

MIAX Pearl Equities™ FAQ

This document contains frequently asked questions about the MIAX Pearl Equities Exchange (MIAX Pearl Equities or the Exchange) and will cover functionality, membership, risk protections and market data. For additional information or to arrange testing, please contact Trading Operations at TradingOperations@miaxglobal.com or (609) 897-7302. To learn more about trading on MIAX Pearl Equities, please contact Sales at Equities@miaxglobal.com or (609) 897-8177. The MIAX Pearl Equities Interface Specifications can be viewed [here](#).

Q. What is the MIAX Pearl Equities Exchange?

A. The MIAX Pearl Equities Exchange is a fully automated electronic equities trading platform that leverages MIAX's industry leading technology, infrastructure and risk tools. MIAX Pearl Equities does not maintain a physical trading floor and its trading system has been developed specifically for the unique functional and performance demands of equities trading, providing best in class customer interface features, protections, and performance for users of the Exchange.

Q. What are the trading hours for MIAX Pearl Equities?

A. Pre-Opening System Availability (Order Entry Only)

3:30 am to 4:00 am Eastern Time

Early Hours Trading

4:00 am to 9:30 am Eastern Time

Regular Hours Trading

9:30 am to 4:00 pm Eastern Time (ends at 1:00 pm Eastern Time on Early Close Days)

Late Hours Trading

4:00 pm to 8:00 pm Eastern Time (ends at 5:00 pm Eastern Time on Early Close Days)

Q. What is the MIAX Pearl Equities allocation model?

A. MIAX Pearl Equities deploys a Price/Display/Time allocation model.

Q. What are the MIAX Pearl Equities Exchange Identifiers?

A. Exchange Codes:

- Bloomberg: VP
- Blue sheet – Exchange Code: 8
- Blue sheet – Requestor Code: 7
- CAT Destination Code: PEARLEQ

- CAT Market Center ID: H
- CAT Related Market Center ID: S
- CAT Participant Code: PEARLEQ
- ECAT Code: H
- FINRA Short Interest Reporting Code: Y
- MIC Code: EPRL
- MIC Code (Dark): EPRD
- OATS Destination Code: XH
- OATS Market Center ID: H
- RIC Code: .MP
- RIC Trade Exchange ID: MPE
- SIP Code: H
- Thomson One Exchange Code: NP
- UTC Market Code: 190

Q. What types of Membership are supported by MIAX Pearl Equities?

- A. MIAX Pearl Equities supports Equities Market Makers (EMM) and Order Entry Firms (OEF).

As part of the on-boarding process, each member will be required to provide a list of NSCC MPIDs that can be used for order entry and identify which of these MPIDs will be registered as EMM and which will be registered as OEF. Members are allowed to use one or more of these MPIDs to send orders via their sessions. Each session may be permissioned for one or more MPIDs.

Please visit [MIAX Pearl Equities Membership](#) to begin the onboarding process or contact [MIAX Pearl Equities Membership Services](#) for additional information.

Q. Are non-members of MIAX Pearl Equities able to trade on MIAX Pearl Equities?

- A. Non-members of MIAX Pearl Equities are able to trade on MIAX Pearl Equities by setting up a Sponsored Access agreement with a MIAX Pearl Equities Member.

Q. Where can I find the MIAX Pearl Equities User Manual?

- A. The MIAX Pearl Equities User Manual can be found on the Exchange website [here](#).

Q. What is the MIAX Pearl Equities Fee Schedule?

- A. The Exchange's goal is to be extremely competitive and a low-cost provider when it comes to transaction, non-transaction and market data fees. A link to a copy of the complete MIAX Pearl Equities Fee Schedule is available on the Exchange's website under the Fee Summary tab [here](#).

Q. What functionality is supported via the Member Firm Portal User Interface?

- A. The Member Firm Portal User Interface (MFP UI) is a member-facing application available via the internet. The Member Firm Portal UI provides members with the tools needed to view and manage their connectivity, sessions, risk protection configurations, market maker registrations, and orders and trades. Order and trade data is available for current day and up to six months prior.

