

FIX Lite (Flite)
Version 1.0
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Functionality that is not available will be greyed out in the specifications. Any changes will be conveyed via the NASDAQ OMX Head Trader Alerts or Technical Updates.

1 Overview

Flite is an order entry protocol based on a subset of FIX 4.2.

It is assumed that the reader is familiar with the FIX 4.2 protocol as described at <http://www.fixprotocol.org>. This document describes the differences between the NASDAQ OMX PSX implementation and the FIX 4.2 standard.

1.1 Session Information

1.1.1 Logon

The Logon must be the first message sent by the subscriber after the TCP connection is established. EncryptMethod is ignored (FIX level encryption is not supported).

The IP Address of the subscriber, the *SenderCompId* and *TargetCompId* will be validated. If validation fails the connection will be dropped.

1.1.2 ID Fields

SenderCompID sent	The SenderCompID as assigned by NASDAQ OMX PSX. The maximum size is 4 to 6 characters.
TargetCompID	The TargetCompID as assigned by NASDAQ OMX PSX. The maximum size is 4 to 6 characters.

If the connection is unexpectedly broken, upon reconnect the subscriber may receive a Logon Acknowledgement with a sequence number greater than expected. This means that in-flight messages were missed (likely important execution reports). The subscriber should issue a Resend Request to retrieve the missed messages.

Similarly NASDAQ OMX PSX will issue a Resend Request to the subscriber for messages that it missed. The subscriber may wish to send gap fill messages in place of new orders to avoid re-submission of potentially stale orders.

HeartbeatInterval must be specified by the subscriber in the Logon message in whole seconds. Though there are no restrictions imposed by NASDAQ OMX PSX on

HeartbeatInterval, we recommend using a value as low as possible, so disconnects are detected sooner. The accepted *HeartbeatInterval* value will be returned on the Logon Acknowledgement message.

1.1.3 Sequence Numbers

Sequence numbers, both inbound and outbound, will be reset to 1 at the beginning of each session. Messages are processed sequentially. Sequenced messages that have fallen behind (other than Sequence Reset – Reset, Sequence Reset - GapFill and those marked with PossDup flag of 'Y') can cause an immediate logout. Sequence Reset – Reset attempting to reset the sequence to a new sequence number that is lower than current expected sequence will also cause an immediate logout. Messages with sequence numbers higher than expected (other than Logon and Logout) will trigger message recovery via Resend Request.

1.1.4 Heartbeat

A Heartbeat message should be sent if the agreed upon *HeartbeatInterval* has elapsed since the last message sent. If any message has been sent during the preceding *HeartbeatInterval* a Heartbeat message need not be sent.

1.1.5 Test Request

NASDAQ OMX PSX will reply with a Heartbeat message to a Test Request message, providing TestReqId as of original Test Request.

NASDAQ OMX PSX will issue a Test Request if a *HeartbeatInterval* + 1 seconds have elapsed since the last message received. If 3 consequent NASDAQ OMX PSX Test Requests go by without receiving a message the TCP connection is considered broken and will be dropped.

1.1.6 Resend Request

As discussed in the FIX 4.2 specification, it is possible to send an open or closed sequence range in a Resend Request (an open range uses sequence zero as the EndSeqNo). NASDAQ OMX PSX will honor either type of request. Any messages sent in response to NASDAQ OMX PSX Resend Request should have PossDup="Y".

1.1.7 Reject

Session level rejects are used to indicate violations of the session protocol, or missing (or invalid) fields. These are to be expected during development and certification, but should be extremely rare in production. Application layer rejects (like Order Reject and Cancel Reject) are normal.

1.1.8 Sequence Reset

Sequence Reset - Gap Fill (GapFillFlag = "Y") messages should conform to standard message sequencing rules, sequence numbers in the past will be ignored and treated as PossDup="Y".

Sequence Reset - Reset (GapFillFlag not "Y") is used only as a last resort, and always by human intervention, to allow an otherwise confused session to be resumed. In these cases all chances at automatic message recovery are lost.

