



CHIXOE Interface Specification

Cboe Australia Trading System

Published Version 6.6

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System response times may vary for a number of reasons including market conditions, trading volumes and system performance.

VERSION HISTORY

| VERSION | DESCRIPTION | DATE |
|---------|--|------------|
| 1.0 | First Release | 04-11-2013 |
| 1.1 | Key changes: <ul style="list-style-type: none"> • Inserted fields to support short sales | 02-12-2013 |
| 1.2 | Key changes: <ul style="list-style-type: none"> • Updated reasons for Cancel/Reject Order Acknowledgement messages • Add No Self Trade Order Number, Prevented Trade Price, Prevented Trade Quantity and Prevented Liquidity Indicator to Replace Order Acknowledgement messages | 30-01-2014 |
| 1.3 | Key Changes <ul style="list-style-type: none"> • Updated the descriptions on the use of Self Trade Prevention | 05-02-2014 |
| 1.4 | Key Changes <ul style="list-style-type: none"> • Updated descriptions of fields in Add/Replace Order Message and Replace Order Acknowledgement Message in relation to <i>Account</i>, <i>ClientXref</i>, <i>IntermediaryID</i> and <i>OrderOrigin</i>. | 28-03-2014 |
| | Key Changes <ul style="list-style-type: none"> • Updated description of Order Type Replace Order Message | 30-07-2014 |
| 3.0 | Key Changes <ul style="list-style-type: none"> • Updated descriptions for visible MOC order • Support for MEQ | 13-05-2015 |
| 4.0 | Key Changes <ul style="list-style-type: none"> • Inserted field into Execution message to support attributed market | 01-07-2015 |
| 5.0 | Key Changes <ul style="list-style-type: none"> • Support for participant attribution on Cboe & ASX quoted ETFs | 01-12-2015 |
| 5.2p4 | Key Changes <ul style="list-style-type: none"> • Support for field Last Market | 08-06-2017 |
| 5.5 | Key Changes Support for fields: <ul style="list-style-type: none"> • T1Settlement in Order-related messages • Settlement Date in Execution-related message | 30-01-2018 |
| 5.6 | Key Changes Support for MEQSE (Minimum Execution Quantity Single Execution) | 19-06-2018 |
| 5.6p2 | Key Changes MEQSE Supports Broker Preference | 06-12-2018 |
| 6.0 | Key Changes <ul style="list-style-type: none"> • Added Cancel Trade Message | 22-01-2019 |
| 6.2 | Key Changes <ul style="list-style-type: none"> • Accepts MOC MEQSE Orders • Removes Visible MOC Support | 09-05-2019 |

| | | |
|-----|---|------------|
| 6.6 | Key Changes <ul style="list-style-type: none">• Added Cancel Oldest option for No Trade Feat field | 07-09-2021 |
|-----|---|------------|

1 Introduction

This document is the Cboe Order and Execution (“**CHIXOE**”) protocol specification for the order and trade interface between the Cboe Trading System (“**Trading System**”) and its participants. The trading interface allows participants to submit, replace, and cancel orders as well as receive executions from Trading System. CHIXOE is similar to the popular **OUCH** protocol.

Cboe provides CHIXOE as an alternative option to its FIX interface for participants. CHIXOE is a fixed length interface, providing participants with a fast and highly efficient way to connect to Trading System.

2 Data Types

This chapter described the data types that are used in the CHIXOE protocol.

2.1 Integer

Integer fields are unsigned big-endian (network byte order) binary encoded numbers.

2.2 Alpha

Alpha fields consist of alphabetical letters. They are presented in left-justified and padded on the right with spaces. For example, if the user name is "ABCD", it should be sent as "ABCD_ _" ("_" represents a space).

2.3 Numeric

Numeric fields consist of digits which are ASCII coded. They are presented in right justification and are space-filled from the left. For example, if the Sequence Number is 1, it should be sent as " _ _ _ _ _ _ _ _ 1" ("_" represents a space).

2.4 Alphanumeric

Alphanumeric text fields consist of alphabetical letters, digits and spaces. They are presented in left justification and are padded with spaces to the right. For example, if a password is "AB23CD", it should be sent as "AB23CD_ _" ("_" represents a space).

2.5 Price

Price is an integer field. When converted to a decimal format, prices are in fixed point format with 9 whole number digits followed by 4 decimal places. The maximum representable price is 214,748.3647 (decimal, 7FFFFFFF hex).

3 Session

This section describes the session characteristics of the CHIXOE protocol. Session level messages are specified in Section 4. The CHIXOE session protocol is compatible with NASDAQ OMX SoupBin TCP protocol.

3.1 Session Protocol

1. The CHIXOE protocol is built on a session layer on top of TCP/IP sockets. Sessions include both sequenced and non-sequenced messages. The sequenced messages are application messages transferred from server to client, and the non-sequenced messages are the session level messages and carrying application messages transferred from client to server.
2. Sequenced messages include acknowledgement, reject, order and execution messages.
3. Login, logout and heartbeat messages are the examples of non-sequenced messages.
4. Sequenced messages can be retrieved and recovered.
5. Trading System will terminate a connection if the Message Type in the Session message is undefined.

3.2 Session Initialisation

1. A CHIXOE session is initialised when the client establishes a TCP session and sends a login packet.
2. When Trading System receives the login packet, it will either respond with a login accept acknowledgement packet and starts transferring sequenced data, or it will reject the login and terminates the session (if appropriate).
3. If Trading System does not receive a login packet within 30 seconds, it will terminate the session.

3.3 Sequential Messaging

1. The first session level sequenced message of the day will have the sequence number of "1".
2. Subsequent sequenced messages will have the next incremental value implicitly assigned as the sequence number.
3. Session recovery is done by providing the appropriate sequence number.

3.4 Session Recovery

1. Recovering a session is done by counting the number of sequenced messages which have already been received and providing the next expected sequence number of the message to be received when reconnecting to the server.
2. The new session will start from the next expected sequenced message.

4 Session Messages

This section describes the session level messages delivered between Trading System and the clients.

4.1 Debug Message

Debug messages are bidirectional and are used for application development and troubleshooting. They should only be used during development phases. This message is ignored by Trading System.

| DEBUG MESSAGE | | | | |
|----------------|--------|----------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "+" – Debug Message |
| Text | 3 | Variable | Alphanumeric | Free form text |

Figure 1: Debug Message

4.2 Inbound Session Messages

This section describes the session messages sent from clients to Trading System.

