



High Speed Vendor Feed

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Confidential

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HSVF-BX-001E, Document Version 4.1

Document History

Ver.	Date	Description
1.0	2002/04	<p>First release</p> <p>This document was derived from SAM-HSVF Specification v1.32 published by Bourse de Montréal Inc., with references to futures, options on futures, index options, bonds, and sponsored options removed.</p>
1.1	2002/11	<p>Insertion of marker 6.4 in messages type "H" for "number of bid/ask"/</p> <p>Insertion of section 2.2 ("Connection Generalities") / Insertion of section 7 (Strategies) / New strike price code tables for bond options</p> <p>Modification of message type J, JB, JF, JS / Modification of marker 6.2 (Instrument status) / Creation of marker 6.5 (Currency codes) / Creation of marker 6.6 (Market feed Indicators) /</p> <p>Insertion of a price threshold fraction Indicator (J's type messages) / Threshold price now 6 bytes (not 8) / The "Expiry year" field in message type J has been put further in the message / Tick increment is alphanumeric / Modification of marker 4.2 (negative F.1) / Name of marker 6.2 (Status marker) / Creation of Tick table (5.1) / Modification of marker 6.5 (USD instead of US)</p>
1.40	2003/01	<p>Insertion of expiry day, month and expiry year for message type JS / Creation of a section on Strategies / "Trade only" a new option in connection message RS / Instrument Group added in the Instrument keys messages (J's type messages) / Price Indicator marker in message CS</p>
2.0	2003/07/01	<p>1. New messages or functionalities</p> <p>New function 'Option class requested in connection message RS / Insertion of expiry year in all options messages / "Deletion Type" added in message T & TS / New message type 'W' for 'GAP sequence' / 'Optimization Broadcast Level' replaced by 'GAP Control' in message RS</p> <p>2. Modifications to messages or functionality</p> <p>Symbol switch from 3 to 5 characters / Sequence number from 7 to 8 numbers / BCC character removed / Strike price switched from 6 to 7 characters / Bid size & ask size from 3 to 5 characters / The 'Instrument Key ' (J*) messages will be disseminated before the 'Summary' (N*) messages / 'Amount assured to Initial Order' is replaced by 'Percentage assured to Initial Order' in message M & MS / The diffusion of Intra-Day Instrument Key messages (J-JS) / "Frozen" status removed in sec 6.2 / Status Marker 'H' added in sec 6.2 / Removal of 'Instrument External ID' in message T & TS / Type of Order in message O & OS changed (to 'A','B','C') /Modification of the US and Canadian currency (sec 6.1)</p>

Ver.	Date	Description
2.0 Cont.		3. Modification to the content of the specs Fraction Indicator in tick table 5.1 / Number of bytes in message type L (Type 1 & 2) / Field name changed in 'Instrument Keys' messages (J-JS) / 'Bid Price' & 'Ask Price' field in alphanumeric / Modification to the ISIN (first 3 characters) in message J-JS / New strike price table (sec 6.2) / Expiry Month Codes for Strategies sec 7.1.2 / All fields 'not used' are now labeled 'filler' / Modification to sec. 8
2.1	2003/08/01	1. New messages or functionality 2. Modifications to messages or functionality Exposed order part of Price Improvement messages (message type O* and T*) / Type of data in the connection message RS (PIP & Exposed order only) / Message type 'U' now 17 bytes / Marker 6.1 (US Dollar, Canadian Dollar and Japanese Yen) / 'Type of Order' in message O & OS / Filler in message type 'L' / Price indicator marker in sec 6.3 / 3. Modification to the content of the specs Note in sec 2.6 / Note in 'Basic conventions' in sec 3.2.1 / Information on Connection generalities (sec 2.2.2, 2.2.3 & 2.2.4) / Name of the 'Threshold Fraction Indicator' field changed in message J & JS / 'Improvement Phase Expiry Time' & 'Improvement Process Expiry Duration' format now Numeric / Modification to the Option Strike Price Code table in sec 7.3.1
2.2	2004/09	1. New Price Indicator marker ('L' for 'Late Trade') in sec 6.3 2. Modifications of messages or functionalities Status markers added/modified in sec 6.2 'Order Side' field in message T/TS can now be blank 3. Modification to the content of the specs Bulleting message type 2 (message type 'L') type 2 removed Section on BOX products removed Section 9.1 on BOX Operating Sequence modified Modification to section 6.3
2.3	2005/02	1. Modifications of messages or functionalities The Sequence number now 9 bytes
2.4	2005/07/18	-Inserted HSVF modifications to allow more than 100 000 000 messages
2.5	2005-08-03	- Created a group status called Beginning of day inquiries identified as 'B' in section 3.2.8 and 6.2.
2.6	2005-08-11	- Modification to include Order Origin Code for 'O' and 'OS' messages related to the Market Sheet Initial and Improvement Orders (removed blank) in sections 3.2.21 and 3.2.22. - Changes to Order Origin Codes in 'O' and 'OS' messages field values (X, Y, Z) in sections 3.2.21 and 3.2.22.
2.7	2005-09-26	-Modification added for Order Entry Message in O and OS messages.

Ver.	Date	Description
2.8	2005-11-03	-Modified the bandwidth requirements.
2.9	2005-11-15	-Modified the bandwidth requirements to 16 Mbps and 20 Mbps.
2.10	2006-02-08	-Updated Sections 3.2.21 and 3.2.22 according to BX05-0016 and BX05-0029 (R.Levy)
2.11	2006-03-20	- Removed modifications made Sections 3.2.21 and 3.2.22 according to BX05-0016 and BX05-0029 that are not applicable to the current version of the application. - Inserted the document number (identifier) in the document header. -Used Initial Capital letters for Table of Contents
2.12	2006-07-20	- Re-inserted previously removed Account Clearing Type codes of V, W, X, Y, Z in sections 3.2.21, and 3.2.22
	2006-08-16	- Updates as per RFC BX05-0019, Opening Broadcast . Modification to sections 2.7, 3.1.12, 3.2.8 (new section), and 3.2.26 Reformat section 3.2 tables
	2006-12-06	Version for Intranet
2.13	2006-12-15	Latest mods as per LECC memo of 12-08-06
2.14	2007-02-07	Draft version placed on the Intranet
2.15	2007-02-26	Added UPIP message: section 3.1.1 and 3.2.2
	2007-02-27	-Removed list of messages in section 3.1 -Removed all messages and mention to strategies -Removed second instance of RS message (described twice) -Modified table title to use "I" for Length and "T" for type and mentioned this in section 3.1.1 Basic Conventions
	2007-02-27	In section 2.7, modified HSVF Protocol Version line in Connection Message - RS Message Type.
	2007-02-07	- Removed section 2.2.3 Bandwidth Requirements - Added Message Type A - UPIP Process Beginning Message - Added section 3.1.2 Instrument Description and removed this information from the individual messages
	2007-03-07	Minor formatting corrections
	2007-03-12	Approved version updated to Intranet
2.16	2007-04-13	Correction of Cross-Reference errors to para. 3.1.2
	2007-04-13	Approved version updated to Intranet
2.17	2007-05-02	Updates for Protocol Version behaviour. Inserted new table in section 2.7 and modified A, J, & N messages
	2007-05-25	Document for Intranet

