FIX Drop Copy Specification for Equities

Version 1.1

Table of Contents

1 Introduction

This document explains access to the equities drop copy services of Osaka Digital Exchange (ODX) PTS via the FIX protocol. It describes the service's configuration and specifies the messages that can be received via subscription. For further information and inquiries regarding drop copy services or for questions concerning connectivity please contact ODX PTS Technical Support via email to: sysope@odx.co.jp.

2 Overview

The drop copy service is designed to deliver real-time information about trading activity taking place at ODX PTS and can be configured to send a message any time an order is entered, modified, canceled or executed. The service can be integrated for straight through processing (STP) into a client's risk management and settlement systems (see Figure 1).

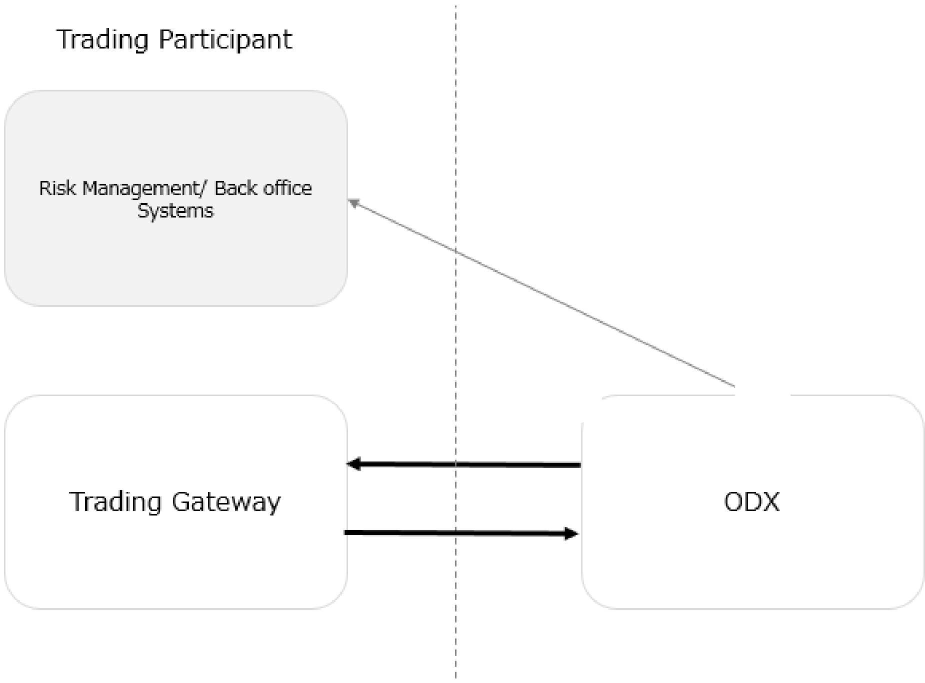

Figure 1: Drop copy integration

The TCP/IP protocol is used for the point-to-point transport layer.

3 Service Configuration

The drop copy service can be configured to deliver copies of transactions based on a combination of order entry port identifier, security group identifier and client reference.

Two subscription types are available:

- Reconciliation, consisting of only trade-related transactions.
- Full, consisting of both order and trade-related transactions.

The ClientID field can be configured to indicate the origin of an order with the following information:

- Order entry port identifier.
- Trade group identifier to which the order entry port belongs.
- Both of the above.

As an example, consider an institution with a trading facility which uses two order entry ports providing access to ODX PTS for three trade groups (see Figure 2).

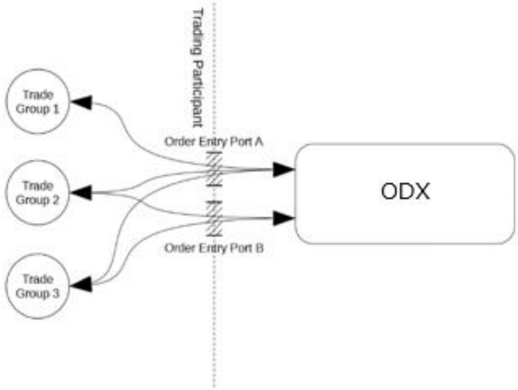

Figure 2: Trading flow

There are two typical use cases of the drop copy service, back office processing and risk management.

