Table of Contents

Algorithms
- MosaicAlgo® 5
- PiAlgo® 6
- BofA TagAlgo™ 7
- INSTINCT® 8
- VWAP (Volume Weighted Average Price) 9
- TWAP (Time Weighted Average Price) 10
- POV (Percentage of Volume) 11
- Dynamic POV 12
- IS (Implementation Shortfall) 13
- QMOC (Quantitative Market on Close) 14
- SMA (Smart Market Access) 15
- Blockseeker 16
- GetDone 17

Platforms
- Market Color Alerts 19
- Advanced Order Safety 20
Algorithms
MosaicAlgo®

Description
MosaicAlgo® is a machine learning algorithm that utilizes order and stock characteristics together with Transaction Cost Analysis (TCA) data to determine the optimal strategy for execution.

Parameters
- **Start/End Time**: Order Start/End Time *(Default: Time of submission, market open/close)*
- **Min/Max % Volume**: Controls the min/max participation rate
- **Over The Day**: Only VWAP or TWAP strategies will be used when selected *(Default: Not enabled)*
- **Urgency**: Low; Medium; High *(Default: Medium)*
- **Auction Participation**: Select auctions to participate in *(Default: All)*
- **Aim To Complete**: Maximizes participation to aim for completion *(Default: Not enabled)*
- **GetDone Price**: Price where the order will look to complete *(Default: Not enabled)*
- **GetDone %**: Percentage of the order to complete at GetDone Price *(Default: 100%)*

Execution Value Chain

Good for
- Optimizing execution performance when not bound by a specific strategy

Watch out for
- Trade constraints will narrow down the pool of available algorithms
PiAlgo®

Description

PiAlgo® is a passive spread capture algorithm that will cross the spread only when the price is likely to move away. Use Urgency to set your willingness to cross the spread and talk to your Electronic Trading representative for customization options.

Parameters

- **Start/End Time**: Order Start/End Time *(Default: Time of submission, market open/close)*
- **Min % Volume**: Controls your minimum target % of traded volume *(Default: 10%)*
- **Max % Volume**: Controls your target % of near touch book size and Max % for the order *(Default: 20%)*
- **Urgency**: Sets the strategy’s willingness to pay the spread *(Default: Medium)*
- **Auction Participation**: Selects auctions to participate in *(Default: All)*
- **Aim To Complete**: Maximizes participation to aim for completion *(Default: Not enabled)*
- **GetDone Price**: Price where the order will look to complete *(Default: Not enabled)*
- **GetDone %**: Percentage of the order to complete at GetDone Price *(Default: 100%)*

Example

“Buy 100,000 shares in ABC using a benchmark of Arrival.”

1. Layer the book on your side of the spread using Max %

2. Use Urgency and Min % to control your willingness to pay the spread

   - Low urgency – always queue passively and will not cross the spread
   - Medium urgency – will cross the spread when the core conditions are met while counting only far touch volume
   - High urgency – will cross the spread when the core conditions are met while counting all volume

3. All 3 core conditions have to be met for any Alpha Trigger to be able to fire:
   - ✔ Spreads are tight
   - ✔ Book is imbalanced against you
   - ✔ Last trade was on the far touch

Good for

- Orders where you are benchmarked to implementation shortfall without a strict participation target or short-term alpha expectation

Watch out for

- Orders with short-term alpha
- Does not guarantee completion (Aim-To-Complete is easily configured)
- Orders with a GetDone may exceed your Max %
BofA TagAlgo™

Description

BofA TagAlgo™ is an IS benchmark strategy that uses PiAlgo® order book placement logic and index-relative performance to determine its participation. The strategy will smartly scale between the Min % and Max % based on the stock’s relative performance to its country index. Participation can be fine-tuned by using Min/Max thresholds.