Ver.	Date	Description
2.18	2008-05-22	<p>Impacts of Options Symbology Initiative.</p> <p>The following Messages have been modified:</p> <ul style="list-style-type: none"> • The Instrument Description, used in many HSVF messages, has been modified to contain new or modified fields. • Message Type J - Option Instrument key • Message Type A - UPIP Process Beginning Message • Message Type C - Option Trade • Message Type D - Option Request for Quote (RFQ) • Message Type F - Option Quote • Message Type H - Option Market Depth • Message Type I -Option Trade Cancellation • Message Type M -Improvement Process Beginning Message (Option) • Message Type N -Option Summary • Message Type O -Market Sheet Initial and Improvement Order (Options) / Exposed Order (Options) • Message Type T -Delete N lines Initial and Improvement Order (Options) / Exposed Order (Options) • Message Type - GC - Group Opening Time • Message Type - GR - Group Status • Message Type - RS - Connection Messages
	2008-05-26	<p>Fixed a couple of other things, given below:</p> <ul style="list-style-type: none"> • Message Type - GC - Group Opening Time: In Group Status field, replaced Value is B with Value is O • Message Type - GR - Group Status: Deleted Value is B and modified the reference to point to section 6.2 - Status Marker <p>Fixed the total number of bytes for messages that have been modified.</p> <p>Updated Section 2.8 Protocol Version Behavior Table with C1 Protocol Version and its behavior.</p> <p>For Message Type O, the following modification has been made:</p> <ul style="list-style-type: none"> • Field name: "Type of Order to be processed at trading system member" has been replaced with the word "Filler". • In the Definition Field the phrase "Default value space" was inserted to replace the previous definition. <p>In Section 6.1: Deleted Marker D: Trading in German Mark</p>
	2008-05-31 2009-02-16	<p>Symbology updates approved by Denis Vallee</p> <p>Inserted note after Table 2.8 indicating HSVF format applies to Protocol Version C1.</p> <p>Section 2.2.2 Updated Hub Contacts</p> <p>Section 3.1.3 Removed message type A - UPIP Order</p> <p>Appendix A, updated Contacts, removed Technical Help Desk section and updated MOC Support</p>

Ver.	Date	Description
2.19	2009-04-27	<p>Updates pertaining to:</p> <ul style="list-style-type: none"> • HSVF modifiers for trade through exemptions • ISO Inbound implementation • PIP duration provided with 1/100^e second accuracy <p>Protocol Versions A0, A1, B, B0, and B1 are no longer supported. Message 'W' length changed from 19 to 20 bytes. Root Symbol has been changed from A to X in sections 3.1.2, 3.1.6 and 3.1.7</p>
2.20	2010-01-29	<p>The following modifications were made:</p> <ul style="list-style-type: none"> • Changed X = Alphabetic to Alphanumeric • Changed Symbol Root to Root Symbol • Inserted text in section 3.1.1 listing exceptions to the format convention for Alphanumeric fields
	2010-02-04	Document placed on Intranet
3.0	2010-06-23	<p>2.6: Update RS message examples with protocol C2 2.8: Update protocol description 3.1.13: Message length fixed 3.1.15: Message length fixed</p>
3.1	2011-11-01	<p>Added Solicitation/Facilitation information in message types: M, T, and O Added new protocol version C3.</p>
3.2	2012-02-21	<p>Added protocol version C4 and removed all older ones. Added Complex Order and Implied price features:</p> <ul style="list-style-type: none"> • Message type CS, FS, GS, HS, IS, JS, MS, NS, OS, QS, TS added. • Message types H and RS modified to include Complex Order and Implied prices. • Updated Price Indicator Markers list of values.
3.3	2012-05-22	<p>2.7: Change value of "Type of Market Data" to receive Implied Prices. 3.1: Fixed wrong message title. 3.1.4, 3.1.16, 3.1.20, 3.1.22, 3.1.24, 3.1.29: Modified message format. 5.1: Add more details on how to interpret the table. 8.1: Update table values</p>
3.4	2012-08-07	Correction to position of field 'Ask Price Sign' in Message HS
3.5	2013-09-20	<p>Fixed various typo errors. 2.2.2: Updated POP location addresses 2.7: Added details on parameters 'I' and 'G'. Added table with most popular RS parameters combinations. 3.1.18: Removed '1' message type.</p>

Ver.	Date	Description
4.0	2014-05-28	<p>2.7: Added new message type “Z” in the table.</p> <p>2.8: Added new protocol version C5.</p> <p>3.1.6 / 3.1.7: Added 2 new fields for showing the Public Customer orders volume (Bid/Ask)</p> <p>3.1.11 / 3.1.12: Added new level “P” for Public Customer volume. Expanded number of level from 5 to 9.</p> <p>3.1.22 / 3.1.23: Updated description of the “Account Type” field.</p> <p>3.1.32: Added new message type “Z”</p> <p>3.1.30: Updated description of “V” message type.</p> <p>8.1: Updated schedule times.</p>
4.1	2014-09-03	<p>3.1.1: Added field 'Instrument Description' in the list of exceptions</p> <p>3.1.22/23: Updated values of fields 'Type of Clearing Account' and 'Type of Order'.</p>

Document Notes

Date	Description
2008-05-21	Conversion of document from Word to FrameMaker
2009-02-16	Document ID changed to HSVF-BX-001E
2011-10-25	Document converted to latest template
2012-11-20	Correction to link in message JS for field Delivery Month. Version 3.4 remains.
2014-09-03	<p>Replaced LEGE with Robert Bessette as Author</p> <p>Replaced Robert Bessette with Vishal Chunnoo as Reviewer</p> <p>Replaced Jean-Francois Bertrand with Etienne Charlebois as Approver</p> <p>Replaced Jean Guilbault with Etienne Charlebois as Owner</p>

Typographic Conventions

Convention	Meaning
Abbreviated menu commands	This document uses abbreviated menu. For example, "Click Display > Toolbars > Standard " means that you should click the Display menu, point to Toolbars , and click the Standard entry.
Boldface type	Boldface type is used for commands, keywords, file names URLs, or other information that you must use literally. Name of windows, dialogs, and other controls also appear in boldface type.
Initial Capital Letters	The first letter of the names of menus, dialog boxes, dialog box elements, and commands are capitalized.
<Text in angle brackets>	Angle brackets are used for variables and values that you must provide.
Emphasized type	Emphasized type is used for words and phrases that need to be emphasized, as for new terms defined in the text. Italicized type is also used for foreign languages terms.
Monospace	Code and script examples appear in a monospace font.
Plus sign in text	Keyboard shortcuts are indicated by a plus sign separating key names. For example, Ctrl+F1 means that you must press the Ctrl and F1 keys at the same time.

