MIAX Options Exchange

Options Order Management using FIX Protocol

FIX Interface Specification

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1. Overview

MIAX FIX Orders Interface (**FOI**) is a messaging interface that allows MIAX members and sponsored firms to send and manage their Options orders. FOI also facilitates real-time electronic communication of transaction information corresponding to such Option orders.

FOI is a flexible interface that uses FIX protocol version 4.2 with minor customization of certain tags. FOI uses FIX protocol for both application messages and session level messages. This document describes the messages that will be supported by FOI. For detailed information regarding FIX protocol and session protocol, please refer to the FIX documentation provided by FIX Protocol Limited (FPL) on their website https://www.fixtrading.org/standards.

This specification is intended to only be used by MIAX member firms and the firms that are sponsored for MIAX access by MIAX member firms.

FOI Features:

FOI has been designed for flexibility, reliability, low latency and high throughput messaging. Some of the key features of the interface are:

- Use of FIX protocol that has been adopted by most of the participants in the Options industry. FIX tag/value messaging is a **flexible** messaging protocol that eliminates platform dependencies and allows to largely decouple exchange and firm deployments.
- FIX session layer is implemented over TCP/IP and facilitates sequenced transmission and recovery of messages across TCP/IP sessions thereby achieving **reliable** communication.
- FOI allows multiple connections per firm. On each FOI connection, Firms are allowed to send orders for any option symbol and any of their MPIDs. These features enable firms to achieve **load balancing** and **higher resiliency**. ClOrdID must be unique per MPID across all sessions per firm.
- FOI hides the intricacies of the Exchange architecture that includes many systems processing specific symbol ranges. FOI design, coupled with the Exchange architecture, facilitates **low latency** and **high throughput** messaging.
- FOI allows mass cancels of orders on each session thereby allowing firms to reduce their risk in bad market conditions or in case of system problems at their end.

1.1 Exchange Related Information

1.1.1 Hours of Operation for MIAX Options Exchange

Please refer to MIAX website at http://www.MIAXOptions.com for details about times for each of these events.

Note: Times specified below are as per timings of United States Eastern Time zone.

Order Acceptance: Firms are allowed to connect and send orders to FOI. 7:30 a.m.

Opening Process: Start of trading session. 9:30 a.m.

Trading Session finished for Equity Options: 4:00 p.m. (ends at 1:00 p.m. on early closing days) MIAX stops accepting orders in these classes. Cancels are still allowed. MIAX may still send queued executions.

Trading Session finished for ETF and Index Options: 4:15 p.m. (ends at 1:15 p.m. on early closing days) MIAX stops accepting orders in these classes. Cancels are still allowed. MIAX may still send queued executions.

End of Order Cancel Acceptance: MIAX will stop accepting cancels for their orders. 4:25 p.m. (1:25 p.m. on early closing days)

Firms are expected to stay connected at least until End of Order Cancel Acceptance because system can send executions and cancels due to production closing logic. Disconnecting before that can result in not receiving key information about order status changes.

Dissemination of *Done for Day* Messages: Time range within which Firms can expect to receive a status message for open orders of the type that they are configured to receive status for. Start time will be anytime from 4:25 p.m. to 5:00 p.m. (1:25 p.m. to 2:00 p.m. on early closing days)

1.1.2 Obtaining More Information

Information such as (but not limited to) membership, rules, fees and support can be obtained by sending an email to Trading Operations or by visiting MIAX website at http://www.MIAXOptions.com.

1.2 Certification for Trading via FOI

MIAX will provide a test area for member firm's testing and certification needs. Please contact MIAX Trading Operations to obtain more information about this environment.
In order to connect to MIAX production, member firms must certify their application with MIAX. This certification testing is a manual process. In order to schedule a certification test, please email Trading Operations.

1.3 FAQs

Membership: Contact member services for details about membership. As a part of the membership, each member firm can get one or more unique MPIDs and one of those IDs will have to be sent in every message.

Routing strategies: Firms are allowed to designate each order as non-routable (DNR: do not route). Absence of the DNR attribute implies that the order is routable (route at opening each day or upon arrival and do not route when resting on book). Please refer to MIAX rules as to the order types are routable.

Mass Cancels: Firms are allowed to request mass-cancels of their orders on each session (connection). FOI allows firms to cancel by

- All Orders received over a session (connection)
- For an MPID: ALL or GTC or DAY orders
- For an MPID for a given Security Symbol (Class): ALL or GTC or DAY orders
- Simple and/or Complex Orders in each of the options mentioned above

Auto Cancel on Disconnect (ACOD): This feature allows firms to limit their exposure during outages by electronically instructing MIAX to cancel designated open orders upon connection loss.
Internally, the ACOD directive is marked on a newly received order when either of the following two conditions exist AND the order does not have a TIF of GTC:

1) Explicitly requested on a new order using ExecInst=o
2) Implicitly requested for all subsequently received new orders on a session established using RawDataLength=1 and RawData=1 in the Logon message.

Once an order is received and booked with the designated ACOD directive, the directive cannot be changed unless the order is subsequently modified with a TIF of GTC. Once an order becomes a GTC order, it is no longer eligible for ACOD.

When FOI detects a disconnect for any reason (whether due to graceful logout, a connection loss or loss of 2 heartbeats), it will trigger the auto cancel on disconnect process, whereby FOI will try to cancel all eligible orders (eligibility defined above). Upon completion of ACOD, the FOI will not accept connections from the Firm for a configured period of time (e.g.: 5 seconds – refer to MIAX Technical alerts for the latest setting).

The ACOD feature is designed to react to external connection loss scenarios only. Therefore, it does not cancel orders in the event of a MIAX system failure. The ACOD feature is provided on a best effort basis. Executions can occur while FOI is processing the ACOD event. As the technical circumstances initiating a disconnect may vary, Firms are advised to call Trading Operations to confirm the status of ACOD eligible open orders remaining at MIAX that were sent via the session(s) that disconnected. Note that ACOD does not cancel PRIME orders.

The execution reports resulting from cancels or trades during the disconnect can be received upon a subsequent reconnect by the firm on the same day.

Auto Cancel on System Failure (ACOSF): In the event of a Matching Engine or FOI, process crash or hardware failure that prevents a Firm's interaction with existing open orders, members can opt in to have the system automatically cancel their open orders for the impacted session(s). In case of FOI failure, orders submitted via any of the member's other sessions will not be affected. In case of any Matching Engine failure, orders submitted to any Matching Engines that are not impacted will not be affected.

Members must select one of the following actions on a firm level and this action will be performed on the affected session(s):

- Cancel All Open Orders: All open orders (including GTC) in the impacted Matching Engine(s) or orders that were sent through the impacted FOI session(s) will be cancelled upon system failure.
- Do Not Cancel All Open Orders: This will disable Auto Cancel on System Failure and Emerald will not cancel any open orders from that session upon system failure. This is the default behavior for the session if the member does not opt in to ACOSF.

Note: This feature is available starting from the Live Order Window (LOW) till the Option close time.

The ACOSF feature is provided on a best effort basis. Executions can occur while the ACOSF event is being processed. As the technical circumstances initiating an ACOSF may vary, firms are advised to contact Trading Operations to confirm the status of ACOSF eligible open orders remaining at Emerald. The execution reports resulting from cancels or trades during the failure can also be received upon a subsequent reconnect, to primary or backup FOI, by the Firm on the same day.

Done for Day: For the firms that need status of orders at the end of day, MIAX can send out a *DoneForDay* report for each order that is still open. Firms can request that MIAX sends this report for GTC and/or DAY orders. Note that this is just a status report of open orders and this message does not cancel orders in MIAX engine. The GTC Orders that are open at the end of the day will be introduced back into the system by MIAX in the next Trading session for symbols that remain active.

Executions/Busts/Adjustments: All executions are conveyed to firms via FOI. Busts and adjustments to Executions are not conveyed to firms via FOI.

Poss Dup: MIAX ignores the "Poss dup" flag in FIX header. MIAX only checks for uniqueness of ClOrdID for the MPID for the day. Sending orders and subsequent actions against them over more than one port is strongly discouraged as it results in unpredictable outcomes due to sequencing of messages over multiple ports.

Flow control: Upon receipt of a FIX message, FOI will not read the firm facing port until it sends back the response. Firms that do not strictly follow a one-in-flight paradigm are advised to limit the number of in-flight FIX messages to less than 50 for optimal TCP protocol performance; i.e. under certain limited circumstances, exceeding this limit could result in shrinking window size and/or dropped packets.

Failure/Recovery: In the event of a catastrophic hardware problem servicing FOI, MIAX will activate backup FOI services on alternative hardware with different IP addresses. Other than a change in IP address, the FIX session can be reestablished just as after a normal disconnect and resynchronized per normal FIX protocol. Note that selected outbound messages, from MIAX to the Firm, in transition during the failure, may be sent **or resent** with PossResend=Y. Firms may have already seen some of these messages before, with lower sequence numbers, and should handle the possible duplicate communications. MIAX will reject any retransmitted orders by checking ClOrdID uniqueness for each MPID.

Note that the backup FOIs are not available for connectivity testing during the trading day.

Firms are encouraged to conduct failover testing to ensure seamless interaction during such events.

1.4 Configuration

Firms can configure their session(s) with the below properties.

Comp ID: All messages sent in either direction must contain SenderCompID and TargetCompID. Firms and MIAX will agree upon the values, to be used for these fields, at the time of initial setup. Firms are allowed to use a single *Comp ID* for each connection. MIAX will allow connections from a preconfigured computer (CompID).

Firm to MIAX

SenderCompID	TargetCompID
Firm Comp ID	MIAX

MIAX to Firm

SenderCompID	TargetCompID
MIAX	Firm Comp ID

SenderSubID: All application messages sent in either direction must contain SenderSubID and TargetSubID. These are not required in administrative messages or User Notification Messages. Firms and MIAX will agree upon the value, to be used for this field, at the time of initial setup. Firms send in their Executing Broker MPID (Firm MPID) in this field and Firms are allowed to get multiple *such* IDs from MIAX. Firms can send in any of their IDs on each of their connections. MIAX will use the clearing details associated with this MPID in addition to the clearing information supplied in the order message.

Firm to MIAX

	SenderSubID	TargetSubID
MIAX Test Env	Firm MPID	TEST
MIAX Prod Env	Firm MPID	PROD

MIAX to Firm

SenderSubID	TargetSubID
TEST	Firm MPID
PROD	Firm MPID

IP Address: At the time of setup, MIAX will require Firms source IPs and will allocate one or more MIAX FIX server IPs to your firm as agreed upon by the Firm and MIAX membership.

Port: At the time of setup, MIAX will allocate one or more MIAX FIX server ports as agreed upon by the Firm and MIAX membership.

Done For Day: Firms can request MIAX to configure their ports for receiving Done for Day reports at the end of the day for their open GTC and/or DAY orders.

Order Protection: MIAX provides a service to protect firms based on order size. These values can be set on a firm basis (not MPID level) and is calculated across all sessions belonging to a Firm.

Simple Orders

- MaxOrderSize: An order (non-Crossing) will be rejected if the OrderQty is greater than this value.
- MaxCrossingOrderSize: A Crossing order will be rejected if the OrderQty is greater than this value.
- MaxOpenOrders: Orders will be rejected if the total outstanding open order count is greater than this value.
- MaxOpenContracts: Orders will be rejected if the inbound OrderQty plus the number of open contracts is greater than the configured value.

Complex Orders

- MaxComplexOrderSize: An order (non-Crossing) will be rejected if the OrderQty is greater than this value.
- MaxComplexCrossingOrderSize: A Crossing order will be rejected if the OrderQty is greater than this value.
- MaxComplexOpenOrders: Orders will be rejected if the total outstanding complex open order count is greater than this value.
- MaxComplexOpenContracts: Orders will be rejected if the inbound sum of all components (OrderQty * LegRatio for each leg) plus the number of open contracts for complex orders is greater than the configured value.

Note that these protections are not applicable to SAO orders.

Firms can also establish the MaxOrderSize, MaxCrossingOrderSize, MaxComplexOrderSize and MaxComplexCrossingOrderSize protection settings per class. When present, the per class setting value overrides the corresponding firm wide value for the specified class.

Firms will coordinate with MIAX Trading Operations to establish the above order size protection settings.

Stock Clearing Account: Firms that choose to trade stock tied strategies must set up their Stock Clearing Account information (Underlying MPID or DTC Account Number) by coordinating with MIAX Trading Operations.

Check Sum verification: Firms can request the FIX Standard Trailer Check Sum calculation to be enabled or disabled. Enabled, the MIAX system will perform standard FIX verification of messages and reject message that fail the test. MIAX will not perform Check Sum calculations on inbound messages when disabled.

Risk Protection Monitoring: Firms participating in MIAX Risk Protection Monitoring can manage Risk Notification messages on a per session basis. The configuration of notification messages can be coordinated with MIAX Trading Operations. Each notification type (solicited or un-solicited) is independently configurable to be forwarded or dropped.

Stock Symbol Format: Legsymbol will be in the OCC Options Underlying symbol format by default. Firms can opt to send/receive LegSymbol in the stock ticker format for stock leg trades of Complex stock-tied orders in messages "AB", "AC", "As" and "8". This can be configured per FOI port.

2. FIX Message Format and Delivery

Please refer to **FIX v4.2 Protocol** document (https://www.fixtrading.org/standards) for details about **FIX message format and delivery**. That section offers insights into the general format of a FIX message being comprised of a *standard header* followed by the message body fields and terminated with a *standard trailer*. It further states that the non-printing, ASCII "SOH" (#001, hex:0x01, referred to in this document as <SOH>) must be used as the field and message delimiter.

All tags must have a value specified. Optional fields without values should not be specified in the FIX message. An order that contains a missing required tag, or a tag with no associated value, will be rejected back to the user.

Data Types:
    Price field formats are specified in the messages
    Char String fields are case sensitive unless otherwise noted

2.1 Standard Message Header

The Standard Header precedes each administrative or application message in the FIX protocol. The header identifies the message type, length, destination, sequence number, origination point, and time.