Parameters

- **Start/End Time**: Order Start/End Time (Default: Time of submission, market open/close)
- **Min/Max % Volume**: Controls the Min and Max participation rate
- **Scaling**: Reversion/Neutral/Momentum (Default: Reversion)
- **Benchmark**: Participate based on relative performance (Default: Index)
- **Stock Reference Price**: Explicit stock price for Stock Benchmark
- **Urgency**: Low (5-10%), Medium (10-20%), High (20-30%) (Default: Medium)
- **Aim To Complete**: Maximizes participation to aim for completion (Default: Not enabled)
- **Auction Participation**: Selects auctions to participate in (Default: All)
- **GetDone Price**: Price where the order will look to complete (Default: Not enabled)
- **GetDone %**: Percent of the order to complete at GetDone Price (Default: 100%)

Example

“Buy 100,000 ABC, BofA TagAlgo™, maximum 25% of volume.”

Stocks vs Index

- Price vs Time
- Index vs ABC

Participate rate

- Min % vs Time
- Max % vs Time
- Scales up as stock underperforms index
- Scales down as stock outperforms index

Good for

- Smart participation based on index-relative performance and PiAlgo® order book placement logic
- Orders with low completion risk to prioritize performance

Watch out for

- Momentum driven stocks where you have directional view
- Does not guarantee completion - use, yes ‘Aim to Complete’ where required
INSTINCT®

Description
INSTINCT® combines stock specific characteristics and Urgency to determine the ideal average participation rate. The algorithm continuously monitors real-time order book dynamics using the instinct signaling framework to minimize market impact. With 5 urgency levels at your disposal, take full control of your execution with a simple parameter change.

Parameters
- **Start/End Time**: Order Start/End Time *(Default: Time of submission, market open/close)*
- **Max % Volume**: Controls the maximum participation rate
- **Urgency**: 1=5-10%, 2=10-20%, 3=20-30%, 4=30-35%, 5=GetDone *(Default: 3)*
- **Aim To Complete**: Maximizes participation to aim for completion *(Default: Not enabled)*
- **Auction Participation**: Selects auctions to participate in *(Default: All)*
- **GetDone Price**: Price where the order will look to complete *(Default: Not enabled)*
- **GetDone %**: Percentage of the order to complete at GetDone Price *(Default: 100%)*

Example
“Buy 2M ABC, INSTINCT® 3 with a 110 limit.”

Good for
- The go-to algorithm for smart participation and flexibility

Watch out for
- Urgency 5 will be aggressive, use limits
**VWAP**

**Description**

Volume Weighted Average Price (VWAP) combines the smart spread capture and crossing logic of PiAlgo® with the ability to schedule execution over a specified time period. Utilizing smart volume curves, the strategy will take more discretion than regular VWAP in order to maximize spread capture.

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start/End Time</td>
<td>Order Start/End Time (Default: Time of submission, market open/close)</td>
</tr>
<tr>
<td>Max % Volume</td>
<td>Controls the maximum participation rate</td>
</tr>
<tr>
<td>Urgency</td>
<td>Low; Medium; High (Default: Medium)</td>
</tr>
<tr>
<td>Auction Participation</td>
<td>Selects auctions to participate in (Default: All)</td>
</tr>
<tr>
<td>Speed Up Price</td>
<td>Price level to trigger Speed Up (Default: Not enabled)</td>
</tr>
<tr>
<td>Speed Up Target %</td>
<td>Target % of volume when Speed Up is triggered</td>
</tr>
<tr>
<td>GetDone Price</td>
<td>Price where the order will look to complete (Default: Not enabled)</td>
</tr>
<tr>
<td>GetDone %</td>
<td>Percentage of the order to complete at GetDone Price (Default: 100%)</td>
</tr>
</tbody>
</table>

**Example**

“Buy 100,000 ABC, VWAP over the day. Do not exceed 20% of volume.”

**Good for**

- Where order completion is a priority but minimizing impact is more important than strict adherence to a VWAP profile
- Orders where you have a directional view (that prices will move in your favor) i.e. prices moving lower/higher for buys/sells

**Watch out for**

- Will take more discretion around the target volume profile than regular VWAP
- Orders with a GetDone Price may exceed your Max % Volume
TWAP

Description
Time Weighted Average Price (TWAP) schedules execution of an order evenly over a specified time period. The Auction Participation parameter allows you to opt in or out of open and close periods on the fly. Use GetDone features to complete an order at a specified price.