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Section 1 Introduction

This specification defines the communications interface and message formats for the high speed transmission which broadcasts real-time trading and statistical information from BOX.

The BOX - High Speed Vendor Feed is comprised of trades, quotes, market depth, bulletins, summaries and other statistics. Information is provided on all BOX listings.

Section 2 Overview

2.1 Basic Conventions

All messages which comprise the BOX-HSVF are transmitted to the user on a dedicated line. Each message type is fixed in format and messages are non-blocked. Re-transmission of any data already transmitted, is available. See [paragraph “2.6, Transmission Capability” on page 4](#).

2.2 Connection Generalities

2.2.1 Interface

BOX uses a TCP/IP broadcast interface.

2.2.2 Hub/POP Facilities

SECAUCUS - EQUINIX NY4 SITE	NEW YORK SITE
Boston Options Exchange C/o Equinix 755 Secaucus Road Secaucus, NJ, 07094 NPA-NXX: 201-864 <i>Support 1 gigabit and 10 gigabit connections</i>	Boston Options Exchange C/o Equinix 65 Broadway, 3rd Floor New York, NY, 10006 NPA-NXX: 212-430 <i>Support 1 gigabit connection</i>

2.3 Transmission Format

Each message is framed by an STX and an ETX character. The format used is:

S T X	MESSAGE HEADER	MESSAGE	E T X
-------------	----------------	---------	-------------

STX and ETX indicate, respectively, the beginning and the end of the record being transmitted.

2.4 Data Format

Each message consists of a standard message header followed by the message body which varies in format according to the message type.

2.5 Message Header

The standard message header attached to all messages has the following format:

SEQUENCE NUMBER	MESSAGE TYPE
9	2

Every message is assigned a sequence number. The sequence number is incremented by 1 for each message sent. The sequence numbers will range from 000000001 to 999999999 (decimal, ASCII) with wrap around.

Retransmitted messages will contain the original sequence numbers.

The message type field identifies the type of record being sent.

2.6 Transmission Capability

Normal Connection (START OF DAY @ 1:35am EST)	<ol style="list-style-type: none"> 1) Participant connects to specified port 2) Participant sends RS message type ex. 000000001RS000000000YNYYN0C4000 3) Exchange sends data to Participant with: <ul style="list-style-type: none"> • Starting sequence number 000000001 • Regular market messages on options <p>Market depth for all trading instruments Complex Order messages Summary messages GAP Control: 0 (will receive GAP messages) All options classes</p>
RETRANSMISSION -A- (REQUESTING TO RECEIVE FROM BEGINNING OF THE DAY)	<ol style="list-style-type: none"> 1) Participant connects to specified port 2) Participant sends RS message type ex. 000000001RS000000000YNYYN0C4000 3) Exchange resends all messages disseminated so far through out the day
RETRANSMISSION -B- (REQUESTING THE NEXT MES- SAGE IN LINE)	<ol style="list-style-type: none"> 1) Participant connects to specified port 2) Participant sends RS message type ex. 000000001RS999999999YNYYN0C4000 3) Exchange sends the next message to Participant

RETRANSMISSION -C- (FROM A SPECIFIC SEQUENCE NUMBER)	1) Participant connects, if disconnected, to specified port 2) Participant sends RS message type ex. 000000001RS0000013247YNYYN0C4000 3) Exchange sends all messages with sequence numbers greater than 13247 Note: If the Exchange's sequence number is lower than Participant's, transmission will begin with the next message.
DISCONNECTION	1) Participant disconnects from port

Note 1: For a retransmission (type 'A' or 'C'), Participants should keep the same parameters (Type of market data / GAP Control / Option classes requested).

Note 2: Participants need to reconnect every day after **1:35 a.m.** EST. Their connections are disabled by BOX at **5:55 p.m.** EST.

Note 3: The messages start at "000000001" every day.

2.7 Connection Message - RS Message Type

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Header	11	X	Refer to paragraph "2.5" on page 4
Reset Sequence	10	N	Indicates the last message received. The messages will restart at "000000001 " every day.
System Default	1	A	'Y'
System Default	1	A	'N'
Type of Market Data	1	A	<p>Y: Client wants to receive the market depth messages (types H and HS) on the top 5 bids/asks for the type of trading instruments chosen.</p> <p>N: Client wants to receive the best bid/ask message (types F and FS) for the type of trading instrument chosen</p> <p>T: Client only wants to receive trade messages (types C and CS) without quotes or market depth messages</p> <p>P: Client only wants to receive Price Improvement and Exposed order messages (M, MS, O, OS, T, TS)</p> <p>I: Client wants to receive market depth messages (types H and HS) on the top 5 Bids/Asks and the calculated Implied best limit. Implied limits are disseminated in H and HS message types.</p> <p>G: Client wants to receive Quote message (types F and FS) on the first Bid/Ask and the calculated Implied best limit. Implied limits are disseminated in H and HS message types.</p>

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Complex Order	1	A	Y: Client wants to receive all messages, on both option and Complex Order instrument types. N: Client wants to receive messages on option instruments only (no Complex Order).
Market Summaries	1	A	Y: Client wants to receive ONLY the market summaries and the Instrument key messages N: Client wants to receive the regular market messages WITH the summaries and the Instrument key messages
GAP Control	1	N	Applicable only if 'Number of options classes requested' is greater than 000 0: Will receive GAP messages 1: Will not receive GAP messages (the sequence number will not be in an n+1 order)
HSVF Protocol Version	2	X	For detail information on Protocol Version behavior, refer to paragraph "2.8" on page 8 .
Number of Option Classes Requested	3	N	000:Client wants to receive messages on all option classes 001 to 999:Client wants to receive messages on XXX (between 001 to 999) option classes
Option Classes Requested	Up to 5994 bytes	X	Options classes requested (using the 6 character Root Symbol, right padded with blanks). Maximum: 999 option classes Ex : to request for classes ABC and DEF: ABC<blank><blank><blank>DEF<blank><blank><blank>

The following table shows all message types sent based on the different options selected in the RS message. Shaded boxes mean that the corresponding messages are broadcast. Empty boxes mean that the corresponding messages are not broadcast.

Example: For the RS parameters 'Type of Market Data = Any', 'Complex Order = N', 'Market Summaries = Y' and 'Gap Control = 0', the following message types are broadcast: J, N, Q, S, U, V and Z.

These combinations represent only a sample of all possibilities.