The following table contains the Standard Header tags processed by MIAX. Any other header tag will be ignored.

Tag	FIX Name	Req'd	Details
8	BeginString	Yes	Always the first field in a FIX message. Valid value: FIX.4.2
9	BodyLength	Yes	Always the second field in a FIX message. Length of message expressed as the number of characters in the message following the BodyLength field up to, and including, the delimiter immediately preceding the CheckSum tag ("10=").

Tag	FIX Name	Req'd	Details
35	MsgType	Yes	Always the third field in a FIX message. Defines the message type. Valid values - Administrative messages: '0' = Heartbeat '1' = Test Request '2' = Resend Request '3' = Reject (Session level reject) '4' = Sequence Reset '5' = Logout 'A' = Logon Valid values – Application messages: '8' = Execution Report '9' = Single Order Cancel Reject 'D' = New Order Single 'F' = Single Order Cancel Request 'G' = Single Order Cancel/Replace 'H' = Order Status Request 'j' = Reject (Business message reject) 's' = New Order Cross "AB" = New Order – Multileg "AC" = Order Cancel/Replace - Multileg "As" = New Order Cross - Multileg
34	MsgSeqNum	Yes	Message sequence number (numeric).
43	PossDupFlag	No	Ignored
49	SenderCompID	Yes	Identifies the party sending the message. The sending firm should use their Line Identifier as assigned by MIAX. MIAX will use "MIAX" when sending the messages to Firms.
50	SenderSubID	Cond.	Sub identifier of the party sending the message. Required for application messages sent from Firm to MIAX. See Configuration section 1.4 Configuration for more detail.
52	SendingTime	Yes	Time of message transmission expressed in UTC (Universal Time Coordinated), also known as GMT. This value must be within 60 seconds of the current time; else the order will be rejected. Format: YYYYMMDD–HH:MM:SS.uuu
56	TargetCompID	Yes	Identifies the party receiving the message. Firms should use the value "MIAX." MIAX will use the Firm's Line ID when sending the messages to Firms.

Tag	FIX Name	Req'd	Details
57	TargetSubID	Cond.	Sub identifier of the party receiving the message. Required for application messages delivered to the firms from MIAX. See Configuration section 1.4 Configuration for more detail.
97	PossResend	No	Ignored in messages sent to MIAX. Set to Y in messages from MIAX during certain failure/recovery scenarios.
115	OnBehalfOfCompID	Cond.	Only applicable to messages sent to MIAX: Identifies the end client that is the originator of the message. This will be returned in the DeliverToCompID of messages corresponding to this message.
116	OnBehalfOfSubID	Cond.	Only applicable to messages sent to MIAX: Sub identifier of the end client. This will be returned in the DeliverToSubID of messages corresponding to this message.
122	OrigSendingTime	Cond.	Required for resent messages. If no data is available, this value is set to the SendingTime value. Format: YYYYMMDD–HH:MM:SS.uuu
128	DeliverToCompID	Cond.	Only applicable to messages sent from MIAX: MIAX will reflect back the data sent in OnBehalfOfCompID field.
129	DeliverToSubID	Cond.	Only applicable to messages sent from MIAX: MIAX will reflect back the data sent in OnBehalfOfSubID field.

2.2 Standard Message Trailer

The Standard Trailer terminates each administrative or application message in the FIX protocol. The trailer is used to segregate messages and contains the three-digit character representation of the Check Sum value. Tag must be present even for Firms that have disabled Check Sum validation.

The following table contains the Standard Trailer tags processed by MIAX. Any other Trailer tag will be ignored.

Tag	FIX Name	Req'd	Details
10	CheckSum	Yes	Always the last field of a FIX message.

3. Session Protocol

Please refer to **FIX v4.2 Protocol** document (http://fixprotocol.org/specifications) for details about **FIX session protocol**. This protocol layer offers session management capabilities such as establishing a FIX session, authentication, application/administrative messaging over TCP/IP, sequencing of messages, heartbeats and gap fills. Order sending firm will always be the *Initiator* of the FIX session and MIAX is the *Acceptor*.

4. Administrative Messages

This section consists of administrative messages such as those that are used for session protocol.

4.1 Logon Request (MsgType = A)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Logon Request**.

The logon message authenticates a user establishing a connection to a remote system. The logon message must be the first message sent by the Firm that needs to initiate a FIX session with FOI. Firms must wait for a Logon message as a response from FOI before sending other messages.

The message format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = A
95	RawDataLength	Cond	The number of bytes in RawData. When used, it must be set to 1. Omit tags 95 & 96 when Auto Cancel on Disconnect (ACOD) is not required.
96	RawData	Cond	Raw data that contains custom information and is of the length specified in RawDataLength. Valid Values: "1" = Activate Auto Cancel on Disconnect (ACOD) on disconnect or graceful logout
98	EncryptMethod	Yes	(always unencrypted)
108	HeartBtInt	Yes	Value specified in seconds. Note: Must be > 0 and same value must be used by both sides.
141	ResetSeqNumFlag	No	Indicates both sides of a FIX session should reset sequence numbers
	Standard Trailer	Yes	

Points to note:

- Firms can specify a heartbeat interval that is greater than zero and FOI will use the same. Both sides must use that same interval to check if the other side is alive. A Heartbeat interval of 5 seconds is recommended.

Upon missing of a single heartbeat, FOI will send a *Test Request*. Upon missing of 2 heartbeats, FOI will send a logout and terminate the connection. MIAX recommends using as low of a value the reliability and latency of your telecommunications channel will allow.

- Encryption is not supported and hence the EncryptMethod field is ignored.
- When Firms reconnect due to a loss of connection, the login response from MIAX may contain a sequence number greater than what the firm expects. This will require the Firm to follow the FIX resend protocol to do a gap fill. MIAX will initiate a similar gap fill process if MIAX detects a gap. MIAX will also reject orders with a SendingTime > 60 seconds.
- Auto Cancel on Disconnect (ACOD): In order to activate the feature for the session, both tag 95 and 96 must be present and both must be set to 1. If one tag is present and the other is absent, the Logon request is rejected.

4.2 Heartbeat (MsgType = 0)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Heartbeat**.

The heartbeat format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 0
112	TestReqID	Cond	Required when the heartbeat is the result of a Test Request message.
	Standard Trailer	Yes	

Points to note:

- Check the Logon message for details about the heartbeat interval
- Each side must send a heartbeat only when the agreed upon interval has elapsed since the last message was sent.

4.3 Test Request (MsgType = 1)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Test Request**.

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 heartbeat format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 1
112	TestReqID	Yes	
	Standard Trailer	Yes	

Points to note:

- If heartbeat interval + 1 second has elapsed since the last message was received, a Test request can be issued. After two such iterations, the connection must be dropped. This ensures a proactive detection and cleanup of a broken TCP connection.

4.4 Resend Request (MsgType = 2)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Resend Request**.

The message format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 2
7	BeginSeqNo	Yes	
16	EndSeqNo	Yes	
	Standard Trailer	Yes	

4.5 Reject – Session Level (MsgType = 3)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Reject (session level)**.

FOI will disregard any message that is garbled, cannot be parsed or fails a data integrity check. MIAX will also terminate the connection.

The message format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 3
45	RefSeqNum	Yes	MsgSeqNum of rejected message
371	RefTagID	Cond	Required if reject reason refers to a specific tag
372	RefMsgType	Yes	The MsgType of the FIX message being referenced
373	SessionRejectReason	Yes	Code to identify reason for a session-level Reject message Valid Values: "0" = Invalid tag number "1" = Required tag missing "2" = Tag not defined for this message type "3" = Undefined tag "4" = Tag specified without a value "5" = Value is incorrect (out of range) for this tag "6" = Incorrect data format for value "7" = *Unused/Not applicable* "8" = *Unused/Not applicable* "9" = Comp ID problem "10" = SendingTime accuracy problem "11" = Invalid MsgType

FIX Tag	FIX Name	Req'd	Details
58	Text	No	Will be supplied if there is a need to supply more information regarding the reject
	Standard Trailer	Yes	

4.6 Sequence Reset (MsgType = 4)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Sequence Reset (Gap Fill)**.

The message format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 4
123	GapFillFlag	No	
36	NewSeqNo	Yes	
	Standard Trailer	Yes	

4.7 Logout Request (MsgType = 5)

Please refer to **FIX v4.2 Protocol** document for details about **FIX Logout Request**.

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

Before actually closing the session, the logout initiator must wait for the opposite side to respond with a confirming logout message. This gives the remote end a chance to perform any Gap Fill operations that may be necessary. The session may be terminated if the remote side does not respond in 5 minutes.

After sending the Logout message, the logout initiator should not send any messages unless requested to do so by the logout acceptor via a ResendRequest.

The message format is as follows:

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 5
58	Text	N	Can be used to send readable information to the recipient. FOI will just log this and no alerts will be generated on any human readable display devices.
	Standard Trailer	Yes	

5. Application Messages

This section consists of application messages such as Order messages, cancel requests and execution reports.

5.1 New Order – Single (MsgType = D)

Users can send orders to the MIAX exchange with the New Order Single message (MsgType = D). The following table contains the fields MIAX supports for the New Order Single message.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = D
1	Account	No	Customer ID defined by the firms. Maximum length 10 characters. FOI will pass this through for clearing.
11	ClOrdID	Yes	Unique identifier of the order as assigned by the firm for the MPID used to populate the SenderSubID. Must be 30 characters or less. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session.
18	ExecInst	No	Valid values: f = Inter-market Sweep Order (ISO) o = Auto Cancel on connection loss (Firm requesting Auto Cancel on Disconnect (ACOD) for this Order) Note: If any other value is present the order will be rejected.
38	OrderQty	Yes	Number of contracts specified on the order. Valid Range: 1 to 999,999. Max length 6.
40	OrdType	Yes	Valid values: 1 = Market 2 = Limit
44	Price	Cond	Price for limit orders (OrdType = 2) Format follows standard OCC clearing format where a combined total digits before and after the decimal is 8 or less. 4 digits before the decimal can have 4 after Valid range published via Technical Circular Price should not be specified on market orders
54	Side	Yes	Side of order. Valid values: 1 = Buy 2 = Sell
55	Symbol	Yes	The 6 character OCC Security Symbol (Class) for an option.

FIX Tag	FIX Name	Req'd	Details
59	TimeInForce	Yes	Specifies how long the order remains in effect. Valid values: 0 = DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order) A = SAO (Settlement Auction Only: Use only for Index Settlement Auctions on Settlement Day)
60	TransactTime	Yes	Time of execution/order creation expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
76	ExecBroker	No	Specifies order handling. Valid values: "DNR" = Do not route (Trade at MIAX or post to MIAX book. Never route away) **Default:** If this tag is absent, the behavior is as follows: Route (if necessary) upon arrival and every day at Opening if allowed by rules. Do not route once resting on MIAX book.
77	OpenClose	Cond	Specifies if this order opens a position or closes a position. Required except when CustomerOrFirm set to 4 = Market Maker or 5 = Non-Member Market Maker Valid values: O = Open C = Close.
167	SecurityType	Yes	Identifies type of instrument. Valid value = OPT (Options)
200	MaturityMonthYear	Yes	Expiration month and year. Format: YYYYMM (For example, 201009 is an expiration of September 2010.)
201	PutOrCall	Yes	Indicates whether an option is a put or a call. Valid values: 0 = Put 1 = Call
202	StrikePrice	Yes	Strike price for an option.
203	CoveredOrUncovered	No	Specifies whether the option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered

FIX Tag	FIX Name	Req'd	Details
204	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer
205	MaturityDay	Yes	Expiration day of month, used along with MaturityMonthYear (200) to fully specify the maturity date for options. Format: DD (single digit allowed)
439	ClearingFirm	No	CMTA information of Order originator's clearing firm. Valid range: 1 – 99999
440	ClearingAccount	Cond	OCC sub-account (Multi-account). This is a required value for Non-member MM orders. MIAX Member MM can send their MPID in this tag in lieu of tag 109 It must be an UPPERCASE alphanumeric value, with a maximum of 5 characters. A value with up to 3 characters is generally used. (see Notes section below)
109	ClientID	Cond	For MIAX member Market Maker orders, MMs can send their MPID with this tag. MIAX Member MM can send in their MPID in tag 440 in lieu of tag 109 (see notes section below)
79	AllocAccount	No	MIAX assigned directed firm code of the designated participant for directed order flow. Max of 4 characters.
58	Text	No	Additional clearing information for the order that MIAX will send to OCC. Max 13 characters.
1090	MaxPriceLevels	No	MIAX Variable Protection (MVP) Unspecified (tag absent) = Use default configured in MIAX system Valid Values to override MIAX default setting: -1 = Allow the order to trade up to 20 ticks (MPVs) beyond its IRP value. 0 = Order is eligible to trade only at its Initial Reference Price (IRP) 1 through 20 = Maximum number of ticks (MPVs) that the order may trade beyond its IRP before being canceled back. If the specified MVP value is greater than 20 MPVs, MIAX will set MVP for this order = 20 MPVs. Greater than 99 = Order will be rejected Changes to default or maximum value will be communicated via Technical circulars.

