



DBSI SuperX ATS

Frequently Asked Questions

October 2018
Version 45

Risk Control	Description
Max Daily Notional	Can be configured per FIX session or across multiple sessions for a given client. Total daily notional amounts exceeding this limit will be rejected.
Max Order Notional	Order notional amounts exceeding this limit will be rejected.
Max Order Quantity	Order quantities exceeding this limit will be rejected.
Clearly Erroneous / Limit Price Checks	Limit price check for orders to prevent clearly erroneous executions. If the order limit price is a certain percentage of a threshold away from the last bid/offer of the security, the order will be rejected. Price thresholds are defined as: $x < \$1 - 75\%$ $\$1.00 \leq x < \$10.00 - 50\%$ $x \geq \$10 - 20\%$

- Q Does SuperX support pre trade risk control checks?**
A Yes, please see the risk controls supported by SuperX.
- Q How does SuperX match orders?**
A SuperX matches orders based on strict price/time prioritization. See question 18 for an example.
- Q What order types does SuperX support?**
A SuperX executes Market & Limit orders at or within the NBBO.
- Q What time in force modes does SuperX support?**
A Day & IOC
- Q What pegging instructions does SuperX support?**
A Market Peg (peg to the far touch), Midpoint Peg (peg to midpoint) and Primary Peg (peg to the near touch).
- Q Does SuperX support odd lot orders?**
A SuperX does not support odd lots and will reject pure odd lot orders. If SuperX receives a mixed lot order, the matching engine will execute the round lot portion and cancel back the odd lot shares.
- Q How does SuperX handle priced limit orders?**
A SuperX must comply with Rule 612 of Regulation NMS.
 In other words, orders routed to SuperX in securities priced $\geq \$1$ with more than 2 decimal places will be rejected. SuperX will also reject orders in securities priced $< \$1$ with more than 4 decimal places.

OATS/ACT MPID: DBAX Clearing Firm: 0573
 LAST MARKET MIC: DBSX

Contacts:

Trading Desk:
 +1 212 250 4077
 SuperX.US@list.db.com

Technical Support:
 +1 212 250 0749

Operations:
 +1 904 527 6400
 SuperX.OPS@list.db.com

Billing:
 SuperXInvoicing@list.db.com

FIX Certification & Network Connectivity:
 +1 212 250 5001
 fixny@list.db.com

8. Q How does SuperX support the RegNMS Sub-Penny Rule in the Matching Engine?

A For orders in securities priced \geq \$1 USD, having strike prices with more than 2 decimal places, SuperX will round the Strike Price as follows in the Matching Engine:

Buy orders will round down to two decimal places; and Sell orders will round up to two decimal places. For orders in securities priced $<$ \$1 USD, the Strike Price is limited to 4 decimal places, SuperX will round the Strike Price as follows in the Matching Engine:

Buy orders will round down to four decimal places; and Sell orders will round up to four decimal places.

**9. Q How will SuperX handle the following scenario?:
NBB = \$12.38 | \$12.39 = NBO**

Order Details	Strike Price
Order A) Buy Near-Touch Peg Order arrives at 10:05am.	\$12.38
Order B) Buy Midpoint Peg Order arrives at 10:06am.	\$12.385, rounded to \$12.38

A Order B's Strike Price will be rounded in compliance to the RegNMS-Sub-Penny Rule, please refer to Question 8.

At 11:07am, Order C) arrives as a Sell Market Peg Order. Order C will cross with Order A with a cross price of \$12.38, based on the strict price/time priority in SuperX.

10. Q Do you provide equal price improvement or preference the supplier/taker? Please provide an example.

A Equal price improvement is provided to both sides of the trade when possible. Please see examples below.

Example 1

NBBO: 10.00 x 10.01
 Order 1: Resting B 5,000 shares @ \$10.00
 Order 2: Marketable S 5,000 shares @ \$10.00
 Order 1 Execution : 5,000 @ \$10.00
 Order 2 Execution : 5,000 @ \$10.00

Example 2

NBBO : 10.00 x 10.01
 Order 1 : Resting B 1,000 shares MIDPOINT PEG
 Order 2 : Marketable S 1,000 shares @ \$10.00
 Order 1 Execution : 1,000 @ \$10.0025
 Order 2 Execution : 1,000 @ \$10.0025

Example 3

NBBO : 10.00 x 10.01
 Order 1 : Resting B 3,000 shares @ \$10.01
 Order 2 : Marketable S 3,000 shares @ \$10.00
 Order 1 Execution : 3,000 @ \$10.005
 Order 2 Execution : 3,000 @ \$10.005

11. Q Does SuperX match orders during a locked market?
A By default, SuperX does not allow matching during a locked market.