Parameters
Start/End Time : Order Start/End Time *(Default: Time of submission, market open/close)*
Max % Volume : Controls the maximum participation rate
Auction Participation : Selects auctions to participate in *(Default: All)*
GetDone Price : Price where the order will look to complete *(Default: Not enabled)*
GetDone % : Percentage of the order to complete at GetDone Price *(Default: 100%)*

Example
“Buy 100,000 ABC, TWAP over the day. Do not exceed 20% of volume.”

Good for
• Keeping dollar neutral on buy versus sell baskets
• Names with unstable volume profiles

Watch out for
• TWAP will pay the spread more than VWAP in long queue names
• Use price and volume limits to avoid pushing prices
• Orders with a GetDone Price may exceed your Max % Volume
POV

Description
Percentage of Volume (POV) targets a user-specified percentage of market volume. Fair Value and Gradual Catch up logic protects you against unexpected price or volume spikes. Take advantage of price moves in your favor by setting a Speed Up Price and target participation.

Parameters
- **Start/End Time**: Order Start/End Time *(Default: Time of submission, market open/close)*
- **Target % Volume**: Sets the target participation rate
- **Auction Participation**: Selects auctions to participate in *(Default: All)*
- **Speed Up Price**: Price level to trigger Speed Up *(Default: Not enabled)*
- **Speed Up Target %**: Target % of volume when Speed Up is triggered
- **GetDone Price**: Price where the order will look to complete *(Default: Not enabled)*
- **GetDone %**: Percentage of the order to complete at GetDone Price *(Default: 100%)*

Example
“Buy 1 million ABC, be 25% of market volume from 12 p.m.”

Good for
- Keeping pace with market volume
- Utilizing the Speed Up function to take advantage of favorable prices

Watch out for
- Completion is not guaranteed
- Orders with a GetDone Price may exceed your Target % Volume
Dynamic POV

Description
Based upon our standard POV strategy, Dynamic POV uses a dynamic reference price as the trigger for when to Speed Up.

Parameters
Start/End Time: Order Start/End time (Default: Time of submission, market open/close)
Reference Price: Dynamic reference price to trigger Speed Up
Target %: Participation rate when price is less favorable than reference
Speed Up %: Participation rate when price is more favorable than reference
Auction Participation: Selects auctions to participate in (Default: All)
GetDone Price: Price where the order will look to complete (Default: Not enabled)
GetDone %: Percentage of the order to complete at GetDone Price (Default: 100%)

Reference Price Examples
AVG: Average price
VSOT: VWAP since the order is trading
VWAP: All day VWAP for the particular security
PCL: Previous closing price
OPN: Opening price
ARR: Arrival mid price

Example
“Buy 1 million ABC, be 20% of volume above interval VWAP, 40% below.”

Good for
• Dynamically switching participation based on real time price movement

Watch out for
• Completion is not guaranteed
• Orders with a GetDone Price may exceed your Target % Volume
IS

Description
Implementation Shortfall (IS) aims to minimize market impact versus arrival by dynamically adjusting target participation using both a user specified trading style (Reversion/Momentum/Neutral) and a proprietary market impact model.

Parameters
Start/End Time: Order Start/End Time (Default: Time of submission, market open/close)
Min/Max % Volume: Controls the min/max participation rate
Scaling: Reversion/Neutral/Momentum (Default: Neutral)
Urgency: Low Risk (target 10%)/ Medium Risk (target 20%)/ High Risk (target 30%) (Default: Medium)
Auction Participation: Selects auctions to participate in (Default: All)
GetDone Price: Price where the order will look to complete (Default: Not enabled)
GetDone %: Percentage of the order to complete at GetDone Price (Default: 100%)

Example
“Buy 250,000 ABC, IS with Reversion scaling.”

Good for
- Targeting an arrival price benchmark based on your preferred trading style
- When you have a view on price movement

Watch out for
- Completion is not guaranteed
- Orders with a GetDone Price may exceed your Max % Volume

Impact model results in order being front loaded
Arrival price at order start
Price moves on-side of arrival price – target % speeds up
Price
Target rate %

GetDone Price
GetDone %

Start/End Time
Min/Max % Volume
Scaling
Urgency
Auction Participation
GetDone Price
GetDone %

Price
Target %

BofA SECURITIES
QMOC

Description
Quantitative Market on Close (QMOC) targets the closing price by scheduling trading based on order size, stock volatility and trader urgency. Select an urgency of High to start later in the trading day, Low to start earlier. You can limit your participation to the closing auction period only by selecting MOC Only.

