MIAX Emerald™ Options Exchange

Overview

MIAX Emerald is the MIAX Exchange Group's (MIH) third fully electronic options trading exchange and has leveraged the industry leading technology and infrastructure developed by MIAX to serve as a counterpart to MIAX Options and MIAX PEARL by providing a pro-rata allocation and maker-taker pricing model. MIAX Emerald, along with MIAX PEARL, MIAX Options and the MIAX Options Complex Order System, provides members of the MIAX Exchange Group with access to all pricing and allocation models. The MIAX Emerald Trading System has been developed specifically for the unique demands of derivatives trading, providing best in class customer interface features, protections and extreme performance for users of the Exchange.

Market Model

- Pro-Rata allocation
- Maker/Taker pricing

Membership

- Types of Membership
  - Market Makers
    - Registered Market Maker (RMM)
    - Lead Market Maker (LMM)
    - Primary Lead Market Maker (PLMM)
  - Electronic Exchange Members

- Membership Process:
  - Holders in good standing of MIAX Options or MIAX PEARL Exchange Trading Permits are eligible to receive a MIAX Emerald Trading Permit through a short form waive-in membership process
  - Prospective member firms must be registered as a broker-dealer and must meet certain additional criteria described by the Exchange in the Exchange's Rules
- Further information on membership at MIAX Emerald, is available on the MIAX Website

Market Access

MIAX Express Interface (MEI)

- MIAX Express Interface (MEI) offers Market Makers direct connections to each matching engine for high-speed mass quoting. Each full service MEI is capable of processing more than 200,000 quote messages per second
- Three types of MEI ports are available
  - Full Service MEI Port
    - All input message types are supported
  - Limited Service MEI Port
    - Supports all message types except bulk quotes
  - Priority Purge Port
    - Supports only Quote Mass Cancel Messages

FIX Order Interface (FOI) gateway
- Electronic Exchange Members (EEMs) send FIX orders to the Exchange's systems through the FOI gateway. Each FOI is capable of processing more than 7,700 order messages per second

Data Center Services

Network Infrastructure

- The MIAX Express Network Interface (MENI) was designed to complement the MIAX options exchanges and was built from the ground up to address the performance and security needs of a high speed trading platform. MIAX Emerald uses MENI along with MIAX Options and MIAX Pearl.
  - The MENI infrastructure utilizes fully diverse and redundant 40Gbps backbones and 10/40Gbps switch technology for maximum throughput and minimal latency using its own dedicated extranet switches
  - The MENI infrastructure is located in the Equinix NY4 data center
    - Customers can cross-connect to the MENI from elsewhere within the Equinix NY4 facility
    - MENI cross-connects are latency equalized to ensure each participant's cross-connect is the same physical distance from the interconnect regardless of their location in the Equinix NY4 facility
    - MIAX Emerald members may share 1Gig connections across all three MIAX exchanges. Dedicated 10Gig ULL connections are

available for MIAX Emerald, but cannot be used to access other MIAX Equity Options platforms
- 1 Gigabit and 10 Gigabit LL connections are available and capable of accessing Emerald and any or all of the other MIAX Equity Options platforms in the CH4 disaster recovery center

Connectivity

- MIAX Emerald utilizes the same or similar APIs and protocols as other exchanges in the MIAX Exchange Group, minimizing complexity of connectivity for prospective members MIAX supports the following connectivity options
  - Cross connection
  - Point-to-point connection
  - Metro Ethernet/Dark Fiber connection
- Users are strongly encouraged to establish dual connections to the primary facility in NY4 and connection to the disaster recovery system located in Chicago (CH4) to minimize the possibility of service disruption
- Exchange Codes
  - MIC code: EMLD
  - OCC Exchange code: D
  - OPRA: D
  - COATS: E
  - OATS: OE
  - Blue sheet – Exchange Code: 9
  - Blue sheet – Requestor Code: 7
  - The EMLD Requestor Code will be '7' to match MIAX Options.
  - The Requestor Code is by Exchange family so just one code is needed

Fees

Transaction Fees

The full MIAX Emerald fee schedule is available on the Exchange's website.
MIAX Emerald Fee Schedule

Market Data

Top of Market (ToM) Feed

Get the MIAX Emerald BBO (EBBO) and Trade Report market data via our hyper fast Top of Market feed. Top of Market Feed Specification

Administrative Information Subscriber (AIS) Feed

The AIS feed provides timely delivery of important notification messages such as Series Updates, System State and Liquidity Seeking Events. Administrative Information Subscriber Feed Specification

