

**MIAx Options Exchange**  
**MIAx Pearl Options Exchange**  
**MIAx Emerald Options Exchange**

# **Market Protections**

Modified March 2022

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# 1. Introduction

## National Operations Center (“NOC”), Located in Princeton, NJ office

- Centralized Systems Control, Monitoring & Management
- Leverages on-site expertise, facilitates system operation, & expedites troubleshooting
  - Help Desk and Systems Operations teams occupy the same space to facilitate communication & speed of troubleshooting responses
  - Business & systems domain experts immediately accessible to provide key decision making
  - Software development & systems technology staff available to provide deep technical knowledge & experience when needed
- Centralized Management of Exchange System Startup & Initialization
  - Centrally managed & controlled
    - Manages operational dependencies through entire startup & initialization process
    - Automatically alerts key stakeholders of failures
    - Exchange systems startup and initialization can be overridden in the event of any failure

## Application of Protections

- All Protections noted in this document are applied at each exchange individually. In no case does the application of a Protection at one exchange in any way affect a member’s ability to participate normally on another MIA X Exchange Group platform. Please see the appropriate exchange User’s Manual and Rulebook for additional information about each Protection

## 2. MIAX Exchange Group Protections for Orders

	Protection	Description	Available Currently	Configuration Details
1.	MIAX Open Orders <sup>1</sup>	Exchange Systems track the aggregate number of open orders for the Simple Market and separately track the aggregate number of open orders for the Complex Market, resting on the book for each Firm. Firms may define a maximum number of open orders threshold for the Simple Market and a maximum number of open orders threshold for the Complex Market, or use the Exchange default values. Once the either the Simple Market or Complex Market, Max Open Orders threshold has been reached, the Exchange rejects all new orders for that market but allows orders submitted prior to the threshold breach to continue to be managed and trade. Max Open Orders functionality provides the protection of speed bumps without entirely removing the Member from the market. To resume submitting orders, the Member must contact MIAX Trading Operations.	MIAX, Pearl & Emerald	Member configurable  Exchange Defaults: 30,000 Simple Market Orders  Exchange Defaults: 30,000 Complex Market Orders
2.	Max Open Contracts <sup>1</sup>	Exchange Systems track the aggregate total quantity of unexecuted contracts for the Simple Market and separately track the aggregate number of open unexecuted contracts for the Complex Market, resulting from open orders resting on the book for each Firm. Firms may define a maximum number of open contracts threshold for the Simple Market and a maximum number of open contracts threshold for the Complex Market or use the Exchange default values. Once the either the Simple Market or Complex Market, Max Open Contracts threshold has been reached or exceeded, the Exchange rejects all new orders from the Firm for that market. To resume	MIAX, Pearl & Emerald	Member configurable  Exchange Defaults: 1,000,000 Simple Market open contracts  1,000,000 Complex Market open contracts

		submitting orders, the Member must contact MIAX Trading Operations.		
3.	Max Order Size	Exchange Systems compare the quantity on each incoming order to a pre-defined Maximum Order Size. Firms may define a Maximum Order Size for orders in the Simple Market, Crossing orders in the Simple Market, orders in the Complex Market and Crossing orders in the Complex Market, or use the Exchange default values for these protections. In addition to the foregoing Exchange-wide settings, Firms may now select Firm/Class Maximum Order Size protections that will apply specifically to a selected Class. If an order exceeds the Maximum Order Size protection, the Exchange rejects the order. Maximum Order Size is a per order protection and applies to all order types with the exception of Settlement Auction Only (SAO) orders.	MIAX, Pearl & Emerald	Member configurable  Exchange Defaults: 10,000 contracts
4.	Real-Time High Order Rates <sup>1</sup>	Exchange Systems monitor each Firm's order rates in real-time to watch for atypical behavior. If the System detects a Firm's order rate is higher than normal, it sends an alert to Trading Operations. MIAX Trading Operations may contact the Member to confirm whether the higher order rate is intended. The Real-Time High Order Rate monitoring functionality provides the protection of a speed bump without removing the Member from the market.	MIAX, Pearl & Emerald	N/A
5.	Risk Protection Mechanism ("RPM"): Order Rate Protection <sup>1</sup>	Exchange Members have the ability to manage the operational risk associated with order rates. The Risk Protection Mechanism gives Members the flexibility to create multiple groups made up of a single or multiple Market Participant Identifier ("MPIDs") and define order rate thresholds specific to each group's risk tolerance. Order rates can be measured for varying durations, ranging from one second through the entire trading session. Members may assign multiple order rates to each group allowing them to detect	MIAX, Pearl & Emerald	Member configurable  Exchange Default: N/A  Member Default: a minimum of one protection is required

