Japannext JNX

ITCH Market Data Specification for Equities

Version 1.7
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1. Introduction

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

2. Overview

The message protocol of ITCH is widely used and considered an industry standard. It provides tick-by-tick details for all displayable orders in the Japannext PTS execution system.

Japannext PTS offers two options for the transport layer for ITCH messages:

- The point-to-point protocol of SoupBinTCP.
- The one-to-many protocol of MoldUDP64.

3. 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.

Price fields are 4 byte Integer fields. When converted to fixed point number format they have 9 whole number digits and 1 decimal place. The maximum representable value is 214,748,364.6 (7FFFFFFE hex).

Quantity fields are 4 byte Integer fields with a maximum representable value of 2,147,483,647 (7FFFFFFF hex).

4. Outbound Sequenced Messages

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

4.1 Timestamp – Seconds Message

The timestamp is separated into two parts to improve bandwidth efficiency: the 'seconds' part comes as a standalone Timestamp – Seconds Message and reflects the number of seconds elapsed since midnight of the day that the trading session started. The 'nanoseconds' part comes as a field within individual messages as the number of nanoseconds since the most recent Timestamp – Seconds Message.

A Timestamp – Seconds Message will be sent for every second in which there is at least one other message type sent.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is T = Timestamp – Seconds Message.
Timestamp – Seconds	1	4	Integer	Number of seconds since midnight of the day that the trading session started.

4.2 System Event Message

System Event Messages signal data feed, system and market events.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is S = System Event Message.

Name	Offset	Length	Type	Comments
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Group	5	4	Alpha	Orderbook group identifier. Blank if system wide event. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
System Event	9	1	Alpha	Refer to the System Events table below.

Table 1: System Events

Value	Description
O	Start of Messages – Always the first message sent in any trading day excepting Timestamp – Seconds Messages.
S	Start of System Hours – Indicates the market is open and ready to start accepting orders.
Q	Start of Market Hours – Start of trading session.
M	End of Market Hours – End of trading session.
E	End of System Hours – Indicates the market is closed and will not accept any new orders.
C	End of Messages – Always the last message sent in any trading day.

4.3   Price Tick Size Message

Price Tick Size Messages define a set of price tick size tables. Price Tick Size Messages are sent before Orderbook Directory Messages.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is L = Price Tick Size Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Price Tick Size Table Id	5	4	Integer	Price tick size table identifier.
Price Tick Size	9	4	Integer	Price tick size.
Price Start	13	4	Integer	Start of price range for this price tick size.

4.4   Orderbook Directory Message

Orderbook Directory Messages provide information about orderbooks available in the Japannext PTS execution system.

Orderbook Directory Messages are sent at the start of each trading day.

Initial reference prices are provided via Order Added Messages sent after the Orderbook Directory Messages.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is R = Orderbook Directory Message.

Name	Offset	Length	Type	Comments
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Alpha	Quick code.
Orderbook Code	9	12	Alpha	International Securities Identification Number (ISIN).
Group	21	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
Round Lot Size	25	4	Integer	Number of shares that represent a round lot.
Price Tick Size Table Id	29	4	Integer	Price tick size table identifier.
Price Decimals	33	4	Integer	Number of decimal places in price fields. Value is 1.
Upper Price Limit	37	4	Integer	Maximum tradable price.
Lower Price Limit	41	4	Integer	Minimum tradable price.

4.5   Trading State Message

A Trading State Message indicates the current trading state of an orderbook.

Prior to the start of system hours, Japannext PTS initiates an orderbook trading state spin. In this spin, Trading State Messages are sent for all orderbooks which are eligible for trading at the start of system hours. If an orderbook is absent from the orderbook trading state spin, clients should assume that the orderbook is suspended at the start of system hours.

After the start of system hours, Trading State Messages are sent to relay changes in the trading state for individual orderbooks.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is H = Trading State Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Alpha	Quick code.
Group	9	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
Trading State	13	1	Alpha	Current trading state. Values: T = Trading V = Suspended

4.6   Short Selling Price Restriction State Message

A Short Selling Price Restriction State Message indicates the current short selling price restriction state of an orderbook.

Prior to the start of system hours, Japannext PTS initiates a short selling price restriction state spin. In this spin, Short Selling Price Restriction State Messages are sent for all orderbooks which have short selling price restriction in effect at the start of system hours. If an orderbook is absent from the short selling price restriction state spin, clients should assume that the orderbook has no short selling price restriction at the start of system hours.