FIX Tag	FIX Name	Req'd	Details
9385	AuctionID	Cond	Required only if TIF is AtCrossing(9). Numeric Event ID when this order is in response to a liquidity gathering event at MIAX. This must match the event ID published in the Administrative Information Subscriber (AIS) feed. A value of 0 (zero) is accepted for Opening, but rejected for other events.
9449	BillingMPID	No	MIAX will bill the account associated with this MPID versus default billing of the account associated with Executing Broker MPID supplied in tag SenderSubID. This tag is ignored unless it is different than SenderSubID.
9732	AttributableOrderIndicator	No	Valid Values: 'Y' = Yes 'N' = No Default = 'N' if not provided. Indicates if the Attributable ID (Executing Broker MPID) should be displayed in Liquidity Seeking Event Notification messages triggered by this Order.
	Standard Trailer	Yes	

Points to note:

- *Order Validation*: MIAX exchange will validate each order it receives by checking that the user sent all the required FIX fields for the order. FIX field level validation failure will result in a session reject. Business rule validation failures will result in rejection in the form of an Execution Report (MsgType = 8) with an Execution Type of Rejected (ExecType = 8). When the Firm message passes FIX field level validations and Business rule level validation and still has to be rejected, MIAX will send a Business reject message for them. Once the Order is accepted and Acked, any further Business rule validations that fail will result in an unsolicited cancel.
- *Order Acknowledgement*: Upon receipt of an order, MIAX validates the order and then sends an acknowledgement back to the client. This acknowledgement tells the user that a MIAX Matching Engine has received the order, and has processed it. This acknowledgement is in the form of an Execution Report (MsgType = 8) with an Execution Type of New (ExecType =0) and an Order Status of New (OrdStatus = 0). See the section "Execution Report (MsgType = 8)" for more information about the individual Execution Report fields.
- *Auto Cancel on Disconnect (ACOD)*: Firms wishing to use the MIAX Auto Cancel on Disconnect feature on an order-by-order basis must send each order that they want MIAX to cancel upon disconnect with ExecInst=o. Orders that do not have this specified will not be canceled upon disconnect. Please refer to the FAQs for details on the Auto Cancel on Disconnect feature. This Order attribute will be ignored for GTC orders and GTC orders will not be canceled upon disconnect.
- MIAX member Market Maker orders must be identified with their MPID. For flexibility, the MPID can be sent in either tag 440 or 109. When both tags have values, MIAX will validate them for equivalence and reject otherwise.
- Please refer to MIAX regulatory circulars for the MIAX Variable Protection default setting and Order types that support MIAX Variable Protection.

5.2 New Order Cross (MsgType = s)

New Order Cross message enables firms to participate in MIAX Price Improvement Mechanism (MIAX PRIME) allowing a MIAX EEM to enter an order it represents as agent (an Agency Order) into an auction affording an opportunity for the Agency Order to receive price improvement. Firms can also use this message type to send Customer-to-Customer Cross (C2C) orders as well as Qualified Contingent Cross (QCC) orders. This is a FIX 4.3 Message supported over our 4.2 session.

FIX Tag		FIX Name	Req'd	Details
		Standard Header	Yes	MsgType = s (lowercase s)
548		CrossID	Yes	Identifier for a cross order. Must be 30 characters or less. MIAX recommends firms to maintain uniqueness across New Order Cross (MsgType = s) and New Order Cross – Multileg (MsgType = As) within a single trading day for the EEM across all FOIs for the firm
549		CrossType	Yes	Valid Values: 2 = PRIME Paired Cross 4 = PRIME Customer-to-Customer Cross(C2C) 6 = PRIME Qualified Contingent Cross (QCC)
552 ***Repeating Group***		NoSides	Yes	Must set to a value of 2 When CrossType (549) = 2 The first side is the Agency side The second side is the Contra side When CrossType (549) = 4 Both sides are Agency and Tag 204 is validated to ensure they are set to "0"
→	**54**	Side	Yes	Side of order. Valid values: 1 = Buy 2 = Sell *Required tag to start each repeated group.*
→	**11**	ClOrdID	Yes	Unique identifier of the order as assigned by the firm for the MPID used to populate the SenderSubID. Must be 30 characters or less. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session.
→	**78** ***Repeating Group***	NoAllocs	Yes	Number of Repeating groups for pre-trade allocation. Must be set from 1 to max value of 10 (see Notes section Clearing Details below)

FIX Tag			FIX Name	Req'd	Details
→	→	**80**	AllocQty	Yes	Quantity to be allocated to specific sub-account. Valid Range: 1 to 999,999. Max length 6. *Required tag to start each repeated group.*
→	→	**1**	Account	No	Customer ID defined by the firms. Maximum length 10 characters. FOI will pass this through for clearing.
→	→	**58**	Text	No	Additional clearing information for the order that MIAX will send to OCC. Max 13 characters.
→	→	**77**	OpenClose	Cond	Specifies if this order opens a position or closes a position. Required except when CustomerOrFirm set to 4 = Market Maker or 5 = Non-Member Market Maker Valid values: O = Open C = Close
→	→	**204**	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: When Tag 549=2 (Paired Cross) Agency and Contra Side 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 5 = Non-Member Market Maker 8 = Non-Priority Customer Agency Side Only 4 = Market Maker (MM) Valid values: When Tag 549=4 (Customer-To-Customer Cross) 0 = Priority Customer(other values will be rejected) Valid values: When Tag 549=6 (QCC) Agency and Contra Side 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer
→	→	**203**	CoveredOrUncovered	No	Specifies whether the option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered

FIX Tag			FIX Name	Req'd	Details
→	→	439	ClearingFirm	No	CMTA information of Order originator's clearing firm. Valid range: 1 – 99999
→	→	440	ClearingAccount	Cond	OCC sub-account (Multi-account). This is a required value for Non-member MM orders. MIAX Member MM can send their MPID in this tag. It must be an UPPERCASE alphanumeric value, with a maximum of 5 characters. A value with up to 3 characters is generally used. (tag 109 is not available as in MsgType (D))
→	→	467	IndividualAllocID	Cond	Unique identifier for a specific NoAllocs repeating group instance. Only validated for Contra Order when NoAlloc > 1. Uniqueness is for this order only. No validate across orders. AlphaNumeric, Max length = 4
→	→	9946	FirmMPID	Yes	Executing Broker MPID (Firm MPID) (See notes section Clearing Details below)
→	→	9449	BillingMPID	No	MIAX will bill the account associated with this MPID versus default billing of the account associated with Executing Broker MPID supplied in tag FirmMPID. This tag is ignored unless it is different than FirmMPID.
→	79		AllocAccount	No	MIAX assigned directed firm code of the designated participant for directed order flow. Agency Side only. Ignore otherwise Max of 4 characters.
→	9732		AttributableOrderIndicator	No	Valid Values: 'Y' = Yes 'N' = No Default = 'N' if not provided. Indicates if the Attributable ID (Executing Broker MPID) should be displayed in Liquidity Seeking Event Notification messages triggered by this Order. Valid Agency Side only. Ignored if present for contra order

FIX Tag	FIX Name	Req'd	Details
18	ExecInst	No	Valid values: X = "Last to Fill" is enabled, when not present, "Last to Fill" is disabled. f = Inter-market Sweep Order (ISO), when not present, "ISO" is disabled. Note: If any other value (or values) is present the order will be rejected. Only evaluated when tag 549=2 (see Notes section below)
38	OrderQty	Yes	Number of contracts to cross. When CrossType (549)=6 (QCC), OrderQty must be minimum 1,000 or order will be rejected. Valid Range: 1 to 999,999. Max length 6.
40	OrdType	Yes	Valid values: 2 = Limit
44	Price	Yes	Price for limit orders (OrdType = 2) Sets the Auction Start Price. Valid ranges published via Technical Circular
55	Symbol	Yes	The 6 character OCC Security Symbol (Class) for an option.
60	TransactTime	Yes	Time of execution/order creation expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
167	SecurityType	Yes	Identifies type of instrument. Valid value = OPT (Options)
200	MaturityMonthYear	Yes	Expiration month and year. Format: YYYYMM (For example, 201009 is an expiration of September 2010.)
201	PutOrCall	Yes	Indicates whether an option is a put or a call. Valid values: 0 = Put 1 = Call
202	StrikePrice	Yes	Strike price for an option.
205	MaturityDay	Yes	Expiration day of month, used along with MaturityMonthYear (200) to fully specify the maturity date for options. Format: DD (single digit allowed)

FIX Tag	FIX Name	Req'd	Details
9040	AutoMatchOrdType	No	Valid values: 1 = Market 2 = Limit Only required for orders with auto-match enabled Note: Only evaluated when tag 549=2 (see Notes section below)
9044	AutoMatchPrice	Cond	Sets the limit price at which the Contra Order will Auto-Match. The AutoMatchPrice must improve the AuctionStart Price (tag 44) otherwise the order will be rejected. Format is the same as Price (tag 44) Required if tag 9040 set to 2 = Limit
810	UnderlyingPrice	No	Execution price of the NMS stock trade associated with this QCC order. Max 11 bytes. Only relevant for QCC Order (549=6).
879	UnderlyingQty	No	Traded quantity of the NMS stock trade associated with this QCC order. Max 9 bytes. Only relevant for QCC Order (549=6).
9811	PriceDelta	No	The delta of the NMS stock trade associated with the QCC order. Max 11 bytes. Only relevant for QCC Order (549=6).
9812	UnderlyingExecutionTime	No	Time of execution of the NMS stock trade associated with this QCC order. Only relevant for QCC Order (549=6). Format: HH:MM:SS (EST)
9813	UnderlyingExecutionExchange	No	Executing exchange of the NMS stock trade associated with this QCC order. Max 4 bytes. Can be MIC code or Exchange code. Only relevant for QCC Order (549=6).
	Standard Trailer	Yes	

Points to note:

- *Execution Reports:* MIAX will send individual execution report for each side for Ack, Reject, and Done events. Trade Reports, or execution reports of type fill and partial fill, will be sent for the agency side and each Contra side allocation. For example, if a New Order Cross had three contra side allocations and fills at the end of an auction and does not trade with any other liquidity; the Firm will receive six trade reports. Three executions will be generated for the agency side and one for each contra allocation.
- *Clearing Details:* As stated in section 1.4 sub-section "SenderSubID", MIAX will use the clearing details associated with the MPID in the SenderSubID in addition to the clearing information supplied in the new order message. The default clearing information for the Agency Order for a Paired PRIME Cross Type or the First Priority Customer order for Customer-to-Customer Cross type, is set using the SenderSubID (Tag 9946 for the Agency order or the First Priority Customer order in the NoAlloc repeating group must equal the SenderSubID or the order will be rejected). Additional alternative clearing details can be specified via the available NoAlloc repeating group tags *(See example below)*. The Contra Order can have up to 10 Pre-

Trade allocations. Each Contra allocation will use tag 9946 (Firm MPID), versus SenderSubID, as the default clearing information plus additional clearing in the NoAlloc repeating group *(See example below)*.

- *Tag 549*: See MIAX Rules for more detail explanation of auction types. When set to MIAX PRIME Customer-to-Customer Cross, MIAX will reject the orders if both sides are not Priority Customers. The Cross will follow MIAX rules and cross immediately. When set to MIAX PRIME Pair Cross, both sides can be Priority Customer and the orders will follow rules for an auction. Having both orders set as Priority Customer will not force an immediate cross.
- *Auto-Match and "Last to Fill"*: These two features are mutually exclusive and the cross will be rejected if Tag 9040 is present and tag 18 is present with value 'X'
- *Auto-Match*: Functionality is enabled by the presence of tag 9040. The Auto-Match price must improve the AuctionStart Price (tag 44) otherwise the order will be rejected.
- *QCC Order*: NMS stock trade information associated with QCC order (tags: 810, 879, 9811, 9812, 9813) is not validated and will be truncated if it exceeds the specified field limits. QCC Order will be accepted even if this information is missing, invalid or exceeds the field limits.
- *Example FIX Message*: Here is an example New Order Cross Message with the Contra Side having three Pre-Trade allocations. Yellow highlight is agency order. Blue is the Contra order. The grey area are the three contra allocations.
  8=FIX.4.2 9=414 35=s 34=2 49=TEST1 50=BD33 52=20140312-17:46:30.733 56=MIAXTEST 57=MIAX 18=X 40=2 44=165 55=IBM 60=20140312-17:46:30.732 167=OPT 200=201401 201=1 202=220 205=18 548=6_case_1 549=2 552=2 54=1 11=6_case_1_side_1 78=1 80=20 77=O 204=0 9946=BD33 9732=Y 54=2 11=6_case_1_side_2 78=3 80=5 1=A_1 77=O 204=0 467=ID1 9946=MMRU 80=5 1=A_2 77=C 204=0 467=ID2 9946=BD34 80=10 1=A_3 77=C 204=0 467=ID3 9946=BD34 38=20 10=154

5.3 New Order – Multileg (MsgType = AB)

Users can send complex orders to the MIAX exchange with the New Order Multileg message (MsgType = AB). The following table contains the fields MIAX supports.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = AB
1	Account	No	Customer ID defined by the firms. Maximum length 10 characters. FOI will pass this through for clearing.
11	ClOrdID	Yes	Unique identifier of the order as assigned by the firm for the MPID used to populate the SenderSubID. Must be 30 characters or less. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session.
18	ExecInst	No	Valid values: o = Auto Cancel on connection loss (Firm requesting Auto Cancel on Disconnect (ACOD) for this Order) Note: If any other value is present the order will be rejected.
38	OrderQty	Yes	Number of strategies specified on the order. Valid Range: Must be positive, the Max value is dependent on the max leg ratio. Max is limited to the OrderQty * (max LegRatio) <= 999,999. Max length 6.