RS PARAMETERS	COMBINATIONS											
Type Of Market Data	Y	Any	Any	N	N	T	P	P	I	I	G	G
Complex Order	Y	N	Y	Y	N	Y	N	Y	N	Y	N	Y
Market Summaries	N	Y	Y	N	N	N	N	N	N	N	N	N
Gap Control	0	0	0	0	0	0	0	0	0	0	0	1
Message Types												
C												
CS												
D												
F												
FS												
GC												
GR												
GS												
H												
HS												
I												
IS												
J												
JS												
L												
M												
MS												
N												
NS												
O												
OS												
Q												
QS												
S												
T												
TS												
U												
V												
W												
Z												

2.8 Protocol Version Behavior

The following table outlines the protocol behavior for the field 'Protocol Version' within the RS message.

RS MESSAGE	PROTOCOL VERSION	PROTOCOL BEHAVIOR
With Protocol Version	Ax, Bx, C1, C2 & C3	Old versions not supported anymore.
	C4	Includes Complex Order/Strategy. See document version 3.5.
	C5	Includes all "C4" features plus the new Z-System Time Stamp message type and the updated H/HS and F/FS message types including the Public Customer bid/ask volume at the best limit. Format described within this document is associated with this Protocol Version.
	<Anything else>	RS message is rejected
Without Protocol Version	n/a	RS message is rejected

Section 3 Messages

3.1 Message Record Format and Definitions

This chapter contains a summary of all message types that are transmitted.

Note: HSVF users must have the ability to skip and ignore any message that is not defined below. The Boston Options Exchange (BOX) may introduce new message types to support extended functions in the future. Since new message types may be defined in future versions of the protocol, anyone using this version of the HSVF protocol must be able to avoid impact of undefined new messages types they may receive.

3.1.1 Basic Conventions

Basic conventions are described below:

- Whenever a field is indicated as being blank it contains the ASCII space character (hex 20).
- Numeric fields: Numbers (0 to 9), Right justified, zero filled.
- Alphanumeric fields: All characters possible (numbers, letters, others), right justified, zero filled, with the exception of the following fields, which are left justified, and blank filled:
 - Instrument External Code
 - Root Symbol
 - Instrument Description
- All alphabetic fields: Letters (A to Z) left justified, blank filled unless stated otherwise.
- The 'Filler' field can have any format (numeric, alphanumeric, ASCII space character (hex 20)).

In the following tables:

- Column L represents the length in bytes of the described field.
- Column T ('Data Type') will be represented by the following characters. Refer to the above for a more detail description of each:
 - A = Alphabetic
 - N = Numeric
 - X = Alphanumeric

3.1.2 Instrument Description - 20 Bytes

The Instrument is identified when needed by the following fields:

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Root Symbol	6	X	Symbol for the Option series
Expiry Month Code	1	A	Delivery month for the contract
Strike Price Code	1	A	Code for the strike price of the option
Strike Price	7	N	Strike Price of the option in full
Strike Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Expiry Year	2	N	Last 2 digits of the option expiry year
Expiry Day	2	N	Delivery day for the contract

3.1.3 Message Type C - Option Trade - 76 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Volume	8	X	Number of contracts for the trade (Refer to paragraph "6.4" on page 36)
Trade Price	6	N	Price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Net Change Sign	1	X	For the net change field, value is +/-
Net Change	6	N	Net change = last trade price - previous close
Net Change Fraction Indicator	1	X	Fraction indicator for the net change price (Refer to paragraph "4.2" on page 31)
Filler	6		
Stamp Time	6	N	Time of trade (HHMMSS)
Open Interest	7	X	This field contains the outstanding number of contracts in the series (Refer to paragraph "6.4" on page 36). (Updated on a trade by trade basis.)
Filler	1		
Price Indicator Marker	1	A	Identifies the type of transaction (Refer to paragraph "6.3" on page 36)

3.1.4 Message Type CS - Complex Order Instrument Trade - 79 Bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Volume	8	X	Number of contracts for the trade (Refer to paragraph "6.4" on page 36)
Trade Price Sign	1	X	"+" or "-" sign.
Trade Price	6	N	Price at which the transaction took place
Trade Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Net Change Sign	1	X	For the net change field, value is +/-
Net Change	6	N	Net change = last trade price - previous close
Net Change Fraction Indicator	1	X	Fraction indicator for the net change price (Refer to paragraph "4.2" on page 31)
Filler	6		
Stamp Time	6	N	Time of trade (HHMMSS)
Price Indicator Marker	1	A	Identifies the type of transaction (Refer to paragraph "6.3" on page 36)

3.1.5 Message Type D - Option Request for Quote (RFQ) - 40 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Size of the Price Requested	8	X	Number of contracts for which the price is requested

3.1.6 Message Type F - Option Quote - 68 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Bid Price	6	X	Bid price for the option series

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of option contracts represented by the bid price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5thcharacter becomes an exponent
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of option contracts represented by the ask price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5thcharacter becomes an exponent
Filler	1		
Instrument Status Marker	1	A	Indicates instrument status (Refer to paragraph "6.2" on page 35)
Public Customer Bid Size	5	X	Number of option contracts represented by Public Customer orders on the bid side.
Public Customer Ask Size	5	X	Number of option contracts represented by Public Customer orders on the ask side.

3.1.7 Message Type FS - Complex Order Quote - 79 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Bid Price Sign	1	X	"+" or "-" sign.
Bid Price	6	X	Bid price for the option series
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of option contracts represented by the bid price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5thcharacter becomes an exponent.
Ask Price Sign	1	X	"+" or "-" sign.
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of option contracts represented by the ask price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5thcharacter becomes an exponent

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Instrument Status Marker	1	A	Indicates instrument status (Refer to paragraph "6.2" on page 35)
Public Customer Bid Size	5	X	Number of option contracts represented by Public Customer orders on the bid side.
Public Customer Ask Size	5	X	Number of option contracts represented by Public Customer orders on the ask side.

3.1.8 Message Type GC - Group Opening Time - 25 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Root Symbol	6	X	Root of the instrument group
Group Status	1	A	Value is O
Scheduled Time	6	N	Defines at which time the group will open

3.1.9 Message Type GR - Group Status - 19 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Root Symbol	6	X	Root of the instrument group
Group Status	1	A	Group status of the trading instrument (Refer to paragraph "6.2" on page 35).'

This message will be sent when a group of trading instruments enters a new status. For more details, refer to **Chapter 8 - Operating Sequence** for a complete list of the trading hours schedule for BOX products.

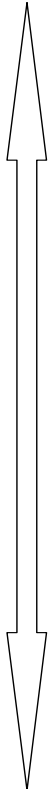
3.1.10 Message Type GS - Complex Order Group Status - 15 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Group of the Complex Order Instrument	2	X	Group of the Complex Order Instrument
Group Status	1	A	Group status of the trading instrument (Refer to paragraph "6.2" on page 35).'

