

# **Japannext PTS OUCH Trading Specification for Equities**

Version 1.6  
Updated 8 February 2017

# Table of Contents

Introduction.....	3
Overview.....	3
Fault Redundancy.....	3
Service Configuration.....	3
Data Types.....	3
Inbound Messages.....	3
Enter Order Message.....	4
Replace Order Message.....	4
Cancel Order Message.....	5
Outbound Sequenced Messages.....	5
System Event Message.....	6
Accepted Message.....	6
Replaced Message.....	7
Canceled Message.....	8
AIQ Canceled Message.....	8
Executed Message.....	9
Rejected Message.....	9
Revision History.....	11

## 1. Introduction

This document explains access to the equities trading services of Japannext PTS via the OUCH protocol. It describes the service's configuration and specifies the application messages. For further information and inquiries regarding trading services or for questions concerning connectivity please contact Japannext PTS Technical Support via email to: [ito@japannext.co.jp](mailto:ito@japannext.co.jp).

## 2. Overview

The message protocol of OUCH is widely used and considered an industry standard. By using the OUCH protocol, clients are able to access different markets and liquidity pools operated by Japannext PTS. They can enter new orders, modify or cancel existing orders, and receive execution reports in real-time.

The point-to-point transport layer for OUCH payloads is [SoupBinTCP](#).

## 3. Fault Redundancy

A single OUCH account can be bound to multiple physical OUCH machines, which then act as mirrors of each other for fault redundancy. In this configuration, these OUCH machines are able to accept orders and cancel requests, and any outbound messages will be simultaneously generated.

## 4. Service Configuration

An OUCH trading service can be configured to accept and maintain multiple OUCH sessions per client. However only one active connection is allowed to a particular OUCH machine per account.

For any client's OUCH account, the Cancel on Disconnect feature is always active. All open orders created by an OUCH account which has lost connection to all OUCH hosts due to any reason, will be automatically withdrawn. For every withdrawn order an unsolicited cancellation message will be sent to the client upon connection re-establishment.

## 5. Data Types

Integer fields are unsigned big-endian (network byte order) binary encoded numbers.

Alpha fields are left-justified and padded on the right with spaces.

Tokens are integer fields. They are sequential and increasing, and must be unique per OUCH account within a trading day.

Shares are integer fields with a maximum representable value of 2,147,483,647 (7FFFFFFF in hex).

Prices are integer fields. When converted to a decimal format, prices are in fixed point format with 9 whole number digits followed by 1 decimal place. The maximum representable price is 214,748,364.6 (7FFFFFFE in hex).

## 6. Inbound Messages

Inbound messages are sent from the client's application to the OUCH host. All inbound messages may be repeated benignly. This gives the client the ability to re-send any inbound message if it is uncertain whether Japannext PTS received it in the case of a connection loss or an application error.

The idea of benign inbound message retransmission with end-to-end acknowledgment is fundamental to the fault redundancy implementation. If the client's connection ever fails, there is no way of knowing if pending messages actually made it over the link before the failure. A robust OUCH client can safely re-send any pending messages over a mirrored link without worrying about generating duplicates.

All inbound messages on an OUCH port are processed sequentially. This guarantees that if two orders are

entered consecutively on the same connection, the first order entered will always be accepted first.

## 6.1 Enter Order Message

An Enter Order Message is used to enter a new order into the Japannext PTS execution system.

Every valid order sent is acknowledged by an Accepted Message. An Enter Order Message with an Order Token out of sequence will be silently ignored.