FIX Tag	FIX Name	Req'd	Details
40	OrdType	Yes	Valid values: 1 = Market (market order acceptance is set by the exchange. Please refer to MIAX circulars for the current setting) 2 = Limit
44	Price	Cond	The net price of the spread. This tag is required for Limit orders. To the customer that enters the order: • Debit (positive) – Willing to pay • Credit (negative) – Wants cash back • 0 (zero) – Even orders Format is limited to max 4 decimal places for stock-tied orders and 2 decimal places for all other orders. Price should not be specified on market orders. MIAX will not accept an order where a leg can print higher than max price for a simple order.
59	TimeInForce	Yes	Specifies how long the order remains in effect. Valid values: 0 = DAY 1 = GTC (Good Till Canceled) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order)
60	TransactTime	Yes	Time of execution/order creation expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
167	SecurityType	Yes	Identifies type of instrument. Valid value = MLEG (Multileg)
204	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer
439	ClearingFirm	No	CMTA information of Order originator's clearing firm. Valid range: 1 – 99999
440	ClearingAccount	Cond	OCC sub-account (Multi-account). This is a required value for Non-member MM orders. MIAX Member MM can send their MPID in this tag in lieu of tag 109 It must be an UPPERCASE alphanumeric value, with a maximum of 5 characters. A value with up to 3 characters is generally used. (see Notes section below)

FIX Tag	FIX Name	Req'd	Details
528	OrderCapacity	Cond	*Stock leg only* Specifies firm's capacity for the stock leg. Valid values: A = Agency P = Principal R = Riskless Principal
109	ClientID	Cond	For MIAX member Market Maker orders, MMs can send their MPID with this tag. MIAX Member MM can send in their MPID in tag 440 in lieu of tag 109 (see notes section below)
79	AllocAccount	No	MIAX assigned directed firm code of the designated participant for directed order flow. Max of 4 characters.
58	Text	No	Additional clearing information for the order that MIAX will send to OCC. Max 13 characters.
9018	MIAXExecInst	No	MIAX Specifies Execution Instructions. Valid values: P = ABBO Price Protection (APP) A = Auction on Arrival (AOA) O = Auction on Arrival Only (AOAO)Note: If any other value is present the order will be rejected. See "Points to Note" section for formatting instructions
9372	StockClearingAccount	No	*Stock-tied Orders only* Underlying MPID or DTCC account for the Stock leg of this order.
9385	AuctionID	Cond	Required only if TIF is AtCrossing(9). Numeric Event ID when this order is in response to a liquidity gathering event at MIAX. This must match the event ID published in the Administrative Information Subscriber (AIS) feed.
9449	BillingMPID	No	MIAX will bill the account associated with this MPID versus default billing of the account associated with Executing Broker MPID supplied in tag SenderSubID. This tag is ignored unless it is different than SenderSubID.
9732	AttributableOrderIndicator	No	Valid Values: 'Y' = Yes 'N' = No Default = 'N' if not provided. Indicates if the Attributable ID (Executing Broker MPID) should be displayed in Liquidity Seeking Event Notification messages triggered by this Order.
555	NoLegs	Yes	Number of Legs of the order Valid values: 2 - 8

FIX Tag	FIX Name	Req'd	Details
600	LegSymbol	Yes	**For Option Leg:** The 6 character OCC Security Symbol (Class) for an option. **For Stock Leg**: The OCC Options underlying symbol (default) or stock ticker symbol (configurable) **Note:** This Field is used to delimit the repeating group.
608	LegCFICode	Yes	CFI code for the individual leg Valid values: • OC - Option call • OP - Option put • ES – Equity Shares
611	LegMaturityDate	Cond	*Option leg only* Expiration Date in the YYYYMMDD format.
612	LegStrikePrice	Cond	*Option leg only* Strike price for an option.
623	LegRatioQty	Yes	The ratio of this individual leg. Number of option contracts or stock shares for this leg is: LegRatioQty * OrderQty Max ratio value is 999. Max length 5, i.e., there can be only two leading 0s with max value of 999. See notes below for additional details.
624	LegSide	Yes	The side of this individual leg Valid values are: 1 = Buy 2 = Sell 5 = Sell Short (for stock leg) 6 = Sell Short Exempt (for stock leg)
654	LegRefID	Yes	Used to identify a specific leg. Firm assigned ID must not exceed 5 characters.
564	LegPositionEffect	Cond	*Option leg only* The valid values are: O = Open C = Close
565	LegCoveredOrUncovered	No	*Option leg only* Specifies whether the option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered
	Standard Trailer	Yes	

Points to note:

- *Order Validation*: MIAX will validate each order it receives by checking that the user sent all the required FIX fields for the order. FIX field level validation failure will result in a session reject. Business rule validation failures will result in rejection in the form of an Execution Report (MsgType = 8) with an Execution Type of Rejected (ExecType = 8). When the Firm message passes FIX field level validations and Business rule level validation and still has to be rejected, MIAX will send a Business reject message. Once the Order is accepted and Acked, any further Business rule validations that fail will result in an unsolicited cancel.

- *Order Acknowledgement:* Upon receipt of an order, MIAX validates the order and then sends an acknowledgement back to the client. This acknowledgement tells the user that MIAX has received the order, but has not yet processed it. This acknowledgement is in the form of an Execution Report (MsgType = 8) with an Execution Type of New (ExecType =0) and an Order Status of New (OrdStatus = 0). See the section "Execution Report (MsgType = 8)" for more information about the individual Execution Report fields.
- *Auto Cancel on Disconnect (ACOD)*: Firms wishing to use the MIAX Auto Cancel on Disconnect feature on an order-by-order basis must send each order that they want MIAX to cancel upon disconnect with ExecInst=o. Orders that do not have this specified will not be canceled upon disconnect. Please refer to the FAQs for details on the Auto Cancel on Disconnect feature. This Order attribute will be ignored for GTC orders and GTC orders will not be canceled upon a disconnect.
- MIAX member Market Maker orders must be identified with their MPID. For flexibility, the MPID can be sent in either tag 440 or 109. When both tags have values, MIAX will validate them for equivalence and reject otherwise.
- *Quantity and Ratios:* Legs must always be entered where the OrderQty is the Greatest Common Factor of the legs quantities.
  Example: An order to Buy 1 SeriesABC, Sell 2 SeriesXYZ, Qty 100 should not be entered as Buy 100 SeriesABC, Sell 200 SeriesXYZ, Qty 1.
  - Complex Orders with only Option legs: The maximum ratio between any two legs must not exceed 3:1
  - Stock-Tied Orders: The minimum ratio between the stock leg and an option leg must not be lesser than 12.5:1
- *Order Pricing:* Limit price supplied with the order is assumed to be for the unit leg ratio quantity. Example: A $2 debit for 100 units of leg ratio of 1:2 yielding $2 debit for 100 units, $200 debit for the entire order.
- *Tag 9018:* Formatting is the same as standard FIX Tag 18. If more than one instruction is applicable to an order, this field can contain multiple instructions delimited by a space.
- *Tag 555 (NoLegs):* Complex orders can have two to eight legs. Stock-tied orders must have exactly one stock leg plus one to four option legs. Option legs can only be for standard options. Leg repeating group is delimited by tag LegSymbol.
- The order is Acked with Execution Reports for each instrument leg defined.
- Rejects are communicated with a single Execution Report.
- Max valid Net Price: MIAX will not accept an order where a leg can be printed higher than max price for a simple order. Please refer to MIAX circulars for the current default setting.

Example FIX Message: Example of New Order Mulitleg message with stock leg. Stock leg is highlighted in yellow and it's attributes are in **BOLD**. The grey area represents the option leg(s).
8=FIX.4.2 9=421 35=AB 34=7 49=UBSTEST2 50=BD33 52=20180214-13:41:04.914 56=MIAXTEST 57=MIAX 11=AB-Example 38=10 40=2 44=100.05 60=20180214-13:41:04.914 59=0 167=MLEG 204=2 **528=A** 555=2 600=IBM 608=**ES** 623=100 624=1 654=LEG1 600=IBM 608=OC 611=20130216 612=205 623=1 624=2 654=LEG2 564=C 565=1 10=161

5.4 New Order Cross – Multileg (MsgType = As)

New Order Cross – Multileg message (MsgType = As) enables firms to participate in MIAX Complex Price Improvement Mechanism (cPRIME). MIAX EEMs can send this message type to enter a Complex Order they represent as agent (an Agency Order) into an auction affording an opportunity for the Agency Order to receive price improvement. Firms can use this message type to send Complex Customer-to-Customer Cross (cC2C) orders, Qualified Contingent Cross (cQCC) as well as Related Futures Cross (RFC) orders. This is a custom FIX message supported over our FIX 4.2 session.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = As (uppercase A, lowercase s)
548	CrossID	Yes	Identifier for a cross order. Must be 30 characters or less. MIAX recommends firms to maintain uniqueness across New Order Cross (MsgType = s) and New Order Cross – Multileg (MsgType = As) within a single trading day for the EEM across all FOIs for the firm
549	CrossType	Yes	Valid Values: 2 = cPRIME 4 = cC2C 6 = cQCC 8 = RFC
40	OrdType	Yes	Valid values: 2 = Limit Market Orders not supported
18	ExecInst	No	Valid values: X = "Last to Fill" is enabled, when not present, "Last to Fill" is disabled. Note: If any other value is present the order will be rejected. Only evaluated when tag 549=2 and AutoMatchOrdType (tag 9040) must not be present or populated (see Notes section below)
44	Price	Yes	The net price of the spread from the perspective of the customer that originates the order (first order in the message): • Debit (positive) – Willing to pay • Credit (negative) – Wants cash back • 0 (zero) – Even orders Sets the Auction Start Price. Can be up to 4 decimal places for stock-tied cPRIME and stock-tied cQCC and must be 2 decimal places for all other orders including stock-tied cC2C.
38	OrderQty	Yes	Number of strategies to cross.

FIX Tag	FIX Name	Req'd	Details
			When CrossType (549)=6 (cQCC), (OrderQty * min LegRatio) must be minimum 1000 or order will be rejected. Valid Range: Must be positive with max length 6. The max value is dependent on the max leg ratio. Max is limited to the (OrderQty * max LegRatio) <= 999,999.
73 ***Repeating Group***	NoOrders	Yes	Must set to a value of 2. When CrossType (549)=2 (cPRIME) or 6 (cQCC) or 8 (RFC): • first order is the Agency Side • second order is the Contra Side When CrossType (549)=4 (cC2C): • both are Priority Customer orders and tag 204 is validated to ensure it is set to "0"
→ **11**	ClOrdID	Yes	Unique identifier of the order as assigned by the firm for the MPID used to populate the SenderSubID. Must be 30 characters or less. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session. *Required tag to start each repeated group.*
→ **78** ***Repeating Group***	NoAllocs	Yes	Number of Repeating Groups for pre-trade allocation. **Must be set to 1**. Future phase may support Contra Side NoAllocs > 1 for Cross Type (549) = 2 (cPRIME) or 6 (cQCC) or 8 (RFC). (See Notes section "Clearing Details" below)
→ → **80**	AllocQty	Yes	Quantity to be allocated to specific sub-account. Valid Range: 1 to 999,999. Max length 6. *Required tag to start each Repeating Group.* (See Notes section below)
→ → **1**	Account	No	Customer ID defined by the firms. Max length 10 characters. FOI will pass this through for clearing.
→ → **58**	Text	No	Additional clearing information for the order that MIAX will send to OCC. Max 13 characters.

FIX Tag			FIX Name	Req'd	Details
➔	➔	**204**	CustomerOrFirm	Yes	Specifies the order origin type. Valid values: When CrossType (549)=2 (cPRIME): Agency and Contra Side 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 5 = Non-Member Market Maker 8 = Non-Priority Customer Agency Side Only 4 = Market Maker (MM) When CrossType (549)=4 (cC2C): 0 = Priority Customer When CrossType(549)=6 (cQCC) or 8 (RFC): Agency and Contra Side 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker (MM) 5 = Non-Member Market Maker 8 = Non-Priority Customer
➔	➔	**439**	ClearingFirm	No	CMTA information of Order originator's clearing firm. Valid range: 1 – 99999
➔	➔	**440**	ClearingAccount	Cond	OCC sub-account (Multi-account). This is a required value for Non-member MM orders. MIAX Member MM can send their MPID in this tag. It must be an UPPERCASE alphanumeric value, with a maximum of 5 characters. A value with up to 3 characters is generally used. (Tag 109 is not available as in MsgType (D))
➔	➔	**467**	IndividualAllocID	Cond	Unique identifier for a specific NoAllocs repeating group instance. Only validated for Contra Order when NoAlloc > 1 (future phase), otherwise ignored. Uniqueness is for this order only. No validation across orders. AlphaNumeric, Max length = 4.

FIX Tag			FIX Name	Req'd	Details
➔	➔	528	OrderCapacity	Cond	Required for stock-tied orders only. Specifies firm's capacity for the stock leg. Valid values: A = Agency P = Principal R = Riskless Principal
➔	➔	9372	StockClearingAccount	No	*Stock-tied Orders only* Underlying MPID or DTCC account for the Stock leg of this order.
➔	➔	9946	FirmMPID	Yes	Executing Broker MPID (Firm MPID) (See notes section "Clearing Details" below)
➔	➔	9449	BillingMPID	No	MIAX will bill the account associated with this MPID versus default billing of the account associated with Executing Broker MPID supplied in tag FirmMPID. This tag is ignored unless it is different than FirmMPID.
➔	79		AllocAccount	No	MIAX assigned directed firm code of the designated participant for directed order flow. Max of 4 characters. Note: Evaluated only for CrossType(549)=2 (cPRIME) for the Agency Side. Ignored otherwise.
➔	9732		AttributableOrderIndicator	No	Indicates if the Attributable ID (Executing Broker MPID) should be displayed in Liquidity Seeking Event Notification messages triggered by this Order. Valid Values: 'Y' = Yes 'N' = No Default = 'N' if not provided. Note: Evaluated only for CrossType(549)=2 (cPRIME) for the Agency Side. Ignored otherwise.
555 *Repeating Group*			NoLegs	Yes	Number of Legs of the Complex Strategy Valid values: 2 – 8
➔	600		LegSymbol	Yes	**For Option Leg:** The 6 character OCC Security Symbol (Class) for an option. **For Stock Leg**: The OCC Options underlying symbol (default) or stock ticker symbol (configurable) *Required tag to start each Repeating Group.*