3.1.11 Message Type H - Option Market Depth - up to 179 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10.
Instrument Status Marker	1	A	Indicates Instrument status (Refer to paragraph "6.2" on page 35)
Number of Level	1	N	Number of level for the trading instrument, from 1 to 5.
Level of Market Depth	1	X	Level of market depth, value: 1 to 5: for regular market depth A : for Implied prices P: for Public Customer volume
Bid Price	6	X	Bid price for the option series
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of option contracts represented by the bid price (Refer to paragraph "6.4" on page 36). If size is greater than 99999-> the 5th character becomes an exponent.
Number of Bid Orders	2	X	Number of bid orders, present at a given moment in the order book (Refer to paragraph "6.4" on page 36). If greater than 99-> the 2nd character becomes an exponent
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of option contracts represented by the ask price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5th character becomes an exponent.
Number of Ask Orders	2	X	Number of ask orders, present at a given moment in the order book (Refer to paragraph "6.4" on page 36) If greater than 99-> the 2nd character becomes an exponent.

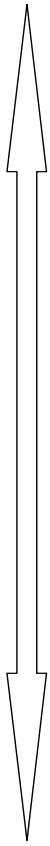
Up to 9Times



3.1.12 Message Type HS - Complex Order Market Depth - up to 199 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Instrument Status Marker	1	A	Indicates Instrument status (Refer to paragraph "6.2" on page 35)
Number of Level	1	N	Number of level for the trading instrument, from 1 to 5.
Level of Market Depth	1	X	Level of market depth, value: 1 to 5: for regular market depth A : for Implied prices P: for Public Customer volume
Bid Price Sign	1	X	"+" or "-" sign.
Bid Price	6	X	Bid price for the option series
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of option contracts represented by the bid price (Refer to paragraph "6.4" on page 36). If size is greater than 99999-> the 5th character becomes an exponent.
Number of Bid Orders	2	X	Number of bid orders, present at a given moment in the order book (Refer to paragraph "6.4" on page 36). If greater than 99-> the 2nd character becomes an exponent
Ask Price Sign	1	X	"+" or "-" sign.
Ask Price	6	X	Ask price for the option series
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of option contracts represented by the ask price (Refer to paragraph "6.4" on page 36) If size is greater than 99999-> the 5th character becomes an exponent.
Number of Ask Orders	2	X	Number of ask orders, present at a given moment in the order book (Refer to paragraph "6.4" on page 36) If greater than 99-> the 2nd character becomes an exponent.

Up to 9 Times



3.1.13 Message Type I - Option Trade Cancellation - 68 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Volume	8	X	Number of contracts being cancelled.
Trade Price	6	N	Price at which the transaction took place (Refer to paragraph "6.4" on page 36).
Trade Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Filler	6		
Stamp Time	6	N	Time at which the original transaction took place (HHMMSS)
Open Interest	7	X	Open long position of the option series, as of the trade (Refer to paragraph "6.4" on page 36)
Filler	1		
Price Indicator Marker	1	X	Identifies the type of transaction (Refer to paragraph "6.3" on page 36)

A cancellation will reduce the total volume, value and transactions by the amount of the cancelled trade. A cancellation message is followed by an Option Summary message (message type N) which will reflect the corrected market.

3.1.14 Message Type IS - Complex Order Trade Cancellation - 71 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Volume	8	X	Number of contracts being cancelled.
Trade Price Sign	1	X	"+" or "-" sign.
Trade Price	6	N	Price at which the transaction took place (Refer to paragraph "6.4" on page 36).
Trade Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Filler	6		
Stamp Time	6	N	Time at which the original transaction took place (HHMMSS)
Price Indicator Marker	1	X	Identifies the type of transaction (Refer to paragraph "6.3" on page 36)

3.1.15 Message Type J - Option Instrument keys - 119 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Strike Price Currency	3	X	Currency used for the option strike price (Refer to paragraph "6.5" on page 37)
Max Number of Contracts per Order	6	X	Maximum authorized number of contract per order (Refer to paragraph "6.4" on page 36).
Min Number of Contracts per Order	6	X	Minimum authorized number of contract per order (Refer to paragraph "6.4" on page 36).
Max Threshold Price	6	X	Maximum threshold price authorized for an option contract (Refer to paragraph "6.4" on page 36).
Max Threshold Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Min Threshold Price	6	X	Minimum threshold price authorized for an option contract (Refer to paragraph "6.4" on page 36).
Min Threshold Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Tick Increment	6	X	Precision with which the price of an order limit can be expressed (Refer to paragraph "5.1" on page 33).
Tick Increment Fraction Indicator	1	N	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Option Type	1	X	Type of option ("A" for American, "E" for European)
Market Flow Indicator	2	X	Defines the instrument type (Refer to paragraph "7.2" on page 39)
Group	2	X	Group of the instrument
Instrument	4	X	Code identifying the instrument
Instrument External Code	30	X	External identifier used by traders when entering an order
Option Marker	2	A	Refer to paragraph "6.1" on page 35
Underlying Symbol	10	X	Root Symbol for the underlying security

Option Instrument Keys messages will be sent:

- At the beginning and the end of the day with his associate Summary message
- Anytime during the day if a threshold limit was changed for an instrument

3.1.16 Message Type JS - Complex Order Instrument keys - 121 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Expiry Year	2	N	Expiration year of the leg of the Complex Order Instrument expiring first. Format is YY.
Delivery Month	1	A	Delivery month code of the leg of the Complex Order Instrument expiring first. (Refer to paragraph "7.1" on page 39)
Expiry Day	2	N	Expiry day of the leg of the Complex Order Instrument expiring first.
Max Number of Contracts per Order	6	X	Maximum authorized number of contract per order (Refer to paragraph "6.4" on page 36).
Min Number of Contracts per Order	6	X	Minimum authorized number of contract per order (Refer to paragraph "6.4" on page 36).
Max Threshold Price Sign	1	X	"+" or "-" sign.
Max Threshold Price	6	X	Maximum threshold price authorized for an option contract (Refer to paragraph "6.4" on page 36).
Max Threshold Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Min Threshold Price Sign	1	X	"+" or "-" sign.
Min Threshold Price	6	X	Minimum threshold price authorized for an option contract (Refer to paragraph "6.4" on page 36).
Min Threshold Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Tick Increment	6	X	Precision with which the price of an order limit can be expressed (Refer to paragraph "5.1" on page 33).
Tick Increment Fraction Indicator	1	N	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31).
Filler	2	X	
Group	2	X	Group of the instrument
Instrument	4	X	Code identifying the instrument
Instrument External Code	30	X	External identifier used by traders when entering an order

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Complex Order Instrument Allow Implied	1	A	Indicates if the Complex Order Instrument supports Implied Price. N = No C = Continuous Implied S - Snapshot Implied

Complex Order Instrument Keys messages will be sent:

- At the beginning and the end of the day with his associate Summary message. Also when a Complex Order instrument is created during trading hours.