4.2.1 Login

The Login message is sent to the server when a client tries to establish a session connection to Trading System. It also allows session recovery by providing the sequence number when sending the login request message.

| LOGIN REQUEST MESSAGE | | | | |
|-----------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "L" – Login Message |
| Username | 3 | 6 | Alphanumeric | Username |
| Passw ord | 9 | 10 | Alphanumeric | Passw ord |
| Requested Session | 19 | 10 | Alphanumeric | Login requested session ID. Leave this field blank for initial login; and provide Session ID for subsequent logins. |
| Sequence Number | 29 | 20 | Numeric | The next expected sequence number of the feed from which to start. "1" indicates starting from the beginning of the day. "0" indicates the last message generated by the system bypassing recovery. |

Figure 2: Login Request Message

4.2.2 Logout

The Logout message is used for sending a session termination request to Trading System. Trading System will close the session immediately after receiving a logout request message.

| LOGOUT REQUEST MESSAGE | | | | |
|------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "O" – Logout Message |

Figure 3: Logout Request Message

4.2.3 Client Heartbeat Message

The Client Heartbeat message is used for sending heartbeat messages to Trading System from the client side on a regular interval. If Trading System does not receive any message including heartbeat from the client for more than 15 seconds, the session will be terminated.

| CLIENT HEARTBEAT MESSAGE | | | | |
|--------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "R" – Client Heartbeat Message |

Figure 4: Client Heartbeat Message

4.2.4 Unsequenced Data Message

An Unsequenced Data message is a message sent by a client which contains order requests. These messages are not sequenced and may be lost in the event of a socket failure. All unsequenced messages can be sent repeatedly. This gives the client the ability, in the case of a connection loss or an application error, to re-send any unsequenced message if it is uncertain whether the CHIXOE server received it.

| UNSEQUENCED DATA MESSAGE | | | | |
|--------------------------|--------|----------|---|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "U" – Unsequenced Data Message |
| Data | 3 | Variable | See section "Inbound Application Message" | Inbound application message |

Figure 5: Unsequenced Data Message

4.3 Outbound Session Messages

This section describes session messages sent from Trading System to the clients.

4.3.1 Login Accept Acknowledgement

The Login Accept Acknowledgement message is used for acknowledging a login request message sent by the client upon successful login.

| LOGIN ACCEPT ACKNOWLEDGEMENT MESSAGE | | | | |
|--------------------------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "A" – Login Accepted Message |
| Session | 3 | 10 | Alphanumeric | The session ID currently logged into. |
| Sequence Number | 13 | 20 | Numeric | The next expected sequence number. |

Figure 6: Login Accept Acknowledgement Message

4.3.2 Login Reject Acknowledgement

The Login Reject Acknowledgement message is used for acknowledging the failure of a login request message sent by the client.

| LOGIN REJECT ACKNOWLEDGEMENT MESSAGE | | | | |
|--------------------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "J" – Login Rejected Message |

| | | | | |
|---------------|---|---|-------|---|
| Reject Reason | 3 | 1 | Alpha | Reject reason: "A" – Invalid username/password "S" – Invalid session ID |
|---------------|---|---|-------|---|

Figure 7: Login Reject Acknowledgement Message

4.3.3 Server Heartbeat Message

If a session is idle for more than one second, Trading System will send a heartbeat message.

| SERVER HEARTBEAT MESSAGE | | | | |
|--------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "H" – Server Heartbeat Message |

Figure 8: Server Heartbeat Message

4.3.4 Sequenced Data Message

The Sequenced Data message is a message sent by Trading System which contains outbound application messages. Since messages are delivered in sequence, the first sequenced data message of the current day has the sequence number '1', and the succeeding sequenced messages are each assigned implicitly with the next sequence number.

| SEQUENCED DATA MESSAGE | | | | |
|------------------------|--------|----------|---|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "S" – Sequenced Data Message |
| Data | 3 | Variable | See section "Outbound Application Message" | Outbound application message |

Figure 9: Sequenced Data Message

4.3.5 End of Session Message

The server will send an End of Session message to denote that the current session is finished. The connection will be closed shortly after this packet, and the user will no longer be able to reconnect to the current session.

| END OF SESSION MESSAGE | | | | |
|------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Length | 0 | 2 | Integer | Length of message excluding this field |
| Message Type | 2 | 1 | Alpha | "Z" – End of Session Message |

Figure 10: End of Session Message

5 Inbound Application Messages

Application messages from client to server are carried by Unsequenced Data messages.

5.1 Add Order Message

An Add Order message is used to enter a new order into Trading System. Every valid order that is sent is acknowledged by an Add Order Acknowledgement message. An Add Order message with a non-unique Client Order ID will be ignored without acknowledgement.

A valid immediate order which fails to execute is acknowledged with an Order State of "D" (Dead).

If any field in an Add Order message contains unsupported values, the order will be rejected.

| ADD ORDER MESSAGE | | | | |
|-------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "O" – Add Order Message |
| Client Order ID | 1 | 14 | Alphanumeric | Must be unique per CHIXOE account within a trading day. |
| Symbol ID | 15 | 6 | Alphanumeric | Unique security identifier. |
| Side | 21 | 1 | Alpha | Side of order. Supported values: "B" = Buy "S" = Sell "T" = Short sell |
| Quantity | 22 | 4 | Integer | Total number of shares. The maximum value is 2,147,483,647. |
| Price | 26 | 4 | Price | Price of the order. For pegged orders, the value specified in this field serves as a limit on the pegged order price. Only positive values are valid. The maximum value is 214,748.3647. Must be set to zero for MOC order. |
| Time in Force | 30 | 4 | Integer | Specifies how long the order remains in effect. Supported values: 0 = IOC 99999 = Day 100000 = FOK 100001 = Preference and Kill 100002 = Preference or Kill |
| Order Type | 34 | 1 | Alpha | Types of order: "A" = Limit "M" = Mid-Point Peg "R" = NearPointX (Primary) Peg "S" = FarPointX (Market) Peg "C" = MOC |
| Account | 35 | 10 | Alphanumeric | Blank or free-text. Used to provide any internal account information. Set first byte to integer null and all other bytes to space for no value. |
| Client Cross Ref | 45 | 15 | Alphanumeric | Can be used to provide additional client side cross reference information. Set first byte to integer null and all other bytes to space for no value. |
| Clearing Firm | 60 | 4 | Integer | CHESS Clearing Participant ID. Must be a valid 5 digit CHESS PID. |
| No Self-Trade | 64 | 15 | Alphanumeric | Identified as a Self-Trade Prevention (STP) order. |