		<p>microbursts of activity or activity that the Member considers risky when monitored over time. Members must establish at least one Allowable Order Rate setting, with a corresponding specified time period of not less than one second, and not to exceed ten seconds. The maximum time period for this protection will be established by the Exchange and communicated to Members via Regulatory Circular. The System generates warnings to a member when a group reaches both 70% and 90% of its threshold. Once a threshold is exceeded, the System rejects new orders and, if configured by the Member's request, cancels all open day orders submitted by all MPIDs in the group. For a group to resume trading, the Member must contact MIAX Trading Operations.</p>		
<p>6.</p>	<p>Risk Protection Mechanism ("RPM"): Executed Contract Rate Protection<sup>1</sup></p>	<p>Exchange Members have the ability to manage the operational risk associated with contracts executed from orders. The Risk Protection Mechanism gives Members the flexibility to create multiple groups, made up of a single or multiple MPIDs, and define the maximum number of executed contracts allowed for each group with a Firm-defined time period. Executed contract rates can be measured for varying durations ranging from one second through the entire trading session. Members may assign multiple executed contract rates to each group allowing them to monitor for microbursts of activity that a member considers risky when monitored over time. Members must establish at least one Contract Execution Rate setting, with a corresponding specified time period of not less than one second, and not to exceed ten seconds. The maximum time period for this protection will be established by the Exchange and communicated to Members via Regulatory Circular. The System generates warnings to a Member when a group reaches both 70% and 90% of its threshold. Once an execution occurs which</p>	<p>MIAX, Pearl &amp; Emerald</p>	<p>Member configurable</p> <p>Exchange Default: N/A</p> <p>Member Default: a minimum of one protection is required</p>

		causes the total number of executed contracts within the defined time frame to exceed the Executed Contract Rate Protection threshold, the System rejects all subsequent new orders, and if configured by the Member's request cancels all day orders submitted by the group. For a group to resume trading, the Member must contact MIAX Trading Operations.		
7.	Firm Initiated Order Mass Cancel <sup>1</sup>	Firms can initiate a systematic mass cancel of their orders via FIX. Orders to be cancelled can be specified by MPID, TIF, and/or Class. Cancellations submitted via FIX affect only orders transmitted over that FIX session.	MIAX, Pearl & Emerald	N/A
8.	Firm Requested Manual Mass or Limited Cancel <sup>1</sup>	Firms can initiate a manual cancel of their orders via a request to MIAX Trading Operations. Orders to be cancelled can be specified by Firm, MPID, TIF and/or Class. Manual cancellations executed by MIAX Trading Operations affect orders across all FIX sessions.	MIAX, Pearl & Emerald	N/A
9.	Firm Initiated Manual Order Block and Cancel	Manual Block and Cancel allows Members to request that all orders, by Firm name or MPID, be cancelled and all new inbound and orders blocked. A Member may request Exchange staff to (i) remove and cancel all of its orders in the System and (ii) block all new inbound orders, by Firm name or by MPID. The block will remain in effect until the Member requests Exchange staff to remove the block.	MIAX, Pearl & Emerald	N/A
10.	Auto Cancel on Disconnect ("ACOD") <sup>1</sup>	Auto Cancel on Disconnect order protection allows Firms to elect an automated cancellation function for eligible orders upon loss of connectivity to the Exchange. In the event that a loss of connectivity occurs, the System will close the Member's session and cancel all eligible orders as instructed by the Member. Following a disconnect, reconnection will not be permitted for a certain period of time as disseminated via Regulatory Circular.	MIAX, Pearl & Emerald	Yes (see <i>MIAX, Pearl and Emerald FIX Interface Functional Specifications</i> )

<p>11.</p>	<p>Auto Cancel on System Failure (“ACOSF”)<sup>1</sup></p>	<p>Auto Cancel on System Failure order protection allows Firms to elect an automated cancellation function for eligible orders in the event of a Matching Engine or FOI process crash or hardware failure that prevents a Firm’s interaction with existing open orders. The system will cancel all open orders (including GTC) in the impacted Matching Engine(s) or cancel orders that were sent through the impacted FOI session(s), upon system failure.</p>	<p>Pearl</p>	<p>Member configurable</p> <p>Firm Default: Do Not Cancel All Open Orders</p> <p>(see Pearl FIX Interface Specifications)</p>
<p>12.</p>	<p>No Bid – Offer Threshold</p>	<p>If the Exchange, upon initial receipt or reevaluation, evaluates a market order to sell an option when i) the national best bid is zero and the national best offer is greater than the Exchange default threshold setting or the Member designated threshold setting, or ii) the resulting national best bid is zero after any final trade or routed order, the System will cancel the market order to sell. If the National Best Offer is equal to or less than i) the Exchange default threshold setting or the Member designated threshold setting, or ii) the resulting national best bid is zero after any final trade or routed order at the time of evaluation, the System will convert the sell market order to a sell limit order with a price of one Minimum Price Variation (“MPV”) and post the order on the book.</p>	<p>MIAX, Pearl &amp; Emerald</p>	<p>Exchange Setting: \$0.10</p> <p>Member Configurable (Future Implementation)<sup>2, 3, 4</sup></p>
<p>13.</p>	<p>Max Put Price Protection for Orders<sup>2</sup></p>	<p>The Exchange will reject, manage or cancel orders for a put option with a price that exceeds the Maximum Put Price</p> <ul style="list-style-type: none"> <li>• Maximum price of a Put Option is the Strike price plus the Put Price Variance (PPV) setting</li> <li>• Put bid orders priced through the maximum value (bid higher than the top limit) will trade up to and including the maximum value, then will be managed at the limit of the allowable trading range, or cancel subject to Managed Protection Override (MPO)</li> </ul>	<p>MIAX</p> <p>(Future Implementation)<sup>2, 3</sup></p>	<p>Exchange Setting: PPV: \$0.10</p>