1.1.9 Logout

Either side may issue a Logout to gracefully close the session. The side that issues the Logout should process messages normally until it sees the Logout Acknowledgement, and then break the TCP connection. NASDAQ OMX PSX will typically only request Logout after the scheduled end of a FIX session.

1.1.10 Automatic Cancel On Disconnect

A Flite port, at the subscriber's request, can be configured with "cancel-on-disconnect" support. When configured with "cancel-on-disconnect" support, all open orders for a subscriber will be cancelled automatically in case NASDAQ OMX PSX detects TCP connection related issues or in cases when NASDAQ OMX PSX can not handle subscriber message for the reasons of bad incoming data. "Cancel-on-disconnect" is performed on a best effort basis.

1.2 Data Types

NASDAQ OMX PSX follows FIX standard for data types. Price fields are limited to 4 places after decimal point.

The maximum accepted price should not exceed 199,999.9900.

1.3 Fault Redundancy

A single Flite Account can be bound to multiple physical Flite instances. These Flite instances then provide "parallel" fix sessions for fault redundancy.

In this configuration, all instances are able to accept orders and cancel requests. ClOrdIds will be shared and validated across all instances. Both incoming and outgoing sequencing will be maintained across all instances. However subscriber will be allowed to maintain only one active connection at a time. If the subscriber connects to one of the alternative instances when still connected on another instance, the old connection will be dropped and the new connection will be accepted.

1.4 Service Bureau Configuration

A single Flite Account can accept orders from one or more firms, allowing a service bureau configuration. The service bureau Flite Account must be specifically authorized to enter trades on behalf of each represented participant with a NASDAQ OMX PSX Service Bureau Agreement, available separately. Once an agreement has been submitted, the Flite Account set up as the service bureau may enter orders for the represented firm by putting the represented firm's Market Maker Identifier in the ClientId field upon order entry.

2 Session Protocol Messages

All NASDAQ OMX PSX comments/additions to the FIX specification are listed in BOLD in the "Comments" column for each message type.

If a Tag is not explicitly supported by NASDAQ OMX PSX it will be ignored. Your message will not be rejected.

2.1 Message Header

Tag	Field Name	Req'd	Comments
8	BeginString	Y	FIX.4.2. Must be the first field in message.
9	BodyLength	Y	Must be second field in the message.
35	MsgType	Y	Must be the third field in the message.
34	MsgSeqNum	Y	
49	SenderCompID	Y	SenderCompID as assigned by NASDAQ OMX PSX.
56	TargetCompID	Y	TargetCompID as assigned by NASDAQ OMX PSX.
52	SendingTime	Y	Required by FIX but not validated by NASDAQ OMX PSX.
50	SenderSubID	N	Ignored. When sending execution report NASDAQ OMX PSX will send INET in this field.
57	TargetSubID	N	Ignored, When sending execution report NASDAQ OMX PSX will duplicate first 4 characters of Client Order Id in this field.
43	PossDupFlag	N	Should be present on retransmitted messages, whether prompted by the sending system or as the result of a resend request.
97	PossResend	N	Required when message may be duplicate of another message sent under a different sequence number.
122	OrigSendingTime	N	Required for message resends but not validated by NASDAQ OMX PSX.

2.2 Logon Message

Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = A
98	EncryptMethod	Y	Ignored.
108	HeartBtInt	Y	Heartbeat interval in seconds.
141	ResetSeqNumFlag	N	Ignored.
95	RawDataLength	N	Ignored.
96	RawData	N	
	Standard Trailer	Y	

3 Inbound Messages

3.1 Enter Order Message

Broker Dealer's who wish to electronically submit securities orders to NASDAQ OMX PSX for execution use the new order message type.

