

# **IDX OUCH SPECIFICATION**

## **Technical Specifications**

**Version 1.9.0**



Indonesia Stock Exchange

member of  **WORLD FEDERATION  
OF EXCHANGES**

Indonesia Stock Exchange Building

Jl. Sudirman Kav 52-53

Jakarta 12190

INDONESIA

Phone: +62-21-5150515

Fax: +62-21-51504

## Document History

VERSION	DATE	SUMMARY OF CHANGES
1.0.0	2015-12-22	First release. Section 1.3 <i>Requirements</i> updated.
1.1.0	2016-02-19	OUCH Trading Limit Status – minor name change
1.2.0	2016-03-21	Minor change to offset values for OUCH Accepted Message [A]
1.3.0	2016-04-26	Updated length of OrderSource in Ouch Enter Order Message [O].
1.4.0	2016-12-15	Added Quantity in Lots description in sections 3 <i>Inbound Sequenced Messages</i> and 4 <i>Outbound Sequenced Messages</i> .
1.5.0	2017-01-27	Added 'j' order rejected reason in <i>Table 16 – Rejected Order Reasons</i> . Replaced 'shares' with 'lots'.
1.6.0	2017-03-06	Updated Offset column and increased length of BrokerReference to 20 in <i>Table 3 – OUCH Enter Order Message [O]</i> and <i>Table 8 – OUCH Accepted Message [A]</i> .
1.7.0	2020-10-29	Added Immediate value to Time In Force, and Minimum Quantity field in <i>Table 3 – OUCH Enter Order Message [O]</i> . Added Minimum Quantity field in <i>Table 8 – OUCH Accepted Message [A]</i> .
1.8.0	2021-08-31	Changes updated/added due to CR038: <ul style="list-style-type: none"> <li>• Updated FOK and FAK orders in Table 3 and Table 8</li> <li>• Updated Counter Party ID field set to 0 in Table 12</li> </ul>
1.9.0	2023-02-09	Added cancel reason 'I' in <i>Table 11 – Cancelled Reasons</i> . Added reject reason 'N' in <i>Table 16 – Rejected Order Reasons</i> . <i>Table 18 – OUCH Restatement Message [R]</i> added.

# Contents

<b>1</b>	<b>Context</b> .....	<b>4</b>
1.1	Business Context .....	4
1.2	Requirements.....	4
<b>2</b>	<b>Data Types</b> .....	<b>5</b>
<b>3</b>	<b>Inbound Unsequenced Messages</b> .....	<b>6</b>
<b>4</b>	<b>Outbound Sequenced Messages</b> .....	<b>9</b>
<b>5</b>	<b>Outbound Unsequenced Messages</b> .....	<b>15</b>
<b>6</b>	<b>Message Kinematics</b> .....	<b>16</b>
6.1	Replace Order Message [U].....	16
6.2	Cancel Order Message [X].....	16
6.3	OUCH Order Tokens .....	16
6.3.1	Enter Order Message .....	16
6.3.2	Replace Order Message.....	16
6.3.3	Resiliency.....	16
6.4	System Event Message [S] .....	17
	<b>Tables</b>	
	Table 1 – OUCH Data Types.....	5
	Table 2 – OUCH Compound Data Types.....	5
	Table 3 – OUCH Enter Order Message [O].....	6
	Table 4 – OUCH Replace Order Message [U] .....	7
	Table 5 – OUCH Cancel Order Message [X] .....	8
	Table 6 – OUCH Trading Limit Message [T] .....	8
	Table 7 – OUCH System Event Message [S].....	9
	Table 8 – OUCH Accepted Message [A].....	9
	Table 9 – OUCH Replaced Message [U] .....	10
	Table 10 – OUCH Canceled Message [C].....	11
	Table 11 – Cancelled Reasons .....	12
	Table 12 – OUCH Executed Order Message [E] .....	12
	Table 13 – OUCH Broken Trade Message [B].....	12
	Table 14 – OUCH Broken Trade Reasons .....	13
	Table 15 – OUCH Rejected Order Message [J] .....	13
	Table 16 – Rejected Order Reasons .....	13
	Table 17 – OUCH Trading Limit Status Message [T] .....	14
	Table 18 – OUCH Restatement Message [R].....	14
	Table 19 – OUCH Trading Limit Status Message [T] .....	15
	Table 20 – OUCH Event Message flow .....	17

# 1 Context

## 1.1 Business Context

This document will cover order management via the OUCH protocol.