After the start of system hours, Short Selling Price Restriction State Messages are sent to relay changes in the short selling price restriction state for individual orderbooks.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is Y = Short Selling Price Restriction State Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Alpha	Quick code.
Group	9	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
Short Selling State	13	1	Alpha	Current short selling price restriction state. Values: 0 = No price restriction 1 = Price restriction in effect

4.7   Order Added Messages

An Order Added Message or an Order Added with Attributes Message indicates that a new order has been accepted by the Japannext PTS execution system and was added to the displayable book. These messages include an Order Number which is unique per day per orderbook group.

4.7.1   Order Added Message – No Attributes

An Order Added Message will be generated for normal orders accepted by the system.

Reference prices are provided via Order Added Messages with Order Number value of zero. Initial reference prices are sent after the Orderbook Directory Messages. A manual reference price update will generate an additional Order Added Message.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is A = Order Added Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Order Number	5	8	Integer	Reference number of the accepted order. Zero indicates a reference price message.
Buy/Sell Indicator	13	1	Alpha	Side of the order. Values: B = Buy S = Sell Ignore if reference price message.
Quantity	14	4	Integer	Total number of shares added to the book. Ignore if reference price message.
Orderbook Id	18	4	Alpha	Quick code.

Name	Offset	Length	Type	Comments
Group	22	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
Price	26	4	Integer	Price of the order. For a reference price message, a value of 214,748,364.7 (7FFFFFFF hex) denotes no reference price available.

4.7.2 Order Added with Attributes Message

An Order Added with Attributes Message will be generated for orders with market specific attributes accepted by the system.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is F = Order Added with Attributes Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Order Number	5	8	Integer	Reference number of the accepted order.
Buy/Sell Indicator	13	1	Alpha	Side of the order. Values: B = Buy S = Sell
Quantity	14	4	Integer	Total number of shares added to the book.
Orderbook Id	18	4	Alpha	Quick code.
Group	22	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market
Price	26	4	Integer	Price of the order.
Attribution	30	4	Alpha	Reserved. Always blank.
Order Type	34	1	Alpha	Type of the order. Values: Q = DLP order

4.8 Order Executed Message

An Order Executed Message is sent whenever an order in the book is executed in whole or part. This message includes a Match Number which is unique per day per orderbook group.

It is possible to receive several Order Executed Messages for the same Order Number if that order is executed in multiple parts. Order Executed Messages on the same order are cumulative.

The execution price may be derived from the passive order price.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is E = Order Executed Message.

Name	Offset	Length	Type	Comments
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Order Number	5	8	Integer	Reference number of the executed order.
Executed Quantity	13	4	Integer	Number of shares executed.
Match Number	17	8	Integer	Reference number of the match.

4.9 Order Deleted Message

An Order Deleted Message is sent whenever an order in the book has been canceled. All remaining shares are no longer accessible so the order must be removed from the book.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is D = Order Deleted Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Order Number	5	8	Integer	Reference number of the canceled order.

4.10 Order Replaced Message

An Order Replaced Message is sent whenever an order in the book has been replaced. The new order details are provided for the replacement, along with a New Order Number to be used henceforth.

Name	Offset	Length	Type	Comments
Message Type	0	1	Alpha	Value is U = Order Replaced Message.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Original Order Number	5	8	Integer	Reference number of the original order.
New Order Number	13	8	Integer	Reference number of the replaced order.
Quantity	21	4	Integer	New total number of shares displayed in the book.
Price	25	4	Integer	New price of the order.

Revision History

Date	Version	Description
2012-04-24	1.0	Initial revision.
2012-07-25	1.1	Added Order Added with Attributes Message. Corrected reverse meaning of the Trading State spin. Clarified Timestamp – Seconds Message frequency.
2012-08-23	1.2	Removed Quantity Tick Size Table Message. Replaced Minimum Quantity field with Round Lot Size.
2013-08-28	1.3	Added Short Selling Price Restriction Indicator message.
2014-10-03	1.4	Mentioned U-Market.
2017-10-26	1.5	Replaced Order Reference Number field name with Order Number. Replaced Security with Orderbook in message and field names.
2017-12-18	1.6	Renamed messages: Orderbook Directory → Orderbook Directory Message, Orderbook Trading Action → Trading State Message, Short Selling Price Restriction Indicator → Short Selling Price Restriction State Message, Add Order Message → Order Added Message, Add Order with Attributes Message → Order Added with Attributes Message, Order Delete Message → Order Deleted Message, Order Replace Message → Order Replaced Message. Clarified initial and update reference price mechanisms.
2023-02-17	1.7	Changed Type of Orderbook Id to Alpha