| ADD ORDER MESSAGE | | | | |
|--------------------|--------|--------|-------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | <p>Orders from the same participant with the same No Self-Trade value will not be allowed to match with each other. The action that will be taken to avoid self-trade is controlled by the No Trade Feat.</p> <p>Filling this field with spaces means that self-trade prevention checking is disabled for this order.</p> |
| No Trade Feat | 79 | 1 | Alpha | <p>Defines the behaviour of self-trade prevention.</p> <p>Supported values: "N" = Cancel New est Order (the incoming order is cancelled). "D" = Decrement and Cancel (the quantity of the larger order will be reduced, and the smaller order(s) are cancelled) "X" = Booking Purpose Trade. The resultant trade is reported to CHESSE as a booking purpose trade and a synthetic order cancellation is created on the CHIXMD feed to enable subscribers to properly manage their market picture. "O" = Cancel Oldest Order (the resting order is cancelled and the incoming order will continue to be processed)</p> <p>"_" (space) is valid ONLY if No Self-Trade is also filled with spaces.</p> <p>For order with MEQSE = Y, this field can be set with "X" only for non-empty value of No Self-Trade.</p> <p>If two self-trade prevention orders have different No Trade Feat, the system will use the behaviour specified in the incoming aggressive order.</p> |
| Order Capacity | 80 | 1 | Alpha | <p>Designates the capacity of the firm placing the order.</p> <p>Supported values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal</p> |
| Directed Wholesale | 81 | 1 | Alpha | <p>Directed wholesale indicator</p> <p>Supported Values: "Y" = True "N" = False</p> |
| Intermediary ID | 82 | 10 | Alpha | <p>Intermediary identifier – may be populated with AFS licence number</p> <p>Set first byte to integer null and all other bytes to space for no value</p> |
| Order Origin | 92 | 20 | Alpha | <p>Origin of order information that provides an internal client identifier.</p> <p>Set first byte to integer null and all other bytes to space for no value</p> |
| Order Restrictions | 112 | 1 | Alpha | <p>Broker Preferencing logic can ONLY be enabled/disabled by contacting Market Operations to request that it be configured as a default setting on a per FIX Gateway basis. If a participant elects to have broker preferencing enabled, this field permits the default setting to be overridden provided the</p> |

| ADD ORDER MESSAGE | | | | |
|-----------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | <p>override order has TIF = IOC or FOK</p> <p>I = Override broker preference default setting</p> <p>"_" (space) = Do not override broker preference default setting</p> |
| Short Sell Naked Quantity | 113 | 4 | Integer | <p>For a short sell order, this field defines the portion of order quantity (defined by <i>Quantity</i>) that is naked.</p> <p>Must be set to zero for non-short sell order.</p> |
| Short Sell Covered Quantity | 117 | 4 | Integer | <p>For a short sell order, this field defines the portion of order quantity (defined by <i>Quantity</i>) that is covered.</p> <p>Must be set to zero for non-short sell order.</p> |
| Short Sell Long Quantity | 121 | 4 | Integer | <p>For a short sell order, this field defines the portion of order quantity (defined by <i>Quantity</i>) that is owned by the participant who places the order.</p> <p>The sum of <i>Short Sell Naked Quantity</i>, <i>Short Sell Covered Quantity</i> and <i>Short Sell Long Quantity</i> should equal to the <i>Quantity</i> for a short sell order. The <i>Short Sell Long Quantity</i> itself should not be equal to the <i>Quantity</i>.</p> <p>Must be set to zero for non-short sell order.</p> |
| Minimum Execution Quantity | 125 | 4 | Integer | <p>Minimum Execution Quantity (MEQ) is only supported on the following orders</p> <ul style="list-style-type: none"> • Orders where TIF = IOC; P&K • Price Improvement Orders (pegged orders); and • MOC hidden orders <p>Set to zero for no MEQ.</p> |
| T1Settlement | 129 | 1 | Alpha | <p>Possible values: "Y" = True "N" = False Fill this field with "_" (space) means that T1Settlement is ignored and treated as "N"</p> <p>The T1Settlement field is only applicable to the 'Warrant Trade Report Facility'.</p> <p>Please note that the 'Warrants Trade Report Facility' uses the hidden MOC order type and matching mechanism.</p> <p>Please refer to the Order Type Overview document for details on the Warrant Trade Report Facility.</p> |
| MEQSE | 130 | 1 | Alpha | <p>MEQSE (Minimum Execution Quantity Single Execution) is only supported on the following orders that have Minimum Execution Quantity Specified:</p> <ul style="list-style-type: none"> • Pegged orders • MOC hidden orders <p>Possible values: "Y" = Minimum Execution Quantity Single Execution "N" = Minimum Execution Quantity Fill this field with "_" (space) means that</p> |

| ADD ORDER MESSAGE | | | | |
|-------------------|--------|--------|------|------------------|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | MEQSE is ignored |

Figure 11: Add Order Message

5.2 Replace Order Message

In the Replace Order message the client must provide 2 client order ID's. The first one must point to a live order (Client Order ID) in Trading System and the other one must be a new ID (New Client Order ID). If the Client Order ID does not exist in Trading System or the New Client Order ID is not valid, the Replace Order message will be ignored and no acknowledgement will be sent to the client.

If the order exists but other details are not valid, the replace action fails and the original order will be canceled and removed from the order book. In this case the New Client Order ID may be reused in next Add or Replace Order message.

The Quantity field in the Replace Order message indicates the total number of shares of the whole order chain. If a client wants to modify the Quantity field, the new Quantity must include all executed shares of the order.

An order cannot be replaced with a new total number of shares less than the total number of executed shares. In this situation, the Replace order will be canceled.

For an order replaced with a new total number of shares equal to the total number of executed shares, the Replace Order message is accepted and acknowledged with Order State equals "D" (Dead). In this case, the order will be canceled automatically.

To leave the order quantity unchanged, the Quantity field should be set to 0 (zero).

| REPLACE ORDER MESSAGE | | | | |
|-----------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "U" – Replace Order Message |
| Client Order ID | 1 | 14 | Alphanumeric | Client Order ID for the order which is being replaced. Must match exactly with the Client Order ID of the current live order. |
| New Client Order ID | 15 | 14 | Alphanumeric | Must be unique per CHIXOE account within a trading day. |
| Quantity | 29 | 4 | Integer | Total number of shares including previous executions on this order chain. Set it to 0 (zero) to leave the order quantity unchanged. The maximum value is 2,147,483,647. |
| Price | 33 | 4 | Price | Price of the order. For pegged orders, the value specified in this field serves as a limit on the pegged order price. Only positive values are allowed. The maximum value is 214,748.3647. Must be set to zero for MOC order. |
| Time in Force | 37 | 4 | Integer | Specifies how long the order remains in effect. Supported values: 0 = IOC 99999 = Day 100000 = FOK 100001 = Preference and Kill 100002 = Preference or Kill |
| Order Type | 41 | 1 | Alpha | Types of order: "A" = Limit "M" = Mid-Point Peg "R" = NearPointX (Primary) Peg "S" = FarPointX (Market) Peg "C" = MOC |