Considering the Limit Down/Limit Up Regulation, SuperX supports functionality to allow matching during 1) a locked market where the NBB = NBO or 2) matching when either the NBB = LU OR NBO = LD.

The default configuration for each participant for settings 1) and 2) will be not to match.

Please contact us for additional information on this feature.

12. Q Does SuperX support anti-internalization?

A Yes. Please let us know if you would like additional information on this feature.

13. Q Does SuperX support cancel-on-disconnect?

A Yes. This feature is applied by default.

14. Q How many orders per second can SuperX support?

A SuperX is designed to withstand 2,000 orders per second per FIX session before latency degradation becomes obvious.

15. Q What is the matching engine round-trip time?

A Including all pre-trade risk controls, the matching engine is typically about 150µs to process a new order and supply an acknowledgement.

16. Q Does the SuperX support drop copy sessions?

A Yes. Additionally SuperX can roll up all executions from multiple sessions into a single drop copy session.

17. **Q** Is minimum quantity supported by SuperX?
How is minimum quantity interpreted and executed in SuperX?
A Yes. For example, an order to B 1000 with a MinQty = 500 can only be executed against a S order with an ordered quantity of 500 or greater. The B order will not execute against five 100 share orders on the book.
- a. **Q** Does SuperX accept Min Qty on 'New' and 'Cxl/Replace'?
A Yes, for both.
- b. **Q** What if the 'New' order does not contain 'MinQty', and subsequently the order is 'Cxl/Replace' with the 'MinQty' included?
A The 'Cxl/Replace' will be accepted, 'MinQty' will be processed.
- c. **Q** What if the 'New' order does contain 'MinQty', and subsequently the order is 'Cxl/Replace' with the 'MinQty' excluded?
A The 'Cxl/Replace' will be accepted, 'MinQty' will be excluded.
- d. **Q** How will SuperX handle a request to 'Cancel/Replace' an order that is partially filled, where 'MinQty' > 'OrderQty'?
A Cancel replace is accepted and MinQty is set to LeavesQuantity.
- e. **Q** How will SuperX handle a request to 'Cancel/Replace' an order that is partially filled order, where 'MinQty' = 'Order Qty'?
A Cancel replace is accepted and MinQty is set to LeavesQuantity.
- f. **Q** How will SuperX handle an partially filled order, when the 'LeavesQty' < 'MinQty'?
A By default, the 'MinQty' will be reset to equal 'LeavesQty' and will cross with any opposite side order equal or greater than 'LeavesQty'. Clients can choose to have their orders cancelled back when LeavesQty becomes less than the MinQty, contact superx.us@list.db.com or fixny@list.db.com to make this change.
- g. **Q** Can a rule be created to automatically apply a MinQty to one or more of the counterparty groups described in Q21?
A Yes, please contact superx.us@list.db.com or fixny@list.db.com to request this feature.
- h. **Q** If a MinQty / Counterparty rule is in place and an order also includes a MinQty parameter, which takes precedence?
A Where the rule specifies a MinQty, it takes precedence over the MinQty parameter on the order.
18. **Q** How will SuperX handle orders priced outside of the LULD Bands? How will SuperX handle RegNMS(NBBO) and LULD?
A SuperX will continue to accept limit orders priced outside LULD bands but will not cross outside the bands. For pegged orders, SuperX will replace all current references to NBB/O with:

Adjusted NBB = Max(NBB, Limit Down)
Adjusted NBO = Min(NBO, Limit Up)

This will result in the following behavior under these market conditions:
- a. Normal Condition (NBB>=LD and NBO<=LU):
Matching will occur as prior to LULD
- b. Limit state (NBB=LU or NBO=LD):
Orders will match at LU or LD, if the client has chosen to participate in a 'LU/LD locked market'. Refer to question 12.
- c. Straddle – Two types of scenarios:
• LU straddle (NBO>LU and NBB<LU and NBB>=LD): Orders will match at or within NBB and LU (i.e. NBO is replaced by LU)
• LD straddle (NBB<LD and NBO > LD and NBO <=LU): Orders will match at or within LD and NBO (i.e. NBB is replaced by LD)
- d. Super straddle (NBB<LD and NBO>LU):
Orders will match between LD and LU
- e. NBBO Outside bands – (NBO<LD or NBB>LU):
No matching, as this scenario should not occur.
19. **Q** Does SuperX utilize direct market data feeds?
A SuperX uses direct exchange feeds as the primary source of NBBO for all protected quotes. The Securities Information Processor (SIP) feeds are used as a secondary source of NBBO and for regulatory status.
20. **Q** Does SuperX support sending liquidity flags on fills?
A For direct Liquidity Partner connections to the ATS:
• Yes, liquidity flags are enabled by default in tag 851 (1 = Add, 2 = Remove)

For other DB clients
• Yes, the liquidity flags can be sent (1 = Add, 2 = Remove).