Parameters
- **Start Time**: Order Start Time (Default: QMOC calculated Start Time)
- **Urgency**: Low (Start Early)/Medium/High (Start Later) (Default: Medium)
- **Max % Volume**: Controls the max participation rate
- **Auction Limit vs Last (bps)**: Re-strike limit price with reference to last trade price in continuous (Default: Off)
- **Auction Participation**: MOC Only (Default: Off)

Example
“Buy 500,000 ABC, market on close. Happy to start early to reduce market impact.”

Good for
- Targeting closing price without having unnecessary impact
- Trading

Watch out for
- Without MOC Only selected, QMOC can start early
- Stocks with unstable closing volumes
**SMA**

**Description**

Smart Market Access (SMA) is a Direct Market Access (DMA) strategy that adheres to the market microstructure and exchange rules across Asia Pacific. By default, SMA offers Iceberg and Peg functionality. Set a display size to only show a portion of your order at one time. Select a Peg To price and optional Peg Offset to follow a prevailing market price.

**Parameters**

- **Start/End Time**: Order Start/End time *(Default: Time of submission, market open/close)*
- **Display**: Quantity of shares to display at the Peg or Limit Price *(Default: SMA calculated)*
- **Peg To**: Price point to Peg to Mid/Bid/Offer/Near/Far Touch *(Default: off)*
- **Peg Offset**: Price (in ticks) to adjust your selected Peg To *(Default: 0)*
- **Auction Participation**: Selects auctions to participate in *(Default: All)*

**Example**

“Buy 50,000 shares in ABC, peg to the bid and only show 10,000 shares at a time.”

**Good for**
- Direct access to the order book
- Earning the spread (Peg)
- Limiting market impact by hiding your true order size (Iceberg)

**Watch out for**
- Use limit prices to avoid market impact
- Completion is not guaranteed
- Stock price momentum against you when using Peg
Blockseeker

Description
Blockseeker is a dark only strategy that can access both Instinct X® and external exchange dark liquidity venues (Australia only). Set a Cross Price to peg the order to Mid/Near/Far Touch and a ‘Min Cross Quantity’ to avoid fills below a specified size Minimum Execution Quantity (MEQ).

Parameters
Start/End Time : Order Start/End Time *(Default: Time of submission, market open/close)*
Min Cross Quantity : Minimum fill size in number of shares *(Default: 1)*
Cross Limit Price : Peg to Mid/Bid/Offer/Near/Far Touch *(Default: Mid)*

Example
“Buy 1 million ABC, dark only and peg to the Mid Price. Use an MEQ of 100,000 shares.”

Good for
- Minimising information leakage and market impact
- Searching for block liquidity by using an MEQ

Watch out for
- No guarantee of completion
GetDone

Description
GetDone is a liquidity seeking strategy that looks to intelligently take volume within your limit price. By using the Urgency parameter, you have the ability to alter how much of the far touch you take at a time, providing liquidity seeking with increased control.

Parameters
Start/End Time: Order Start/End Time (Default: Time of submission, market open/close)
Max % Volume: Controls the maximum participation rate
Urgency: Increases Far Touch liquidity taking percentage (Default: Medium)
Allow Post: Allow posting (Default: Yes)
Auction Participation: Selects auctions to participate in (Default: All)

Example
“Buy 100,000 ABC aggressively up to a limit of 103, happy to post.”

1. Post a single slice to the Near Touch (100) based on current best bid and offer sizes
2. Use Urgency to control how much of the Far Touch you take at a time. In Low and Medium urgency, the strategy will not ‘walk the book’, it will take 30% and 50% of the Far Touch respectively
3. In High urgency, the strategy will ‘walk the book’ to your limit (taking 100% of liquidity at 101, 102 and 103)

Good for
- Semi-automatic trading or level trading for better performance
- Liquidity taking with control

Watch out for
- Unintended impact – use tight limits
- Does not guarantee completion
Platforms
Market Color Alerts

Description
Market Color monitors real time order, stock and market conditions. Clients are alerted of events directly based on predefined criteria. Used extensively by the Electronic Trading desk, Market Color Alerts are highly customizable in order to meet your specific trading requirements.