		<ul style="list-style-type: none"> <li>Put Offer orders priced higher the maximum value will be rejected, or in the case of eQuotes will be cancelled</li> </ul>		
14.	Max Liquidity Price Check for Orders	Maximum Order Price field check. The Exchange System will reject a new order for the Simple Market, with a price that exceeds the Maximum Liquidity Price.	MIAX, Pearl & Emerald	Exchange Setting: \$2,999.99 (see <i>MIAX, Pearl and Emerald FIX Interface Functional Specifications</i> )
15.	Limit Order Opposite Price Percent and Value (Simple Market)	<p>The Exchange will reject limit orders for the Simple Market, priced through the opposite side of the NBBO by an amount greater than 50% of the NBBO or \$2.50, whichever is less, with the exception of:</p> <ul style="list-style-type: none"> <li>When the Simple Market NBO is less than or equal to \$0.50, the Exchange will only reject limit orders to buy with a price that is greater than the NBO by \$0.25 or more</li> <li>When the NBB is less than or equal to \$0.25, the Exchange will accept any properly submitted limit order to sell</li> </ul>	MIAX, Pearl & Emerald	Exchange Setting: When the NBO is greater than \$0.50 for orders to buy or the NBB is greater than \$0.25 for orders to sell, the greater of 50% of the NBBO or \$2.50, whichever is less
16.	Limit Order Opposite Price Value (Complex Market)	The Exchange will reject limit orders for the Complex Market, priced through the opposite side of the cNBBO by an amount greater than \$2.50.	MIAX & Emerald	Exchange Setting: \$2.50
17.	Vertical Spread Protection for Complex Orders and Complex Crossing Orders	<p>The Exchange will reject, manage or cancel Vertical spread orders priced outside a total allowable trading range.</p> <ul style="list-style-type: none"> <li>Vertical spread bids with a limit price less than zero minus the Vertical Spread Variance (VSV) setting will be rejected</li> <li>Vertical spread bids with a limit price greater than the absolute value of the difference between the strike plus the VSV will trade all available prices up to and including the maximum trade value; then will be managed, or cancel subject to</li> </ul>	MIAX & Emerald	Exchange Setting: \$0.10

		<p>Managed Protection Override (MPO)<sup>3</sup></p> <ul style="list-style-type: none"> <li>Vertical spread offers with a limit price greater than the absolute value of the difference between the strike plus the VSV will be rejected</li> <li>Vertical spread offers with a market price less than zero minus the VSV will trade all available prices down to and including the minimum trade value; then will be managed, or cancel subject to MPO<sup>3</sup></li> <li>(Future Implementation)<sup>3,4</sup> Vertical spread offers with a limit price less than zero minus the VSV will be rejected</li> </ul>		
18.	Calendar Spread Protection for Complex Orders and Complex Crossing Orders	<p>The Exchange will reject, manage or cancel Calendar spread orders priced outside the total allowable trading range.</p> <ul style="list-style-type: none"> <li>Calendar spread bids with a limit price less than zero minus the Calendar Spread Variance (CSV) will be rejected</li> <li>Note the maximum possible offer for a Calendar spread is unlimited, thus there is no maximum price protection for Calendar spreads</li> <li>Calendar spread offers with a market price less than zero minus the CSV setting will trade all available prices down to and including the minimum trade value; then will be managed, or cancel subject to MPO<sup>3</sup></li> <li>(Future Implementation)<sup>3,4</sup> Calendar spread offers with a limit price less than zero minus the CSV will be rejected<sup>3,4</sup></li> <li>Calendar spread protection does not apply to European Style options</li> </ul>	MIAX & Emerald	Exchange Setting: \$0.10
19.	Butterfly Spread Protection for Complex Orders and Complex Crossing Orders <sup>3</sup>	<p>The Exchange will reject, manage or cancel Butterfly spread orders priced outside a total allowable trading range.</p> <ul style="list-style-type: none"> <li>Butterfly spread bids with a limit price less than zero minus the</li> </ul>	MIAX  (Emerald Future Implementation)	Exchange Setting: \$0.10