Q. What functionality is supported via the Member Firm Portal API?

- A. The Member Firm Portal Application Programming Interface (API) is an internet accessible set of REST services that allows member firms' systems to retrieve and modify data. The MFP API is separate and unique from the MFP UI in both functionality offered and design. The Member Firm Portal API provides members with the ability to query for and manage select risk protections, as well as reset triggered risk protections.

Q. When does a MIAX Pearl Equities Market Maker assignment become effective?

- A. MIAX Pearl Equities Market Makers are able to make modifications to their symbol assignment list via the Member Firm Portal. If the modifications are made before 9:00 am Eastern Time, the change will be effective on the same business day. However, if the registration list is uploaded or modified after 9:00 am Eastern Time, the change will be effective for the next business day.

Q. When making Market Maker registrations, what is a Primary MPID versus a Supplemental MPID?

- A. When submitting market maker symbol assignments, Market Makers must indicate which of their NSCC issued MPIDs are Primary MPID(s) or Supplemental MPID(s) for the purposes of market making in the symbol.
- Each Primary MPID in the symbol will be responsible for individually meeting the Market Maker obligations in the symbol.
 - Each Supplemental MPID in the symbol will contribute to each Primary MPID's obligations in the symbol to assist the Primary MPID in meeting its obligation.
 - Each Firm is able to designate more than one Primary and Supplemental MPID in the symbol.

Q. What order types are supported by MIAX Pearl Equities?

- A. The following order types are supported by MIAX Pearl Equities:
- RHO, IOC, FOK, Day, GTT, and GTX Limit Orders – Displayed and Non-Displayed
 - Post Only Orders – Displayed and Non-Displayed
 - Midpoint Peg Orders
 - Primary Peg Orders
 - Intermarket Sweep Orders (ISO) – Displayed and Non-Displayed
 - Minimum Execution Quantity Orders

- Reserve Orders
- IOC and FOK Market Orders
- Attribution, including Retail Attribution
- All order types are available in Round Lot, Odd Lot and Mixed Lot sizes

Each of these order types is described in detail in the [MIAX Pearl Equities Rulebook](#).

Additionally, a quick reference guide outlining the permitted attribute combinations for each order type can be found [here](#).

Q. Does MIAX Pearl Equities route to other U.S. Equities Exchanges to execute against the NBBO?

- A. Yes. Routing services are provided to the protected quotes of all U.S. Equities Exchanges via a third party broker dealer.

MIAX Pearl Equities subscribes to the direct feeds of the majority of the other U.S. Equities Exchanges to have the timeliest view of the NBBO for routing purposes.

Orders may be marked “Do Not Route,” “Route Once” or “Re-Routable.” For Route Once and Re-Routable orders, the default and supported routing strategy is Order Protection. The strategy will attempt to execute against the Protected BBOs of the away markets after it is executed locally at or better than each away BBO.

An order marked as “Route Once” is eligible for routing upon receipt, except when received before the Opening process. When received before the Opening process, the Route Once order is eligible to route as part of the Opening process. An order marked as “Re-Routable” is eligible for routing upon receipt as well as any subsequent time that resting quantity is locked or crossed by an away market quote.

Q. What Routing Strategies does MIAX Pearl Equities offer?

- A. MIAX Pearl Equities offers the following Routing Strategies:

Order Protection. Order Protection is a routing strategy under which an order checks the Pearl Equities orderbook for available shares and then is routed to attempt to execute against Protected Quotations at away Trading Centers. All routable orders will be defaulted to the Order Protection routing strategy.