Usually a back office specific configuration includes copies of all trade reports for all trade groups (see Figure 3).

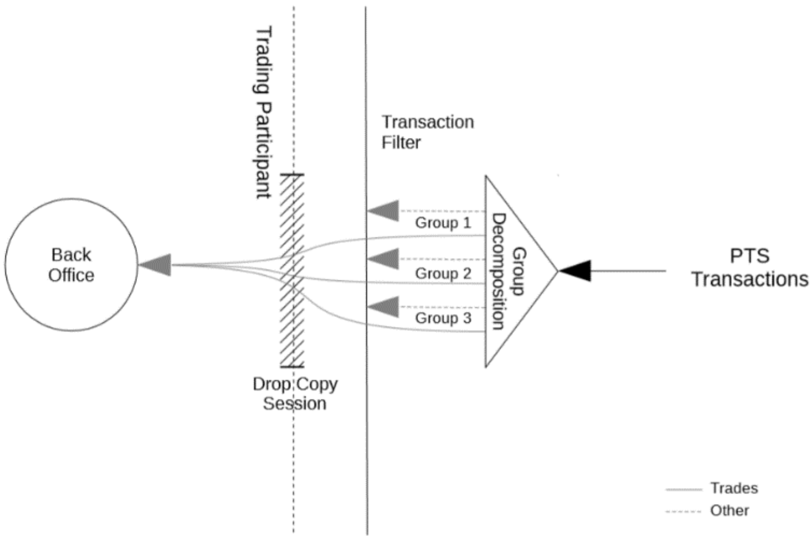

Figure 3: Back office specific flow

Whereas a risk management's scope of interest is more narrow, focusing only on particular trade groups, however is more detailed in that it includes all transactions (see Figure 4).

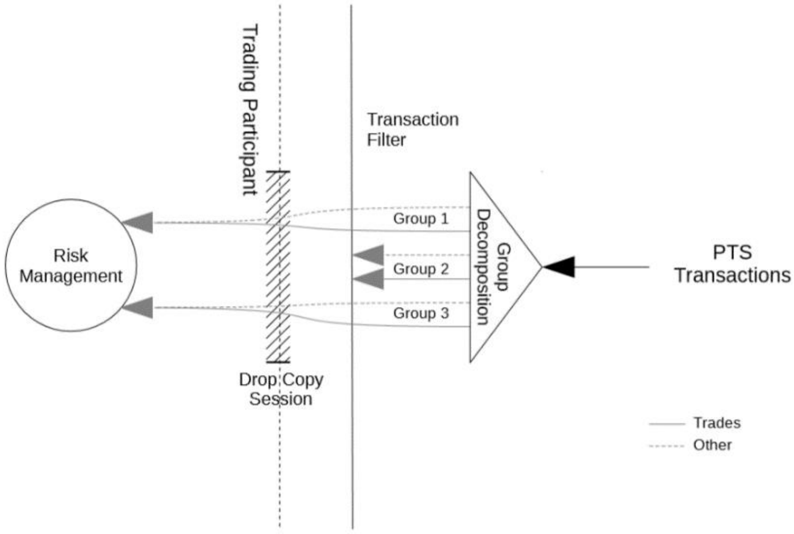

Figure 4: Risk management specific flow

4 FIX Protocol

The messaging described in this specification complies to the standard FIX 4.2 protocol. For details please refer to http://www.fixprotocol.org/specifications/FIX.4.2.

This specification follows the standard FIX specification as much as possible. However in limited cases fields and field values have been extended by backporting from the FIX 4.4 specification.

4.1 Data Types and Required Fields

Field data types in this specification are the same as those defined in the standard FIX specification. However, in certain places this specification further restricts field values from those specified in the standard. All field values will be stated in the message specification details.

Fields that are marked as required in the standard FIX specification are also marked as required in this specification, denoted 'Y' in the message definitions. Additionally required fields by this specification are denoted 'R'.

4.2 Limitations

This specification applies limitations on particular field lengths.