## 1.2 Requirements

X-stream INET Trading provides an order management interface that is commonly used by high volume trading applications.

The OUCH protocol is widely used and considered an industry standard. This standard is designed for a low latency messaging. X-stream INET Trading will adhere, as closely as possible, to the latest published version of these fixed width message definitions.

As part of the project, market participant feedback will be solicited for this specification. Comments received will be reviewed by IDX and Nasdaq and as a result, this specification may change.

The point-to-point transport layer for OUCH payloads will be SoupBinTCP3.0.

SoupBinTCP is required as it supports binary types in the payload. Binary types are employed in the latest OUCH standards so required for X-stream INET Trading.

## 2 Data Types

**Table 1 – OUCH Data Types**

DATA TYPE	DESCRIPTION
Alpha	Left justified and right padded.
Integer	Unsigned big-endian binary encoded.

**Table 2 – OUCH Compound Data Types**

DATA TYPE	LEN	DESCRIPTION
Token	4	<p>An Integer that must be increased for each inbound OUCH message.</p> <p>Tokens must be unique per OUCH client for each trading cycle.</p> <p>Unsigned big-endian binary encoded.</p> <p>Once an order has been accepted then it is reference by its token.</p>

### 3 Inbound Unsequenced Messages

In this section, the *Quantity* fields have a quantity defined in 'lots'.

**Table 3 – OUCH Enter Order Message [O]**

NAME	OFFSET	LEN	VALUE/TYPE	NOTES
Type	0	1	"O"	Enter Order Message Id.
Order Token	1	4	Token	Token must be unique for each OUCH user per trading cycle.
Broker Reference	5	20	Alpha	Assigned by Participant. It is not checked but returned via the Accepted sequenced message and also forwarded to the downstream systems.
Investor Id	25	6	Alpha	Assigned by the Participant. This field is forwarded to the clearing and settlement venues. There is no validation of this field, it is simply passed through to the depended systems. This maps to the SID value.
Order Verb	31	1	Alpha	'B'uy 'S'ell Shor'T' Sell 'P'rice Stabilisation (only buy) 'M'argin (only buy)
Order Source	32	4	Alpha	Expected format = `ABCD` Can contain up to four of the values below: q Individual investor – Online r Individual investor – Sharia s Institutional investor – DMA t Institutional Investor – Sharia u Sales – Online v Sales – Sharia w Sales – Remote x Dealer – Sharia y Dealaer – Remote z House – Remote Q Individual investor – Online – Automated Ordering R Individual investor – Sharia – Automated Ordering S Institutional investor – DMA – Automated Ordering T Institutional Investor – Sharia – Automated Ordering U Sales – Online – Automated Ordering V Sales – Sharia – Automated Ordering

NAME	OFFSET	LEN	VALUE/TYPE	NOTES
				W Sales – Remote – Automated Ordering X Dealer – Sharia – Automated Ordering Y Dealer – Remote – Automated Ordering Z House – Remote – Automated Ordering
Domicile	36	1	Alpha	'Indonesia, 'A'sing (foreigner), 'S'endiri (house), 'F'oreigner house.
Quantity	37	8	Integer	Total number of lots. Maximum value 0x7FFFFFFFFFFFFFFF
Orderbook	45	4	Integer	Unique orderbook identifier. Unsigned big-endian binary encoded.
Price	49	4	Integer	The price of this order. The price is 0x7FFFFFFF for a 'market' order. Only positive value and maximum price for a 'limit' order is 0x7FFFFFFF -1
Time in Force	53	4	Integer	0 - Immediate 99997 – session 99998 - day Any other values are not supported (order will be rejected).
Client Id	57	4	Integer	Reserved for future use.
Minimum Quantity	61	8	Integer	If TIF = 0, specifies the minimum acceptable quantity to execute. For FOK order, set Minimum Quantity = Quantity For FAK order, set Minimum Quantity = 0

**Table 4 – OUCH Replace Order Message [U]**

**Note:** The Broker Reference, Investor Id, Account Id, Order Verb, Order Source, Domicile and TIF fields cannot be changed with the replace order message. They will be inherited from the original order.