MIAX Order (MOR) Feed

MOR is a high speed real-time feed that publishes all actionable orders in addition to Series Updates, System State and Underlying Trading Status messages. MIAX Order Feed Specification

Complex Top of Market (cToM) Feed

The Complex Top of Market (cToM) provides subscribers with the current Complex EBBO (cEBBO) and Strategy Last Sale prices for all active Strategies using MIAX's high speed technology platform. Complex Order functionality may be enabled or disabled via Regulatory Circular.
Complex Top of Market Feed Specification

Clearing Trade Drop (CTD) Feed

The MIAX Clearing Trade Drop feed provides real-time clearing trade content to firms using the same ultra-low latency technology provided throughout the MIAX platform.
Clearing Trade Drop Feed Specification

Order and Quote Types

Simple Order Types

- Market
- Limit
- Marketable Limit
- Fill-or-Kill (FOK)
- Immediate or Cancel (IOC)
- Auction or Cancel (AOC)
- Post-Only
- Intermarket Sweep Orders (ISO)
- Do Not Route (DNR)
- Opening Only (OPG)
- Day Limit
- Good 'Til Cancelled (GTC)
- Attributable
- Price Improvement Mechanism (PRIME®)
- Qualified Contingent Cross (QCC)
- Customer Cross (C2C)

Each of these order types is described in detail in MIAX Emerald Rule 516. Crossing Order functionality may be enabled or disabled via Regulatory Circular.

Complex Order Types

- Market
- Limit
- Good 'Til Cancelled (cGTC)
- Auction or Cancel (cAOC)
- Immediate or Cancel (cIOC)
- Complex Prime (cPRIME)
- Complex Customer Cross (cC2C)
- Complex Qualified Contingent Cross (cQCC)
- Stock-Tied Strategies

Each of these order types is described in detail in MIAX Emerald Rule 518. Complex Order functionality may be enabled or disabled via Regulatory Circular.

Simple Quote Types

- Standard – A Standard quote cancels or replaces the Market Maker's previous quote, if any. For each Option, a Market Maker may only have a single Standard quote per side
- eQuote – An eQuote is a quote with a specific time in force that does not automatically cancel and replace a previous Standard quote or eQuote
- Fill-or-Kill eQuote (FOK)
- Immediate -or-Cancel eQuote (IOC)
- Auction or Cancel eQuote (AOC)
- Intermarket Sweep eQuote (ISO)
- Opening eQuote (OPG)

Each of these quote types is described in detail in MIAX Emerald Rule 517.

Complex Quote Types

- Auction-or-Cancel (cAOC)
  Immediate-or-Cancel (cIOC)

Each of these quote types is described in detail in MIAX Emerald Rule 518.   Complex Order functionality may be enabled or disabled via Regulatory Circular.

Quoting Requirements

PLMM, LMM and RMM Quoting Requirements are posted in the Regulatory section of the Exchange's website: MIAX Emerald Market Maker Requirements

Routing to other Exchanges

Routing services are provided for routing to all Options Exchanges in the United States and are fully compliant with the Options Locked and Crossed Markets Plan (the Plan). The MIAX Emerald System routes Public Customer orders to away markets displaying liquidity at the NBBO when required to satisfy a protected quotation under the Plan

A full description of MIAX Emerald routing functionality is available in MIAX Emerald Rule 529.

MIAX Emerald Market Protections

- MIAX Variable Price Protection (MVP)
- MIAX Order Monitor (MOM)
- Aggregate Risk Manager (ARM)
- Aggregate Risk Manager Across Classes (ARM^2)
- Risk Protection Monitor (RPM)
- FIX Auto Cancel on Disconnect Protection (FIX ACOD)
- Mass Cancellation of Trading Interest
- Self-Trade Protection
- Order Purges
- ABBO Crossing Protections

Further information about MIAX risk protections is available in the Risk Management Market Protections Overview

Important Information

For additional information about the Exchange, please see the MIAX Emerald User Manual and the MIAX Emerald Rulebook

For additional details about connecting to the MIAX Express Network Interconnect (MENI), please see the Connectivity Guide and Interface Specifications on the Exchange's website.

Exchange updates will be provided through MIAX Emerald Alerts. To add MIAX Emerald Alerts to your current e-mail subscriptions or to register a new e-mail address for subscription to MIAX Alerts, visit: MIAX Email Subscriptions

Trading Hours

Normal hours of operation can be found on the MIAX Website. For further information, please contact Trading Operations at TradingOperations@MIAXOptions.com, (609) 897-7302.