FIX Tag		FIX Name	Req'd	Details
➔	**608**	LegCFICode	Yes	CFI code for the individual leg Valid values: OC - Option call OP - Option put ES – Equity Shares
➔	**611**	LegMaturityDate	Cond	*Option leg only* Format: YYYYMMDD.
➔	**612**	LegStrikePrice	Cond	*Option leg only* Strike price for an option.
➔	**623**	LegRatioQty	Yes	The ratio of this individual leg. Number of option contracts or stock shares for this leg is: LegRatioQty * OrderQty.Max ratio value is 999. Max length 5, i.e., there can be only two leading 0s with max value of 999. See notes below for additional details.
➔	**624**	LegSide	Yes	The side of this leg from Agency Side. Valid values: 1 = Buy 2 = Sell 5 = Sell Short (for stock leg) 6 = Sell Short Exempt (for stock leg)
➔	**9624**	ContraSideShortSell	Cond	*Stock leg only* Required when this leg is stock leg and Contra Side of the stock leg is sell side, i.e., LegSide(624)=1 (Buy). Specifies if it is a short sell. Valid values: 5 = Sell Short 6 = Sell Short Exempt n = Not a short sell Future phase may support a delimited list of the above valid values for Contra side NoAllocs > 1
➔	**654**	LegRefID	Yes	Used to identify a specific leg. Firm assigned ID must not exceed 5 characters.
➔	**564**	LegPositionEffect	Cond	*Option leg only* Specifies if the order opens or closes a position on this leg for Agency Side. Required except when Agency side CustomerOrFirm set to 4 = Market Maker or 5 = Non-Member Market Maker. Valid values: O = Open C = Close

FIX Tag		FIX Name	Req'd	Details
➔	**9564**	ContraLegPositionEffect	Cond	*Option leg only* Specifies if the order opens or closes a position on this leg for Contra Side. Required except when Contra side CustomerOrFirm set to 4 = Market Maker or 5 = Non-Member Market Maker. Valid values: O = Open C = Close Future phase may support a delimited list of the above valid values for Contra side NoAllocs > 1
➔	**565**	LegCoveredOrUncovered	No	*Option leg only* Specifies whether the Agency Side option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered
➔	**9565**	ContraLegCoveredOrUncovered	No	*Option leg only* Specifies whether the Contra Side option position is covered or uncovered. Valid values: 0 = Covered 1 = Uncovered Future phase may support a delimited list of the above valid values for Contra side NoAllocs > 1
60		TransactTime	Yes	Time of execution/order creation expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
9040		AutoMatchOrdType	No	Valid values: 1 = Market 2 = Limit Only required for orders with auto-match enabled. Note: Only evaluated when CrossType(549)=2 (cPRIME). (See Notes section below)
9044		AutoMatchPrice	Cond	Sets the limit price at which the Contra Order will Auto-Match. The AutoMatchPrice must improve the AuctionStart Price (44) otherwise the order will be rejected. Format is the same as Price (44) Required if tag 9040 set to 2 = Limit

FIX Tag	FIX Name	Req'd	Details
810	UnderlyingPx	No	Execution price of the NMS stock trade associated with this cQCC order. Max 11 bytes. Only relevant for cQCC Order (549=6).
879	UnderlyingQty	No	Traded quantity of the NMS stock trade associated with this cQCC order. Max 9 bytes. Only relevant for cQCC Order (549=6).
9811	PriceDelta	No	The delta of the NMS stock trade associated with the cQCC order. Max 11 bytes. Only relevant for cQCC Order (549=6).
9812	UnderlyingExecutionTime	No	Time of execution of the NMS stock trade associated with this cQCC order. Only relevant for cQCC Order (549=6). Format: HH:MM:SS (EST)
9813	UnderlyingExecutionExchange	No	Executing exchange of the NMS stock trade associated with this cQCC order. Max 4 bytes. Can be MIC code or Exchange code. Only relevant for cQCC Order (549=6).
	Standard Trailer	Yes	

Points to note:

- *Execution Reports:* MIAX will send individual execution report for each side for Ack, Reject, and Done events. Trade Reports, or execution reports of type fill and partial fill, will be sent for the Agency side and each Contra side allocation per leg. For example, a New Order Cross with six legs that fills at the end of an auction and does not trade with any other liquidity; the Firm will receive twelve trade reports. Six executions will be generated for the Agency side and six for the Contra side.
- *Clearing Details:* As stated in section 1.4 sub-section "SenderSubID", MIAX will use the clearing details associated with the MPID provided in SenderSubID, in addition to the clearing information supplied in the new order message. The default clearing information for the Agency Order of a cPRIME/cQCC/RFC Cross type or the First Priority Customer order of cC2C Cross type is set using the SenderSubID (tag 9946 for the Agency Order or the First Priority Customer order in the NoAlloc Repeating Group must equal the SenderSubID or the order will be rejected). Additional alternative clearing details can be specified via the available NoAlloc repeating group tags *(See example below)*. In future phase when Contra Order may have > 1 pre-trade allocations, each Contra allocation will use tag 9946 (Firm MPID), versus SenderSubID, as the default clearing information *(See example below)*.
- Tag 80 – AllocQty: The sum of AllocQty for each side should be equal to tag 38 – OrderQty, else the order will be rejected.
- *Tag 549*: See MIAX Rules for more detail explanation of auction types. When set to 4 (cC2C), both sides must be Priority Customer, otherwise MIAX will reject the orders. The cC2C Cross will follow MIAX rules and cross immediately. When set to 2 (cPRIME), both sides can be Priority Customer and the orders will follow rules for an auction. Having both sides set as Priority Customer will not force an immediate cross.
- *Tag 555 (NoLegs):* The Complex Strategy defined by tag 555 (NoLegs) can have two to eight legs. Stock-tied strategies must have exactly one stock leg plus one to four option legs. Option legs can only be for standard options.

- *Quantity and Ratios:* Legs must always be entered where the OrderQty is the Greatest Common Factor of the legs quantities.
  Example 1: An order to Buy 1 SeriesABC, Sell 2 SeriesXYZ, Qty 100 should not be entered as Buy 100 SeriesABC, Sell 200 SeriesXYZ, Qty 1.
  - **Complex Orders with Option only legs: The maximum ratio between any two legs must not exceed 3:1**
  - **Stock-Tied Orders: The minimum ratio between the stock leg and an option leg must not be lesser than 12.5:1**
- *Auto-Match and "Last to Fill":* These two features are mutually exclusive and the cross will be rejected if Tag 9040 is present and tag 18 is present with value 'X'
- *Auto-Match:* Functionality is enabled by the presence of tag 9040. The Auto-Match price must improve the AuctionStart Price (tag 44) otherwise the order will be rejected.
- *cQCC Order*: NMS stock trade information associated with cQCC order (tags: 810, 879, 9811, 9812, 9813) is not validated and will be truncated if it exceeds the specified field limits. cQCC Order will be accepted even if this information is missing, invalid or exceeds the field limits.

Example FIX Message:
Example of New Order Cross Mulitleg message. Agency order is highlighted in yellow. Contra order is in blue. The grey area represents the option leg(s) of the complex order.
8=FIX.4.2 9=421 35=As 34=6 49=UBSTEST2 50=BD33 52=20170307-23:21:04.914 56=MIAXTEST 57=MIAX 38=5 548=123456 549=2 40=2 44=0 60=20170307-23:21:04.913 73=2 11=As-Example:A 78=1 80=5 204=0 9946=BD33 11=As-Example:C 78=1 80=5 1=1234567890 204=0 9946=BD33 555=2 600=IBM 608=OC 611=20130216 612=205 623=1 624=1 654=LR1 564=C 9564=C 565=0 600=IBM 608=OP 611=20130216 612=205 623=1 624=2 654=LR2 564=C 9564=C 565=1 10=161

Example of New Order Cross Mulitleg message with a stock leg. Stock leg is highlighted in yellow and stock specific attributes are in BOLD. The grey area represents the option leg(s).
8=FIX.4.2 9=421 35=As 34=8 49=UBSTEST2 50=BD33 52=20180214-13:41:04.915 56=MIAXTEST 57=MIAX 38=15 548=As-Example-2 549=2 40=2 44=0 60=20180214-13:41:04.915 73=2 11=As-Example-2:A 78=1 80=15 204=0 **528=A** 9946=BD33 11=As-Example-2**:**C 78=1 80=15 1=1234567890 204=0 **528=P** 9946=BD33 555=2 600=IBM 608=**ES** 623=100 624=1 **9624=5** 654=LR1 600=IBM 608=OC 611=20130216 612=205 623=1 624=2 654=LR2 564=C 9564=C 565=1 9565=0 10=161

5.5 Order Cancel Request – Single or Multileg (MsgType = F)

Firms can send a cancel request to MIAX to cancel the remaining quantity of an existing order or mass cancel many orders. The following table summarizes the format for the Order cancel request message.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = F
11	ClOrdID	Yes	Unique identifier of the cancel request, which is assigned by the institution. Must be 30 characters or less.
9100	RequestType	Cond.	When absent, request is treated as a request for canceling a single order. Required for mass cancels. Valid values:

FIX Tag	FIX Name	Req'd	Details
			0 = Single Simple or Complex order cancel 31 = Mass cancel of all orders for this MPID on this Session only 32 = Mass cancel of GTC orders for this MPID on this Session only 33 = Mass cancel of DAY orders for this MPID on this Session only 34 = Mass cancel of all orders for this MPID on this Session only and Security Symbol (class) 35 = Mass cancel of GTC orders for this MPID on this Session only and Security Symbol (class) 36 = Mass cancel of DAY orders for this MPID on this Session only and Security Symbol (class) 37 = Mass cancel of all orders for this Firm on this Session only Default = "0" when not present.
38	OrderQty	No	Not Required. No Validation if the tag is present. Valid values: 1 – 999,999. Max length 6.
41	OrigClOrdID	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. ClOrdID of the targeted Order to cancel. Must be 30 characters or less.
54	Side	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. Side of order. Must match the original order. Valid values: 1 = Buy 2 = Sell. Not required for multileg orders
167	SecurityType	No	Modifies which type of orders to cancel based on the RequestType (Tag 9100). Valid values: OPT (Options) – Cancel only simple option orders MLEG (Multileg) – Cancel only multileg orders All – Cancel both simple and multileg orders Default = "ALL" when not present in the Cancel Request.

FIX Tag	FIX Name	Req'd	Details
55	Symbol	Cond.	RequestType= 31, 32, or 33: Ignored RequestType=34, 35 or 36: Required. The 6 character OCC Security Symbol (class) for an option. RequestType=0 or missing: Not required for multileg orders else required . The 6 character Security Symbol (class) for an option. This value must match the original order.
60	TransactTime	Yes	Time request was initiated/released expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
200	MaturityMonthYear	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. Expiration month and year. Value must match the original order. Format: YYYYMM (For example, 201009 is an expiration of September 2010.) Not required for multileg orders
205	MaturityDay	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. Expiration day of month, used along with MaturityMonthYear (200) to fully specify the maturity date for options. This value must match the original order. Format: DD (single digit allowed) Not required for multileg orders
201	PutOrCall	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. Specifies whether the option is a put or a call. Must match the original order. Valid values: 0 = Put 1 = Call Not required for multileg orders
202	StrikePrice	Cond.	RequestType>0: Ignored RequestType=0 or missing: Required. Strike price for an option, which must match the original order. Not required for multileg orders
	Standard Trailer	Yes	

Points to note:

- ClOrdID in an Order Cancel Request must identify the cancel request uniquely. As a result, it cannot be the same as the ClOrdID of any order or replace.

- Upon receipt of a cancel request, MIAX responds with an Execution Report that has ClOrdID set to the ClOrdID of the cancel, OrigClOrdID set to the ClOrdID of the target order and OrdStatus and ExecType are both set to Pending Cancel(6).
- An order with a cancel pending must not be considered closed until MIAX sends an Execution message with a status indicating that the order is closed. For example, an Execution with ExecType = Cancelled, where ClOrdID refers to the ClOrdID of the cancel, and OrigClOrdID refers to the ClOrdID of the order.
- An order may have only one cancel pending at a time. Sending a second cancel while one is pending will result in the second cancel being rejected. Only after the first cancel is rejected can the firm send another cancel.
- An order may have been partially routed away when MIAX receives the Cancel Request. MIAX will immediately cancel contracts on the MIAX book and send an Execution Report in response. Tag 58 (Text) will contain the number of contracts canceled. Formatted "CxlQty:N" where N is a whole number.
- Upon receipt of a mass cancel request, MIAX will cancel each of the orders as per the request and send Execution report messages for each order that was canceled. If there are any orders that are not canceled due to them being in-flight on a separate FIX line, Firms are responsible to send separate cancels for them. Firms must not treat the request as a guarantee that all orders will be canceled in accordance with their book.
- Canceling a simple or complex order requires setting OrigClOrderID (tag 47) = <ClOrdID of the order> and optionally RequestType (tag 9100) = 0 and SecurityType (tag 167) = <OPT or MULTILEG>. The cancel request will be rejected if the optional RequestType and/or SecurityType are present in the request and do not match the OrigClOrdID given in tag 47.
- Multileg Pending Cancels and Cancled Execution Reports are sent per leg.

5.6 Order Cancel/Replace Request – Single (MsgType = G)

The MIAX FIX Engine allows customers to replace orders. However, there are some fields such as ClientID and Symbol that cannot be changed on the replacement order. Refer to the table below for a complete list of fields in the Cancel/Replace Request message. Fields not listed below will be ignored.

FIX Tag	FIX Name	Req'd	Can Repl	Details
	Standard Header	Yes		MsgType = G
11	ClOrdID	Yes	Must	Unique ID of replacement order as assigned by the institution. Note that this identifier will be used in the ClOrdID field of the Cancel Reject Message if the replacement request is rejected. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session. Must be 30 characters or less.
38	OrderQty	Yes	Yes	The total intended order quantity. Valid value: 1 – 999,999. Max length 6.
40	OrdType	Yes	Yes	Order type of the replacement order. This value may be changed. Valid values: 1 = Market 2 = Limit

FIX Tag	FIX Name	Req'd	Can Repl	Details
41	OrigClOrdID	Yes	N/A	ClOrdID of the targeted order when canceling or replacing an order.
44	Price	Cond	Yes	Price for limit orders (OrdType = 2) Format follows standard OCC clearing format where a combined total digits before and after the decimal is 8 or less. 4 digits before the decimal can have 4 after Valid range published via Circular Price should not be specified on market orders
54	Side	Yes	No	Side of order. Must match the original order. Valid values: 1 = Buy 2 = Sell
55	Symbol	Yes	No	The 6 character OCC Security Symbol (class) for an option. Value must match original order.
58	Text	No	Yes	Additional information about the order. This value must be re-specified if it was on the original order and needs to be carried over.
59	TimeInForce	Yes	Yes	Specifies how long the order remains in effect. Valid replaces: OPG, DAY or GTC may be replaced to values OPG, DAY or GTC. Other replaces are rejected. Valid values: 0= DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the specified Liquidity gathering event, Auction or Cancel) A = SAO (Settlement Auction Only: Use only for Index Settlement Auctions on Settlement Day)
60	TransactTime	Yes	Yes	Time request was initiated/released expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD-HH:MM:SS.uuu
77	OpenClose	Cond	Yes	Specifies if this order opens a position or closes a position. Required except when CustomerOrFirm set to 4 = Market Maker or 5 = Non-Member Market Maker Valid values: O = Open C = Close.