		<p>Butterfly Spread Variance (BSV) setting will be rejected</p> <ul style="list-style-type: none"> <li>• Butterfly spread bids with a limit price greater than the absolute value of the difference between the closest strikes (upper strike price minus the middle strike price or the middle strike price minus the lower strike price) plus the BSV will trade all available prices up to and including the maximum trade value; then will be managed, or cancel subject to Managed Protection Override (MPO)</li> <li>• Butterfly spread offers with a limit price greater than the absolute value of the difference between the closest strikes (upper strike price minus the middle strike price or the middle strike price minus the lower strike price) plus the BSV will be rejected</li> <li>• Butterfly spread offers with a market price less than zero minus the BSV will trade all available prices down to and including the minimum trade value; then will be managed, or cancel subject to MPO<sup>2,3</sup></li> <li>• (Future Implementation)<sup>3,4</sup> Butterfly spread offers with a limit price less than zero minus the BSV will be rejected</li> </ul>		
<p>20.</p>	<p>Parity Price Protection for Stock-Tied “Buy-Write” and “Married-Put” Complex Orders</p>	<p>The Exchange will reject, manage or cancel Stock-Tied “Buy-Write” and “Married-Put” orders priced outside the total allowable trading range</p> <ul style="list-style-type: none"> <li>• Call Parity is Stock price minus Strike price of the option</li> <li>• Put Parity is Strike price of the option minus the Stock price</li> <li>• Call or Put Options should never trade under parity by more than the Parity Spread Variance (PSV)</li> </ul>	<p>MIAX &amp; Emerald</p>	<p>Exchange Setting: \$0.10</p>

		<ul style="list-style-type: none"> <li>Parity protected spread bids with a limit price less than the Parity Protected Spread Price (PPSP) will be rejected</li> <li>Parity protected spread offers with a limit price less than the PPSP will trade all available prices down to and including the PPSP; then will be managed, or cancel subject to Managed Protection Override (MPO)<sup>3</sup></li> </ul>		
21.	Managed Protection Override (MPO) <sup>2,3</sup>	MPO provides member firms the ability to optionally cancel an order that would otherwise be subject to management pursuant to the following protections: Max Put Price Protection, Vertical Spread Protection, Calendar Spread Protection, Butterfly Spread Protection, and Parity Price Protection	MIAX  (Pearl & Emerald Future Implementation)	Member Configurable Default: Off
22.	Wide Market Threshold	The Exchange will reject market orders in Simple Market, regardless of side, if the NBBO spread is greater than or equal to the Exchange Wide Market Threshold.	MIAX, Pearl & Emerald	Exchange Setting: \$5.00 (or class maximum quote width, if greater than \$5)
23.	Minimum Price Variation	The Exchange will reject limit orders with an invalid MPV.	MIAX, Pearl & Emerald	N/A
24.	Opening Price Collar: Expanded Quote Range (“EQR”)	MIAX Option and MIAX Emerald’s Expanded Quote Range provides a price protection collar for orders during the opening and during re-opening following a market halt. Any orders that participate in the Exchange’s opening process will only execute at prices at or within the collar. The Exchange determines the EQR by evaluating its book’s two-sided quotes that meet valid-width requirements. As an additional precaution, the Exchange also considers the best away valid-width market when determining the EQR to provide our members with away-market price protection. The Exchange subtracts a predefined offset from the best bid and adds a predefined offset to the best offer to define the EQR. The Exchange predefines	MIAX & Emerald	Please see the Appendix for the predefined offset grid

		the offsets conservatively to establish tight collars that further mitigate the risk of orders executing at erroneous prices. The System executes orders at prices at or within the EQR, routing eligible orders to any away markets at the NBBO if necessary, and then if necessary, at prices outside the NBBO, but at or within the collar. After trading the greatest allowable number of contracts, the System cancels any unexecuted balance of orders priced through the opening price in multi-list products.		
25.	Default Intraday Price Collar for multi-list products	MIAX limits how far an order can “walk the book” through the NBBO at the time of initial evaluation. For market orders, or limit orders priced through the market, in the absence of a specified multi-tick value, the System does not execute more than five MPVs away from the original opposite side of NBBO. The Order will not be displayed or executed outside the less aggressive of its limit price or its protected price and will be cancelled by the System if its protection limit would be exceeded.	MIAX, Pearl & Emerald	Exchange Default: 5 ticks
26.	MIAX Variable Price Protection (MVP)	Similar to the Exchange default of 5 MPV, MIAX’s MVP multi-tick price collar limits how far outside the NBBO at the time of initial evaluation an order can “walk the book”. For each order, Members instruct how many ticks from the original opposite side NBBO the order can trade. Members can select a multi-tick value within the allowable range. When specified, the Member provided multi-tick value replaces the Exchange Default Intraday Price Collar value for that order. The Order will not be displayed or executed outside the less aggressive of its limit price or its protected price and will be cancelled by the System if its protection limit would be exceeded.	MIAX, Pearl & Emerald	Member configurable order-by-order: 0 to 20
27.	Liquidity Exposure Process (LEP)	The Liquidity Exposure Process is designed to slow the progression of aggressively priced Proprietary Product orders allowing for organized price discover	MIAX	Exchange Default: 5 ticks