Examples

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Movement</td>
<td>Tell me when the price moves 3% from arrival</td>
</tr>
<tr>
<td>Non Complete</td>
<td>Alert me if my order is unlikely to get done</td>
</tr>
<tr>
<td>Dark Pool Fills</td>
<td>Let me know if I start getting executions in INSTINCT X®</td>
</tr>
<tr>
<td>First Order</td>
<td>Acknowledge my first order of the day</td>
</tr>
<tr>
<td>No Executions</td>
<td>Give me a heads up if an order isn't getting anything done</td>
</tr>
<tr>
<td>Stock Suspension</td>
<td>Alert me if I send an order in a suspended stock</td>
</tr>
</tbody>
</table>
Advanced Order Safety

Description
Advanced Order Safety (AOS) delivers a wide range of safety checks which can be configured and set as required. Going beyond standard fat finger limits, AOS monitors real-time market and order conditions to protect your order throughout the trading cycle.

Standard Safety Features
The following set of fat finger checks apply to each order (configured separately per client).

- **Price Limit Checks**: Maximum distance away from 'Last' traded price
- **Order Size Limits**: Maximum order size (Notional)
- **Daily Limits**: Maximum daily (Notional)
- **Average Daily Volume (ADV)%**: Maximum allowable order size as % of historical ADV%
- **Minimum Trade Frequency**: Minimum acceptable trade frequency
- **Maximum Spread**: Maximum historical spread for each stock

Dynamic Safety Features
In addition to our standard set of safety checks, there are dynamic features to protect you during the trading life cycle.

Fair Price Control

Avoid Temporary spikes (Potential fat finger)

Do not fall behind on permanent spikes (potential news flow)

Fair Price Limit = Fair Price + Offset

Fair Price = 3 minute Trailing Average

Circuit Breaker

Order starts at Arrival price calculated

1) Order will be paused at 92.5

2) Order is resumed and Arrival price is recalculated at 94

3) Order will be paused and will be routed to senior traders for action

4) Order is resumed and senior trader will then take the ownership of the order while the Arrival price is recalculated at 84

Time
Hong Kong  +852.3508.7550
Mumbai    +91.22.6632.8718
Sydney    +61.2.9226.5537
Tokyo     +81.3.6225.8398

Email:       dg.apes_et@bofa.com
Bloomberg:  MSG MLAPDSA<GO>
Comprehensive GES Disclaimer

BoFA Securities operates Instinct X®, an Alternative Trading System ("ATS") in the US and as a Broker Crossing Network ("BCN") in other geographies. BoFA Securities seeks to operate its ATS/BCNs in accordance with applicable regulations, and in accordance with reasonable expectations of fairness. However, potential execution counterparties in BoFA Securities’ ATS/BCNs and in external venues may have trading objectives and/or expectations that may be adverse to your own, and so execution outcomes may vary. BoFA Securities makes no guarantee as to the performance that can be achieved through the use of its ATSs or BCNs. The Instinct X® ATS/BCN operates on a Price/Capacity/Time priority, with any BoFA Securities’ principal capacity orders yielding to client orders at an equal price.

Within its own ATSs and BCNs, BoFA Securities may offer a variety of crossing services that support a segmentation and/or tiering model to enhance Client choice regarding the nature of potential counterparties with whom they may execute. Where it does so, BoFA Securities will use reasonable efforts to adhere to your expressed preferences regarding the use of different crossing services, to assign Clients to the appropriate segment and to maintain those assignments, and to adhere to your expressed preferences regarding interaction with participants in such segments. While BoFA Securities will use reasonable efforts in this context, it makes no guarantee as to accuracy or consistency of the composition of any segmentation assignment, which may be based in part on BoFA Securities’ understanding of information supplied by others.