FIX Tag	FIX Name	Req'd	Can Repl	Details
79	AllocAccount	No	Yes	MIAX assigned directed firm code of the designated participant for directed order flow. Max of 4 characters.
109	ClientID	Cond	No	For MIAX member Market Makers orders, MM can send their MPID. Must Match original order. MIAX Member MM can send their MPID in this tag in lieu of tag 440 (see notes section below)
167	SecurityType	Yes	No	Identifies type of instrument. Valid value = OPT (Options)
200	MaturityMonthYear	Yes	No	Expiration month and year. Value must match the original order. Format: YYYYMM (For example, 201009 is an expiration of September 2010.)
201	PutOrCall	Yes	No	Must match the original order. Valid values: 0 = Put 1 = Call
202	StrikePrice	Yes	No	Strike price for an option, which must match the original order.
203	CoveredOrUncovered	Cond	Yes	Specifies covered or uncovered options. Required if tag present in original order. Valid values: 0 = Covered 1 = Uncovered
204	CustomerOrFirm	Yes	No	Specifies the order origin type. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker 5 = Non-Member Market Maker 8 = Non-Priority Customer
205	MaturityDay	Yes	No	Expiration day of month, used along with MaturityMonthYear (200) to fully specify the maturity date for options. Format: DD (single digit allowed)
439	ClearingFirm	Cond	No	Clearing Member Transfer Agreement. Required if value was on the original order and needs to be carried over. Provides CMTA information. Valid range: 1 – 99999

FIX Tag	FIX Name	Req'd	Can Repl	Details
440	Clearing Account	Cond	No	OCC sub-account (Multi-account). This is a required value for Non-member MM orders. Must Match original order. MIAX Member MM can send their MPID in this tag in lieu of tag 109 It must be an UPPERCASE alphanumeric value, with a maximum of 5 characters. A value with up to 3 characters is generally used.
	Standard Trailer	Yes		

Points to note:

- Tags that are required and cannot be replaced must match the contents of the original order.
- Tags not listed in the Cancel/replace message above will be ignored.
- Increasing the OrderQty of the original order will result in the order losing it existing time priority in the book.
- An order may have only one cancel replace pending at a time. Sending a second cancel replace while one is pending will result in the second cancel replace being rejected. Only after the first cancel replace is accepted or rejected can the firm send another cancel replace.
- OrderQty may not be the actual open quantity of the new order. MIAX will subtract executed volume of the original (target) order from the OrderQty in the replace request and leave open any remaining contracts in the new order.
- An order may have been partially routed away when MIAX receives the Replace Request. MIAX will immediately cancel contracts on the MIAX book and send an Execution Report in response. Tag 58 (Text) will contain the number of contracts canceled. Formatted "CxlQty:N" where N is a whole number.
- MIAX member Market Maker orders must be identified with their MPID. For flexibility, the MPID can be sent in either tag 440 or 109. When both tags have values, MIAX will validate them for equivalence and reject otherwise. The MPID on the replace order must match what was given on the original order.

5.7 Order Cancel/Replace – Multileg (MsgType = AC)

The MIAX FIX Engine allows customers to replace complex orders. Refer to the table below for a complete list of fields in the Cancel/Replace Request message. The "Can Repl" (Can Replace) column is used to determine which fields can be changed.

FIX Tag	FIX Name	Req'd	Can Repl	Details
	Standard Header	Yes		MsgType = AC
11	ClOrdID	Yes	Must	Unique identifier of the order as assigned by the firm for the MPID used to populate the SenderSubID. Must be 30 characters or less. Uniqueness must be guaranteed within a single trading day (including GTC orders on the book from previous days) for an MPID regardless of FIX Session.

FIX Tag	FIX Name	Req'd	Can Repl	Details
38	OrderQty	Yes	Yes	The total intended order quantity. Valid Range: 1 to 999,999. Max length 6.
40	OrdType	Yes	Yes	Valid values: 1 = Market (market order acceptance is set by the exchange. Please refer to MIAX circulars for the current setting) 2 = Limit
41	OrigClOrdID	Yes	N/A	ClOrdID of the targeted order when canceling or replacing an order.
44	Price	Cond	Yes	The net price of the spread. This tag is required for Limit orders. To the customer that enters the order: • Debit (positive) – Willing to pay • Credit (negative) – Wants cash back • 0 (zero) – Even orders Price should not be specified on market orders. Same format as specified in the Complex order message.
59	TimeInForce	Yes	Yes	Specifies how long the order remains in effect. Valid replaces: DAY or GTC may be replaced to values DAY or GTC. Other replaces are rejected. Valid values: 0 = DAY 1 = GTC (Good Till Canceled) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order)
60	TransactTime	Yes	Yes	Time request was initiated/released expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD-HH:MM:SS.uuu
167	SecurityType	Yes	No	Identifies type of instrument. Valid value = MLEG (Multileg)
79	AllocAccount	No	Yes	MIAX assigned directed firm code of the designated participant for directed order flow. Max of 4 characters.
58	Text	No	Yes	Additional clearing information for the order that MIAX will send to OCC. Max 13 characters.
555	NoLegs	Yes	No	Number of Legs of the order Valid values: 2 - 8

FIX Tag	FIX Name	Req'd	Can Repl	Details
600	LegSymbol	Yes	No	**For Option Leg:** The 6 character OCC Security Symbol (Class) for an option. **For Stock Leg**: The OCC Options underlying symbol (default) or stock ticker symbol (configurable) **Note:** This Field is used to delimit the repeating group.
608	LegCFICode	Yes	No	CFI code for the individual leg Valid values: • OC - Option call • OP - Option put • ES – Equity Shares
611	LegMaturityDate	Cond	No	*Option leg only* Expiration Date in the YYYYMMDD format.
612	LegStrikePrice	Cond	No	*Option leg only* Strike price for an option.
623	LegRatioQty	Yes	No	The ratio of this individual leg. Number of option contracts or stock shares for this leg is: LegRatioQty * OrderQty Max ratio value is 999. Max length 5, i.e., there can be only two leading 0s with the max value of 999.
624	LegSide	Yes	No	The side of this individual leg Valid values are: 1 = Buy 2 = Sell 5 = Sell Short (for stock leg) 6 = Sell Short Exempt (for stock leg)
654	LegRefID	Yes	No	Used to identify a specific leg. Firm assigned ID must not exceed 5 characters. Must be carried over from the original order.

Points to note:

- Tags that are required and cannot be replaced must match the contents of the original order.
- Tags not listed in the Cancel/replace message above will be ignored.
- Increasing the OrderQty of the original order will result in the order losing its existing time priority on the book.
- An order may have only one cancel replace pending at a time. Sending a second cancel replace while one is pending will result in the second cancel replace being rejected. Only after the first cancel replace is accepted or rejected can the firm send another cancel replace.
- OrderQty may not be the actual open quantity of the new order. MIAX will subtract executed volume of the original (target) order from the OrderQty in the replace request and leave open any remaining contracts in the new order.
- Execution Reports marked as Pending Replace and Replaced are sent per leg.
- Order Cancel Reject – Single or Multileg (35=9) messages are used to communicate Replace Rejects.

5.8 Don’t Know Trade (MsgType = Q)

The MIAX FIX Engine **does not** accept a DK Trade message. If the firm has any questions or issues with a trade, please contact MIAX Trading Operations with the details.

5.9 Order Cancel Reject – Single or Multileg (MsgType = 9)

If any of the validations of a Cancel or a Cancel/replace request fail, MIAX responds with an Order Cancel reject message. One such example is if it is too late to cancel an order. Firms are always receiving parties for this message.

FIX Tag	FIX Name	Req’d	Details
	Standard Header	Yes	MsgType = 9
11	ClOrdID	Yes	Unique order ID assigned by institution to the cancel request or to the replacement order.
39	OrdStatus	Yes	Status of order after the Cancel Reject function is applied.
41	OrigClOrdID	Yes	ClOrdID of the order that cannot be canceled or replaced. This value does **not** apply to the initial order of the day.
58	Text	Yes	Text describing error specified in Appendix C: Error Code Table Format: ‘Error Code’: ’Description’ Eg. 46: ClientID Mismatch
102	CxlRejReason	Yes	Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel 1 = Unknown order 2 = Broker Option (Details provided in Text tag, See Appendix C) 3 = Previous cancel or cancel/replace request is still pending
434	CxlRejResponseTo	Yes	Identifies the type of request in which Cancel Reject is the response. Valid values: 1 = Order Cancel Request 2 = Order Cancel/Replace Request
	Standard Trailer	Yes	

Points to note:

- Note that when a cancel or cancel/replace request is rejected, the target order is still live.

5.10 Execution Report – Single or Multileg (MsgType = 8)

The MIAX FIX Engine transmits execution reports (MsgType = 8) back to the Firm who sent the order. The execution report message is used to:

- Confirm the receipt of an order
- Confirm changes to an existing order (i.e. accept cancel and replace requests)
- Relay order status information
- Relay fill information on working orders
- Reject orders
- Report post-trade fees calculations associated with a trade.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = 8
1	Account	No	As specified on the order. Optional field.
6	AvgPx	Yes	Always filled with 0 (zero).
11	ClOrdID	Yes	Unique identifier of the order. This value uses the ID from the original order. Value must be 30 characters or less.
14	CumQty	Yes	Total number of filled options. Valid values: 0 – 999,999
17	ExecID	Yes	Unique identifier for each Execution Report message. Uniqueness is guaranteed within a single trading day. See "Points to Note" below
18	ExecInst	No	Instructions for order handling on exchange. Will be the same value as entered in the order (if used). Valid values: f = ISO o = Auto Cancel on connection loss (Firm requesting Auto Cancel on Disconnect (ACOD) for this Order)
20	ExecTransType	Yes	Identifies the trade type. Valid values: 0 = New 3 = Status
31	LastPx	No	Price of the last fill. This field is not required for ExecTransType = 3 (Status). (the number of decimal places might vary and is not limited to 3).
32	LastShares	No	Quantity of bought/sold contracts on the last fill. This field is not required for ExecTransType = 3 (Status). Valid values: 0 – 999,999

FIX Tag	FIX Name	Req'd	Details
37	OrderID	Yes	OrderID, as assigned by MIAX, is required to be unique for each chain of orders.
38	OrderQty	No	The number of contracts (total order quantity).
39	OrdStatus	Yes	Identifies the current status of an order. Valid values: 0 = New 1 = Partially Filled 2 = Filled 3 = Done for day 4 = Canceled 5 = Replaced 6 = Pending Cancel 8 = Rejected E = Pending Replace
40	OrdType	No	Order type that is specified on the order. Valid values: 1 = Market 2 = Limit
41	OrigClOrdID	No	ClOrdID of the canceled or replaced order. This is the target order of the previous request and **not** the initial order of the day.
44	Price	Cond	Price for limit orders (OrdType = 2) Format follows Price field as described in MsgType D, G, AB & AC.
54	Side	Yes	Side of order. Valid values: 1 = Buy 2 = Sell 5 = Sell Short (for stock leg) 6 = Sell Short Exempt (for stock leg)
55	Symbol	Yes	For Option Legs: The 6 character OCC Security Symbol (class) for an option. For Equity Legs: The OCC Options underlying symbol (default) or stock ticker symbol (configurable)
58	Text	Cond	Reject Reports (ExecType = 8) contain text describing error specified in Appendix C: Error Code Table Format: 'Error Code':' Description' Eg. 46: ClientID Mismatch User requested Cancel and Replace with ExecType equal to "6" or "E" contain partial Canceled Quantity

FIX Tag	FIX Name	Req'd	Details
			Format: CxlQty:'value' Eg. CxlQty:40 Unsolicited Canceled (ExecType = 4) will contain a freeform human readable reason for the cancel. (See Error Code 0 in Appendix C)
59	TimeInForce	No	Specifies how long the order remains in effect. Valid values: 0 = DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the specified Liquidity gathering event, Auction or Cancel) A = SAO (Settlement Auction Only: Use only for Index Settlement Auctions on Settlement Day)
60	TransactTime	No	Time of execution/order creation expressed in UTC (Universal Time Coordinated), also known as GMT. Format: YYYYMMDD–HH:MM:SS.uuu
77	OpenClose	Cond	*Option leg only* Specifies if this order opens a position or closes a position. Required except for MIAX member or Non-Member Market Maker orders Valid values: O = Open C = Close
103	OrdRejReason	No	The reason the order was rejected. Valid values: 0 = Broker Option (Details listed in Text Field; See Appendix C) 1 = Unknown Symbol 2 = Exchange Closed 3 = Order Exceeds Limit 4 = Too Late to Enter 5 = Unknown Order 6 = Duplicate Order (such as duplicate ClOrdID) 8 = Stale Order 11 = Unsupported Order Characteristic
150	ExecType	Yes	Identifies the type of execution report. Valid values: 0 = New 1 = Partially filled 2 = Filled 3 = Done for day 4 = Canceled 5 = Replaced