3.1.17 Message Type L - Bulletins - 93 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11		Refer to paragraph "2.5" on page 4
Filler	1		
Bulletin Type	1	X	1 = regular text bulletin 2 = special text bulletin
Bulletin Contents	79	X	Bulletin in textual format. Left justified and blank filled
Continue Marker	1	N	0 = bulletin continues in next record 1 = bulletin ended

Bulletins will be sent throughout the trading day. More than one message will be used if the bulletin is longer than 79 characters. The continuation character "0" indicates that the bulletin continues to the next record.

When a Trading instrument has been halted by BOX, a Bulletin Message explaining the reason for the halt will be transmitted. When the trading instrument is reinstated, another Bulletin Message explaining the news that accompanied the reinstatement will be transmitted.

All records that make up a particular bulletin will be sent out together. No other message will be interspersed among the records that make up a complete bulletin.

3.1.18 Message Type M - Improvement Process Beginning Message (Option) - 84 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Sequential number unique per Instrument and per trading day

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Initial Order Price	6	N	Indicates the price of the Initial Order
Initial Order Price Fraction Indicator	1	X	Refer to paragraph "4.2" on page 31
Initial Order Quantity	8	X	Indicates the quantity of the Initial Order (Refer to paragraph "6.4" on page 36)
Initial Order Side	1	A	Indicates the dealer side of the Initial Order "B" for buy "S" for sell
Improvement Phase Expiry Time	8	A	Indicates the expiry time of the Improvement Phase (value is in HHMMSSCC)
Improvement Process Expiry Duration	4	N	Indicates the expiry duration of the Improvement Phase (value is in SSCC)
Minimum Quantity for Improvement Order	8	X	Enables market makers to know the minimum quantity for an Improvement Order during the Improvement Phase (Refer to paragraph "6.4" on page 36)
Percentage Assured to Initial Order	8	X	Indicates the quantity of the Initial Order assured to the dealer side of the IO in case of the Initial Order price is the best limit Ex: 00040.00 stands for 40.00 %
Auction Type	1	X	Indicating the auction type G: Regular PIP B: Solicitation C: Facilitation
Filler	1	A	Default value space

3.1.19 Message Type MS - Improvement Process Beginning Message (Complex Order) - 94 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Sequential number unique per Instrument and per trading day
Initial Order Price Sign	1	X	"+" or "-" sign.
Initial Order Price	6	N	Indicates the price of the Initial Order
Initial Order Price Fraction Indicator	1	X	Refer to paragraph "4.2" on page 31

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Initial Order Quantity	8	X	Indicates the quantity of the Initial Order (Refer to paragraph "6.4" on page 36)
Initial Order Side	1	A	Indicates the dealer side of the Initial Order "B" for buy "S" for sell
Improvement Phase Expiry Time	8	A	Indicates the expiry time of the Improvement Phase (value is in HHMMSSCC)
Improvement Process Expiry Duration	4	N	Indicates the expiry duration of the Improvement Phase (value is in SSCC)
Minimum Quantity for Improvement Order	8	X	Enables market makers to know the minimum quantity for an Improvement Order during the Improvement Phase (Refer to paragraph "6.4" on page 36)
Percentage Assured to Initial Order	8	X	Indicates the quantity of the Initial Order assured to the dealer side of the IO in case of the Initial Order price is the best limit Ex: 00040.00 stands for 40.00 %
Auction Type	1	X	Indicating the auction type G: Regular PIP B: Solicitation C: Facilitation

3.1.20 Message Type N - Option Summary - 127 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11		Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Bid Price	6	N	Closing or most recent bid price
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of contracts represented by the bid price (Refer to paragraph "6.4" on page 36)
Ask Price	6	N	Closing or most recent ask price
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of contracts represented by the ask price (Refer to paragraph "6.4" on page 36)
Last Price	6	N	Closing or most recent trade price
Last Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Open Interest	7	X	Refer to paragraph "6.4" on page 36
Tick	1	X	Determined by the difference between last price and the previous different trade price + = uptick - = downtick
Volume	8	N	Total number of contracts traded or current volume if sent after a cancellation
Net Change Sign +/-	1	X	For net change field
Net Change	6	N	Net change = last trade price - previous close Net change will be zero if the option did not trade on the last business day or did not trade today.
Net Change Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Open Price	6	N	Price of the first trade of the day
Open Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
High Price	6	N	Highest trade price of the day or current high price if sent after a cancellation
High Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Low Price	6	N	Lowest trade price of the day or current low price if sent after a cancellation
Low Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Option Marker	2	A	Refer to paragraph "6.1" on page 35
Underlying Symbol	10	X	Root Symbol for the underlying security
Reference Price	6	N	Reference Price of the Option
Reference Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (refer to paragraph "4.2" on page 31)

Option Summary messages will be sent:

- At the beginning of the day. The first Option Summary message sent will define the instruments traded on that day, and contain the closing/reference price in the 'Last Price' field. All other price fields, with the exception of open interest will contain zero values. Any other message sent during the day will contain details of the last trade.
- Any option summary sent after the BEGINNING OF OPTIONS SUMMARY message (Message Type = Q) contains the list of trading instruments for the day (sent prior to market opening) or the summaries after the close of the market for BOX options (sent at 5:10 pm EST).
- After a trade cancellation if extreme values have been changed (Open/High/Low/Last).
- At the end of the day with relevant data such as the Open/High/Low/Last/Volume

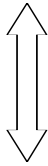
- During the day when new instruments are added.

3.1.21 Message Type NS -Complex Order Summary - up to 778 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11		Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol.
Bid Price Sign	1	X	"+" or "-" sign.
Bid Price	6	N	Closing or most recent bid price
Bid Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Bid Size	5	X	Number of contracts represented by the bid price (Refer to paragraph "6.4" on page 36)
Ask Price Sign	1	X	"+" or "-" sign.
Ask Price	6	N	Closing or most recent ask price
Ask Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Ask Size	5	X	Number of contracts represented by the ask price (Refer to paragraph "6.4" on page 36)
Last Price Sign	1	X	"+" or "-" sign.
Last Price	6	N	Closing or most recent trade price
Last Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Open Price Sign	1	X	"+" or "-" sign.
Open Price	6	N	Price of the first trade of the day
Open Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
High Price Sign	1	X	"+" or "-" sign.
High Price	6	N	Highest trade price of the day or current high price if sent after a cancellation
High Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Low Price Sign	1	X	"+" or "-" sign.
Low Price	6	N	Lowest trade price of the day or current low price if sent after a cancellation
Low Price Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Net Change Sign	1	X	"+" or "-" sign.
Net Change	6	N	Net change = last trade price - previous close Net change will be zero if the option did not trade on the last business day or did not trade today.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Net Change Fraction Indicator	1	X	Defines the number of decimal places or fraction positions (Refer to paragraph "4.2" on page 31)
Volume	8	X	Total number of contracts traded or current volume if sent after a cancellation
Number of Legs	2	N	Number of legs in the Complex Order Instrument (2 to 4)
Ratio Sign	1	X	"+" = Buy the leg "-" = Sell the leg
Ratio	2	N	Quantity (buy or sell), 1 to 99.
Leg Symbol	30	X	Trading symbol of the leg.