Tag	Field Name	Data Type	Comments
1	Account	String	Limited to 10 characters.
6	AvgPx	Price	Limited to 8 whole number digits and 4 decimal places.
11	ClOrdID	String	Limited to 32 characters.
14	CumQty	Qty	Limited to 9 whole number digits.
17	ExecID	String	Limited to 20 characters.
31	LastPx	Price	Limited to 8 whole number digits and 1 decimal place.

Tag	Field Name	Data Type	Comments
32	LastShares	Qty	Limited to 9 whole number digits.
37	OrderID	String	Limited to 20 characters.
38	OrderQty	Qty	Limited to 9 whole number digits.
41	OrigClOrdID	String	Limited to 32 characters.
44	Price	Price	Limited to 8 whole number digits and 1 decimal place.
50	SenderSubID	String	Limited to 4 characters for outgoing messages.
55	Symbol	String	Limited to 9 characters.
109	ClientID	String	Limited to 20 characters.
110	MinQty	Qty	Limited to 9 whole number digits.
151	LeavesQty	Qty	Limited to 9 whole number digits.
880	TrdMatchID	String	Limited to 20 characters.

5 Protocol Mappings

This section defines mappings from the order entry protocols used in the trading services of ODX PTS to the drop copy protocol.

5.1 FIX Order Entry

Fields in the drop copy messages match the original trading messages with the following exceptions.

In the original messages the ClientID field contains the firm identifier (MPID), whereas in the drop copy messages this field contains the order entry port and/or trade group identifiers (see Service Configuration).

Since a drop copy session can deliver messages aggregated from multiple order entry ports, the subscriber should not rely solely on the ClOrdID field to uniquely identify orders. Augmenting the ClOrdID with an appropriately configured ClientID can be used for this purpose.

If the original message has the TimeInForce field with value 4 = Fill or Kill (FOK) then the drop copy message will have the TimeInForce field with value 3 = Immediate or Cancel (IOC) and the MinQty field with value equal to the OrderQty field's value.

The ExecID assigned to a drop copy message will differ from that of the original message. Uniqueness of this field is only guaranteed per individual drop copy session.

5.2 OUCH Order Entry

Fields in the drop copy messages match the original trading messages with the following exceptions.

In the original messages the ClientID (Firm) field contains the firm identifier (MPID), whereas in the drop copy messages this field contains the order entry port and/or trade group identifiers (see Service Configuration).

Since a drop copy session can deliver messages aggregated from multiple order entry ports, the subscriber should not rely solely on the ClOrdID (Order Token) field to uniquely identify orders. Augmenting the ClOrdID (Order Token) with an appropriately configured ClientID can be used for this purpose.

Uniqueness of the ExecID field is only guaranteed per individual drop copy session.

FIX and OUCH field mappings are defined below.

Tag	Field Name	OUCH Field Name
11	ClOrdID	Order Token
		Replacement Order Token
1	Account	Client Reference
54	Side	Buy/Sell Indicator
38	OrderQty	Quantity
55	Symbol	Orderbook Id
50	SenderSubID	Group
44	Price	Price
59	TimeInForce	Time in Force
109	ClientID	Firm
47	Rule80A	Capacity
37	OrderID	Order Number
110	MinQty	Minimum Quantity
41	OrigClOrdID	Previous Order Token
378	ExecRestatementReason	Canceled Order Reason
32	LastShares	Executed Quantity
31	LastPx	Execution Price
851	LastLiquidityInd	Liquidity Indicator
880	TrdMatchID	Match Number
8060	OrderClassification	Order Classification
544	CashMargin	Cash Margin Type
8214	MarginTransactionType	

6 FIX Session Management

FIX sessions are uniquely defined by the SenderCompID and TargetCompID. Any attempt to establish an additional FIX session using the same SenderCompID and TargetCompID will be rejected.

At log on clients are identified by their SenderCompID.

Clients are required to log on to the service using the logon message. Once logged on, clients will need to send heartbeat messages to keep the session active.

In case of connection loss clients are required to again log on using the next transmitted sequence numbers while also taking care of any potential message loss in a FIX protocol compliant manner.

IP addresses, port numbers and CompIDs to use are issued upon application completion.