Name	Offset	Length	Type	Comments
Message Type	0	1	"O"	Enter Order Message.
Order Token	1	4	Token	Must be unique per OUCH account within a trading day and increasing.
Client Reference	5	10	Alpha	Assigned by the client. This field is forwarded to the clearing and settlement venues. There is no validation of this field.
Buy/Sell Indicator	15	1	Alpha	Side of order. Values: B = Buy S = Sell T = Short sell E = Short sell exempt
Shares	16	4	Integer	Total number of shares.
Security Id	20	4	Integer	Security identifier.
Group	24	4	Alpha	Security group identifier. Values: DAY = Daytime J-Market NGHT = Nighttime J-Market DAYX = X-Market DAYU = U-Market
Price	28	4	Integer	Price of the order.
Time in Force	32	4	Integer	Specifies how long the order remains in effect. Values: 0 = Immediate 99999 = Day Other values are not supported (order will be rejected).
Firm	36	4	Integer	Firm identifier for the order entry firm. This field should be set to zero unless specifying a client's MPID. Also forwarded to the downstream systems if required.
Display	40	1	Alpha	Instructions for order handling. Values: P = Post-only Leave blank if unused.
Capacity	41	1	Alpha	Designates the capacity of the firm placing the order. Values: A = Agency P = Principal
Minimum Quantity	42	4	Integer	Specifies the minimum acceptable quantity to execute. Non zero values are only supported for immediate orders.

## 6.2 Replace Order Message

A Replace Order Message is used to modify an existing order. It requires two valid order tokens, an existing token which must match an existing order for that account and a replacement token which must comply as for the Enter Order Message.

A Replace Order Message will be silently ignored if the Existing Order Token is no longer live or the Replacement Order Token is out of sequence.

If the order associated with the Existing Order Token is live but the replace details (except the Replacement Order Token) are invalid, the order will be canceled and removed from the book. In this case the Replacement Order Token is not consumed and may be reused.

The Shares field on the replace denote the total number of shares for the whole order chain. Here is an example:

- An order is entered for 100 shares, it is validated and accepted.
- 25 shares are then executed.
- If the client wishes to replace the order and still be exposed for the balance of 75 shares, then the Replace Order Message must specify 100 shares – the current balance plus the total number of executed shares.

An order may not be replaced with a new total number of shares less than the total number of executed shares. An attempt to do so results in the cancellation of the existing order.

For an order replaced with a new total number of shares equal to the total number of executed shares, the replace is accepted with state Dead.

Name	Offset	Length	Type	Comments
Message Type	0	1	“U”	Replace Order Message.
Existing Order Token	1	4	Token	Must match exactly with that of the current live order.
Replacement Order Token	5	4	Token	Must be unique per OUCH account within a trading day and increasing.
Shares	9	4	Integer	Total number of shares inclusive of previous executions on this order chain.
Price	13	4	Integer	Price of the order.
Time in Force	17	4	Integer	Specifies how long the order remains in effect. Values: 0 = Immediate 99999 = Day Other values are not supported (order will be rejected).
Display	21	1	Alpha	Instructions for order handling. Values: P = Post-only Leave blank if unused.
Minimum Quantity	22	4	Integer	Specifies the minimum acceptable quantity to execute. Non zero values are only supported for immediate orders.

### 6.3 Cancel Order Message

A Cancel Order Message is used to request that an order be canceled.

Note that the only acknowledgment to a Cancel Order Message is the resulting Canceled Order Message. There is no “too late to cancel” message and superfluous Cancel Order Messages are silently ignored.

Name	Offset	Length	Type	Comments
Message Type	0	1	“X”	Cancel Order Message.
Order Token	1	4	Token	Must match exactly with that of the current live order.
Shares	5	4	Integer	Reserved. Field will be ignored, although recommended to set to zero.

## 7. Outbound Sequenced Messages

Outbound messages are generated by the OUCH host and received by the client's application.

## 7.1 System Event Message

A System Event Message signals a Japannext PTS system wide event.

Name	Offset	Length	Type	Comments
Message Type	0	1	“S”	System Event Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
System Event	9	1	Alpha	Refer to the System Events table below.

Table 1: System Events

Event	Description
S	Start of Day – Always the first message. Indicates the market is open and ready to start accepting orders.
E	End of Day – Indicates the market is closed and will not accept any new orders. There will be no further executions.