	<p>for Proprietary Products</p>	<p>and thereby reducing the probability of an order “walking the book” through multiple price points. The LEP will establish price limits (Protected Prices), allowing liquidity to follow the Standard Order and Quote Handling process in a normal manner up or down to first of, (i) the next Protected Price, (ii) the order’s limit price.</p> <ul style="list-style-type: none"> <li>Once reaching a Protected Price, liquidity that remains and is priced through the Protected Price will be posted at the Protected Price for a brief exposure period (LEP Timer).</li> </ul>		
<p>28.</p>	<p>MIAX Price Collars (“MPC”) and MIAX Strategy Protected Price (MSPP)<sup>3</sup> for Complex Orders</p>	<p>MIAX Price Collars is an Exchange-wide system for Complex Orders that will prevent them from executing at potentially erroneous prices by establishing temporary price limits (MPC Prices) or final collar price (MSPP), beyond which the complex order will not be displayed or executed. Complex orders are displayed and/or executed according to normal complex order handling procedures until reaching the first of, (i) their limit price or, (ii) their current MPC Price, or their final MSPP collar price.</p> <p>Any time liquidity would otherwise (i) auction, (ii) trade, or (iii) post at a price more aggressive than the current MPC or final MSPP<sup>3</sup> collar price, the System will initiate a Complex Liquidity Exposure Process (cLEP) Auction. The cLEP Auction uses the Standard Complex Auction methodology. The cLEP Auction Start Price is the MPC Price.</p> <p>After a complex order has been subjected to a cLEP Auction, its MPC Price will advance to a more aggressive level which will become its next MPC Price, unless the order has advanced to its final MSPP<sup>3</sup> collar price and subject to cancellation. The next MPC Price is determined by adding (for protected buy interest) or subtracting</p>	<p>MIAX &amp; Emerald</p>	<p>Exchange Setting: MPC: \$0.25</p> <p>MSPP<sup>3</sup>: \$2.50 (Emerald Future Implementation)</p>

		<p>(for protected sell interest) the MPC Value to/from the then existing MPC Price.</p> <p>MPC protection will continue until an order has been (i) been fully executed, (ii) posted at its limit price, or (iii) cancelled.</p>		
29.	NBBO Managed Orders	<p>When the Exchange is not at the NBBO, the System manages Non-Routable orders, so they do not lock or cross the NBBO. The System displays the order one MPV away from the current opposite side NBBO. The System books the order at an internal price locking the away market. As the NBBO updates, the System dynamically re-price the order and continues to display it one MPV away from the new NBBO, until the order is posted at its original limit price, is fully executed, or cancelled.</p>	MIAX, Pearl & Emerald	N/A
30.	Duplicate Order ID Check <sup>1</sup>	<p>Order validation check for duplicate order ID's. If the Exchange receives an order with a duplicate order ID, the Exchange will reject the order.</p>	MIAX, Pearl & Emerald	N/A
31.	Time Stamp Validation	<p>The Exchange checks the time stamp on incoming orders for stale or queued orders. If the Exchange receives the order more than sixty seconds from the order's original time stamp, the Exchange will reject the order.</p>	MIAX, Pearl & Emerald	Exchange Setting: 60 seconds

<sup>1</sup>Certain Protections on MIAX Pearl are calculated separately for orders submitted through FIX or MEO. <sup>2</sup>Functionality to be supported on Pearl in a future implementation

<sup>3</sup>Functionality to be supported on Emerald in a future implementation

<sup>4</sup>Functionality to be supported on MIAX in a future implementation

### 3. MIAX Exchange Group Protections for Quotes

	Protection	Description	Available Currently	Configuration Details
1.	ARM	<p>The Aggregate Risk Manager (“ARM”) tracks the number of contracts traded by a Market Maker, represented as a percentage of quote size, in an assigned option class within a specified time period. ARM is in effect at the opening and throughout the trading day. Market Makers establish a percentage of their quotation size (Allowable Engagement Percentage) and the time period for each option class. In the absence of a Market Maker established percentage and time period, Exchange defaults will apply. When an execution against a Market Maker’s Standard quote occurs, the System looks back over the specified time period to determine whether the executed contract quantity equals or exceeds the Allowable Engagement Percentage. If triggered, ARM automatically:</p> <ul style="list-style-type: none"> <li>• Purges all of the Market Maker Standard quotes from the class</li> <li>• Blocks new quotes until an ARM re-entry is sent via MIAX Express Interface (“MEI”) or MIAX Express Order Interface (MEO)</li> <li>• Allows MIAX eQuotes to continue to be sent while ARM is effect.</li> </ul> <p>Members may choose one of two Reset on Quote (“RoQ”) settings:</p> <ul style="list-style-type: none"> <li>• Reset on Quote (the default behavior) will reset the executed contract count on the bid (or ask) side of any option where the Firm has submitted a revised bid (or ask) quote</li> <li>• Do NOT Reset on Quote will NOT reset the executed contract count on the bid (or ask) side of any</li> </ul>	MIAX, Pearl & Emerald	<p>Member configurable by class</p> <p>Exchange Default for Market Makers: 105% over 1 second</p> <p>There is NO default value for Pearl EEMs</p> <p>Minimum Allowable Engagement Percentage: 1%</p>