NAME	OFFSET	LEN	VALUE/TYPE	NOTES
Type	0	1	"U"	Replace Order Message Id.
Existing Order Token	1	4	Token	The token to match exactly with the original Enter Order or Replace Order Message.
Replacement Order Token	5	4	Token	Token must be unique for each OUCH user per trading cycle.
Quantity	9	8	Integer	Total number of lots liable, inclusive of previous executions on this order chain. The maximum in the chain being 0x7FFFFFFFFFFFFFFF.
Price	17	4	Integer	The price of the replacement order. The price is 0x7FFFFFFF (hex) 2147483647 (dec) for a

NAME	OFFSET	LEN	VALUE/TYPE	NOTES
				'market' order. Only positive value and maximum price for a 'limit' order is 0x7FFFFFFF -1

**Table 5 – OUCH Cancel Order Message [X]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"X"	Cancel Order Message Id.
Order Token	1	4	Token	The exact match for the original order token from the Order Entry message.

**Table 6 – OUCH Trading Limit Message [T]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"T"	Trading Limit Message Id.
Trading Limit Type	1	1	Alpha	'P'ool 'E'quity 'D'erivative



## 4 Outbound Sequenced Messages

In this section, the *Quantity* fields have a quantity defined in 'lots'.

**Table 7 – OUCH System Event Message [S]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"S"	System Event Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as number of nanoseconds past midnight.
Event Code	9	1	Alpha	"S" start of day "E" end of day

**Table 8 – OUCH Accepted Message [A]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"A"	Accepted Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as number of nanoseconds past midnight.
Order Token	9	4	Token	The order token field as entered
Broker Reference	13	20	Alpha	Assigned by Participant on the order entry message.
Investor Id	33	6	Alpha	The Investor Id field as entered. Maps to SID.
Order Verb	39	1	Alpha	'B'uy 'S'ell Shor'T' Sell 'P'rice Stabilisation (only buy) 'M'argin (only buy)
Order Source	40	4	Alpha	Expected format = `ABCD` Can contain up to four of the values below: a Individual investor – Online b Individual investor – Sharia c Institutional investor – DMA d Institutional Investor – Sharia e Sales – Online f Sales – Sharia g Sales – Remote h Dealer – Sharia i Dealaer – Remote j House – Remote A Individual investor – Online – Automated Ordering B Individual investor – Sharia – Automated Ordering C Institutional investor – DMA – Automated

NAME	OFFSET	LEN	VALUE	NOTES
				Ordering D Institutional Investor – Sharia – Automated Ordering E Sales – Online – Automated Ordering F Sales – Sharia – Automated Ordering G Sales – Remote – Automated Ordering H Dealer – Sharia – Automated Ordering I Dealer – Remote – Automated Ordering J House – Remote – Automated Ordering
Domicile	44	1	Alpha	'I'ndonesia, 'A'sing (foreigner), 'S'endiri (house), 'F'oreigner house.
Quantity	45	8	Integer	Total number of lots accepted.
Orderbook	53	4	Integer	Unique orderbook identifier as entered.
Price	57	4	Integer	The accepted price of the order. The price is 0x7FFFFFFF (hex) or 2147483647 (dec) for a 'market' order.
Time in Force	61	4	Integer	0 – immediate 99997 – session 99998 – day Any other values are not supported
Client Id	65	4	Integer	Reserved for future use.
Order Reference Number	69	8	Integer	Day unique order reference number.
Order Reference Number External	77	8	Integer	Day unique order reference number as displayed on ITCH Total View.
Order State	85	1	Alpha	"L"ive or "D"ead. No further Canceled message will be received for the accepted order.
Minimum Quantity	86	8	Integer	If TIF = 0, specifies the minimum acceptable quantity to execute. For FOK order, Minimum Quantity = Quantity For FAK order, Minimum Quantity = 0

**Table 9 – OUCH Replaced Message [U]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"U"	Replaced Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as number of nanoseconds past midnight.
Replacement Order Token	9	4	Token	The Replacement Order Token field.