7 FIX Messages

7.1 Standard Header – Incoming Messages

Tag	Field Name	Data Type	Req'd	Comments
8	BeginString	String	Y	Identifies beginning of new message and protocol version. Always first field in message. Value is FIX.4.2.
9	BodyLength	int	Y	Message length, in bytes, forward to the CheckSum (10) field. Always second field in message.

Tag	Field Name	Data Type	Req'd	Comments
35	MsgType	String	Y	Defines message type. Always third field in message.
34	MsgSeqNum	int	Y	Integer message sequence number.
43	PossDupFlag	Boolean		Indicates possible re transmission of message with this sequence number. Values: Y = Possible duplicate N = Original transmission
49	SenderCompID	String	Y	Used to identify firm sending message. As assigned by ODX PTS.
52	SendingTime	UTC Timestamp	Y	Time of message transmission (always expressed in UTC).
56	TargetCompID	String	Y	Used to identify receiving firm. As assigned by ODX PTS.
122	OrigSendingTime	UTC Timestamp		Original time of message transmission (always expressed in UTC).

7.2 Standard Header – Outgoing Messages

Tag	Field Name	Data Type	Req'd	Comments
8	BeginString	String	Y	Identifies beginning of new message and protocol version. Always first field in message. Value is FIX.4.2.
9	BodyLength	int	Y	Message length, in bytes, forward to the CheckSum (10) field. Always second field in message.
35	MsgType	String	Y	Defines message type. Always third field in message.
34	MsgSeqNum	int	Y	Integer message sequence number.
49	SenderCompID	String	Y	Used to identify firm sending message. As assigned by ODX PTS.
50	SenderSubID	String		Assigned value used to identify specific message originator. Values: DAY = Daytime
52	SendingTime	UTC Timestamp	Y	Time of message transmission (always expressed in UTC).
56	TargetCompID	String	Y	Used to identify receiving firm. As assigned by ODX PTS.
122	OrigSendingTime	UTC Timestamp		Original time of message transmission (always expressed in UTC).

7.3 Standard Trailer

Tag	Field Name	Data Type	Req'd	Comments
10	CheckSum	String	Y	Three byte, simple checksum. Always defined as three characters. Always last field in message.

7.4 Administrative Messages

7.4.1 Logon

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = A

Tag	Field Name	Data Type	Req'd	Comments
98	EncryptMethod	int	Y	Method of encryption. Not supported. Values: 0 = None / other
108	HeartBtInt	int	Y	Heartbeat interval (seconds). Recommended value is 30 seconds.
141	ResetSeqNumFlag	Boolean		Indicates that both sides of the FIX session should reset sequence numbers. Values: Y = Yes, reset sequence numbers N = No
553	Username	String	R	Userid. As assigned by ODX PTS.
554	Password	String	R	Password or passphrase. As assigned by ODX PTS.
Standard trailer				

7.4.2 Heartbeat

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 0
112	TestReqID	String		Required when the heartbeat is the result of a Test Request message.
Standard trailer				

7.4.3 Test Request

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 1
112	TestReqID	String	Y	Identifier to be returned in resulting Heartbeat.
Standard trailer				

7.4.4 Resend Request

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 2
7	BeginSeqNo	int	Y	Message sequence number of first message in range to be resent.
16	EndSeqNo	int	Y	Message sequence number of last message in range to be resent.
Standard trailer				

7.4.5 Reject

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 3
45	RefSeqNum	int	Y	MsgSeqNum (34) of rejected message
58	Text	String		Message explaining reject reason.
371	RefTagID	int		The tag number of the FIX field being referenced.
372	RefMsgType	String		The MsgType (35) of the FIX message being referenced.