		<p>option where the Firm has submitted a revised bid (or ask) quote, and will include ALL CONTRACTS EXECUTED within the specified ARM time period</p> <ul style="list-style-type: none"> <li>• To change the default behavior from Reset on Quote to Do NOT Reset on Quote, or back to Reset on Quote, contact MIAX Trading Operations</li> </ul> <p>ARM is required for all Market Makers and is optional by MPID for Pearl Electronic Exchange Members using the Binary interface</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>		
2.	ARM Re-entry	<p>The Exchange eliminates potential "race conditions" by restricting the Market Maker from entering new quotes until the Market Maker acknowledges receipt of the ARM trigger by sending a re-entry request and is knowingly new quotes in the affected class.</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl & Emerald	Required
3.	ARM <sup>2</sup> Class Protection – Multiple ARM triggers in a single Class	<p>Extending the concept of ARM, the System will monitor the following to automatically trigger ARM<sup>2</sup>:</p> <p>When a Firm defined number of ARM triggers for a given Option class are triggered over a Firm defined period of time, the System will purge all quotes for the Firm for that class. Re-engagement of quote acceptance will be done manually by the Exchange once permission is given by the Firm to MIAX Trading Operations. ARM<sup>2</sup> is available to Market Makers only.</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl & Emerald	Member configurable
4.	ARM <sup>2</sup> Firm Protection – ARM trigger in	<p>Extending the concept of ARM, the System will monitor the following Firm defined parameters to automatically trigger ARM<sup>2</sup>:</p>	MIAX, Pearl & Emerald	Member configurable

	<p>Multiple Classes</p>	<ul style="list-style-type: none"> <li>• Number of unique classes that trigger a Primary ARM</li> <li>• Time period for measurement</li> </ul> <p>When triggered, the System will purge all quotes Exchange-wide across all Exchange quoting interfaces for the given Firm. Re-engagement of quote acceptance will be done manually by the Exchange once permission is given by the Firm to MIAX Trading Operations.</p> <p>This functionality acts as an Exchange-wide quote mass cancel in all classes that the Firm trade versus a class only quote mass cancel. ARM<sup>2</sup> is available to Market Makers only.</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>		
<p>5.</p>	<p>Firm Initiated Mass Quote Cancel</p>	<p>Members may submit quote mass cancellations through MEI/MEO to remove all of their quotes/orders and/or cancel all or a subset of their quotes on the Exchange, by MPID or MPID/class combination. The Firm Initiated Mass Quote Cancel:</p> <ul style="list-style-type: none"> <li>• Cancels all of the Market Maker Standard quotes and eQuotes from the class</li> <li>• Blocks all new inbound Standard quotes until a re-entry is sent via MEI/MEO</li> <li>• Blocks all new inbound eQuotes until a re-entry is sent via MEI/MEO</li> </ul> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	<p>MIAX, Pearl &amp; Emerald</p>	<p>N/A</p>
<p>6.</p>	<p>Firm Initiated Hybrid Mass Quote Cancel</p>	<p>Using the Hybrid Mass Quote Cancel, Members may submit mass quote cancellations through MEI/MEO to remove all of their Standard quotes on the Exchange while leaving eQuotes unaffected. Firms may cancel their Standard quotes on the Exchange by MPID/class combination. The Firm Initiated Hybrid Mass Quote Cancel:</p>	<p>MIAX, Pearl &amp; Emerald</p>	<p>N/A</p>

		<ul style="list-style-type: none"> <li>• Cancels all of the Market Maker Standard quotes from the class</li> <li>• Blocks all new inbound Standard quotes until a re-entry is sent via MEI/MEO</li> <li>• Does not cancel or block eQuotes on MIAX or IOC MEO orders on MIAX Pearl</li> </ul> <p><i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>		
7.	Firm Initiated Manual Quote Mass Cancel	<p>Manual quote mass cancellation allows Members to request that all quotes on the Exchange be cancelled. A Member may request Exchange Staff to remove all of its quotes or cancel a subset of its quotes on the Exchange, by Firm name or by MPID.</p> <p><i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl & Emerald	N/A
8.	Firm Initiated Manual Quote Block and Cancel	<p>MIAX Manual Block and Cancel allows Members to request that all quotes, by Firm name or MPID, be cancelled and all new inbound quotes blocked. A Member may request Exchange staff to (i) remove all of its quotations on the Exchange and (ii) block all new inbound quotations, by Firm name or by MPID. The block will remain in effect until the Member requests Exchange staff to remove the block.</p> <p><i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl & Emerald	N/A
9.	Real-Time High Quote Rates	<p>The Exchange Systems monitor each Firm’s quote rates in real-time to watch for atypical quoting behavior per MEI/MEO session (quoting interface) as well as for the entire Firm. If the System detects that a Member’s quote rate is higher or lower than normal, it sends an alert to MIAX Trading Operations. MIAX Trading Operations may contact the Member to confirm whether the observed behavior is intended. Real-Time High Quote Rate monitoring provides the protection of a speed bump without removing the Member from the market.</p>	MIAX, Pearl & Emerald	N/A