Route to Primary Auction (“PAC”). PAC is a routing strategy for Market Orders and displayed Limit Orders designated as RHO that the entering firm wishes to designate for participation in the opening, re-opening (following a regulatory halt, suspension, or pause), or closing process of a primary listing market (Cboe BZX, NYSE, Nasdaq, NYSE American, or NYSE Arca) if received before the opening, re-opening, or closing process of such market. The System will designate such orders routed pursuant to the PAC routing strategy with the time-in-force accepted by the primary listing market. Displayed Limit Orders coupled with the PAC routing strategy will be eligible to be routed pursuant to the PI routing strategy described directly below when resting on the MIAX Pearl Equities orderbook in continuous trading.

Price Improvement (“PI”). PI is a routing strategy that will route a displayed Limit Order coupled with the PAC routing strategy to multiple destinations simultaneously at a single price level. PI is not an independent routing strategy and may not be selected individually upon order entry.

Q. What Risk Protections are available on MIAX Pearl Equities?

A. MIAX Pearl Equities provides the following Risk Protections:

- Per Order Risk Metrics
 - Maximum Order Size
 - Minimum and Maximum Order Price Protection
 - Price Tick Size Check
 - Maximum Order Notional Value
 - Limit Order Price Protection
 - Market Order Price Protection
 - ISO Reject
 - Short Sale Reject
 - Short Sale Exempt Reject
 - Market Order Reject
 - Average Daily Volume (ADV) Check
 - Regulation SHO Security List Reject
 - Restricted Security List Reject
 - Non-Agency Reject
 - Override Capacity to Agency
 - Locate Account Validation
 - Early Trading Session Restriction
 - Late Trading Session Restriction
- Cumulative Risk Metrics
 - Maximum Gross Notional Trade Value Protection
 - Maximum Net Notional Trade Value Protection
 - Maximum Gross Notional Open Value Protection
 - Maximum Net Notional Open Value Protection
 - Maximum Gross Notional Trade + Open Value Protection
 - Maximum Net Notional Trade + Open Value Protection
 - Duplicate Order Check
 - Order Rate Protection
- Trade Risk Metrics
 - Trading Collar
 - Market Impact Collar
 - Self-Trade Protection
- Mass Cancel
 - Auto-Cancel on Disconnect
 - Auto-Cancel on Matching Engine/System Failure
 - “Mass Cancel existing orders”, “Block New Order entry” or “Mass Cancel existing orders and Block New Order entry” for an
 - MPID (via Purge Port or MFP UI)
 - MPID + Purge Group (via Purge Port or MFP UI)
 - Session (via MFP UI)

- Firm (via MFP UI)
 - Aggressive Side Purge (“ASP”) Request
 - Cancel if Not NBBO Setter
 - Cancel if Not NBBO Setter with Size

Note: Risk protections are latency equalized; i.e., there is no latency penalty for a member when opting into and leveraging a risk protection available on the Exchange as compared to a member not opting into the risk protection. *For additional details on the Port Configurations, please reference the Port Attributes document which can be found [here](#).*

Q. How is a member able to control and change its risk metrics?

- A. A member is able to request changes to its risk configurations:
1. Via the Member Firm Portal Application Programming Interface (API)
 - a. Such updates can be made intraday via the API and are effective immediately.
 2. Via the Member Firm Portal User Interface (UI)
 - a. Such updates can be made intraday via the UI and are effective immediately.

Changes to risk configurations can only be submitted between the following times:

3:00 am Eastern Time - 8:00 pm Eastern Time (5:00 pm Eastern Time on Early Close Days)

For access to the MFP API or MFP UI, please contact Trading Operations at TradingOperations@miaxglobal.com or 609-897-7302.

Q. Where can a member find the MIAX Pearl Equities system settings?

- A. A member is able to find the MIAX Pearl Equities system settings [here](#).