Enter Order Message				
Name	FIX Tag	Req'd	Value	Notes
Standard Header		Y	"D"	MsgType = "D" Identifies this message as Enter Order Message type
ClOrdId	11	Y	Token	The ClOrdId field only supports alphanumeric characters. You can put any information you like. The ID must be day-unique for each Flite account. Client order

				ID is limited to 14 characters.
HandlInst	21	Y	"1"	If present must be "1" = Automated execution order, private, no Broker
Symbol	55	Y	Alpha	NASDAQ OMX PSX traded symbol
Side	54	Y	Alpha	"1" = buy order "2" = sell order "5" = sell short, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days "6" = sell short exempt, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days
OrderQty	38	Y	Integer	Total number of shares entered. Must be greater than zero and less than 1,000,000
Price	44	N	Integer	The price of the limit order. Price should be absent for OrderType = "2" (Market), if however price will be present for market orders the order will be considered as a limit with a price being a limit price. Please refer to the section in Data Types for more clarification.
Time in Force	59	N	Integer	The number of seconds that this order should live before being automatically canceled. Special values for Time in Force: "0" = Day "1", "6" = Extended Hours Order (order is live until the end of the Nasdaq OMX PSX trading day) "3" = Immediate or Cancel (IOC) "4" = Fill or Kill (only accepted when MinQty = OrderQty, will be treated as IOC order)
ClientId	109	N	Alpha	This field should contain all caps. Firm Identifier for the order entry firm. One logical Flite Account can potentially enter orders for multiple firms in a Service Bureau configuration. If this field is blank-filled, the default firm for the Flite Account will be used.
Display	9140	Y	Alpha	"A" = Attributable-Price to Display "Y" = Anonymous-Price to Comply "N" = Non-Display "P" = Post-Only "I" = Imbalance-Only (for opening and closing cross only) "M" = Mid-Point Peg "W" = Mid-Point Peg Post Only
Capacity	47	Y	Alpha	Values other than "A", "P", or "R" will be converted to "O" = Other "A" = agency

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				"P" = principal "R" = riskless
ExecInst	18	N	Alpha	Valid values: "f" = Intermarket Sweep Order (ISO). Other values from this multi-value string field will be ignored. "y" = Trade-at Intermarket Sweep Order
MinQty	110	N	Integer	Specifies the minimum acceptable quantity to execute
Cross Type	9355	N	Alpha	"N" = No cross (continuous market) "O" = Opening cross "C" = Closing cross "H" = Halt/IPO cross (Must be market price, refer to Prices in Data Types) Absence of this field is treated as if "N" was sent.
Order Type	40	Y	Integer	If present must be "2" = Limit or "1" = Market Order. In former case price should be absent. If set to Market Order, then the order must participate in a crossing process (Tag 9355).
DeliverToCompID	128	N	Alpha	

3.1.1 Order Cancel/Replace Request (a.k.a. Order Modification Request)

The Order Modification Request is used to change the parameters of an existing order.

Do not use this message to cancel the remaining quantity of an outstanding order, use the Cancel Request message for this purpose.

Requests that cannot be processed will be rejected using the Cancel Reject message. The Cancel Reject message will provide the ClOrdID and OrigClOrdID values that were specified on the Order Modification Request message for identification.

The only fields that can be changed via the cancel/replace request message are: OrderQty, Price, Time in force, Display, Iso (ExecInst) and Minimum Quantity. All other fields should be retransmitted as sent in the original order.

Replace Order Message				
Name	FIX Tag	Req'd	Value	Notes
Type	35	Y	"G"	Identifies this message as Replace Order Message type
OrigClOrdId	41	Y	Token	This must be filled out with the exact ClOrdId sent on the Enter Order Message or last Replace Order Message.
ClOrdId	11	Y	Token	The ClOrdId field only supports alphanumeric characters. You can put any information you like. The ID must be day-

Functionality that is not available will be greyed out in the specifications. Any changes will be conveyed via the NASDAQ OMX Head Trader Alerts or Technical Updates.