		<i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i>		
10.	Automatic Quote Purges	<p>Automatic Quote Purge Protection allows Members to specify that in the event of a loss of connectivity for a given MEI or MEO port, the Member’s quotes and eQuotes may be cancelled. In any case, if connectivity with the Firm’s last MEI/MEO port is lost during a defined period of time disseminated via Regulatory Circular, the System will close the session and automatically cancel all quotes and eQuotes.</p> <p><i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl, & Emerald	Yes (see MIAX or Emerald MEI or Pearl MEO Functional Specification)
11.	Opening Price Collar: Expanded Quote Range (“EQR”)	<p>The Exchange creates a collar during the opening process to protect the Members from executing at erroneous prices. The collar prevents the execution of trades on the open outside the price collar. Eligible orders may be routed to any away markets both at the NBBO, and/or to markets priced outside the NBBO but at or within the collar. To define the collar, the Exchange considers all two-sided quotes that meet its minimum width requirements and the best away markets. The Exchange takes the best bids and offers from away markets and Exchange quotes and subtracts a predefined offset from the bid and adds a predefined offset to the offer to calculate the collar. Any liquidity that participates in the opening process will only execute at prices at or within the collar.</p>	MIAX & Emerald	Please see the Appendix for the predefined offset grid
12.	NBBO Managed Quotes	<p>When the Exchange is not at the NBBO, the System manages Market Maker quotes, so they do not lock or cross the NBBO. The System displays the quote one MPV away from the current opposite side NBBO and books the quote at a price that will internally lock the current opposite side NBBO. As the NBBO fades, the System dynamically re-prices the Market Maker quote and continues to display it one MPV away from</p>	MIAX, Pearl & Emerald	N/A

		<p>the new NBBO, until the Market Maker quote reaches its original limit price, is fully executed or cancelled.</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>		
13.	Max Put Price Protection for Quotes <sup>2,3</sup>	<p>The Exchange will manage or cancel a quote or eQuote for a put option with a price that exceeds the Maximum Put Price</p> <ul style="list-style-type: none"> <li>• Maximum price of a Put Option is the Strike price plus the Put Price Variance (PPV) setting</li> <li>• Buy Quote (bid higher than the top limit) will trade up to and including the maximum value, then will be managed at the limit of the allowable trading range, or in the case of eQuotes will be cancelled</li> <li>• Sell Quote (offered higher than the top limit) is not rejected and will be displayed</li> </ul>	MIAX  (Pearl & Emerald Future Implementation)	Exchange Setting: PPV: \$0.10
14.	Simple Orderbook  Max Liquidity Price Check for Quotes	<p>The Maximum Quote Price field check. The Exchange System will reject a new standard quote or eQuote with a price that exceeds the Maximum Liquidity Price.</p> <p><i>The term "quotes" as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	MIAX, Pearl & Emerald	Exchange Setting: \$2,999.99 <i>(see MIAX or Emerald MEI or Pearl MEO Functional Specification)</i>
15.	MIAX Price Collars ("MPC") for Complex eQuotes	<p>MIAX Price Collars is an Exchange-wide system for Complex eQuotes that will prevent them from executing at potentially erroneous prices by establishing temporary price limits (MPC Prices) beyond which the complex eQuote will not be displayed or executed. Complex eQuotes are executed according to normal complex eQuote handling procedures until reaching the first of, (i) their limit price, or (ii) their current MPC Price.</p> <p>MPC protection for eQuotes will continue until an eQuote has been (i) fully executed, or (ii) cancelled.</p>	MIAX & Emerald	Exchange Setting: \$0.25
16.	Vertical Spread Protection for	The Exchange will cancel Vertical spread eQuotes priced outside a total allowable trading range.	MIAX & Emerald	Exchange Setting: \$0.10

	Complex eQuotes	<ul style="list-style-type: none"> <li>Vertical spread bids with a limit price less than zero minus the Vertical Spread Variance (VSV) setting will be cancelled</li> <li>Vertical spread bids with a limit price greater than the absolute value of the difference between the strike plus the VSV will trade all available prices up to and including the maximum trade value; then will be cancelled</li> <li>Vertical spread offers with a limit price greater than the absolute value of the difference between the strike plus the VSV will be cancelled</li> <li>Vertical spread offers with a limit price less than zero minus the VSV will trade all available prices down to and including the minimum trade value; then will be cancelled</li> <li>(Future Implementation)<sup>3,4</sup> Vertical spread offers with a limit price less than zero minus the VSV will be rejected</li> </ul>		
17.	Calendar Spread Protection for Complex eQuotes	<p>The Exchange will cancel Calendar spread eQuotes priced outside the total allowable trading range.</p> <ul style="list-style-type: none"> <li>Calendar spread bids with a limit price less than zero minus the Calendar Spread Variance (CSV) will be cancelled</li> <li>Note the maximum possible offer for a Calendar spread is unlimited, thus there is no maximum price protection for Calendar spreads</li> <li>Calendar spread offers with a limit price less than zero minus the CSV setting will trade all available prices down to and including the minimum trade value; then will be cancelled</li> <li>(Future Implementation)<sup>3,4</sup> Calendar spread offers with a limit price less than zero minus the CSV will be rejected</li> </ul>	MIAX & Emerald	Exchange Setting: \$0.10