FIX Tag	FIX Name	Req'd	Details
			6 = Pending Cancel 8 = Rejected E = Pending Replace
151	LeavesQty	Yes	Number of open contracts for further execution. If the OrdStatus is Canceled or Rejected (no longer active) then LeavesQty = 0, otherwise LeavesQty = OrderQty - CumQty.
167	SecurityType	No	The type of security. Valid values: "OPT" or "MLEG"
200	MaturityMonthYear	No	*Option leg only* Expiration month and year, as specified on the order. Format: YYYYMM (For example, 201009 is an expiration of September 2010.)
201	PutOrCall	No	*Option leg only* As specified on the order. Valid values: 0 = Put 1 = Call
202	StrikePrice	No	*Option leg only* Strike price for an option, as specified on the order.
204	CustomerOrFirm	No	Specifies the order origin type that is specified on the order. Valid values: 0 = Priority Customer 1 = Firm 2 = Broker/Dealer 4 = Market Maker 5 = Non-Member Market Maker 8 = Non-Priority Customer
205	MaturityDay	No	*Option leg only* Expiration day of month, used in along with MaturityMonthYear (200) to fully specify the maturity date for options. Format: DD
207	SecurityExchange	Cond	*Option leg only* Exchange ID (MIC code) of the Option Exchange on which this execution occurred when it occurs on an exchange other than MIAX. Example codes from http://www.iso10383.org/ Example Valid Values: "AMXO" = NYSE/AMEX Options "BATO" = BATS Options "EDGO" = EDGX Options Market

FIX Tag	FIX Name	Req'd	Details
			"XBOX" = BOX Options "C2OX" = C2 Options "XCBO" = CBOE Options "XISX" = ISE Options "GMNI" = ISE Gemini Options "MCRY" = ISE Mercury Options "ARCO" = NYSE/ARCA Options "XNDQ" = Nasdaq Options Market "XPHO" = Nasdaq OMX PHLX Options "XBXO" = Nasdaq BX "MPRL" = MIAX PEARL Options "EMLD" = MIAX Emerald Options "MXOP" = MEMX Options
442	MultiLegReportingType	Cond	Used to indicate what an Execution Report represents for Multileg orders only. Valid Values: 2 = Individual Leg of a Multileg Security 3 = Multileg Security
461	CFICode	Cond	CFI code for the individual leg Valid values: • ES – Equity Shares Presently only for Multileg equity leg.
467	IndividualAllocID	No	Unique identifier for a specific NoAllocs repeating group used in a cross order.
528	OrderCapacity	Cond	*Stock leg only* Firm's capacity for the stock leg as specified in the order. Valid values: A = Agency P = Principal R = Riskless Principal
548	CrossID	Cond	Identification from a cross order. Only populated from New Order Cross orders.
654	LegRefID	Cond	Identifier from the original order. Only present when tag 442 set to '2'
1003	TradeID	Cond	The unique ID that identifies the trade at MIAX. Only available on Fill (ExecType 1 or 2) messages.
9018	MIAXExecInst	No	Instructions for order handling on exchange. Will be the same value as entered in the order (if used). Valid values: P = ABBO Price Protection (APP) A = Auction on Arrival (AOA) O = Auction on Arrival Only (AOAO)
9207	StockExecutionDestination	Cond	*Stock leg only*

FIX Tag	FIX Name	Req'd	Details
			Stock trading/reporting venue that will report and clear the stock leg trade Valid Values: 1 – NASDAQ TRF
9385	AuctionID	Cond	Only present if this is an execution that occurred as a part of a liquidity gathering event (eg. Auctions, route timers). Event ID of the Liquidity Event in which this execution occurred.
9449	BillingMPID	No	Only present if the alternative BillingMPID was provided at Order entry and it is different than the Executing Broker MPID supplied in tag SenderSubID or FirmMPID.
9730	AdditionalBillingParameters	Cond	For Order Executions (ExecType=1 or 2): A field containing additional (not contained elsewhere in Execution report or Order) parameters required for MIAX billing. See Appendix D: Additional Billing Parameters for details. For other Execution reports (ExecType is not 1 or 2): Tag will not be sent.
9946	FirmMPID	No	Only present if execution report is for a fill or partial fill resulting from a New Order Cross message.
	Standard Trailer	Yes	

Points to note**:**

- As specified in section "Use of the Execution Reports for Multileg Instruments" in the FIX Specification, a firm can expect two types of fill execution reports:
  1) Summary Execution Report for the overall multileg instrument (MultilegReportType of 3). OrdQty, LeavesQty, CumQty, AvgPx are in the context of the strategy. Only used for Complex Order Rejects.
  2) Leg Execution Report (MultilegReportType of 2) where the instrument identification and details are promoted to the instrument block. OrdQty, LeavesQty, CumQty, AvgPx are in the context of the individual leg.
- Tag 17 ExecID format: Execution reports representing a simple order will have a format of ####. Execution reports representing a Complex Order leg will have a format of ####-##.
- Order Rejects: If field level validations fails, FOI will send a session reject. Cancel and cancel/replace rejections are sent in the form of cancel reject message. Most other validation failures will result in reject via an Execution report message. If a validation failure does not fit into any of the above mentioned categories, MIAX sends a Business reject message. When rejecting an order the FIX engine will send back an Execution Report (MsgType = 8) with execution type set to 'Rejected' (ExecType = 8).
- Cancel/Replace Responses: The MIAX FIX Engine sends acknowledgements of cancels and cancel/replaces using Execution Report (MsgType='8') message.

- Unsolicited Cancel Reports: MIAX can send unsolicited cancel reports under circumstances listed in MIAX rule book. To do this MIAX would send an Execution Report (MsgType=8') with ExecType='4' (Canceled). MIAX will set the OrdRejReason on the order for the cancel. Also MIAX would not fill in the OrigClOrdID field.
- Done for the Day messages (NothingDone): For orders that remain open past the end of trading day, MIAX can send a "done for day" message back to preconfigured firms telling them the status of the order. Open DAY orders expire and are thrown out. Open GTC orders for active symbols are reentered into the system on the next trading day. MIAX would send an Execution Message (MsgType=8') with the ExecType='3' (Done for Day). The LeavesQty should reflect the number of contracts that are open on the order.

5.11 Order Status Request – Single or Multileg (MsgType = H)

Firms can send Order Status Request message to check on the status of their orders. In response, MIAX sends an Execution Report with indicating (ExecTransType = 3) that this is the status for the requested order.

The following table contains the fields for the Order Status Request message.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = H
11	ClOrdID	Yes	The ClOrdID of the order being requested. Must be 30 characters or less.
54	Side	Cond	Order side, which must match the original order for simple order. Valid values: 1 = Buy 2 = Sell Not required for Complex Orders
55	Symbol	Yes	The 6 character OCC Security Symbol (class) for an option.
167	SecurityType	No	Valid value: OPT or MLEG
	Standard Trailer	Yes	

5.12 User Notification (MsgType = CB)

Firms configured to use Risk Protection Monitoring will receive User Notification communicating the status of Risk checks. Tag 9003 (Event Type) is used to determine the reason for the notification.

The following table contains the fields for the User Notification message.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = CB TargetSubID will not be provided.
926	UserStatus	Yes	6 = other
60	TransactTime	Yes	Time of event creation expressed in UTC (Universal Time Coordinated), also known as GMT.

FIX Tag	FIX Name	Req'd	Details
9000	MPID Group ID	Yes	Firm Assigned Group ID Alphanumeric, Max length 32
9001	Metric ID	Yes	Metric ID for the group Alphanumeric, Max length 32
9011	Routing ID	Yes	Firm assigned Routing ID Alphanumeric, Max length 32
9002	MetricType	Yes	"C" = Rate of Executed Order Contracts "O" = Rate of New/Replace Orders Received '*' (asterisk) = downgraded for older version
9003	Event Type	Yes	"S" = Period Status/Pulse Notification "T" = Safeguard Trigger "R" = Reset Risk Metric "W" = Warning Only "D" = "Metric Deleted" "A" = "Metric Added" "P" = "Metric Paused" "U" = "Metric Un-Paused" '*' (asterisk) = downgraded for older version
9004	MessageID	Yes	Unique ID assigned by MIAX for this event. Can be used to order solicited messages. Unsolicited message will have a value of zero(0) (numeric)
9005	Configured Counting Time Period	Yes	Configured time period in milliseconds which is used to consider events for this Metric ID (numeric)
9006	Configured Max Quantity	Yes	Configured max threshold of counted items for the Configured Counting Time interval for this Metric ID. Defines rate for the counting time period. (numeric)
9007	Current Quantity	Yes	Current counted quantity at the time of the event for this Metric ID. (numeric)
9008	Max Peak Quantity	Yes	Max peak for Current Quantity during pulse interval
9009	Percentage Level	Yes	Current Percentage for the Counted Quantity in relationship to Configured Max Quantity. Valid values from 0 to 255%. Actual percentages greater than 255 will be reported as the max (255)
9010	Protection Type	Yes	"B" = Block all MPIDs for this MPID Group ID "M" = Block all MPIDs for this MPID Group ID and also mass-cancel all day orders for MPIDs in the group "W" = Warning only '*' (asterisk) = downgraded for older version
	Standard Trailer	Yes	

Points to note:

- Event Types (9003) are treated as solicited (T, R, W, D, A, P, U) or unsolicited (S). See configuration section how to control what types are published on the session.
- Status Notifications are sent periodically on a best effort basis at one minute intervals. Intra-day configurations may delay updates one interval.
- MIAX will deliver warnings on a best effort basis. If a metric rapidly produces multiple warnings, initial or older warning levels may be dropped. The latest, or most current, warning will be delivered. If a new Event Type is published using an older App Protocol version, it will be mapped to a '*' (asterisk) for backward compatibility purposes. They will be published as unsolicited or solicited based on the new event type.

5.13 Business Reject – Single or Multileg (MsgType = j)

The Business Message Reject <j> message is used to reject an application-level message which fulfills session-level rules and cannot be rejected via any other means. For example, receipt of a valid unsupported business level message type will result in a business reject (j).

Note that if the message fails session level checks (e.g. incorrect body length, required tag missing, etc.), a session level reject (3) will be issued.

FIX Tag	FIX Name	Req'd	Details
	Standard Header	Yes	MsgType = j
45	RefSeqNum	Yes	MsgSeqNum of rejected message
372	RefMsgType	Yes	MsgType of the FIX message being rejected
379	BusinessRejectRefID	Yes	RefID of the message being rejected. This is the ExecID in case an Execution report is being rejected and this is the ClOrdID in case an Order/Cancel message is being rejected. This will be the CrossID in case a New Order Cross is being rejected.
380	BusinessRejectReason	Yes	Code to identify reason for Business rejection. Valid values: 0 = Other 1 = Unknown ID 2 = Unknown Security 3 = Unsupported Message Type 4 = System not available 5 = Required or conditional tag missing 6 = Matching engine for this symbol is not available
58	Text	Cond	Required if BusinessRejectReason = 0
	Standard Trailer	Yes	

Appendix A: Table of Permitted Origins, Types and Prices Table

Refer to the MIAX rules for further information.

Appendix B: MIAX Options Order Types and Instructions

Order Type	FIX Tags	Description
Market Order	OrdType (40)=1 (market). Price (44) must not be specified.	An order to buy or sell that is to be executed at the best price obtainable.
Limit Order	OrdType (40) = 2 (limit). Price (44) must contain a price.	An order to buy or sell at a specified price or better. A marketable limit order is a limit order to buy/sell at or above/below the consolidated best offer/bid for the security.
IOC (immediate Or Cancel)	OrdType (40) = 1 (market) or 2 (limit) TimeInForce (59) = 3	A limit or market order that is to be executed in whole or in part as soon as such order is received. The portion not so executed is to be treated as cancelled. IOC's only execute on MIAX and do not route.
ISO Intermarket Sweep Order (available under RegNMS)	ISO IOC order OrdType (40) = 2 ExecInst (18) = f TimeInForce (59) = 3	-ISO IOC – Sweep the MIAX Book to the price, cancel any remaining balance, and ignore all away market quotes. ISO Orders will interact with all resting orders and quotes. ISO Orders are never routed out.
Good Till Cancel	TimeInForce(59)=1(GTC)	Order that will stay live until cancelled by the client. Any corporate action on the underlying security will result in an unsolicited cancel back to the client.
Opening	TimeInForce(59)=2(OPG)	Orders that will only be used in the Opening transaction. Any volume remaining at the end of opening transaction will be canceled back to the client.
Response to Liquidity Gathering Event	TimeInForce(59)=9 (AtCrossing: use only in the specified Event). AuctionID (9385) must contain Event ID published in the Administrative Information Subscriber (AIS) Feed.	Orders that will only be used in the specified liquidity gathering event (e.g.: auctions, route timers). Any volume remaining at the end of that transaction will be canceled back to the client.
ABBO Price Protection (APP)	MIAXExecInst (9018) = P	Complex Orders marked APP will never trade at a price outside of the opposing Implied Exchange Best Market Bid and Offer as measured at the time of execution.
Auction on Arrival (AOA)	MIAXExecInst (9018) = A	Complex Order that specifies the submitter's desire to initiate an Auction upon submission in free trading.

Order Type	FIX Tags	Description
Auction on Arrival Only (AOAO)	MIAXExecInst (9018) = O	Complex Order that specifies the submitter's desire to initiate an Auction upon submission in free trading and cancels upon completion of the Complex auction process NOTE: Order must be a DAY order (TIF=DAY)

Appendix C: Error Code Table

Order and cancel rejects will be identified with the below error code in the Text Tag following format: 'Error Code':' Description' Eg. 15: Invalid Price

FIX specification states the Text tag is a free format text string. MIAX will provide as much information as possible but reserves the right to add new errors codes or change meaning as required.