BoFA Securities Routing and Order Handling In the absence of instructions to the contrary, or depending upon your expressed preferences, the particular BoFA Securities routing strategy or algorithm that you may elect to employ, or that is employed on your behalf, and as part of BoFA Securities’ services seeking the most efficient and effective experience for Client orders, your orders may be given an opportunity to interact with any resident non-displayed orders in one of BoFA Securities’ own ATSs or BCNs, which may include BoFA Securities’ principal trading interest, prior to being exposed to external venues. External venues may include but not be limited to public exchange markets, multi-lateral trading facilities, other ATSs or BCNs, or broker dealers. (such routing appropriate to each BoFA Securities’ region) consistent with your instructions or BoFA Securities’ routing logic as applicable. While BoFA Securities maintains relationships and connectivity to a variety of such venues as part of its routing processes, BoFA Securities does not represent that it has access to all such venues that potentially may be available at any given point in time. To the extent that this document references performance times, such information is indicative and attempts to illustrate the performance speed and latency generally associated with certain systems, order/message paths, and linkages. Actual performance may be different and, in some cases, materially slower than indicated.

Additional Disclaimers and Information: This document is provided to you solely for informational purposes by BoFA Securities and is designed to serve as a general summary of the trading services and products that BoFA Securities may offer from time-to-time. This document is not research and it was not prepared or reviewed by employees within the BoFA Securities Research department. This document is not intended to constitute advertising or advice of any kind, and it should not be viewed as an offer or a solicitation to buy or sell securities or any other financial instrument or product. BoFA Securities makes no representation, warranty or guarantee, express or implied, concerning this document and its contents, including whether the information (which may include information and statistics obtained from third party sources) is accurate, complete or current. The information in this document is provided "as is," is subject to change at any time, and BoFA Securities has no duty to provide you with notice of such changes.

BoFA Securities will not be responsible or liable for any losses, whether direct, indirect or consequential, including loss of profits, damages, costs, claims or expenses, relating to or arising from your reliance upon any part of this document. Before determining to use any service or product offered by BoFA Securities, you should consult with your independent advisors to review and consider any associated risks and consequences. This document has been prepared without regard to the specific investment objectives, financial situation and needs of any particular recipient. BoFA Securities does not render any opinion regarding legal, accounting, regulatory or tax matters.

This document is confidential, for your private use only, and may not be shared with others. This document, including all trademarks and service marks relating to BoFA Securities, remains the intellectual property of BoFA Securities. For other important legal terms governing the use of this document please see: https://www.bofaml.com/en-us/content/terms-and-conditions.html and https://www.ml.com/legal.html.

“Bank of America” and “BoFA Securities” are the marketing names used by the Global Banking and Global Markets divisions of Bank of America Corporation. Lending, other commercial banking activities, and trading in certain financial instruments are performed globally by banking affiliates of Bank of America Corporation, including Bank of America, N.A., Member FDIC. Trading in securities and financial instruments, and strategic advisory, and other investment banking activities, are performed globally by investment banking affiliates of Bank of America Corporation ("Investment Banking Affiliates"), including, in the United States, BoFA Securities, Inc. and Merrill Lynch Professional Clearing Corp., both of which are registered broker-dealers and Members of SIPC, and, in other jurisdictions, by locally registered entities. BoFA Securities, Inc. and Merrill Lynch Professional Clearing Corp. are registered as futures commission merchants with the CFTC and are members of the NFA. Bank of America and BoFA Securities entities (for example Bank of America Merrill Lynch International Designated Activity Company and BoFA Securities Europe SA) and branches provide financial services to the clients of Bank of America and BoFA Securities and may outsource/delegate the marketing and/or provision of certain services or aspects of services to other branches or members of the BAC Group (for example in the UK). Your service provider will remain the entity/branch specified in your onboarding documentation and/or other contractual or marketing documentation even where you communicate with staff that operate from a different entity or branch which is acting for and on behalf of your contractual service provider in their communications with you. If you are unsure who your contractual service provider is or will be please contact your usual contact.

For Bank of America or BoFA Securities entities in EMEA, see please additional information via the following link: https://www.bofaml.com/content/dam/boamlimages/documents/articles/ID17_1174/bofaml_entity_list.pdf

Investment products offered by Investment Banking Affiliates: Are Not FDIC Insured • May Lose Value • Are Not Bank Guaranteed.

©2019 Bank of America Corporation. All rights reserved. #2876513

Information as at December 2019