| REPLACE ORDER MESSAGE | | | | |
|-----------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | Order Type cannot be changed for Limit or MOC orders. Peg orders can be changed to different peg type. |
| Account | 42 | 10 | Alphanumeric | Blank or free-text. Used to provide any internal account information. Set first byte to integer null and all other bytes to space to leave content unchanged. Set it to blank (all spaces) to clear existing content. |
| Client Cross Ref | 52 | 15 | Alphanumeric | Can be used to provide additional client side cross reference information. Set first byte to integer null and all other bytes to space to leave content unchanged. Set it to blank (all spaces) to clear existing content. |
| No Self-Trade | 67 | 15 | Alphanumeric | Identified as a Self-Trade Prevention (STP) order. Orders from the same participant with the same No Self-Trade value will not be allowed to match with each other. The action that will be taken to avoid self-trade is controlled by the No Trade Feat. Filling this field with spaces means that self-trade prevention checking is disabled for this order. |
| No Trade Feat | 82 | 1 | Alpha | Defines the behaviour of self-trade prevention. Supported values: "N" = Cancel New est Order (the incoming order is cancelled). "D" = Decrement and Cancel (the quantity of the larger order will be reduced, and the smaller order(s) are cancelled) "X" = Booking Purpose Trade. The resultant trade is sent to CHESSE as a booking purpose trade and a synthetic order cancellation is created on the CHIXMD feed to enable subscribers to properly manage their market picture. "O" = Cancel Oldest Order (the resting order is cancelled and the incoming order will continue to be processed) " " (space) is valid ONLY if No Self-Trade is also filled with spaces. For order with MEQSE = Y, this field can be set with "X" only for non-empty value of No Self-Trade. If two self-trade prevention orders have different No Trade Feat, the system will use the behaviour specified in the incoming order. |
| Order Capacity | 83 | 1 | Alpha | Designates the capacity of the firm placing the order. Supported values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal |
| Directed Wholesale | 84 | 1 | Alpha | Directed wholesale indicator Supported Values: "Y" = True "N" = False |
| Intermediary ID | 85 | 10 | Alpha | Intermediary identifier – may be populated with AFS licence number. |

| REPLACE ORDER MESSAGE | | | | |
|-----------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | Set first byte to integer null and all other bytes to space to leave content unchanged. Set it to blank (all spaces) to clear existing content. |
| Order Origin | 95 | 20 | Alpha | Origin of order information that provides an internal client identifier. Set first byte to integer null and all other bytes to space to leave content unchanged. Set it to blank (all spaces) to clear existing content. |
| Short Sell Naked Quantity | 115 | 4 | Integer | Refer to Add Order Message for description. If the original order is a short sell order and the Quantity in this replace request is zero (unchanged), this field has to be set to zero as well. If the original order is a short sell order and the Quantity in this replace request is not zero, corresponding short sell quantity fields have to be provided for validation. |
| Short Sell Covered Quantity | 119 | 4 | Integer | Refer to Add Order Message for description. If the original order is a short sell order and the Quantity in this replace request is zero (unchanged), this field has to be set to zero as well. If the original order is a short sell order and the Quantity in this replace request is not zero, corresponding short sell quantity fields have to be provided for validation. |
| Short Sell Long Quantity | 123 | 4 | Integer | Refer to Add Order Message for description. If the original order is a short sell order and the Quantity in this replace request is zero (unchanged), this field has to be set to zero as well. If the original order is a short sell order and the Quantity in this replace request is not zero, corresponding short sell quantity fields have to be provided for validation. |
| Minimum Execution Quantity | 127 | 4 | Integer | Refer to Add Order Message for description. |

Figure 12: Replace Order Message

5.3 Cancel Order Message

A Cancel Order message is used to cancel an order.

A Cancel Order message is acknowledged by an Order Cancel Acknowledgement message. If the order doesn't exist in the Trading System, the Cancel Order message will be ignored without acknowledgement.

| CANCEL ORDER MESSAGE | | | | |
|----------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "X" – Cancel Order Message |
| Client Order ID | 1 | 14 | Alphanumeric | Client Order ID for the order which is being CANCELLED. Must match exactly with the Client Order ID of the current live order. |

Figure 13: Cancel Order Message

5.4 Cancel Trade Message

A Cancel Trade message is used to cancel a crossed (same 4-digit Trading PID) trade.

A Cancel Trade message is acknowledged by a Trade Cancellation message (Section 6.6). The Cancel Trade message will be ignored without acknowledgement if the entered Execution ID:

- does not exist in Trading System, or
- does not correspond to a crossed (same PID) trade, or
- is not eligible to delete due to market settings of Cboe

| CANCEL TRADE MESSAGE | | | | |
|----------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "Z" – Cancel Trade Message |
| Execution ID | 1 | 8 | Integer | Execution ID for the execution w hich is being CANCELLED. Must match exactly w ith the Execution ID in Trading System. |

Figure 14: Cancel Trade Message

6 Outbound Application Messages

Application messages from the server to client are carried by a Sequenced Data message.

6.1 System Message

A System message delivers system events to all clients.

| SYSTEM MESSAGE | | | | |
|----------------|--------|--------|---------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "S" – System Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight Australian time. |
| Event Code | 9 | 1 | Alpha | Supported Values: "S" = Start of Day. Always the first message. Indicates the market is open and ready to start accepting orders. "E" = End of Day. Indicates the market is closed and will not accept any new orders today except Market on Close orders (MOC). Clients may still receive a trade message for MOC Executions or Cancelled MOC trades. "M" = MOC Close. Indicates that MOC orders can no longer be entered. Final MOC trades will be issued after this event. |

Figure 15: System Message

6.2 Add Order Acknowledgement Message

An Add Order Acknowledgement message acknowledges the acceptance of a valid Add Order message. All data fields from the Add Order message are carried in the Add Order Acknowledgement message.

If the Order State in the Add Order Acknowledgement message equals "D" (Dead), it means that the order has been accepted but has failed to execute, i.e., the order was accepted and cancelled. No additional messages will be sent for that order.