Q. What proprietary market data feeds are available on MIAX Pearl Equities?

- A. MIAX Pearl Equities offers two proprietary market data feeds:
1. **Top of Market (ToM):** MIAX Pearl Equities Top of Market (ToM) is a data feed that allows subscribers to receive real-time updates of the following information from the MIAX Pearl Equities Exchange:
 - MIAX Pearl Equities Best Bid and Offer (MPBBO)
 - Best Bid and Offer price with aggregated displayed round lot size of odd lots, round lots and/or mixed lots
 - MIAX Pearl Equities Last Sale (trades)
 - Trade Cancellations
 - Status of symbols traded on MIAX Pearl Equities, i.e.
 - Symbol’s Trading Status
 - Current Trading Session
 - MIAX Pearl Equities System Status

ToM real-time data feed is disseminated across 24 feed channels. Recipients can subscribe to two identical feeds (“ToM A” and “ToM B”) per feed channel for the purpose of redundancy

- 2. Depth of Market (DoM):** MIAX Pearl Equities Depth of Market Feed (DoM) is a data feed that allows subscribers to receive real-time updates of the following information from the MIAX Pearl Equities Exchange:
- Displayed orders posting to the MIAX Pearl Equities book:
 - Display Price and Display Size
 - Order's attribution, either to the MPID, or as Retail.
 - Order executions (trades) and Trade Cancellations
 - Retail Indicator for order executions when a Displayed, Attributable Retail order trades
 - Status of symbols traded on MIAX Pearl Equities, i.e.
 - Symbol's Trading Status
 - Current Trading Session
 - MIAX Pearl Equities System Status

DoM real time data feed is disseminated across 24 feed channels. Recipients can subscribe to two identical feeds ("DoM A" and "DoM B") per feed channel for the purpose of redundancy.

For additional details about ToM and DoM, please see the [MIAX Pearl Equities Interface Specifications](#).

Q. Is there a retransmission or refresh service available for the various market data feeds?

- A.** Yes. Both the MIAX Pearl Equities Top of Market (ToM) and MIAX Pearl Equities Depth of Market (DoM) support a retransmission service as well as a refresh service. See the [MIAX Pearl Equities Interface Specifications](#) for more details.

Q. What are the MIAX Pearl Equities Order Entry Interfaces?

- A.** EMMs and OEFs can use two interfaces for the transmission of orders and other messages to and from the Exchange:
1. The FIX Order Interface (FOI)
 2. The MIAX Express Orders Interface (MEO), a proprietary binary protocol.
- **FIX Order Interface (FOI):** EMMs and OEFs may connect to the Exchange via the FIX Order Interface (FOI) gateway using the industry standard FIX protocol with MIAX Pearl Equities specific extensions for the transmission of orders and other messages to and from the Exchange. FOI validates incoming orders and forwards them to the appropriate matching engine. Executions and cancellation notifications are provided through each FOI interface. Each FOI is capable of processing more than 7,500 order messages per second.
 - **MIAX Express Orders Interface (MEO):** MEO is a binary interface that provides clients order entry capabilities to all MIAX Pearl Equities Matching Engines. MEO will route an order to the appropriate Matching Engine based on the security. Member firms have flexibility in setting up MEO ports to cater to their architecture. Each MEO interface has one Full Service port and one Priority Purge port.
 - **Port Types:**
 - **Full Service Port (FSP):** Supports all MEO order input message types.
 - Each full service MEO Interface is capable of processing more than 76,000 orders per second with 3-in-flight messages
 - **Priority Purge Port (PPP):** Supports Mass Cancel Requests only

- If a Firm has multiple MEO interfaces, Mass Cancel requests can be sent via any Priority Purge port.

Firms are assigned backup MEO ports on backup infrastructure. These are slated to be used in the event of failure of primary MEO infrastructure. These backup MEO ports do not accept any messages while operating in the backup mode and are solely used for connection verification while in this mode. Please note: Backup ports have separate IP addresses from the primary ports.

For additional details about FOI and MEO, please refer to the [MIAX Pearl Equities Interface Specifications](#)

Q. Does MIAX Pearl Equities provide a FIX Drop Copy service?

- A.** MIAX Pearl Equities provides two types of FIX Drop (FXD) ports, for orders submitted via FIX Order Interface (FOI) and MIAX Express Orders Interface (MEO):
- Standard FIX Drop Port
 - Sends only trade information including Execution Reports and Trade Cancel/Correct messages
 - FIX Order by Order Drop Port
 - Sends all order activities including Execution Reports, Trade Cancel/Correct messages, and optionally order rejects.