Please contact fixny@list.db.com with further questions on your connection.
21. **Q** What are the general group definitions in SuperX?
DB: Order flow sent from DB's Algorithms, Smart Order Router, SuperX Plus (Dark Pool Aggregator) and Direct Market Access platform to SuperX ATS.

• **DB Agency:** Agency client flow

• **DB Principal:** Deutsche Bank Securities, Inc. acting as principal

Liquidity Partners: Broker-Dealer clients with direct access to SuperX ATS.

• **LP Exchanges:** Liquidity Partners that send order flow routed out from an exchange

• **LP Market Maker:** Liquidity Partners that are proprietary trading firms. Some or all of their order flow may be considered "Market Making"

• **LP Institutional:** Liquidity Partners that are not LP Exchanges or LP Market Makers

• **LP IOC:** This group is comprised of Liquidity Partners that, in our judgment, send a high proportion of IOC orders, or similar orders. Liquidity Partners classified in LP IOC are also members of either LP Institutional, LP Exchanges or LP Market Maker.
22. **Q** What are the operating hours for SuperX?
A SuperX ATS will start to accept orders at 8:00. Matching occurs between 9:30am and 4:00pm. SuperX will not match orders in a symbol until the symbol is open on its primary exchange.
23. **Q** Are post-trade or counterparty group interaction reports available for SuperX?
A Yes, please contact superx.us@list.db.com for information.



Autobahn

Contacts:

European Execution Desk:

+44 (0)207 547 2022
autobahnequity.emea@list.db.com

US Execution Desk:

+1 212 250 3988
autobahnequity.us@list.db.com

Asia (ex Japan) Execution Desk:

+852 2203 6028
autobahnequity.apac@list.db.com

Japan Execution Desk:

+813 5156 6642
autobahnequity.tokyo@list.db.com

Australia Execution Desk:

+61 2 8258 2862
autobahnequity.aus@list.db.com

Autobahn

Autobahn Equity is part of Deutsche Bank's electronic trading platform, providing you with access to execution solutions in all major equities markets. Autobahn trading is available in both lit and alternative venues via our flexible suite of algorithms or direct market access (DMA) and both are supported by robust risk controls. Detailed market knowledge and algorithmic trading expertise are provided by our dedicated coverage team.

Further information:

Support:

Europe: +44 207 545 3448

US: +1 212 250 7034

Japan: +813 5156 6642

Asia (ex Japan): +852 2203 7700

Website:

autobahn.db.com/equity

Disclaimer

These materials are generic in nature and may not apply in particular circumstances. Quantitative models, processes and parameters are subject to amendment, modification, adjustment and correction at Deutsche Bank's discretion, and may incorporate Deutsche Bank's qualitative judgment. Deutsche Bank may from time-to-time run or update such models at its discretion. Categorization of counterparties in SuperX is for analysis purposes and DB is not responsible for updating the included data if client categorizations change at a later date. Deutsche Bank may from time to time modify the methods, processes and parameters used in the analyses and/or as described in this material. Any descriptions of such models, processes, or parameters, or the analyses resulting from them, are only represented to be accurate as of the date of this material. These materials are generic in nature. There may be regional differences in the processes, parameters and models in Deutsche Bank's products. This document does not constitute an offer, an invitation or a recommendation to enter into any transaction. We have sent you this document in our capacity as a potential counterparty acting at arm's length. We are not acting as your financial adviser or in a fiduciary capacity in respect of this proposed transaction or any other transaction with you unless otherwise expressly agreed by us in writing. Prospective investors should understand and discuss with their professional tax, legal, accounting and other advisors the effect of a transaction they may enter into. BEFORE ENTERING INTO ANY TRANSACTION YOU SHOULD TAKE STEPS TO ENSURE THAT YOU UNDERSTAND AND HAVE MADE AN INDEPENDENT ASSESSMENT OF THE APPROPRIATENESS OF THE TRANSACTION IN LIGHT OF YOUR OWN OBJECTIVES AND CIRCUMSTANCES, INCLUDING THE POSSIBLE RISKS AND BENEFITS OF ENTERING INTO SUCH TRANSACTION. YOU SHOULD ALSO CONSIDER MAKING SUCH INDEPENDENT INVESTIGATIONS AS YOU CONSIDER NECESSARY OR APPROPRIATE FOR SUCH PURPOSE. Although the information herein has been obtained from sources believed to be reliable, we do not guarantee its accuracy completeness or fairness. Opinions and estimates may be changed without notice and involve a number of assumptions which may not prove valid. The past performance of securities, indexes or other instruments referred to herein does not guarantee or predict future performance. If applicable, the principal protection feature applies only if the securities or instruments are held to maturity. Please note: market values may be affected a number of factors including index values, interest rates, volatility, time to maturity, dividend yields and issuer credit ratings. These factors are interrelated in complex ways, and as a result, the effect of any one factor may be offset or magnified by the effect of another factor. Calculations of returns on instruments referred to herein may be linked to a referenced index or interest rate. In such cases, the investments may not be suitable for persons unfamiliar with such index or interest rate, or unwilling or unable to bear the risks associated with the transaction. Products denominated in a currency, other than the investor's home currency, will be subject to changes in exchange rates, which may have an adverse effect on the value, price or income return of the products. These products may not be readily realizable investments and are not traded on any regulated market. The securities referred to herein involve risk, which may include interest rate, index, currency, credit, political, liquidity, time value, commodity and market risk and is not suitable for all investors. These instruments are not insured by the Federal Deposit Insurance Corporation (FDIC) or any other U.S. governmental agency. These instruments are not insured by any statutory scheme or governmental agency of the United Kingdom. The distribution of this document and availability of these products and services in certain jurisdictions may be restricted by law. These securities have not been registered under the United States Securities Act of 1933 and trading in the securities has not been approved by the United States Commodity Exchange Act, as amended. We or our affiliates or persons associated with us or such affiliates may: maintain a long or short position in securities referred to herein, or in related futures or options, purchase or sell, make a market in, or engage in any other transaction involving such securities, and earn brokerage or other compensation. Deutsche Bank AG and or its affiliated entities, as the context requires, does not provide accounting, tax or legal advice. Notwithstanding any other express or implied agreement, arrangement or understanding to the contrary, we hereby authorize you (and any of your employees, representatives or agents), subject to applicable U.S. federal and state securities laws, to disclose to any and all persons the structure and tax aspects of this potential transaction, and all materials of any kind (including opinions or other tax analyses) that are provided to you related to such structure and tax aspects, without Deutsche Bank imposing any limitation of any kind. This authorization is effective without limitation of any kind from the commencement of our discussions. Deutsche Bank Private Wealth Management refers to Deutsche Bank's wealth management activities for high-net-worth clients around the world. Deutsche Bank Alex. Brown is a division of Deutsche Bank Securities Inc. Deutsche Bank AG, including its subsidiaries and affiliates, does not provide legal, tax or accounting advice. This communication was prepared solely in connection with the promotion or marketing, to the extent permitted by applicable law, of the transaction or matter addressed herein, and was not intended or written to be used, and cannot be used or relied upon, by any taxpayer for purposes of avoiding any U.S. federal income tax penalties. The recipient of this communication should seek advice from an independent tax advisor regarding any tax matters addressed herein based on its particular circumstances. Derivative transactions involve numerous risks including among others, market, counterparty default and liquidity risk. The appropriateness or otherwise of these products for use by investors is dependent on the investors' own circumstances including their tax position, their regulatory environment and the nature of their other assets and liabilities and as such investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option investors must review the Characteristics and Risks of Standardized Options (<http://onn.theocc.com/publications/risks/riskstoc.pdf>). If you are unable to access the website please contact Deutsche Bank AG at +1 (212) 250-8182 for a copy of this important document. Please note that multi-leg options strategies will incur multiple commissions. The products described in this document are not eligible for sale in all countries and in any event may only be sold to qualified investors. Securities shown in this document shall not be offered or sold to any persons prohibited by the law in their country of origin or in any other relevant country.

IMPORTANT: This presentation has been prepared by members of our Global Markets department. Statements and opinions regarding the Company's investment case, positioning and valuation are not, and should not be construed as, an indication that Deutsche Bank will provide favourable research coverage of the Company or publish research containing any particular rating or price target for the Company's common stock. This presentation speaks only as of the date it is given, and the views expressed are subject to change based upon a number of factors, including market conditions and the Company's business and prospects.