## 7.2 Accepted Message

An Accepted Message acknowledges the receipt and acceptance of a valid Enter Order Message. The data fields from the Enter Order Message are echoed back in this message.

An Accepted Message is sent with state Dead for an immediate order which is accepted but fails to execute. No additional messages will be sent for that order. Order state Dead means that the order was accepted and automatically canceled.

Name	Offset	Length	Type	Comments
Message Type	0	1	“A”	Accepted Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Order Token	9	4	Token	Order Token as entered.
Client Reference	13	10	Alpha	Client Reference as entered.
Buy/Sell Indicator	23	1	Alpha	Buy/Sell Indicator as entered. Values: B = Buy S = Sell T = Short sell E = Short sell exempt
Shares	24	4	Integer	Total number of shares accepted.
Security Id	28	4	Integer	Security identifier as entered.
Group	32	4	Alpha	Security group identifier as entered. Values: DAY = Daytime J-Market NGHT = Nighttime J-Market DAYX = X-Market DAYU = U-Market
Price	36	4	Integer	Accepted price of the order.
Time in Force	40	4	Integer	Time in Force as accepted. Values: 0 = Immediate 99999 = Day
Firm	44	4	Integer	Firm identifier as accepted.
Display	48	1	Alpha	Display as accepted. Values: P = Post-only Blank if unused.

Name	Offset	Length	Type	Comments
Capacity	49	1	Alpha	Capacity of the firm placing the order as entered. Values: A = Agency P = Principal
Order Reference Number	50	8	Integer	Day unique order reference number.
Minimum Quantity	58	4	Integer	The accepted minimum acceptable quantity to execute.
Order State	62	1	Alpha	Order state upon acceptance. Values: L = Live D = Dead

### 7.3 Replaced Message

A Replaced Message acknowledges the receipt and acceptance of a valid Replace Order Message. The data fields from the Replace Order Message are echoed back in this message.

As for Accepted Messages, Replaced Messages sent with state Dead denote that a replace was accepted and then automatically canceled.

Name	Offset	Length	Type	Comments
Message Type	0	1	"U"	Replaced Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Replacement Order Token	9	4	Token	Replacement Order Token as entered.
Buy/Sell Indicator	13	1	Alpha	Buy/Sell Indicator as entered on the original order in the chain. Values: B = Buy S = Sell T = Short sell E = Short sell exempt
Shares	14	4	Integer	Total number of shares outstanding.
Security Id	18	4	Integer	Security identifier as entered on the original order in the chain.
Group	22	4	Alpha	Security group identifier as entered on the original order in the chain. Values: DAY = Daytime J-Market NGHT = Nighttime J-Market DAYX = X-Market DAYU = U-Market
Price	26	4	Integer	Accepted price of the order.
Time in Force	30	4	Integer	Time in Force as accepted. Values: 0 = Immediate 99999 = Day
Display	34	1	Alpha	Display as accepted. Values: P = Post-only Blank if unused.
Order Reference Number	35	8	Integer	Day unique order reference number.
Minimum Quantity	43	4	Integer	The accepted minimum acceptable quantity to execute.

Name	Offset	Length	Type	Comments
Order State	47	1	Alpha	Order state upon replacement. Values: L = Live D = Dead
Previous Order Token	48	4	Token	Order token of the replaced order.

## 7.4 Canceled Message

A Canceled Message informs that an order has been canceled. This could be acknowledging a Cancel Order Message, or it could be the result of the order being canceled automatically.

Name	Offset	Length	Type	Comments
Message Type	0	1	"C"	Canceled Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Order Token	9	4	Token	Order token of the canceled order.
Decrement Shares	13	4	Integer	Number of shares just decremented from the order. This number is incremental, not cumulative.
Canceled Order Reason	17	1	Alpha	Reason the order was reduced or canceled. Refer to the Canceled Order Reasons table below.