Q. Does a member need to certify each application interface and feed before it can be provisioned to use them in production?

- A.** A member wishing to utilize the following MIAX Pearl Equities Liquidity Interfaces is required to contact Trading Operations to arrange for certification testing:
- MIAX Express Order Interface (MEO)
 - FIX Order Interface (FOI)
 - FIX Drop (FXD)

MIAX Pearl Equities does not require certification for members subscribing to the MIAX Pearl Equities market data feeds.

Q. What are the connectivity options for connecting to MIAX Pearl Equities?

- A.** MIAX Pearl Equities offers diverse latency equalized connectivity options in the primary data center:
- 1 Gigabit Ultra Low Latency (ULL) Ethernet
 - 10 Gigabit Ultra Low Latency (ULL) Ethernet

MIAX Pearl Equities offers the following connectivity options in the disaster recover data center:

- 1 Gigabit Ultra Low Latency (ULL) Ethernet
- 10 Gigabit Ultra Low Latency (ULL) Ethernet

MIAX Pearl Equities supports the following connectivity options: Cross Connect, Point-to-Point, and Metro Ethernet/Dark Fiber. Users are strongly encouraged to establish dual connections to the Exchange's primary data center, the NY4 Equinix facility, located in Secaucus, NJ, and to the disaster recovery data center, CH4, located in Chicago, to minimize the possibility of service disruption.

Q. Can a member use the physical connections already established for MIAX Options, MIAX Pearl Options or MIAX Emerald to connect to MIAX Pearl Equities?

A. No. A member must establish new dedicated cross connects to MIAX Pearl Equities.

Please see the [MIAX Pearl Equities Connectivity Guide](#) for further information.

Q. What are the bandwidth suggestions for each of the MIAX Pearl Equities Market Data Feeds and Liquidity Interfaces?

A. Suggested bandwidth requirements are as follows:

- Market Data Feeds
 - The MIAX Pearl Equities Top of Market Feed (ToM)
 - Necessitates dedicated 10 GB ULL network connection
 - The MIAX Pearl Equities Depth of Market (DoM)
 - Necessitates dedicated 10 GB ULL network connection
- Liquidity Interfaces
 - The MIAX Pearl Equities Liquidity Interfaces are:
 - MIAX Express Order Interface (MEO)
 - FIX Order Interface (FOI)
 - FIX Trade Drop (FXD)
 - The aggregate bandwidth of the MIAX Pearl Equities Liquidity Interfaces can be satisfied with a 1 GB ULL connection for many firms. However, firms should assess their unique usage requirements to determine the connection type required to satisfy their needs.
 - Firms are encouraged to consider 10 GB Ultra Low Latency (ULL) as alternative since this connection technology has inherent speed advantages over 1 GB ULL connections.

MIAX Pearl Equities cross-connects are latency equalized to ensure each member's cross-connect is the same physical distance from the MIAX Pearl Equities System regardless of its location in the NY4 Equinix facility in Secaucus, NJ, the Exchange's primary data center.

Please refer to the [MIAX Pearl Equities Connectivity Guide](#) for further information and bandwidth estimates

Q. What are the MIAX Pearl Equities Data Center options?

A. Primary Data Center: NY4 in Secaucus, NJ
Disaster Recovery Data Center: CH4 in Chicago

Q. Can a member cross-connect to MIAX Pearl Equities from other Equinix IBX colocation facilities in Secaucus, NJ?

A. Yes. Cross-connects can be provisioned from other Equinix colocations facilities such as NY6, NY5, and NY2 via the IBX Inter campus cross-connect system. *Note*: Cross-connects from other locations (NY6, NY5, NY2) are not latency equalized. Cross-connects within NY4 are latency equalized.