NAME	OFFSET	LEN	VALUE	NOTES
Order Verb	13	1	Alpha	'B'uy 'S'ell Shor'T' Sell 'P'rice Stabilisation (only buy) 'M'argin (only buy) on original order.
Quantity	14	8	Integer	The accepted quantity of the replacement.
Orderbook	22	4	Integer	Unique orderbook identifier as entered on the replace message.
Price	26	4	Integer	The accepted price of the replacement. 0x7FFFFFFF (hex) or 2147483647 (dec) for a 'market' order.
Time in Force	30	4	Integer	99997 - session 99998 - day Any other values are not supported.
Order Reference Number	34	8	Integer	Day unique order reference number.
Order Reference Number External	42	8	Integer	Day unique order reference number as displayed on ITCH Total View.
Order State	50	1	Alpha	"L"ive or "D"ead. If the replaced quantity is equal to the executed quantity, OrderReplaced message is sent with value "Dead". OrderReplaced message is also sent with value "Dead" for an IOC order which fails to execute. No further Canceled message will be received for the replaced order.
Previous Order Token	51	4	Token	The Order Token of the order that was replaced.

**Table 10 – OUCH Canceled Message [C]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"C"	Canceled Order Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as the number of nanoseconds past midnight
Order Token	9	4	Token	The Order Token of the order being canceled.
Quantity	13	8	Integer	Number of lots canceled. This is balance of the order when the cancel transaction was processed.
Reason	21	1	Alpha	Reason the order was cancelled. Refer to Cancelled Reasons below.

**Table 11 – Cancelled Reasons**

REASON	EXPLANATION	IN RESPONSE TO
'U'	User requested the order to be cancelled. Sent in response to a Cancel Order message or a Replace Order Message.	Cancel Order
'I'	Immediate (order was originally sent with Time In Force of 0).	Cancel Order
'T'	Timeout. Session/day order got expired.	Cancel Order
'S'	Supervisory. For example, emergency withdraw or the user got suspended.	Cancel Order
'L'	User logged off.	Cancel Order
'Z'	Invalid quantity or quantity exceeds maximum limit.	Replace Order
'R'	The order is not allowed at this time.	Replace Order
'X'	Invalid price.	Replace Order
'Y'	Invalid Order Type. For example, the Time In Force value is not supported in current trading session.	Replace Order
'W'	Unknown. Contact support for further information.	Replace Order

**Table 12 – OUCH Executed Order Message [E]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"E"	Order Executed Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as the number of nanoseconds past midnight.
Order Token	9	4	Token	The Order Token of the executed order.
Executed Quantity	13	8	Integer	Incremental quantity executed, i.e. the quantity for this execution only.
Executed Price	21	4	Integer	The executed price for executed quantity.
Liquidity Flag	25	1	Alpha	"A"dded for the passive firm (resting order), "R"emoved for the aggressor, "U"ncross for auction executions.
Match Number	26	8	Integer	Match identifier for each trade. Same for buy/sell sides. This is the X-stream INET Trading trade number.
Counter Party ID	34	4	Integer	Depending on the orderbook setup the counterparty identifier may contain a masking CCP or a trading counterparty. Set to 0 if participant not being sent

**Table 13 – OUCH Broken Trade Message [B]**

This message will not be sent at IDX as trade cancellations or modifications are carried out offline and not during trading.

NAME	OFFSET	LEN	VALUE	NOTES
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NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"B"	Broken Trade Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as the number of nanoseconds past midnight.
Order Token	9	4	Token	The Order Token of the order for which the given Match Number is being broken.
Match Number	13	8	Integer	Match identifier for each trade. Same for buy/sell sides. This is the X-stream INET Trading trade number.
Reason	21	1	Alpha	The reason the trade was broken. See currently supported Broken Trade Reasons table below.

**Table 14 – OUCH Broken Trade Reasons**

REASON	EXPLANATION
'C'	Consent – The two parties mutually agreed to break the trade.
'S'	Supervisory – The trade was manually broken by Star PX Exchange supervisory.

**Table 15 – OUCH Rejected Order Message [J]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"J"	Rejected Order Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as nanoseconds past midnight.
Order Token	9	4	Token	Order Token field as was entered.
Reason	13	1	Alpha	The reason the order was rejected. Refer to Rejected Order Reasons below.