| ADD ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|-----------------------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "A" – Add Order Acknowledgement Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| Client Order ID | 9 | 14 | Alphanumeric | Client Order ID as entered. |
| Symbol ID | 23 | 6 | Alphanumeric | Unique security identifier as entered. |
| Side | 29 | 1 | Alpha | Side as entered. Values: "B" = Buy "S" = Sell "T" = Short sell |
| Order ID | 30 | 8 | Integer | Trading System order reference number. |
| Quantity | 38 | 4 | Integer | Total number of shares accepted. |
| Price | 42 | 4 | Price | Accepted price of the order. |
| Time in Force | 46 | 4 | Integer | Time in Force as accepted. Values: 0 = IOC 99999 = Day 100000 = FOK 100001 = Preference and Kill 100002 = Preference or Kill |

| ADD ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|-----------------------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Order Type | 50 | 1 | Alpha | Order Type value as accepted |
| Account | 51 | 10 | Alphanumeric | Account as entered. |
| Order State | 61 | 1 | Alpha | Order state upon acceptance. Values: "L" = Live "D" = Dead |
| Client Cross Ref | 62 | 15 | Alphanumeric | Client Cross Ref value as accepted. |
| Clearing Firm | 77 | 4 | Integer | Clearing Firm value as accepted. |
| No Self-Trade | 81 | 15 | Alphanumeric | No Self-Trade value as accepted. |
| No Trade Feat | 96 | 1 | Alpha | No Trade Feat value as accepted. |
| Order Capacity | 97 | 1 | Alpha | Capacity of the firm placing the order as entered. Values: "A" – Agency "P" – Principle "M" – Mixed |
| Directed Wholesale | 98 | 1 | Alpha | Directed w holesale indicator as accepted. |
| Intermediary ID | 99 | 10 | Alpha | Intermediary identifier as accepted. |
| Order Origin | 109 | 20 | Alpha | Origin of order information as accepted. |
| Order Restriction | 129 | 1 | Alpha | Order restriction information as accepted |
| Short Sell Naked Quantity | 130 | 4 | Integer | Short Sell Naked Quantity as accepted. |
| Short Sell Covered Quantity | 134 | 4 | Integer | Short Sell Covered Quantity as accepted. |
| Short Sell Long Quantity | 138 | 4 | Integer | Short Sell Long Quantity as accepted. |
| Minimum Execution Quantity | 142 | 4 | Integer | Minimum Execution Quantity as accepted. |
| T1Settlement | 146 | 1 | Alpha | T1Settlement value as accepted. |
| MEQSE | 147 | 1 | Alpha | MEQSE value as accepted. |

Figure 16: Add Order Acknowledgement Message

6.3 Replace Order Acknowledgement Message

A Replace Order Acknowledgement message acknowledges the acceptance of a valid Replace Order Message. All data fields from the Replace Order message are carried in this message.

If the Order State in this acknowledgement message equals "D" (Dead), it means that the Replace Order Message was accepted and quantity in the Replace Order Message equals the total executed quantity in the original order. In this case, the corresponding order will be canceled automatically.

| REPLACE ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|---------------------------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "U" – Replace Order Acknowledgement Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| New Client Order ID | 9 | 14 | Alphanumeric | New Client Order ID as entered. |
| Previous Client Order ID | 23 | 14 | Alphanumeric | Client Order ID of the order replaced. |
| Symbol ID | 37 | 6 | Alphanumeric | Unique security identifier as entered on the original order in the chain. |
| Side | 43 | 1 | Alpha | Side as entered on the original order in the chain. Values: "B" = Buy "S" = Sell "T" = Short sell |

| REPLACE ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|---------------------------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Order ID | 44 | 8 | Integer | Trading System order reference number. |
| Quantity | 52 | 4 | Integer | Total number of shares outstanding. |
| Price | 56 | 4 | Price | Accepted price of the replacement. |
| Time in Force | 60 | 4 | Integer | Time in Force as accepted. Values: 0 = IOC 99999 = Day 100000 = FOK 100001 = Preference and Kill 100002 = Preference or Kill |
| Order Type | 64 | 1 | Alpha | Order Type value as accepted |
| Account | 65 | 10 | Alphanumeric | Account as entered or latest field value if it is entered as blank. |
| Order State | 75 | 1 | Alpha | Order state upon replacement. Values: "L" = Live "D" = Dead |
| Client Cross Ref | 76 | 15 | Alphanumeric | Client Cross Ref value as accepted or latest field value if it is entered as blank. |
| No Self-Trade | 91 | 15 | Alphanumeric | No Self-Trade value as accepted. |
| No Trade Feat | 106 | 1 | Alpha | No Trade Feat value as accepted. |
| Order Capacity | 107 | 1 | Alpha | Order Capacity as accepted. |
| Directed Wholesale | 108 | 1 | Alpha | Directed w holesale indicator as accepted. |
| Intermediary ID | 109 | 10 | Alpha | Intermediary identifier as accepted or latest field value if it is entered as blank. |
| Order Origin | 119 | 20 | Alpha | Origin of order information as accepted or latest field value if it is entered as blank. |
| Short Sell Naked Quantity | 139 | 4 | Integer | Short Sell Naked Quantity as accepted or latest field value if Quantity in the request is set to zero. |
| Short Sell Covered Quantity | 143 | 4 | Integer | Short Sell Covered Quantity as accepted or latest field value if Quantity in the request is set to zero. |
| Short Sell Long Quantity | 147 | 4 | Integer | Short Sell Long Quantity as accepted or latest field value if Quantity in the request is set to zero. |
| Replace Reason | 151 | 1 | Alphanumeric | Reason for the order replace Supported values: "4" = Broker option, if a replace request is originated from a Cross Session Order Management gateway and is accepted. "5" = Partial Decline Of Order Quantity, if the quantity of order is reduced due to the No Trade Feat instruction. "O" = Other |
| No Self-Trade Order Number | 152 | 8 | Integer | If the order is replaced due to the STP, this tag will be filled with the Cboe Order ID of the participant's contra order that would have matched. A value of zero means this acknowledgement was not triggered by STP. |
| Prevented Trade Price | 160 | 4 | Price | Price of the trade which was prevented by Self-Trade Prevention ("Decrement and Cancel" rule) A value of zero means that this acknowledgement was not triggered by STP. |
| Prevented Trade Quantity | 164 | 4 | Integer | Quantity of the trade which was prevented by Self-Trade Prevention ("Decrement and Cancel" rule) A value of zero means that this |

| REPLACE ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|---------------------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | acknowledgement was not triggered by STP. |
| Prevented Liquidity Indicator | 168 | 1 | Alpha | Liquidity Indicator of the trade which was prevented by Self-Trade Prevention ("Decrement and Cancel" rule). Possible Value: "A" = Order added liquidity "R" = Order removed liquidity " " (space) = This acknowledgement was not triggered by STP. |
| Minimum Execution Quantity | 169 | 4 | Integer | Minimum Execution Quantity as accepted. |

Figure 17: Replace Order Acknowledgement Message

6.4 Cancel Order Acknowledgement Message

A Cancel Order Acknowledgement message informs the client that an order has been canceled. This can be acknowledging a Cancel Order message or it can be an automatic order cancellation.