Tag	Field Name	Data Type	Req'd	Comments
373	SessionRejectReason	int		Code to identify reason for a session-level Reject message. Values: 0 = Invalid tag number 1 = Required tag missing 2 = Tag not defined for this message type 3 = Undefined tag 4 = Tag specified without a value 5 = Value is incorrect (out of range) for this tag 6 = Incorrect data format for value 9 = CompID problem 10 = SendingTime (52) accuracy problem 11 = Invalid MsgType (35)
Standard trailer				

7.4.6 Sequence Reset

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 4
36	NewSeqNo	int	Y	New sequence number.
123	GapFillFlag	Boolean		Indicates replacing administrative or application messages which will not be resent. Values: Y = Gap Fill message, MsgSeqNum (34) field valid N = Sequence Reset, ignore MsgSeqNum (34)
Standard trailer				

7.4.7 Logout

Tag	Field Name	Data Type	Req'd	Comments
Standard header				MsgType (35) = 5
58	Text	String		Message explaining logout reason.
Standard trailer				

7.5 Application Messages

7.5.1 Execution Report – Order Accepted

Tag	Field Name	Data Type	Req'd	Comments
Standard header - Outgoing				MsgType (35) = 8
1	Account	String		Account mnemonic as assigned by the institution.
6	AvgPx	Price	Y	Calculated average price of all fills on this order. Value is 0.
11	ClOrdID	String		Unique identifier for the order as assigned by the institution.
14	CumQty	Qty	Y	Total number of shares filled. Value is 0.
17	ExecID	String	Y	Unique identifier of execution message as assigned by ODX PTS.
20	ExecTransType	char	Y	Identifies transaction type. Values: 0 = New

Tag	Field Name	Data Type	Req'd	Comments
37	OrderID	String	Y	Unique identifier for order as assigned by ODX PTS.
38	OrderQty	Qty	R	Quantity accepted.
39	OrdStatus	char	Y	Identifies current status of this order. Values: 0 = New
40	OrdType	char	R	Order type. Values: 2 = Limit
44	Price	Price	R	Price per share.
47	Rule80A	char	R	Designates the capacity of the firm placing the order. Values: A = Agency P = Principal
54	Side	char	Y	Side of order. Values: 1 = Buy 2 = Sell 5 = Sell short 6 = Sell short exempt
55	Symbol	String	Y	Ticker symbol. Value is the 4 digit Quick code.
59	TimeInForce	char	R	Specifies how long the order remains in effect. Values: 0 = Day 3 = Immediate or Cancel (IOC)
60	TransactTime	UTC Timestamp	R	Time the transaction represented by this message occurred.
109	ClientID	String		Order entry port and/or trade group identifiers as assigned by ODX PTS.
110	MinQty	Qty		Minimum quantity of an order to be executed.
150	ExecType	char	Y	Describes the specific Execution Report. Values: 0 = New
151	LeavesQty	Qty	Y	Amount of shares open for further execution. Value is the same as that of OrderQty (38).
544	CashMargin	char	R	Identifies whether an order is a margin order or a non-margin order. Values: 1 = Cash 2 = Margin Open 3 = Margin Close
797	CopyMsgIndicator	Boolean	R	Indicates whether or not this message is a drop copy of another message. Value is Y = Yes
8060	OrderClassification	char	R	High Frequency Trading (HFT) order classification. Values: 1 = Non HFT 3 = HFT market making strategy 4 = HFT arbitrage strategy 5 = HFT directional strategy 6 = HFT other strategy
8214	MarginTransactionType	char		Margin transaction type of the margin order. Values: 1 = Negotiable 2 = Standardized

Tag	Field Name	Data Type	Req'd	Comments
Standard trailer				

7.5.2 Execution Report – Order Replaced

Tag	Field Name	Data Type	Req'd	Comments
Standard header - Outgoing				MsgType (35) = 8
1	Account	String		Account mnemonic as assigned by the institution.
6	AvgPx	Price	Y	Calculated average price of all fills on this order.
11	ClOrdID	String		Unique identifier for the order as assigned by the institution.
14	CumQty	Qty	Y	Total number of shares filled.
17	ExecID	String	Y	Unique identifier of execution message as assigned by ODX PTS.
20	ExecTransType	char	Y	Identifies transaction type. Values: 0 = New
37	OrderID	String	Y	Unique identifier for order as assigned by ODX PTS.
38	OrderQty	Qty	R	Quantity accepted.
39	OrdStatus	char	Y	Identifies current status of this order. Values: 1 = Partially filled 2 = Filled 5 = Replaced
40	OrdType	char	R	Order type. Values: 2 = Limit
41	OrigClOrdID	String	R	ClOrdID (11) of the previous order (not the initial order) as assigned by the institution.
44	Price	Price		Price per share.
47	Rule80A	char	R	Designates the capacity of the firm placing the order. Values: A = Agency P = Principal
54	Side	char	Y	Side of order. Values: 1 = Buy 2 = Sell 5 = Sell short 6 = Sell short exempt
55	Symbol	String	Y	Ticker symbol. Value is the 4 digit Quick code.
59	TimeInForce	char	R	Specifies how long the order remains in effect. Values: 0 = Day 3 = Immediate or Cancel (IOC)
60	TransactTime	UTC Timestamp	R	Time the transaction represented by this message occurred.
109	ClientID	String		Order entry port and/or trade group identifiers as assigned by ODX PTS.
110	MinQty	Qty		Minimum quantity of an order to be executed.