Table 2: Canceled Order Reasons

Reason	Description
U	User requested the order to be canceled. Sent in response to a Cancel Order Message or a Replace Order Message.
I	Immediate order executed and no further matches available on the book. Hence the remaining shares were immediately canceled.
S	This order was manually canceled by a supervisory terminal. For example, emergency withdraw per user's request or the user got suspended.
D	Invalid display type.
L	User logged off.
Z	Invalid shares.
R	Order not allowed at this time.
X	Invalid price.
N	Invalid minimum quantity.
Y	Invalid order type.
V	Exceeded order value limit.
M	Order expired during match.
F	Flow control is enabled and this OUCH port is being throttled.
i	Short sell order restriction.
O	Other.

## 7.5 AIQ Canceled Message

An AIQ Canceled Message informs that an order has been canceled by Japannext PTS trading system to prevent a self-trade. This is an extended version of the Canceled Message with specifics of the prevented trade.



Name	Offset	Length	Type	Comments
Message Type	0	1	“D”	AIQ Canceled Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Order Token	9	4	Token	Order token of the canceled order.
Decrement Shares	13	4	Integer	Number of shares just decremented from the order. This number is incremental, not cumulative.
Canceled Order Reason	17	1	Alpha	Reason the order was reduced or canceled. Value is M = Order expired during match.
Shares Prevented from Trading	18	4	Integer	Shares that would have executed if the trade would have occurred.
Execution Price	22	4	Integer	Price at which the trade would have occurred.
Liquidity Indicator	26	1	Alpha	Identifies whether this would-be trade was a result of a liquidity provider providing or liquidity taker taking the liquidity. Values: A = Added (for the passive firm) R = Removed (for the aggressor)

### 7.6 Executed Message

An Executed Order Message informs that all or part of an order has been executed.

Name	Offset	Length	Type	Comments
Message Type	0	1	“E”	Executed Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Order Token	9	4	Token	Order token of the executed order.
Executed Shares	13	4	Integer	Incremental number of shares executed.
Execution Price	17	4	Integer	Price at which the shares were executed.
Liquidity Indicator	21	1	Alpha	Identifies whether this trade was a result of a liquidity provider providing or liquidity taker taking the liquidity. Values: A = Added (for the passive firm) R = Removed (for the aggressor)
Match Number	22	8	Integer	Day unique match reference number. The matching buy and sell executions share the same match number.

### 7.7 Rejected Message

A Rejected Message may be sent in response to an Enter Order Message if the order cannot be accepted.

Name	Offset	Length	Type	Comments
Message Type	0	1	“J”	Rejected Message.
Timestamp	1	8	Integer	Number of nanoseconds past midnight.
Order Token	9	4	Token	Order token of the rejected order.
Rejected Order Reason	13	1	Alpha	Reason the order was rejected. Refer to the Rejected Order Reasons table below.

Table 3: Rejected Order Reasons

Reason	Description
H	There is currently a trading halt so no orders can be accepted on this security at this time.
Z	Invalid shares.

<b>Reason</b>	<b>Description</b>
S	Invalid security identifier.
D	Invalid display type.
R	Order not allowed at this time.
X	Invalid price.
N	Invalid minimum quantity.
Y	Invalid order type.
V	Exceeded order value limit.
L	MPID not allowed for this port.
F	Flow control is enabled and this OUCH port is being throttled.
c	User does not have permission to enter an order on the given board.
i	Short sell order restriction.
O	Other.

## Revision History

Date	Version	Description
2012-04-23	1.0	Initial revision.
2012-11-07	1.1	Added Shares field to the Cancel Order Message. Added Decrement Shares field to the Canceled Message. Updated Canceled Order Reasons. Updated Rejected Order Reasons.
2012-12-12	1.2	Changed Firm field format to integer. Updated Rejected Order Reasons. Documented that Cancel on Disconnect feature is always active.
2013-07-09	1.3	Added Display value "P". Updated Canceled Order reasons. Updated Rejected Order Reasons.
2014-03-20	1.4	Added AIQ Canceled Message.
2015-01-22	1.5	Mentioned U-Market.
2016-02-10	1.6	Added "F" order rejection and cancel reasons.