| CANCEL ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|--------------------------------------|--------|--------|--------------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "C" – Cancel Order Acknowledgement Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| Client Order ID | 9 | 14 | Alphanumeric | Client Order ID of the canceled order. |
| Order ID | 23 | 8 | Integer | Trading System order reference number. |
| Canceled Quantity | 31 | 4 | Integer | Number of shares canceled. This is the number of untraded shares of the order. |
| Reason | 35 | 1 | Alphanumeric | Reason for the order cancellation Supported values: "U" = User requested the order to be canceled. Sent in response to a Cancel Order Message or a Replace Order Message. "I" = Immediate order executed and no further matches available on the book. Hence the remaining shares were immediately canceled. "s" = This order was manually canceled by a supervisory terminal. "L" = User logged off or disconnected "M" = Invalid Time in Force. "Z" = Invalid quantity. "C" = Invalid capacity. "X" = Invalid price. "T" = Invalid self-trade prevention order. "Y" = Invalid order type. "E" = Invalid directed w/holesale. "G" = Invalid short sell naked/covered/long quantity. "P" = Price check failed. "Q" = Pegged order not allowed. "W" = Self-trade prevention restriction. "4" = Broker option, if a cancel request is originated from a Cross Session Order Management gateway and is accepted. "r" = Short sell order restriction. "d" = Done for day. "K" = Invalid MEQ. "O" = Other. |
| No Self Trade Order Number | 36 | 8 | Integer | If the order is cancelled due to the STP, this tag will be filled with the Cboe Order ID of the participant's contra order that would have matched. |

| CANCEL ORDER ACKNOWLEDGEMENT MESSAGE | | | | |
|--------------------------------------|--------|--------|---------|--|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | A value of zero means this acknowledgement was not triggered by STP. |
| Prevented Trade Price | 44 | 4 | Price | Price of the trade which was prevented by Self Trade Prevention ("Decrement and Cancel" rule) A value of zero means this acknowledgement was not triggered by STP. |
| Prevented Trade Quantity | 48 | 4 | Integer | Quantity of the trade which was prevented by Self Trade Prevention ("Decrement and Cancel" rule) A value of zero means this acknowledgement was not triggered by STP. |
| Prevented Liquidity Indicator | 52 | 1 | Alpha | Liquidity Indicator of the trade which was prevented by Self Trade Prevention ("Decrement and Cancel" rule). Possible Value: "A" = Order added liquidity "R" = Order removed liquidity " " (space) = This acknowledgement was not triggered by STP. |

Figure 18: Cancel Order Acknowledgement Message

6.5 Execution Message

An Execution message is sent when an order has been fully or partially traded.

| EXECUTION MESSAGE | | | | |
|-------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "E" – Execution Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| Client Order ID | 9 | 14 | Alphanumeric | Client Order ID of the executed order. |
| Last Quantity | 23 | 4 | Integer | Shares bought/sold on this execution. |
| Last Price | 27 | 4 | Price | Price of this fill. |
| Liquidity Flag | 31 | 1 | Alpha | Supported values: "A" = Added (for the passive firm). "R" = Removed (for the aggressor). |
| Execution ID | 32 | 8 | Integer | Unique execution reference number. The matching buy and sell executions share the same Execution ID. |
| Last Capacity | 40 | 1 | Alphanumeric | Supported values are "1" = Agent "2" = Cross as agent "3" = Cross as principal "4" = Principal "5" = Mixed "6" = Cross as Mixed Values of 2, 3 or 6 essentially indicate that the client has executed against themselves. Crossing determined by reference to first 3 digits of trading PID |
| Trade Type | 41 | 1 | Alphanumeric | Supported values are "P" = MOC trade with indicative price "M" = MOC trade with final price " " (space) = Other |
| Cross Type | 42 | 1 | Alphanumeric | Supported values are "B" = Broker preferenced crossing " " (space) = Other |
| Trade Report Type | 43 | 1 | Alphanumeric | Supported values are |

| EXECUTION MESSAGE | | | | |
|-----------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | "X" = Booking purpose trade (due to self-trade prevention where the NoTradeFeat = X) " " (space) = Normal trade |
| Contra Participant ID | 44 | 5 | Alphanumeric | Participant ID of contra side. All spaces for *non-attribution instrument. * By default all CXA Quoted & ASX's ETF instruments are attributed. |
| Last Market | 49 | 4 | Alphanumeric | Supported values: "CXAC" = (Limit) "CXAP" = (Mid-Point) "CXAN" = (Near Point) "CXAF" = (Far Point) "CXAM" = (MOC) " " (4-space) = Other/Indicative trade Note: This value is determined by the venue of the resting or 'Maker' order in a trade pair. <u>Both sides</u> of the trade contain the same value |
| Settlement Date | 53 | 8 | Alphanumeric | Supported values: " " (space filled) - This will be the normal value. Default CHES settlement timings will be applied to the trade; "YYYYMMDD" - a settlement date (with format YYYYMMDD) will be returned only if a warrant trade report is reported with T+1 Settlement specified. A settlement date is only populated where a shortened settlement date (from T+2 to T+1) has been requested by both buyer and seller and the trade is a warrant trade report. Please refer to the Order Type Overview document for details on the Warrant Trade Report Facility . |

Figure 19: Execution Message

6.6 Trade Cancellation Message

A Trade Cancellation Message is sent when an execution has been cancelled.

| TRADE CANCELLATION MESSAGE | | | | |
|----------------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "B" – Trade Cancellation Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| Client Order ID | 9 | 14 | Alphanumeric | Client Order ID of the rejected order. |
| Execution ID | 23 | 8 | Integer | The Execution ID as sent in the Execution Message. |
| Reason | 31 | 1 | Alpha | Reason for the order cancellation. Supported values: "S" = The trade was manually cancelled by Cboe supervisory terminal "M" = MOC Trade cancelled. "P" = Crossed (same PID) trade that was cancelled by participant. |
| Last Market | 32 | 4 | Alphanumeric | Supported values: "CXAC" = (Limit) "CXAP" = (Mid-Point) "CXAN" = (Near Point) "CXAF" = (Far Point) "CXAM" = (MOC) |

| TRADE CANCELLATION MESSAGE | | | | |
|----------------------------|--------|--------|------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| | | | | "____"(4-space)= Other/Indicative trade |

6.7 Reject Acknowledgement Message

A Reject Acknowledgement message is sent to reject an Add Order message or a Replace Order message.

| REJECT ACKNOWLEDGEMENT MESSAGE | | | | |
|--------------------------------|--------|--------|--------------|---|
| NAME | OFFSET | LENGTH | TYPE | REMARKS |
| Message Type | 0 | 1 | Alpha | "J" – Reject Acknowledgement Message |
| Timestamp | 1 | 8 | Integer | Number of nanoseconds past midnight. |
| Client Order ID | 9 | 14 | Alphanumeric | Client Order ID of the rejected order. |
| Reject Reason | 23 | 1 | Alpha | Reason for the order rejection. Supported values: "M" = Invalid Time in Force. "Z" = Invalid quantity. "S" = Invalid security identifier. "C" = Invalid capacity "R" = Order not allowed at this time. "X" = Invalid price. "T" = Invalid self-trade prevention order. "Y" = Invalid order type. "A" = Invalid side. "B" = Invalid clearing firm. "E" = Invalid directed w/wholesale. "F" = Invalid order restriction. "G" = Invalid short sell naked/covered/long quantity. "H" = Order cannot be accepted for this security at this time. "J" = MOC order not allowed. "P" = Price check failed. "Q" = Pegged order not allowed. "V" = Exceed order value limit. "c" = User does not have permission to enter an order on the given board. "i" = Short sell order restriction. "j" = Visible MOC orders are not allowed in the trading session. "K" = Invalid MEQ. "O" = Other. "L" = Invalid T1 Settlement value "I" = T1 Settlement is not supported for this order type "m" = Security does not support T1 Settlement for MOC "N" = Invalid MEQSE. "n" = Invalid NoTradeFeat for MEQSE. "o" = MEQSE not support for non-pegged/non-MOC order. "p" = Invalid MinQty for MEQSE. |

