tradable instrument.
65	SymbolSfx	N	Additional information about the security (e.g. preferred, warrants, etc.).
54	Side	Y	Side of order.
38	OrderQty	Y	Quantity ordered. This represents the number of shares. The maximum order size permitted is

Tag	Field Name	Req'd	Meaning/Values
			1,000,000 shares. The maximum notional value permitted is \$30,000,000
40	OrdType	Y	Type of the order.
44	Price	N	Price per unit of quantity (e.g. per share).
59	TimelnForce	Y	Defines the time during which an order is eligible for execution.
528	OrderCapacity	Y	Designates the capacity of the firm placing the order.
582	CustOrderCapacity	N	Capacity of the customer placing the order. If not specified, behavior defaults to MemberTradingOnTheirOwnAccount.
18	ExecInst	N	Instructions for order handling on the exchange. If more than one instruction is required then separate each character by a space.
21041	ExtendedExecInst	N	Additional instructions for order handling on exchange. If more than one instruction is required, then separate each character by a space.
211	PegOffsetValue	N	Amount (signed) added to the peg for a pegged order.
1094	PegPriceType	N	Defines the type of peg.
126	ExpireTime	N	Time/Date of order expiration, this is the expiration time of a GoodForTime TimelnForce. If omitted, expiration time will be set to the end of the post-market trading session. This is in FIX UTCTimestamp format.
110	MinQty	N	Minimum quantity of an order to be executed.
1138	DisplayQty	N	Quantity of the order to be displayed.
1084	DisplayMethod	N	Defines the replenishment size behavior for a reserve order. Selecting 'Undisclosed' will result in a fully hidden order. This tag should be specified for Pegged and Market orders. This tag should not be specified for fully displayed Limit orders. Currently if this tag is not specified for a Pegged or Market order the default value shall be Undisclosed. This is not recommended as this behavior may change in a future revision of the specification.
21006	ReserveReplenishTime	N	Defines the replenishment timing behavior for a reserve order. This is a custom tag.
1087	DisplayMinIncr	N	Defines the minimum increment to be used when calculating a random refresh of DisplayQty.
60	TransactTime	Y	UTCTimestamp since epoch with millisecond precision.
114	LocateReqd	N	Required on Short Sell and Short Sell Exempt orders only. Only acceptable value is 'N' which indicates the member has secured the required locate.
21020	RepriceFrequency	N	Defines the frequency of a reprice. If this tag is not sent then the order will not be repriced. This is a custom tag.
21021	RepriceBehavior	N	Reprice behavior when market is locked or crossed. This is a custom tag.
2362	StpGroupID	N	Unique identifier of self trade prevention group.
21001	SelfTradePrevention	N	Defines the desired behavior in the event of a wash. This is a custom tag.
21005	RiskGroupID	N	Unique identifier of a custom risk control set to be applied to this order. This is a custom tag.

Tag	Field Name	Req'd	Meaning/Values
583	LnkID	N	Permits clients to assign a link identifier used for their own order tracking. The LnkID length must be <= 4.
5700	LocateBroker	N	For a short sell order, the broker (MPID) that the member shall borrow shares from. Customer ports can be configured to require this field to be set on short sale orders, otherwise it is optional.
453	NoPartyIDs	N	The number of parties in the following Parties Group.
→448	PartyID	Y	MPID
→447	PartyIDSource	Y	Identifies the source of the PartyID.
→452	PartyRole	Y	Identifies the type of the PartyID.
	Standard Trailer	Y	

10.2 OrderCancelReplaceRequest

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

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = G
41	OrigClOrdID	Y	ClOrdID (11) of the previous order (NOT the initial order of the day) as assigned by the client, used to identify the previous order in cancel and cancel/replace requests.
11	ClOrdID	Y	Unique identifier for an Order as assigned by the client. Uniqueness must be guaranteed within a single trading day. The ClOrdID length must be <= 16.
55	Symbol	Y	This field may not change from the value stated in the original order.
65	SymbolSfx	N	This field may not change from the value stated in the original order.
54	Side	Y	Side may only change between Sell and SellShort.
38	OrderQty	Y	Quantity ordered. This represents the number of shares. Increasing the size will cause the order to lose its priority in the book.
40	OrdType	Y	OrderType may only change from Limit order to Market order.
44	Price	N	Price per share of the order. Changing the price will cause the order to lose its priority in the book.
1138	DisplayQty	N	Quantity of the order to be displayed.
114	LocateReqd	N	Required on Short Sell and Short Sell Exempt orders only. Only acceptable value is 'N' which indicates the member has secured the required locate.
60	TransactTime	Y	FIX UTCTimestamp since epoch with millisecond precision.
583	LnkID	N	Permits clients to assign a link identifier used for their own order tracking.
5700	LocateBroker	N	For a short sell order, the broker (MPID) that the member shall borrow shares from. Customer ports can be configured to require this field to be set on short sale orders, otherwise it is optional.
	Standard Trailer	Y	

10.3 OrderCancelRequest

The order cancel request message requests the cancellation of all remaining size on an order.

Tag	Field Name	Req'd	Meaning/Values
	Standard Header	Y	With tag 35 (MsgType) = F
41	OrigClOrdID	Y	ClOrdID (11) of the previous order (NOT the initial order of the day) as assigned by the customer, used to identify the previous order in cancel and cancel/replace requests.
11	ClOrdID	Y	A Unique identifier for the cancel request. The ClOrdID length must be <= 16.
37	OrderID	N	Unique identifier for an Order previously assigned by the exchange.
55	Symbol	Y	Must be the same as the original order.
65	SymbolSfx	N	Additional information about the security (e.g. preferred, warrants, etc.).
54	Side	Y	Side of order.
60	TransactTime	Y	UTC timestamp since epoch with millisecond precision.
	Standard Trailer	Y	