

# **Japannext PTS ITCH Market Data Specification for Bonds**

Version 1.1  
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## 1. Introduction

This document explains access to the bonds 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](mailto: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.

Signed Integer fields are signed 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 Signed Integer fields. When converted to fixed point number format they have 7 whole number digits and 3 decimal places. The maximum representable value is 2,147,483.646 (7FFFFFFE hex) and the minimum representable value is -2,147,483.648 (80000000 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.
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: DJGB = JGB 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	Yield tick size.
Price Start	13	4	Signed Integer	Start of yield range for this yield 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 yields 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	Bond code per SICC definition.
Orderbook Code	9	12	Alpha	International Securities Identification Number (ISIN).

Name	Offset	Length	Type	Comments
Group	21	4	Alpha	Orderbook group identifier. Values: DJGB = JGB Market
Round Lot Size	25	4	Integer	Number of bonds 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 3.
Upper Price Limit	37	4	Signed Integer	Maximum tradable yield. A value of 2,147,483.647 (7FFFFFFF hex) denotes no upper yield limit available.
Lower Price Limit	41	4	Signed Integer	Minimum tradable yield. A value of 2,147,483.647 (7FFFFFFF hex) denotes no lower yield 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	Bond code per SICC definition.
Group	9	4	Alpha	Orderbook group identifier. Values: DJGB = JGB Market
Trading State	13	1	Alpha	Current trading status. Values: T = Trading V = Suspended

## 4.6 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.

If the Order Number has a value of zero, this indicates a reference yield update for the orderbook. Initial reference yield updates are sent after the Orderbook Directory messages. A manual reference yield 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.

Name	Offset	Length	Type	Comments
Order Number	5	8	Integer	Reference number of the accepted order. Zero indicates a reference yield update.
Buy/Sell Indicator	13	1	Alpha	Side of the order. Values: B = Buy S = Sell Ignore if reference yield update.
Quantity	14	4	Integer	Total number of bonds added to the book. Ignore if reference yield update.
Orderbook Id	18	4	Integer	Bond code per SICC definition.
Group	22	4	Alpha	Orderbook group identifier. Values: DJGB = JGB Market
Price	26	4	Signed Integer	Yield of the order. For a reference yield update, a value of 2,147,483.647 (7FFFFFFF hex) denotes no reference yield available.

## 4.7 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 yield may be derived from the passive order yield.

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 bonds executed.
Match Number	17	8	Integer	Reference number of the match.

## 4.8 Order Delete Message

An Order Delete Message is sent whenever an order in the book has been canceled. All remaining bonds 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.

## 4.9 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.

<b>Name</b>	<b>Offset</b>	<b>Length</b>	<b>Type</b>	<b>Comments</b>
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 bonds displayed in the book.
Price	25	4	Signed Integer	New yield of the order.

## Revision History

Date	Version	Description
2016-12-05	1.0	Initial revision.
2017-10-26	1.1	Replaced Order Reference Number field name with Order Number. Replaced Security with Orderbook in message and field names. Replaced Bonds with Quantity in data type descriptor and field names. Replaced Yield with Price in data type descriptor, and message and field names.