Figure 20: Reject Acknowledgement Message

7 Appendix A – CHIXOE Examples

7.1 Login

Client is able to login to CHIXOE Gateway successfully.

| Login – Inbound message | | | |
|-------------------------|--------|--------------|--------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "L" |
| Username | 6 | Alphanumeric | "user " |
| Password | 10 | Alphanumeric | "password " |
| Requested Session | 10 | Alphanumeric | " " (spaces for initial login) |
| Sequence Number | 20 | Numeric | 1 |

| Login Accept Acknowledgement – Outbound message | | | |
|---|--------|--------------|---|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "A" |
| Session | 10 | Alphanumeric | "20130723 " (default session will be today's date in YYYYMMDD format) |
| Sequence Number | 20 | Numeric | 1 |

Client fails to login with invalid user name.

| Login – Inbound message | | | |
|-------------------------|--------|--------------|---------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "L" |
| Username | 6 | Alphanumeric | "user22" |
| Password | 10 | Alphanumeric | "password " |
| Requested Session | 10 | Alphanumeric | " " |
| Sequence Number | 20 | Numeric | 1 |

| Login Reject Acknowledgement – Outbound message | | | |
|---|--------|-------|-------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "J" |
| Reject Reason | 1 | Alpha | "A" (Invalid user name) |

Client fails to login with invalid session ID.

| Login – Inbound message | | | |
|-------------------------|--------|--------------|---------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "L" |
| Username | 6 | Alphanumeric | "user " |
| Password | 10 | Alphanumeric | "password " |
| Requested Session | 10 | Alphanumeric | "20120722 " |
| Sequence Number | 20 | Numeric | 1 |

| Login Reject Acknowledgement – Outbound message | | | |
|---|--------|-------|--------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "J" |
| Reject Reason | 1 | Alpha | "S" (Invalid session ID) |

7.2 System Message

Client receives an event message from the system.

| System Message – Outbound message | | | |
|-----------------------------------|--------|---------|-------------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "S" |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Event Code | 1 | Alpha | "S" (Start of Day) |

7.3 Add Order

Client adds a limit day order successfully.

| Add Order – Inbound message | | | |
|-----------------------------|--------|--------------|-------------------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "O" |
| Client Order ID | 14 | Alphanumeric | "36179815 " |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 99999 (Day order) |
| Order Type | 1 | Alpha | "A" (Limit order) |
| Account | 10 | Alphanumeric | " " |
| Client Cross Ref | 15 | Alphanumeric | " " |
| Clearing Firm | 4 | Integer | 1234 |
| No Self Trade | 15 | Alphanumeric | " " (Disable STP checking) |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" (Agency) |
| Directed Wholesale | 1 | Alpha | "N" (False) |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Order Restrictions | 1 | Alpha | " " (Do not change default setting) |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |
| T1Settlement | 1 | Alpha | " " |
| MEQSE | 1 | Alpha | " " |

| Add Order Acknowledgement – Outbound message | | | |
|--|--------|--------------|-------------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "A" |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | "36179815 " |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Order ID | 8 | Integer | 1 |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 99999 |
| Order Type | 1 | Alpha | "A" |
| Account | 10 | Alphanumeric | " " |

| Add Order Acknowledgement – Outbound message | | | |
|--|--------|--------------|--------------------------------|
| Name | Length | Type | Example value |
| Order State | 1 | Alpha | "L" (Order inserted into book) |
| Client Cross Ref | 15 | Alphanumeric | " " |
| Clearing Firm | 4 | Integer | 1234 |
| No Self Trade | 15 | Alphanumeric | " " |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" |
| Directed Wholesale | 1 | Alpha | "N" (False) |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Order Restriction | 1 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |
| T1Settlement | 1 | Alpha | " " |
| MEQSE | 1 | Alpha | " " |

Client adds an IOC order successfully and the order is indicated as dead in the acknowledgement.

| Add Order – Inbound message | | | |
|-----------------------------|--------|--------------|----------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "O" |
| Client Order ID | 14 | Alphanumeric | "36179817 " |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 0 (IOC order) |
| Order Type | 1 | Alpha | "A" (Limit order) |
| Account | 10 | Alphanumeric | " " |
| Client Cross Ref | 15 | Alphanumeric | " " |
| Clearing Firm | 4 | Integer | 1234 |
| No Self Trade | 15 | Alphanumeric | " " (Disable STP checking) |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" (Agency) |
| Directed Wholesale | 1 | Alpha | "N" (False) |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Order Restriction | 1 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |
| T1Settlement | 1 | Alpha | " " |
| MEQSE | 1 | Alpha | " " |

| Add Order Acknowledgement – Outbound message | | | |
|--|--------|--------------|-------------------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "A" |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | "36179817 " |

| Add Order Acknowledgement – Outbound message | | | |
|--|--------|--------------|-----------------------|
| Name | Length | Type | Example value |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Order ID | 8 | Integer | 2 |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 0 |
| Order Type | 1 | Alpha | "A" |
| Account | 10 | Alphanumeric | " " |
| Order State | 1 | Alpha | "D" (Order cancelled) |
| Client Cross Ref | 15 | Alphanumeric | " " |
| Clearing Firm | 4 | Integer | 1234 |
| No Self Trade | 15 | Alphanumeric | " " |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" |
| Directed Wholesale | 1 | Alpha | "N" (False) |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Order Restriction | 1 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |
| T1Settlement | 1 | Alpha | " " |
| MEQSE | 1 | Alpha | " " |

Client fails to add an IOC order because "No Trade Feat" must be defined for STP order.