**Table 16 – Rejected Order Reasons**

REASON	EXPLANATION
'H'	The orderbook, instrument, board or market is not tradeable.
'Z'	Invalid quantity or quantity exceeds maximum limit.
'S'	Invalid orderbook identifier.
'R'	The order is not allowed at this time.
'X'	Invalid price.
'N'	Invalid Minimum Quantity.
'Y'	Invalid Order Type. For example, the Time In Force value is not supported in current trading session.
'F'	Flow control in place for user. A throttle is active for this OUCH port.
'B'	Order source is not valid.
'j'	The order has exceeded the firm trading limits.

REASON	EXPLANATION
'W'	Unknown. Contact support for further information.

**Table 17 – OUCH Trading Limit Status Message [T]**

This message will be sent as a sequenced message on update of the firm trading limits by KPEI.

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"T"	Trading Limit Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as nanoseconds past midnight.
Trading Limit Type	9	1	Alpha	'P'ool 'E'quity 'D'erivative
Used	10	8	Integer	The used value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.
Traded	18	8	Integer	The traded value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.
Limit	26	8	Integer	The limit value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.

**Table 18 – OUCH Restatement Message [R]**

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"R"	Restatement
Timestamp	1	8	Integer	Timestamp – reflected as nanoseconds past midnight.
Order Token	9	4	Token	The Order Token of the restated order.
Price	13	4	Integer	The new order price.
Reason	17	1	Alpha	The reason for order restatement. 'P' – Order restatement due to price update from Market to Limit.

## 5 Outbound Unsequenced Messages

**Table 19 – OUCH Trading Limit Status Message [T]**

This unsequenced outbound message will be sent in response to an OUCH client sending inbound trading limit message.

NAME	OFFSET	LEN	VALUE	NOTES
Type	0	1	"T"	Trading Limit Message Id.
Timestamp	1	8	Integer	Timestamp – reflected as nanoseconds past midnight.
Trading Limit Type	9	1	Alpha	'P'ool 'E'quity 'D'erivative
Used	10	8	Integer	The used value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.
Traded	18	8	Integer	The traded value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.
Limit	26	8	Integer	The limit value for the trading limit. Not set is 0x7FFFFFFFFFFFFFFF.

## 6 Message Kinematics

### 6.1 Replace Order Message [U]

The inbound replace message must set the quantity in terms of the total order quantity over the entire amendment chain.

An order is entered with a quantity *100*, it is validated and accepted. A quantity of *25* is then executed.

If the client wishes to replace the order and still be exposed for the balance of *75*, then the Replace Order Message must have a quantity of *100* – the current balance plus the executed quantity.

If the quantity is amended to a new *150*, then the Replace Order Message is sent with a quantity of *175* – the new *150* plus the executed quantity of *25*.

An order may not be replaced with a new quantity less than the total executed quantity, this would result in the deletion of the existing order.

For an order replaced with a new quantity equal to the total executed quantity, the replace is accepted and the response has the state Dead.

### 6.2 Cancel Order Message [X]

The entire order quantity is removed from the book.

### 6.3 OUCH Order Tokens

#### 6.3.1 Enter Order Message

The Order Token must be unique for the trading cycle and OUCH account for the Enter Order Message. An Enter Order Message with a previously used Order Token will be silently ignored.

#### 6.3.2 Replace Order Message

The Replace Order Message requires two valid Order Tokens. The first must match an existing order for that account and the second, the replacement token, must be unique as for the Enter Order Message.

The Replace Order Message will be silently ignored if the Previous Order Token is no longer live or the Replacement Order Token is invalid.

If the order, associated to the Previous Order Token, is live but the replace details (except the new Order Token) are invalid the order will be canceled and removed from the book. The Replacement Order Token is not consumed and may be reused.

If an order is amended to an IOC and minimum quantity is specified when the existing order has partially traded, the existing order will be cancelled.

#### 6.3.3 Resiliency

The Token field allows for the benign retransmission of OUCH inbound messages. If a connection fails, pending messages may be resent without generating duplicates.

The mirroring of OUCH ports, across Engine hosts, allows a seamless failover to a second host. Therefore, pending messages may be resent over the second link without generating duplicates.



## 6.4 System Event Message [S]

**Table 20 – OUCH Event Message flow**

TRANSITION	SYSTEM EVENT MESSAGE [S] SYSTEM EVENT CODE (System Level)
IPXS-SOD	'S' – "Start of Day"
IPXS-EOD	'E' – "End of Day"