				unique for each Flite account. Client order ID is limited to 14 characters.
Side	54	Y	Alpha	buy/sell indicator: "1" = buy order "2" = sell order "5" = sell short, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days "6" = sell short exempt, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days
Symbol	55	Y	Alpha	NASDAQ OMX PSX traded symbol
OrderQty	38	Y	Integer	Total number of shares liable, inclusive of previous executions on this order chain. Must be greater than zero and less than 1,000,000
Price	44	N	Integer	The price of the replacement order. Price should be absent for OrderType = "2" (Market), if however price will be present for market orders the order will be considered as a limit with a price being a limit price. Please refer to the section in Data Types for more clarification.
Time in Force	59	N	Integer	The number of seconds that this replacement should live before being automatically canceled. Special values for Time in Force are listed in Data Types above.
Display	9140	N	Alpha	"A" = Attributable-Price to Display "Y" = Anonymous-Price to Comply "N" = Non-Display "P" = Post-Only "I" = Imbalance-Only (for opening and closing cross only)"M" = Mid-Point Peg "W" = Mid-Point Peg Post Only
ExecInst	18	N	Alpha	Valid values: "f" = Intermarket Sweep Order (ISO). "y" = Trade-at Intermarket Sweep Order
MinQty	110	N	Integer	Specifies the minimum acceptable quantity to execute
HandlInst	21	N	Integer	If present must be "1" = Automated execution order, private, no Broker intervention
Order Type	40	Y	Integer	If present must be "2" = Limit or "1" = Market Order. In former case price should be absent. If set to Market Order, then the order must participate in a crossing process (Tag 9355).
DeliverToCompID	128	N	Alpha	

3.1.2 Cancel Order Message

The Order Cancel Request Message requests the cancellation of all of the remaining quantity of an existing order.

Note that the Order Cancel/Replace Request should be used to partially cancel (reduce) an order.

A cancel request is assigned a ClOrdID and is treated as a separate entity. If rejected, the ClOrdID of the cancel request will be sent in the Cancel Reject message, as well as the ClOrdID of the actual order in the OrigClOrdID field. The ClOrdID assigned to the cancel request must be unique amongst the ClOrdID assigned to regular orders and replacement orders.

Cancel Order Message				
Name	FIX Tag	Req'd	Value	Notes
Type	35	Y	"F"	Cancel Order Message
Order Token	41	Y	Token	The Order Token as was originally transmitted in an Enter Order Message
Buy/Sell Indicator	54	Y	Alpha	buy/sell indicator: "1" = buy order "2" = sell order "5" = sell short, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days "6" = sell short exempt, subscriber affirms ability to borrow securities in good deliverable form for delivery within three business days
Stock	55	Y	Alpha	Stock Symbol
DeliverToCompID	128	N	Alpha	

Note that the only acknowledgement to a Cancel Order Message is the resulting Canceled Order Message. There is no "too late to cancel" message since by the time you received it, you would already have gotten the execution. Superfluous Cancel Order Messages are silently ignored.

4 Outbound Sequenced Messages

4.1 System Event Message

System Event Messages signal events that affect the entire NASDAQ OMX PSX system:

System Event Message				
Name	FIX Tag	Req'd	Value	Notes
Message Type	35	Y	"h"	System Event Message identifier
Event Code	340	Y	Alpha	Event Codes: "2" = Start of Day — This is always the first message each day. It indicates that NASDAQ OMX PSX is open and ready to start accepting orders. "3" = End of Day — This indicates that NASDAQ OMX PSX is now closed and will not accept any new orders or replaces in this session. There will be no further executions during this session; however, it is still possible to receive Broken Trade Messages and Canceled Order Messages

4.2 Execution Report

The execution report message is used to:

1. Confirm the receipt of an order
2. Confirm changes to an existing order (i.e. accept cancel and replace requests)
3. Relay order status information
4. Relay fill information on working orders
5. Reject orders

Each execution message will contain information that will describe the current state of the order and execution status as understood by NASDAQ OMX PSX. State changes will be sent as separate messages and will not be used to also convey new partial fill details:

Execution Report			
Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = 8
37	OrderID	Y	OrderID, as assigned by NASDAQ OMX PSX, is required to be unique for each chain of orders.
17	ExecID	Y	Identifier of execution message as assigned by broker. NASDAQ OMX PSX assigns the ExecID based on the Flite match number of the transaction. If you cross yourself on a trade the buy and sell orders will have the same ExecID.
20	ExecTransType	Y	Identifies transaction type Valid values: 0 = New 1 = Cancel Trade breaks will be sent with an ExecTransType of '1'. NASDAQ OMX PSX does not support trade corrections.
76	ExecBroker	Y	"INET"
150	ExecType	Y	Describes the type of execution report. Same possible values as OrdStatus.
39	OrdStatus	Y	Describes the current state of a CHAIN of orders, same scope as OrderQty, CumQty, LeavesQty, and AvgPx Valid Values: 0 = New 1 = Partial Fill 2 = Filled 3 = Done 4 = Canceled 5 = Replaced 6 = Pending Cancel 8 = Rejected
55	Symbol	Y	NASDAQ OMX PSX traded symbol
54	Side	Y	For rejected orders, this field is not required.
38	OrderQty	Y	For rejected orders, this field is not required.
32	LastShares	Y	Quantity of shares bought/sold on this (last) fill.
31	LastPx	Y	Price of this (last) fill.
151	LeavesQty	Y	Amount of shares open for further execution. If the OrdStatus is Canceled, DoneForTheDay, Expired, Calculated, or Rejected (in which case the order is no longer active) then LeavesQty could be 0, otherwise LeavesQty = OrderQty - CumQty. For rejected orders, this field is not required.
14	CumQty	Y	Currently executed shares for chain of orders.
6	AvgPx	Y	Calculated average price of all fills on this order.
19	ExecRefID	N	Appears on Breaks only and contains the ExecID of the trade being broken.
11	ClOrdID	N	ClOrdID of the order being reported
44	Price	N	As specified in the NewOrder
211	PegDifference	N	As specified in the NewOrder
41	OrigClOrdID	N	ClOrdID of the previous order (NOT the initial order)

			of the day) when reporting replace.
109	ClientID	N	Used for firm identification in third-party transactions. If a ClientID was specified in the original order then it will be returned in all subsequent execution reports.
9140	Display	N	"A" = Attributable-Price to Display "Y" = Anonymous-Price to Comply "N" = Non-Display "P" = Post-Only "I" = Imbalance-Only (for opening and closing cross only) "M" = Mid-Point Peg "W" = Mid-Point Peg Post Only
75	TradeDate	N	
59	TimeInForce	N	Absence of this field indicates Market Hours order
60	TransactTime	N	Time of execution/order creation (expressed in GMT).
58	Text	N	Free format text string. In case of reject will also contain NASDAQ OMX PSX order reject code. See "Reject Reasons" table.
9882	LiquidityFlag	N	Will be returned within all execution reports that contain a partial or full fill. See Liquidity Flags Table below for values
9883	BBO Weight indicator	N	"0" = 0-0.2% "1" = 0.2%-1% "2" = 1%-2% "3" = greater than 2% space = unspecified "S" = Sets the PBBO while joining the NBBO "N" = Improves the NBBO upon entry
	Standard Trailer	Y	

4.2.1 Liquidity Flags

Liquidity Flags	
Flag	Value
A	Added
V	Displayed added liquidity with original order size of greater than or equal to 2,000 shares. Only applicable to symbols that are set to the pro rata execution algorithm.
R	Removed
O	Opening Cross
M	Opening Cross (imbalance-only)
C	Closing Cross
L	Closing Cross (imbalance-only)
H	Halt/IPO Cross
K	Halt Cross
J	Non-displayed adding liquidity
m	Removed liquidity at a midpoint

k	Added liquidity via a midpoint order
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4.3 Order Cancel Reject

The order cancel reject message is issued by NASDAQ OMX PSX upon receipt of a Cancel Request or Cancel/Replace Request Message that cannot be honored.

