Japannext PTS
ITCH Market Data Specification
for Equities

Version 1.5
Updated 26 October 2017

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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 payloads:

- 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

For bandwidth efficiency reasons, the protocol separates the timestamp into two parts. The seconds part comes as a standalone Timestamp – Seconds Message and reflects the number of seconds past midnight that the message was generated. The nanoseconds part comes as a field within individual message formats and reflects the number of nanoseconds since the most recent Timestamp – Seconds Message that the payload message was generated.

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

Name	Offset	Length	Type	Comments
Message Type	0	1	"T"	Timestamp – Seconds Message.
Timestamp – Seconds	1	4	Integer	Number of seconds since midnight.

4.2 System Event Message

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

Name	Offset	Length	Type	Comments
Message Type	0	1	"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 – Outside timestamp messages, always the first message sent in any trading day.
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 the Orderbook Directory messages.

Name	Offset	Length	Type	Comments
Message Type	0	1	"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

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. Note that reference prices are provided via Add Order Messages.

Name	Offset	Length	Type	Comments
Message Type	0	1	"R"	Orderbook Directory.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Integer	4 digit Quick code.
Orderbook Code	9	12	Alpha	International Securities Identification Number (ISIN).

Name	Offset	Length	Type	Comments
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. A value of 214,748,364.7 (7FFFFFFF hex) denotes no upper price limit available.
Lower Price Limit	41	4	Integer	Minimum tradable price. A value of 214,748,364.7 (7FFFFFFF hex) denotes no lower price limit available.

4.5 Orderbook Trading Action

An Orderbook Trading Action message indicates the current trading status of an orderbook.

Prior to the start of system hours, Japannext PTS initiates a Orderbook Trading Action spin. In this spin, Orderbook Trading Action 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 Action spin, clients should assume that the orderbook is suspended at the start of system hours.

After the start of system hours, Orderbook Trading Action messages are sent to relay changes in trading status for individual orderbooks.

Name	Offset	Length	Type	Comments
Message Type	0	1	"H"	Orderbook Trading Action.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Integer	4 digit 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 status. Values: T = Trading V = Suspended

4.6 Short Selling Price Restriction Indicator

A Short Selling Price Restriction Indicator message indicates the current short selling price restriction status of an orderbook.

Prior to the start of system hours, Japannext PTS initiates a Short Selling Price Restriction Indicator spin. In this spin, Short Selling Price Restriction Indicator 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 Indicator 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 Indicator messages are sent to relay changes in short selling price restriction status for individual orderbooks.

Name	Offset	Length	Type	Comments
Message Type	0	1	"Y"	Short Selling Price Restriction Indicator.
Timestamp – Nanoseconds	1	4	Integer	Number of nanoseconds since last Timestamp – Seconds Message.
Orderbook Id	5	4	Integer	4 digit 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 status. Values: 0 = No price restriction 1 = Price restriction in effect

4.7 Add Order Message

An Add Order Message indicates that a new order has been accepted by the Japannext PTS execution system and was added to the displayable book. This message includes an Order Number which is unique per day per orderbook group.

There are two variations of the Add Order Message.

4.7.1 Add Order – No Attributes

This message will be generated for normal orders accepted by the system.

If the Order Number has a value of zero, this indicates a reference price update for the orderbook. Initial reference price updates are sent after the Orderbook Directory messages. A manual reference price update will generate an additional Add Order Message.

Name	Offset	Length	Type	Comments
Message Type	0	1	"A"	Add Order 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 update.
Buy/Sell Indicator	13	1	Alpha	Side of the order. Values: B = Buy S = Sell Ignore if reference price update.
Quantity	14	4	Integer	Total number of shares added to the book. Ignore if reference price update.
Orderbook Id	18	4	Integer	4 digit Quick code.
Group	22	4	Alpha	Orderbook group identifier. Values: DAY = Daytime market NGHT = Nighttime market DAYX = X-Market DAYU = U-Market

Name	Offset	Length	Type	Comments
Price	26	4	Integer	Price of the order. For a reference price update, a value of 214,748,364.7 (7FFFFFFF hex) denotes no reference price available.

4.7.2 Add Order with Attributes

This message will be generated for orders with market specific attributes accepted by the system.

Name	Offset	Length	Type	Comments
Message Type	0	1	"F"	Add Order 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	Integer	4 digit 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	"E"	Order Executed Message.
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 Delete Message

An Order Delete 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	"D"	Order Delete 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 Replace Message

An Order Replace 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 which will be used henceforth.

Name	Offset	Length	Type	Comments
Message Type	0	1	"U"	Order Replace 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 Add Order with Attributes Message. Corrected reverse meaning of the Orderbook Trading Action 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.