Japannext JNX

ITCH Market Data Specification for Bonds

Version 1.2
Updated 1 April 2020

Table of Contents

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.

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.

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

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 past midnight that the message was generated, and 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.

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.
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 – 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	Yield tick size.
Price Start	13	4	Signed Integer	Start of yield range for this yield 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 yields 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	Integer	Bond code per SICC definition.
Orderbook Code	9	12	Alpha	International Securities Identification Number (ISIN).
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.
Lower Price Limit	41	4	Signed Integer	Minimum tradable yield.

4.5   Trading State Message

A Trading State Message indicates the current trading status 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	Integer	Bond code per SICC definition.
Group	9	4	Alpha	Orderbook group identifier. Values: DJGB = JGB Market
Trading State	13	1	Alpha	Current trading state. Values: T = Trading V = Suspended

4.6   Order Added Message

An Order Added 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.

Reference yields are provided via Order Added Messages with Order Number value of zero. Initial reference yields are sent after the Orderbook Directory Messages. A manual reference yield 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 yield update.
Buy/Sell Indicator	13	1	Alpha	Side of the order. Values: B = Buy S = Sell Ignore if reference yield message.
Quantity	14	4	Integer	Total number of bonds added to the book. Ignore if reference yield message.
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 message, 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	Alpha	Value is 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 Deleted Message

An Order Deleted 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	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.

4.9   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 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.
2017-12-18	1.2	Renamed messages: Orderbook Directory → Orderbook Directory Message, Orderbook Trading Action → Trading State Message, Add Order Message → Order Added Message, Order Delete Message → Order Deleted Message, Order Replace Message → Order Replaced Message. Clarified initial and update reference price mechanisms.