		<ul style="list-style-type: none"> <li>• Calendar spread protection does not apply to European Style options</li> </ul>		
18.	Butterfly Spread Protection for Complex eQuotes <sup>3</sup>	<p>The Exchange will cancel Butterfly spread eQuotes priced outside a total allowable trading range.</p> <ul style="list-style-type: none"> <li>• Butterfly spread bids with a limit price less than zero minus the Butterfly Spread Variance (BSV) setting will be cancelled</li> <li>• Butterfly spread bids with a limit price greater than the absolute value of the difference between the closest strikes (upper strike price minus the middle strike price or the middle strike price minus the lower strike price) plus the BSV will trade all available prices up to and including the maximum trade value; then will be cancelled</li> <li>• Butterfly spread offers with a limit price greater than the absolute value of the difference between the closest strikes (upper strike price minus the middle strike price or the middle strike price minus the lower strike price) plus the BSV will be cancelled</li> <li>• Butterfly spread offers with a limit price less than zero minus the BSV will trade all available prices down to and including the minimum trade value; then will be cancelled</li> <li>• (Future Implementation)<sup>3,4</sup> Butterfly spread offers with a limit price less than zero minus the BSV will be rejected</li> </ul>	MIAX (Emerald Future Implementation)	Exchange Setting: BSV: \$0.10
19.	Parity Price Protection for Stock-Tied “Buy-Write” and “Married-Put” Complex eQuotes	<p>The Exchange will cancel Stock-Tied “Buy-Write” and “Married-Put” eQuotes priced outside the total allowable trading range</p> <ul style="list-style-type: none"> <li>• Call Parity is Stock price minus Strike price of the option</li> <li>• Put Parity is Strike price of the option minus the Stock price</li> </ul>	MIAX & Emerald	Exchange Setting: \$0.10

		<ul style="list-style-type: none"> <li>• Call or Put Options should never trade under parity by more than the Parity Spread Variance (PSV)</li> <li>• Parity protected bids with a limit price less than the Parity Protected Spread Price (PPSP) will be rejected</li> <li>• Parity protected offers with a limit price less than the PPSP will trade all available prices down to and including the PPSP; then will be cancelled</li> </ul>		
<p>20.</p>	<p>MIAX and Emerald Single Side Protection (“SSP”) for quotes</p> <p>Pearl Single Side Protection (SSP) for binary orders</p>	<p>Single Side Protections remove the risk of trading multiple MEI/MEO quotes/orders on the same side of the market for an option. In order for protection to be in effect, SSP must be enabled for an MPID by contacting MIAX Trading Operations. A single setting will enable (or disable) SSP. If enabled, SSP will be triggered when the full remaining size of a MEI/MEO quote/order is exhausted by a trade. Once triggered, the Member will be notified and the following actions affecting that Member will be taken:</p> <ul style="list-style-type: none"> <li>• Any MEI/MEO quote/order on that side of that option for that Member will be cancelled</li> <li>• All new MEI/MEO quotes/orders on that side of that option for that Member will be blocked</li> <li>• A reset message will be required before the Member can reenter MEI/MEO quotes/orders on that (sell or buy) side of that option</li> <li>• ISO, AOC, SAO and OPG quotes/orders are unaffected (are not cancelled or blocked) and will never cause a protection to be triggered</li> </ul> <p><i>The term “quotes” as used in this section applies equally to all MEO orders on MIAX Pearl.</i></p>	<p>MIAX, Pearl &amp; Emerald</p>	

<sup>2</sup>Functionality to be supported on Pearl in a future implementation

<sup>3</sup>Functionality to be supported on Emerald in a future implementation

<sup>4</sup>Functionality to be supported on MIAX in a future implementation



## 4. Appendix

<b>EXPANDED QUOTE RANGE (“EQR”)</b>		
<b>Option Classes Not Included in the Penny Program – EQR Nickel-Dime Issues</b>		
<b>Bid Range</b>	<b>EQR</b>	<b>&gt;9 Months</b>
\$0.00 - \$1.00	\$0.05	5x
\$1.01 - \$3.00	\$0.10	5x
\$3.01 - \$5.00	\$0.20	5x
\$5.01 - \$10.00	\$0.30	5x
\$10.01 - \$20.00	\$0.50	5x
\$20.01 - \$40.00	\$0.70	5x
>\$40.00	\$0.90	5x
<b>Option Class Included in the Penny Pilot – EQR for Penny-Nickel Issues</b>		
<b>Bid Range</b>	<b>EQR</b>	<b>&gt;9 Months</b>
\$0.00 - \$1.00	\$0.05	5x
\$1.01 - \$3.00	\$0.10	5x
\$3.01 - \$5.00	\$0.20	5x
\$5.01 - \$10.00	\$0.30	5x
\$10.01 - \$20.00	\$0.05	5x
\$20.01 - \$40.00	\$0.70	5x
>\$40.00	\$0.90	5x
<b>Options Overlying SPY/IWM/QQQ EQR for All Penny Issues</b>		
<b>Bid Range</b>	<b>EQR</b>	<b>&gt;9 Months</b>
\$0.00 - \$0.40	\$0.05	5x
\$0.41 - \$1.00	\$0.07	5x
\$1.01 - \$2.00	\$0.10	5x

\$2.01 - \$3.00	\$0.15	5x
\$3.01 - \$5.00	\$0.20	5x
\$5.01 - \$10.00	\$0.30	5x
\$10.01 - \$20.00	\$0.50	5x
\$20.01 - \$40.00	\$0.70	5x
>\$40.00	\$0.90	5x



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