2 to 4 times



Complex Order Summary messages will be sent:

- At the beginning of the day. The first Complex Order Summary message sent will define the instruments traded on that day, and contain the closing price in the 'Last Price' field. All other price fields will contain zero values. Any other message sent during the day will contain details of the last trade.
- Any Complex Order Summary sent after the BEGINNING OF COMPLEX ORDER SUMMARY message (Message Type = QS) contains the list of trading Complex Order instruments for the day (sent prior to market opening) or the summaries after the close of the market for BOX options (sent at 5:10 pm EST).
- After a trade cancellation if extreme values have been changed (Open/High/Low/Last).
- At the end of the day with relevant data such as the Open/High/Low/Last/Volume
- During the day when new instruments are added.

3.1.22 Message Type O - Market Sheet Initial and Improvement Order (Options) / Exposed Order (Options) - 72 bytes

This message type is not broadcasted for Improvement orders related to Solicitation and Facilitation auction types.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Order Side	1	X	The "must be filled" side ("B" for Buy, "S" for Sell)
Type of Order	1	X	Type of limit entered A: Initial Order P: Exposed Order

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Limit Entered for an Order	6	X	For a buy order, represents the highest price that the order issuer is willing to pay For a sell order, represents the lowest price at which the order issuer is willing to sell
Limit Fraction Indicator	1	X	Refer to paragraph "4.2" on page 31
Order Quantity	8	X	Refer to paragraph "6.4" on page 36
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per instrument and per trading day
Type of Clearing Account for Member that Owns the Order	1	X	Indicates the account type for which an order was entered using the clearing house member's account typology. When "Type of Order" is equal to "A", the Account Type is for the InitO (Auction initiator or dealer side). 6: Public Customer 7: Broker Dealer 8: Market Maker T: Professional Customer W: Broker Dealer cleared as Customer X: Away Market Maker
Filler	1	A	Default value space
End of the Exposition	8	N	HHMMSSCC - '0' filled for PIP messages
Auction Type	1	X	Indicating the auction type or if the message is related to an exposed order. G: Regular PIP F: Exposed Order

3.1.23 Message Type OS - Market Sheet Initial and Improvement Order (Complex Order) / Exposed Order (Complex Order) - 83 bytes

This message type is not broadcasted for Improvement orders related to Solicitation and Facilitation auction types.

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Order Side	1	X	The "must be filled" side ("B" for Buy, "S" for Sell)

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Type of Order	1	X	Type of limit entered A: Initial Order P: Exposed Order
Limit Entered for an Order Sign	1	X	"+" or "-" sign.
Limit Entered for an Order	6	N	For a buy order, represents the highest price that the order issuer is willing to pay For a sell order, represents the lowest price at which the order issuer is willing to sell
Limit Fraction Indicator	1	X	Refer to paragraph "4.2" on page 31
Order Quantity	8	X	Refer to paragraph "6.4" on page 36
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per instrument and per trading day
Type of Clearing Account for Member that Owns the Order	1	X	Indicates the account type for which an order was entered using the clearing house member's account typology. When "Type of Order" is equal to "A", the Account Type is for the InitO (Auction initiator or dealer side). 6: Public Customer 7: Broker Dealer 8: Market Maker T: Professional Customer W: Broker Dealer cleared as Customer X: Away Market Maker
Filler	1	A	Default value space
End of the Exposition	8	N	HHMMSSCC - '0' filled for PIP messages
Auction Type	1	X	Indicating the auction type or if the message is related to an exposed order. G: Regular PIP F: Exposed Order

3.1.24 Message Type Q - Beginning of Options Summary - 12 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default

Indicates the beginning and the end of day option summaries (message type N) are to follow. Other messages (such as bulletins) can be interspersed with the summaries.

3.1.25 Message Type QS - Beginning of Complex Order Summary - 12 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default

Indicates the beginning and the end of day Complex Order Summaries (message type NS) are to follow. Other messages (such as bulletins) can be interspersed with the summaries.

3.1.26 Message Type S - End of Sales - 18 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Reserved	1	A	Reserved for future use
Time	6	N	Time of message transmission (HHMMSS)

The "End of Sales" message will be sent when there is no more trading activity to be transmitted. This will occur after the closing of the market.

3.1.27 Message Type T - Delete N lines Initial and Improvement Order (Options) / Exposed Order (Options) - 47 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	20	X	Refer to paragraph "3.1.2" on page 10 .
Deletion Type	1	N	1: Deletion of a precise order 2: Deletion of all previous orders in the specified side 3: Deletion of all orders
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Order Side	1	X	B for Buy S for Sell <Blank> for all

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per Instrument and per trading day
Auction Type	1	X	Indicating the auction type or if the message is related to an exposed order. G: Regular PIP B: Solicitation C: Facilitation F: Exposed Order

3.1.28 Message Type TS - Delete N lines Initial and Improvement Order (Complex Order) / Exposed Order (Complex Order) - 57 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Instrument Description	30	X	Complex Order Instrument symbol. The individual legs are defined in message type NS.
Deletion Type	1	N	1: Deletion of a precise order 2: Deletion of all previous orders in the specified side 3: Deletion of all orders
Order Sequence Number	6	N	Allocated by the Central trading engine at each valid order entry
Order Side	1	X	B for Buy S for Sell <Blank> for all
Improvement Phase Sequential Number	6	N	Indicates the number of an Improvement Phase. Not relevant when the message refers to an Exposed Order. Sequential number unique per Instrument and per trading day
Auction Type	1	X	Indicating the auction type or if the message is related to an exposed order. G: Regular PIP B: Solicitation C: Facilitation F: Exposed Order

3.1.29 Message Type U - End of Transmission - 18 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Exchange ID	1	A	"Q" by default
Time	6	N	Time at which the message is transmitted (HHMMSS)

This message will be sent to indicate that the day's transmission is complete. This message will be sent at approximately 5:15 pm daily. After this hour, no HSVF messages will be transmitted. Transmission will resume the following day at 1:00 am.

3.1.30 Message Type V - Circuit Assurance - 17 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Time	6	N	Time the message is transmitted (HHMMSS)

This message is sent out if no messages were sent by BOX for more than one second once the broadcast has started (i.e. at the termination of the Test Loop message). This will be an assurance that the line is up. The message will continue to be sent until the client disconnection. The Circuit Assurance message will repeat the sequence number of the previous record transmitted (except if it is a re-transmit message) i.e. it will not augment the sequence number.