Tag	Field Name	Data Type	Req'd	Comments
150	ExecType	char	Y	Describes the specific Execution Report. Values: 5 = Replaced
151	LeavesQty	Qty	Y	Amount of shares open for further execution.
378	ExecRestatement Reason	int	Y	Code to identify reason for unsolicited cancel. Values: 100 = Trade prevention
544	CashMargin	char	R	Identifies whether an order is a margin order or a non-margin order. Values: 1 = Cash 2 = Margin Open 3 = Margin Close
797	CopyMsgIndicator	Boolean	R	Indicates whether or not this message is a drop copy of another message. Value is Y = Yes
8060	OrderClassification	char	R	High Frequency Trading (HFT) order classification. Values: 1 = Non HFT 3 = HFT market making strategy 4 = HFT arbitrage strategy 5 = HFT directional strategy 6 = HFT other strategy
8214	MarginTransactionType	char		Margin transaction type of the margin order. Values: 1 = Negotiable 2 = Standardized
Standard trailer				

7.5.3 Execution Report – Order Canceled

Tag	Field Name	Data Type	Req'd	Comments
Standard header - Outgoing				MsgType (35) = 8
1	Account	String		Account mnemonic as assigned by the institution.
6	AvgPx	Price	Y	Calculated average price of all fills on this order.
11	ClOrdID	String		Unique identifier for the order as assigned by the institution.
14	CumQty	Qty	Y	Total number of shares filled.
17	ExecID	String	Y	Unique identifier of execution message as assigned by ODX PTS.
20	ExecTransType	char	Y	Identifies transaction type. Values: 0 = New
37	OrderID	String	Y	Unique identifier for order as assigned by ODX PTS.
38	OrderQty	Qty	R	Quantity accepted.
39	OrdStatus	char	Y	Identifies current status of this order. Values: 4 = Canceled
40	OrdType	char	R	Order type. Values: 2 = Limit
41	OrigClOrdID	String		ClOrdID (11) of the previous order (not the initial order) as assigned by the institution.
44	Price	Price	R	Price per share.

Tag	Field Name	Data Type	Req'd	Comments
47	Rule80A	char	R	Designates the capacity of the firm placing the order. Values: A = Agency P = Principal
54	Side	char	Y	Side of order. Values: 1 = Buy 2 = Sell 5 = Sell short 6 = Sell short exempt
55	Symbol	String	Y	Ticker symbol. Value is the 4 digit Quick code.
59	TimeInForce	char	R	Specifies how long the order remains in effect. Values: 0 = Day 3 = Immediate or Cancel (IOC)
60	TransactTime	UTC Timestamp	R	Time the transaction represented by this message occurred.
109	ClientID	String		Order entry port and/or trade group identifiers as assigned by ODX PTS.
110	MinQty	Qty		Minimum quantity of an order to be executed.
150	ExecType	char	Y	Describes the specific Execution Report. Values: 4 = Canceled
151	LeavesQty	Qty	Y	Amount of shares open for further execution. Value is 0.
378	ExecRestatement Reason	int		Code to identify reason for unsolicited cancel. Values: 2 = Verbal change 7 = Cancel on System Failure 12 = Cancel on connection loss 99 = Other 100 = Trade prevention 102 = Cancel on margin restriction
797	CopyMsgIndicator	Boolean	R	Indicates whether or not this message is a drop copy of another message. Value is Y = Yes.
544	CashMargin	char	R	Identifies whether an order is a margin order or a non-margin order. Values: 1 = Cash 2 = Margin Open 3 = Margin Close
8060	OrderClassification	char	R	High Frequency Trading (HFT) order classification. Values: 1 = Non HFT 3 = HFT market making strategy 4 = HFT arbitrage strategy 5 = HFT directional strategy 6 = HFT other strategy
8214	MarginTransactionType	char		Margin transaction type of the margin order. Values: 1 = Negotiable 2 = Standardized
Standard trailer				