| Add Order – Inbound message | | | |
|-----------------------------|--------|--------------|-------------------|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "O" |
| Client Order ID | 14 | Alphanumeric | "36179818 " |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 0 (IOC order) |
| Order Type | 1 | Alpha | "A" (Limit order) |
| Account | 10 | Alphanumeric | " " |
| Client Cross Ref | 15 | Alphanumeric | " " |
| Clearing Firm | 4 | Integer | 1234 |
| No Self Trade | 15 | Alphanumeric | "ABCD " |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" (Agency) |
| Directed Wholesale | 1 | Alpha | "N" (False) |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Order Restriction | 1 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |
| T1Settlement | 1 | Alpha | " " |
| MEQSE | 1 | Alpha | " " |

| Reject Acknowledgement – Outbound message | | | |
|---|--------|--------------|--|
| Name | Length | Type | Example value |
| Message Type | 1 | Alpha | "J" |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | "36179818 " |
| Reject Reason | 1 | Alpha | "T" (Invalid STP order, No Trade Feat must be defined) |

7.4 Replace Order

Client replaces an order successfully

| Replace Order – Inbound message | | | |
|---------------------------------|--------|--------------|---------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "U" |
| Client Order ID | 14 | Alphanumeric | "36179815" |
| New Client Order ID | 14 | Alphanumeric | "36179816" |
| Quantity | 4 | Integer | 2000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 99999 |
| Order Type | 1 | Alpha | "A" |
| Account | 10 | Alphanumeric | " " |
| Client Cross Ref | 15 | Alphanumeric | " " |
| No Self Trade | 15 | Alphanumeric | " " |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" |
| Directed Wholesale | 1 | Alpha | "N" |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |

| Replace Order Acknowledgement – Outbound message | | | |
|--|--------|--------------|------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | "U" |
| Timestamp | 8 | Integer | 3608638500000 (10:01:26,385) |
| New Client Order ID | 14 | Alphanumeric | "36179816" |
| Previous Client Order ID | 14 | Alphanumeric | "36179815" |
| Symbol ID | 6 | Alphanumeric | "VOD.L " |
| Side | 1 | Alpha | "B" |
| Order ID | 8 | Integer | 1 |
| Quantity | 4 | Integer | 2000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 99999 |
| Order Type | 1 | Alpha | "A" |
| Account | 10 | Alphanumeric | " " |
| Order State | 1 | Alpha | "L" |
| Client Cross Ref | 15 | Alphanumeric | " " |
| No Self Trade | 15 | Alphanumeric | " " |
| No Trade Feat | 1 | Alpha | " " |
| Order Capacity | 1 | Alpha | "A" |
| Directed Wholesale | 1 | Alpha | "N" |
| Intermediary ID | 10 | Alpha | "1234567890" |
| Order Origin | 20 | Alpha | " " |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| No Self Trade Order Number | 8 | Integer | 0 |
| Replace Reason | 1 | Alphanumeric | "O" |
| Minimum Execution Quantity | 4 | Integer | 0 |

Client fails to replace an order because “No Trade Feat” is not defined. The order will be cancelled in this case.

| Replace Order – Inbound message | | | |
|---------------------------------|--------|--------------|---|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “U” |
| Client Order ID | 14 | Alphanumeric | “36179822” |
| New Client Order ID | 14 | Alphanumeric | “36179823” |
| Quantity | 4 | Integer | 1000 |
| Price | 4 | Price | 100 |
| Time in Force | 4 | Integer | 99999 |
| Order Type | 1 | Alpha | “A” |
| Account | 10 | Alphanumeric | “ ” |
| Client Cross Ref | 15 | Alphanumeric | “ ” |
| No Self Trade | 15 | Alphanumeric | “ABCD” |
| No Trade Feat | 1 | Alpha | “ ” (must be defined when STP is enabled) |
| Order Capacity | 1 | Alpha | “A” |
| Directed Wholesale | 1 | Alpha | “N” |
| Intermediary ID | 10 | Alpha | “1234567890” |
| Order Origin | 20 | Alpha | “ ” |
| Short Sell Naked Quantity | 4 | Integer | 0 |
| Short Sell Covered Quantity | 4 | Integer | 0 |
| Short Sell Long Quantity | 4 | Integer | 0 |
| Minimum Execution Quantity | 4 | Integer | 0 |

| Cancel Order Acknowledgement – Outbound message | | | |
|---|--------|--------------|------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “C” |
| Timestamp | 8 | Integer | 3608638500000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | “36179822” |
| Order ID | 8 | Integer | 1 |
| Canceled Quantity | 4 | Integer | 1000 |
| Reason | 1 | Alpha | “T” (invalid STP order) |
| No Self Trade Order Number | 8 | Integer | 0 |
| Prevented Trade Price | 4 | Price | 0 |
| Prevented Trade Quantity | 4 | Integer | 0 |
| Prevented Liquidity Indicator | 1 | Alpha | “ ” |

7.5 Cancel Order

Client cancels an order successfully.

| Cancel Order – Inbound message | | | |
|--------------------------------|--------|--------------|---------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “X” |
| Client Order ID | 14 | Alphanumeric | “36179816” |

| Cancel Order Acknowledgement – Outbound message | | | |
|---|--------|--------------|------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “C” |
| Timestamp | 8 | Integer | 3608638500000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | “36179816” |
| Order ID | 8 | Integer | 1 |

| Cancel Order Acknowledgement – Outbound message | | | |
|---|--------|---------|---------------|
| Name | Length | Type | Example Value |
| Canceled Quantity | 4 | Integer | 2000 |
| Reason | 1 | Alpha | “U” |
| No Self Trade Order Number | 8 | Integer | 0 |
| Prevented Trade Price | 4 | Price | 0 |
| Prevented Trade Quantity | 4 | Integer | 0 |
| Prevented Liquidity Indicator | 1 | Alpha | “ ” |

7.6 Execution

Client receives an execution after a trade is done.

| Execution message | | | |
|-----------------------|--------|--------------|-------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “E” |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | “36179834 ” |
| Last Quantity | 4 | Integer | 1000 |
| Last Price | 4 | Price | 100 |
| Liquidity Flag | 1 | Alpha | “R” |
| Execution ID | 8 | Integer | 130000001 |
| Last Capacity | 1 | Alphanumeric | “4” |
| Trade Type | 1 | Alphanumeric | “ ” |
| Cross Type | 1 | Alphanumeric | “ ” |
| Trade Report Type | 1 | Alphanumeric | “ ” |
| Contra Participant ID | 5 | Alphanumeric | “ ” |
| Last Market | 4 | Alphanumeric | “CXAC” |
| Settlement Date | 8 | Alpha | “ ” |

7.7 Trade Cancellation

Client receives a MOC trade cancellation.

| Trade Cancellation message | | | |
|----------------------------|--------|--------------|-------------------------------|
| Name | Length | Type | Example Value |
| Message Type | 1 | Alpha | “B” |
| Timestamp | 8 | Integer | 36086385000000 (10:01:26,385) |
| Client Order ID | 14 | Alphanumeric | “36179834 ” |
| Execution ID | 8 | Integer | 130000001 |
| Reason | 1 | Alpha | “M” |
| Last Market | 4 | Alphanumeric | “ ” |