The format of the Order Cancel Reject Message is as follows

Tag	Field Name	Req'd	Comments
	Standard Header	Y	MsgType = 9
37	OrderID	Y	If the cancel reject is for an unknown order this field will contain the text "Unknown". Otherwise, it will contain the OrderID of the last order in the chain of orders.
11	ClOrdID	N	Unique order id assigned by broker to the cancel request or to the replacement order. As of now this is not supported and will not be specified. CancelReject will contain only OrigClOrdID. Client order ID is limited to 14 characters.
41	OrigClOrdID	Y	ClOrdID that could not be canceled/replaced. ClOrdID of the previous order (NOT the initial order of the day) when canceling or replacing an order.
39	OrdStatus	Y	OrdStatus value after this cancel reject is applied.
109	ClientID	N	Used for firm identification in third-party transactions. For known orders this will contain the ClientID specified in the original order.
102	CxlRejReason	N	Code to identify reason for cancel rejection. Valid values: 0 = Too late to cancel 1 = Unknown order
58	Text	N	See "Reject Reasons" table
	Standard Trailer	Y	

4.3.1 Reject Reasons

Reject Reasons	
Reason	Explanation
"T"	Test Mode — This Flite Account is configured for test mode and is not able to accept orders in non-TEST securities.
"H"	Halted — There is currently a trading halt so no orders can be accepted in this stock at this time.
"Z"	Shares exceeds configured safety threshold — The number of shares entered must be less than the safety threshold configured for this Account. The safety threshold can be added/updated through NASDAQ OMX PSX Subscriber Services.
"S"	Invalid stock — The stock field must be a valid issue, tradable on NASDAQ OMX PSX.
"D"	Invalid Display Type — Sent when Display Type Entered cannot be accepted in current circumstances and can't be simply converted to a valid Display

	Type.
"C"	NASDAQ OMX PSX is closed.
"L"	Requested firm not authorized for requested clearing type on this account – To authorize additional firms, use the NASDAQ OMX PSX Service Bureau Agreement.
"M"	Outside of permitted times for requested clearing type
"R"	This order is not allowed in this type of cross (stock or time restrictions).
"X"	Invalid price
"N"	Invalid Minimum Quantity
"W"	Invalid Mid-point Post Only Price

5 Support

If you have any questions or comments about this specification, email tradingservices@nasdaqomx.com. We welcome suggestions for new features or improvements.

6 Revision History

Revision #	Date	Change
1.0	06/25/2009	Initial document
1.0	08/10/2009	Removed display flag "S" Removed display flag "F"
1.0	06/16/2010	Added execinst value "M" for mid-point pegging
1.0	07/20/2010	Added tag 128 to all inbound messages Revised the language for the client order ID to allow only alphanumeric characters
1.0	08/12/2010	Clarified the use of Market orders in FLITE
1.0	09/13/2011	Re-introduced the sell short exempt value in the buy sell field
1.0	10/04/2011	Removed IOC requirement from minimum quantity orders
1.0	11/07/2011	Added numeric liquidity flag values
1.0	03/08/2012	Removed legacy value "R" from display field Removed legacy value "I" from cross type field Removed legacy value "I" from liquidity flag field Added default values for capacity field
1.0	04/19/2012	Added liquidity flag values "k", "m"
1.0	07/26/2012	Moved the mid-point peg value "M" from tag 18 to tag 9140
1.0	05/01/2013	Changes reflected for price-size functionality
1.0	06/12/2013	Clarified the length of the client order ID is limited to 14 characters
1.0	05/14/2014	Added Liquidity flag value "V" Added display value "W" for mid-point peg post only
1.0	06/12/2014	Changed "Liquidity Code" to "Liquidity Flag" Updated formatting of the document
1.0	04/02/2015	Greyed out liquidity flag values for crosses Added reject reason code "W"
1.0	06/04/2015	Changed wording of liquidity flag values "O", "M", "C", "L", "H", and "K" to make consistent with all specifications
1.0	06/18/2015	Added BBO Weight Indicator to execution report
1.0	05/16/2016	Greyed out Cross Trade Flag values "O", "C", "H"
1.0	07/18/2016	Added value "y" to tag 18

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