7.5.4 Execution Report – Trade

Tag	Field Name	Data Type	Req'd	Comments
Standard header - Outgoing				MsgType (35) = 8
1	Account	String		Account mnemonic as assigned by the institution.
6	AvgPx	Price	Y	Calculated average price of all fills on this order.
11	ClOrdID	String		Unique identifier for the order as assigned by the institution.
14	CumQty	Qty	Y	Total number of shares filled.
17	ExecID	String	Y	Unique identifier of execution message as assigned by ODX PTS.
20	ExecTransType	Char	Y	Identifies transaction type. Values: 0 = New
31	LastPx	Price	R	Price of this (last) fill.
32	LastShares	Qty	R	Quantity bought/sold on this (last) fill.
37	OrderID	String	Y	Unique identifier for order as assigned by ODX PTS.
38	OrderQty	Qty	R	Quantity accepted.
39	OrdStatus	char	Y	Identifies current status of this order. Values: 1 = Partially filled 2 = Filled
40	OrdType	char	R	Order type. Values: 2 = Limit
44	Price	Price	R	Price per share accepted.
47	Rule80A	char	R	Designates the capacity of the firm placing the order. Values: A = Agency P = Principal
54	Side	char	Y	Side of order. Values: 1 = Buy 2 = Sell 5 = Sell short 6 = Sell short exempt
55	Symbol	String	Y	Ticker symbol. Value is the 4 digit Quick code.
59	TimeInForce	char	R	Specifies how long the order remains in effect. Values: 0 = Day 3 = Immediate or Cancel (IOC)
60	TransactTime	UTC Timestamp	R	Time the transaction represented by this message occurred.
109	ClientID	String		Order entry port and/or trade group identifiers as assigned by ODX PTS.
110	MinQty	Qty		Minimum quantity of an order to be executed.
150	ExecType	char	Y	Describes the specific Execution Report. Values: 1 = Partial fill 2 = Fill
151	LeavesQty	Qty	Y	Amount of shares open for further execution.

Tag	Field Name	Data Type	Req'd	Comments
544	CashMargin	char	R	Identifies whether an order is a margin order or a non-margin order. Values: 1 = Cash 2 = Margin Open 3 = Margin Close
797	CopyMsgIndicator	Boolean	R	Indicates whether or not this message is a drop copy of another message. Value is Y = Yes.
851	LastLiquidityInd	int	R	Indicator to identify whether this fill was a result of a liquidity provider providing or liquidity taker taking the liquidity. Values: 1 = Added liquidity 2 = Removed liquidity
880	TrdMatchID	String	R	Identifier assigned to a trade by a matching system.
8060	OrderClassification	char	R	High Frequency Trading (HFT) order classification. Values: 1 = Non HFT 3 = HFT market making strategy 4 = HFT arbitrage strategy 5 = HFT directional strategy 6 = HFT other strategy
8214	MarginTransactionType	char		Margin transaction type of the margin order. Values: 1 = Negotiable 2 = Standardized
Standard trailer				

7.5.5 Business Message Reject

Tag	Field Name	Data Type	Req'd	Comments
Standard header - Outgoing				MsgType (35) = j
45	RefSeqNum	int		MsgSeqNum (34) of rejected message
58	Text	String		Message explaining reject reason.
372	RefMsgType	String	Y	The MsgType (35) of the FIX message being referenced.
380	BusinessRejectReason	int	Y	Code to identify reason for a Business Message Reject message. Values: 0 = Other 3 = Unsupported Message Type
Standard trailer				

8 Revision History

Date	Version	Changes
2022-05-02	1.0	Initial revision.
2024-11-18	1.1	Updated 7.4.1: Added "R" to classify tags 553 and 554 as required.