Code	Description	Code	Description	Code	Description
0	Reserved for free form text	34	Invalid CoveredUncovered	65	Missing TimeInForce
1	Unknown Symbol	35	Invalid CustomerOrFirm	66	Missing CustomerOrFirm
2	Exchange Closed	36	Invalid OpenClose	67	Missing TransactTime
3	Order Exceeds Limit	37	Invalid Account	68	SenderSubID Mismatch
4	Too Late To Enter	38	Invalid AllocAccount	69	Symbol Mismatch
5	Unknown Order	39	Invalid AuctionID	70	Side Mismatch
6	Duplicate Order	40	Invalid ClientID	71	TransactTime Mismatch
8	Stale Order	41	Invalid MaturityMonthYear	72	MaturityMonthYear Mismatch
11	UnsupportedOrderCharacteristic	42	Invalid Text	73	MaturityDay Mismatch
12	User Requested Cancel	43	Invalid TransactTime	74	PutOrCall Mismatch
13	IOCOrder	44	Invalid PutOrCall	75	StrikePrice Mismatch
14	Timeout	45	Invalid MaturityDay	76	CustomerOrFirm Mismatch
15	Supervisory	46	Invalid StrikePrice	77	ClearingFirm Mismatch
16	Cancel Received Outside AOC	47	Missing ClearingAccount	78	ClearingAccount Mismatch
17	System Unavailable	48	Missing ClearingFirm	79	ClientID Mismatch
18	Invalid SenderSubID	49	Missing ClOrdID	80	AllocAccount Mismatch
19	Invalid OnBehalfOfCompID	50	Missing OrigClOrdID	81	RoutingPolicy Mismatch
20	Invalid OnBehalfOfSubID	51	Missing OrderQty	82	Account Mismatch
21	Invalid ClOrdID	52	Missing Side	83	MaxOpenOrders Exceeded
22	Invalid OrigClOrdID	53	Missing SecurityType	84	MaxOrderSize Exceeded
23	Invalid Side	54	Missing Symbol	85	MaxOpenContracts Exceeded
24	Invalid SecurityType	55	Missing MonthYear	86	Order Routed Away
25	Invalid Option	56	Missing PutOrCall	87	AuctionID Invalid For TIF
26	Invalid ExecInst	57	Missing StrikePrice	88	Price On Market Order
27	Invalid ClearingDetails	58	Missing MaturityMonthYear	89	SenderSubID Not An EEM
28	Invalid OrderQty	59	Missing MaturityDay	90	Unknown Option
29	Invalid OrdType	60	Missing AuctionID	91	Risk Protection
30	Invalid Price	61	Missing ClientID	92	Option Restricted To Closing
31	Invalid TimeInForce	62	Missing OpenClose	93	TooLateToCancel
32	Invalid ExecBroker	63	Missing Account	94	Cxl Or Replace Pending
33	Invalid OptionPosition	64	Missing OrdType	95	Auto Canceled on Disconnect

Appendix D: Additional Billing Parameters

MIAX will provide parameters used by MIAX for billing in tag 9730 of *execution report* message for all executions (trades). The following table gives the breakup of that field:

Position	Number of Characters	Parameter Name	Description
1	1	OrderOrigin	Origin (CustomerOrFirm) of the firm's side of the order
2	1	ContraOrigin	Origin (CustomerOrFirm) of the opposite side of this trade
3	1	PriorityIndicator	Only applicable for MM origin. 'Y' = Yes 'N' = No '' (space) = N/A
4	1	MMRole	Only applicable for MM origin. 'P' = PLMM 'L' = LMM 'R' = RMM 'U' = UMM (UMM: Unassigned to quote in this class) '' (Space) = N/A
5	1	LiquityTimerRole	When the liquidity is involved in a trade occurring in a MIAX PRIME Auction or Timer Event such as a Route and Liquidity Refresh as defined in field "AuctionType", this field contains the role of the liquidity. Possible values: 'I' = Timer Initiator or PRIME Agency Order or PRIME Qualified Contingent Cross Agency Order 'J' = Timer Joiner on same side as Timer Initiator 'T' = Liquidity received before and on the same side as Timer Initiator or PRIME Agency Order 'B' = Received on opposite side of Initiator/Agency order before Timer/Auction stated 'A' = Received on opposite side of Initiator/Agency order after Timer/Auction started 'R' = Received as a response and on opposite side of Timer Initiator or PRIME Agency Order after event started 'E' = Managed interest filled by PRIME Agency order before the auction starts 'K' = PRIME Contra order that trades with agency order at the end of auction or PRIME Qualified

Position	Number of Characters	Parameter Name	Description
			Contingent Cross Contra Order that trades with Agency Order ‘P’ = PRIME Customer Cross ‘ ‘ (space) = N/A (Not Applicable) ‘*’ (asterisk) = downgraded for older version
6	1	ClassType	Indicates whether the underlying is being billed as maker/taker. ‘C’ = Conventional ‘M’ = Maker/Taker
7	1	LiquidityIndicator	‘A’ = Add ‘R’ = Remove ‘N’ = Not Applicable
8	1	MbboMPV	‘P’ = PennyAlways ‘N’ = Penny/Nickel ‘D’ = Nickel/Dime ‘ ‘ (space) = Not Applicable
9	1	MarketState	’N’ = Normal Trading ’A’ = Auction ’R’ = Routing Timer ‘ ‘ (space) = Not Applicable
10	4	DirectedFirmCode	Directed Firm Code (DFC) of the participant that the order was directed to
14	1	DirectedStatus	Status of directed order flow. Directed: ‘E’ = Directed to DLMM assigned to Underlying ‘U’ = Directed to DLMM not assigned to Underlying Not Directed: ‘N’ = Non-directed Order (NDO) ‘X’ =DFC invalid ‘I’ = Not directed due to Order origin (Origin not Priority Customer)
15	1	AuctionType	‘1’ = Opening ‘2’ = Reopening ‘3’ = Closing ‘4’ = Routing ‘5’ = Liquidity Refresh ‘6’ = PRIME Paired Order ‘7’ = PRIME Customer-to-Customer Cross ‘8’ = PRIME Qualified Contingent Cross ‘9’ = Liquidity Exposure Process (LEP) ‘ ‘ = Not Applicable (space) ‘*’ (asterisk) = downgraded for older version
16	6	RoutedOrderQty	Total Routed Away Quantity. Format: Fixed length integer prepended with zero I.E. 000012

Position	Number of Characters	Parameter Name	Description
22	1	TradedWithDirected MM	Indicates if the trade occurred with the MM to which the order was Directed: 'Y' = Yes 'N' = No '' (space) = Not Applicable
23	1	ContraTimeInForce	0 = DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order) A = SAO (Settlement Auction Only: Use only for Index Settlement Auctions on Settlement Day) '*' (asterisk) = downgraded for older version
24	1	ContraLiquidityTimer Role	When the liquidity is involved in a trade occurring in a PRIME Auction or Timer Event such as a Route and Liquidity Refresh as defined in field "AuctionType", this field contains the role of the liquidity. Possible values: 'I' = Timer Initiator or PRIME Agency Order or PRIME Qualified Contingent Cross Agency Order 'J' = Timer Joiner on same side as Timer Initiator 'T' = Liquidity received before and on the same side as Timer Initiator or PRIME Agency Order 'B' = Received on opposite side of Initiator/Agency order before Timer/Auction started 'A' = Received on opposite side of Initiator/Agency order after Timer/Auction started 'R' = Received as a response and on opposite side of Timer Initiator or PRIME Agency Order after event started 'E' = Managed interest filled by PRIME Agency order before the auction starts 'K' = PRIME Contra order that trades with agency order at the end of auction or PRIME Qualified Contingent Cross Contra Order that trades with Agency Order 'P' = PRIME Customer Cross ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
25	1	StrategyAuctionType	Possible values: ' ' (space) = Not Applicable 'I' = Initial Improvement Opening 'Y' = Initial Improvement Opening: Book Crossed 'U' = Upon Receipt Improvement

Position	Number of Characters	Parameter Name	Description
			‘R’ = Reevaluation Improvement ‘P’ = Reevaluation Improvement: Book Crossed ‘C’ = Immediate Book Uncrossing ‘L’ = Complex Liquidity Exposure Process (cLEP) ‘*’ (asterisk) = downgraded for older version
26	1	StrategyTimerRole	When the liquidity is involved in a trade occurring in a Complex Standard Auction as defined in field StrategyAuctionType, or a cPRIME auction or cC2C or cQCC or RFC crossing, this field contains the role of the liquidity: ‘I’ = Standard Auction Initiator or cPRIME Agency Order or cQCC Agency Order or RFC Agency Order ‘J’ = Joiner on the same side of initiator and received after auction started ‘T’ = Pre- existing on the same side of initiator and received before auction started ‘B’ = Pre- existing on opposite side of Initiator and received before auction stated ‘A’ = Un-related on opposite side of Initiator and received after auction started ‘R’ = Response on opposite side of Initiator and received after event started ‘G’ =Response on the same side of initiator and received after auction started ‘K’ = cPRIME Contra Order that trades with Agency Order at the end of auction or cQCC Contra Order or RFC Contra Order that trades with Agency Order ‘P’ = cC2C Order ‘ ‘ (space) = N/A (Not Applicable) ‘*’ (asterisk) = downgraded for older version
27	1	ContraStrategyTimer Role	When the liquidity is involved in a trade occurring in a Complex Standard Auction as defined in field StrategyAuctionType, or a cPRIME auction or cC2C or cQCC or RFC crossing, this field contains the role of the liquidity: ‘I’ = Standard Auction Initiator or cPRIME Agency Order or cQCC Agency Order or RFC Agency Order ‘J’ = Joiner on the same side of initiator and received after auction started ‘T’ = Pre- existing on the same side of initiator and received before auction started ‘B’ = Pre- existing on opposite side of Initiator and received before auction stated ‘A’ = Un-related on opposite side of Initiator and received after auction started

Position	Number of Characters	Parameter Name	Description
			'R' = Response on opposite side of Initiator and received after event started 'G' =Response on the same side of initiator and received after auction started 'K' = cPRIME Contra Order that trades with Agency Order at the end of auction or cQCC Contra Order or RFC Contra Order that trades with Agency Order 'P' = cC2C Order ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
28	1	Strategy State	Possible values: ' ' (space) = Not Applicable 'A' = Standard Auction 'F' = Free Trading 'P' = cPRIME 'X' = cC2C 'Q' = cQCC 'R' = RFC '*' (asterisk) = downgraded for older version
29	1	Contra Liquidity Type	Possible values: 'O' = Order 'Q' = Quote 'E' = eQuote 'C' = Complex Order 'D' = Complex eQuote ' ' (space) = N/A (Not Applicable) (eg: Manual Trade) '*' (asterisk) = downgraded for older version

Appendix E: Order Protection Settings

The following table provides a mapping of Order Protection Settings to Order types. Firms will coordinate with MIAX Trading Operations to establish these order size protection settings.

	Simple Non-Crossing Orders	Simple Crossing Orders	Complex Non-Crossing Orders	Complex Crossing Orders		Available At Per Class Level
MaxOrderSize	Y	NA	NA	NA		Y
MaxCrossingOrderSize	NA	Y	NA	NA		Y
MaxOpenOrders	Y	Y	NA	NA		N
MaxOpenContracts	Y	Y	NA	NA		N
MaxComplexOrderSize	NA	NA	Y	NA		Y
MaxComplexCrossingOrderSize	NA	NA	NA	Y		Y
MaxComplexOpenOrders	NA	NA	Y	Y		N
MaxComplexOpenContracts	NA	NA	Y	Y		N

Appendix F: Contact List

Please visit MIAX website at http://www.MIAXOptions.com for obtaining most up-to-date contact list and other such information.

Appendix G: Revision History

Revision Date	Version	Description
Feb 16, 2018	2.3	Stock-tied strategy trading enhancements. MsgType = “AB”: Added a new field OrderCapacity Updated details of LegRatioQty Added to list of valid values for LegSide Updated notes for Tag 555 (NoLegs) and provided leg ratio details for stock-tied orders Added an example FIX message for stock-tied multileg message MsgType = “As”: Added a new field OrderCapacity Updated details of LegRatioQty Added notes for Tag 555 (NoLegs) and leg ratio for stock-tied orders Added an example FIX message for stock-tied multileg cross order MsgType = “AC”: Updated details of LegRatioQty Added to list of valid values for LegSide MsgType = “8”: Added to list of valid values for LegSide Noted that these fields will be present for option leg message only – OpenClose, MaturityMonthYear, PutOrCall, StrikePrice, MaturityDay, SecurityExchange Added new stock leg only fields – OrderCapacity, StockExecutionDestination Appendix D (Additional Billing Parameters): Added ‘ ‘(space) to list of valid values for – MbboMPV and Market State Noted in the Overview/Configuration section that firms need to coordinate with MIAX Trading Operations to set up their Stock Clearing Account information for trading in stock-tied strategies Other updates - Removed support for mini options from MsgType = “s”, “AB”, “As” and “8”
May 09, 2018	2.3a	MsgType = “As”: Made tag 9624 (ContraSideShortSell) conditional. It is required if the contra side is the sell side of the stock leg. Its value for indicating “Not a short sell” is changed to “n”
Jun 27, 2018	2.3b	Firms can now opt-in to send/receive stock symbol in ticker symbol format for Complex Stock-tied orders in messages “AB”, “AC”, “As” and “8”.
Sep 04, 2018	2.4	Added new value ‘A’ (Settlement Auction Only) to TimeInForce in messages “D”, “G” and “8” Added new tag 9372 StockClearingAccount in messages “AB” and “As” AdditionalBillingParameters: AuctionType new value: ‘9’ StrategyAuctionType new value: ‘L’
Sep 10, 2020	2.5	Added RFC related changes in MsgType As (for new CrossType) and Strategy related fields in Additional Billing Parameters Added AOAO changes in msgType AB and 8 for new MIAXExecInst (9018) = O

Revision Date	Version	Description
		Added Last to Fill cPRIME changes in msgType As to add tag 18 (ExecInst) for X to indicate LastToFill Added Attributeable changes in msgType AB to include a field 9732 (AttributableOrderIndicator) Added changes for ISO PRIME – introduced an additional value ("f") in tag 18 (ExecInst) to indicate ISO along with other existing values
Nov 02, 2021	2.5a	Support for 4 decimal price format for Complex stock-tied orders.
May 17, 2022	2.6	Added Contra Liquidity Type indicator to Additional Billing Parameter Removal of FOK TIF
Aug 01, 2022	2.6a	Added ACOSF Feature
May 23, 2023	2.6b	SecurityExchange: Added 'MXOP'(MEMX Options)

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