3.1.31 Message Type W - Gap Sequence - 20 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Sequence Numbers Skipped	9		Sequence numbers skipped. (Sequence number of the actual W message) +1 up to the 'Sequence numbers skipped' value Has to be greater than the sequence number of the actual W message

The Gap message signals the beginning and ending sequence numbers of messages relating to classes different from those subscribed to during the connection message

Ex: Log with all the instruments		If a client wants to receive only the market data on YYY, he will receive	
Sequence number	Instrument	Sequence number	Instrument
00007393C	0BYYY	00007393C	0BYYY
00007394H	0BZZZ	00007394W	0B0007397

Ex: Log with all the instruments		If a client wants to receive only the market data on YYYY, he will receive	
00007395C	0BXXX		
00007396C	0BZZZ		
00007397H	0BFFF		
00007398N	0BYYY	00007398N	0BYYY
00007399H	0BZZZ		

3.1.32 Message Type Z- System Time Stamp - 20 bytes

FIELD NAME	L	T	DEFINITION / VALIDATION RULES
Message Header	11	X	Refer to paragraph "2.5" on page 4
Trading Engine Time Stamp	9	N	Time stamp generated by the SOLA [®] Trading Engine (HHMMSSmmm)

This message is sent out every second and contains the time stamp when it was originally transmitted by the trading engine. Broadcast starts during the pre-opening and continues until the end of day disconnection of all clients (currently 5:55 pm EST). The sequence number in the message header is incremented by 1 for each message sent.

Section 4 Price Fields

4.1 Description

The Price field will be a six (6) character numeric field. The delineation of the whole number portion of the price and the decimal/fractional portion of the price will be defined by the Fraction Indicator Code (FI). Furthermore, the FI will indicate the manner in which the price is to be displayed visually. This implies that all zero fractions may be sent in order to maintain consistency in the visual alignment of the implied decimal places. The all zero fraction would be replaced by spaces for visual display.

No truncation of price data is permitted by this Specification except for high order zeros for products which trade in fractions of 1/10,000,000 or smaller. Should such truncation be necessary then it will be implicit from the FI which will be 7, 8 or 9.

4.2 Fraction Indicator Code

All fractions are expressed as fractions or in decimals as defined by the price fraction rules of the particular product (Section 5.1). The Fraction Indicator Code will be one (1) Alphanumeric Character as follows:

FRACTION	CODE	FRACTION	CODE
1/1	0	-1/1	A
1/10	1	-1/10	B
1/100	2	-1/100	C
1/1,000	3	-1/1,000	D
1/10,000	4	-1/10,000	E
1/100,000	5	-1/100,000	F
1/1,000,000	6	-1/1,000,000	G
1/10,000,000	7		
1/100,000,000	8		
1/1,000,000,000	9		

Section 5 Tick Table

5.1 Price Fraction Rules (Tick Increment)

This table shows the minimum tick increment for the order prices. For instruments using different minimum tick increments based on the price range, the following values are used:

PRICE RANGE	TICK INCREMENT FIELD VALUE	FRACTION INDICATOR (F.I.)	MINIMUM TICK INCREMENT
Order Price below \$3.00	0000T1	2	\$0.05
Order Price equal or above \$3.00	0000T1	2	\$0.10
All PIP, Facilitation and Solicitation orders, at any price	0000T1	2	\$0.01

Section 6 Marker Codes

6.1 Markers for Options

FIRST LETTER (CURRENCY OR TYPE OF MARKET)	
Marker	Description
B	Trading in British Pound
C	Trading in Canadian Dollar
E	Trading in Swiss Franc
F	Trading in Euro
U	Trading in US Dollar
Y	Trading in Japanese Yen
2ND LETTER (TYPE OF OPTIONS)	
Marker	Description
Blank	Regular Options

6.2 Status Markers

STATUS		USED IN	
MARKER	DESCRIPTION	GROUP MESSAGES	INSTRUMENT MESSAGES
Y	Pre-opening phase	X	X
O	Opening phase	X	X
T	Opened for Trading	X	X
H	Trading Halted	X	X
F	Forbidden phase	X	X
R	Reserved phase (goes into a state as pre-opening where orders can be sent, modified or canceled)		X
S	Suspended phase (goes into a state as pre-opening where orders can be sent, modified or canceled)		X
Z	Frozen		X
A	Surveillance Intervention phase (Consultation phase)	X	X
C	Closed	X	X
B	Beginning of day inquiries	X	X

STATUS		USED IN	
MARKER	DESCRIPTION	GROUP MESSAGES	INSTRUMENT MESSAGES
BLANK	If not used		

6.3 Price Indicator Markers

PRICE INDICATOR		WILL IMPACT THE ...				
MARKER	DESCRIPTION	OPENING PRICE	HIGH PRICE	LOW PRICE	LAST PRICE	VOLUME
C	Trades performed at the end of a PIP allocation phase	X	X	X	X	X
L	Late trade (Transaction is being reported late and is out of sequence)					X
O	Trades performed during the opening	X	X	X	X	X
S	Reference price (volume field zero filled)					
V	Volume adjustment ('Trade price' field with the price of the individual leg)					X
W	Trades resulting from the transmission of an ISO Inbound order	X	X	X	X	X
X	Trades performed when the market is closed or crossed					X
G	Contingent Trade, price of the trade was not controlled against the NBBO.	X	X	X	X	X
I	Trade involving an implied order or Leg Trade of a Complex Order instrument	X	X	X	X	X
P	Trade done on a Complex Order Instrument					X
BLANK	Actual transaction took place	X	X	X	X	X

6.4 Indicator Code (used for Bid/Ask Size, Volume, Open Interest)

MARKER	DESCRIPTION (THE SIZE OF THE BID/ASK FIELD IS IN ...)	
C	100	(Hundreds)
D	1,000	(Thousands)
E	10,000	(Ten-Thousands)
F	100,000	(Hundred-Thousands)

MARKER	DESCRIPTION (THE SIZE OF THE BID/ASK FIELD IS IN ...)	
G	1,000,000	(Millions)
H	10,000,000	(Ten-Millions)
I	100,000,000	(Hundred-Millions)
J	1,000,000,000	(Billions)

DATA	MESSAGE SENT	PARTICIPANT SHOULD DISPLAY...
Bid size of 120575	Size field will indicate 1205C	120500
Volume of 258,487,797	Volume will indicate 2584877C	258,487,700

6.5 Strike Price Currency Codes

CURRENCY	
MARKER	DESCRIPTION
USD	US \$
CAD	Canadian \$
Blank	Not provided

Section 7 Month Price Codes

7.1 Month Codes

7.1.1 Options

Call Options		
A - January	E - May	I - September
B - February	F - June	J - October
C - March	G - July	K - November
D - April	H - August	L - December

Put Options		
M - January	Q - May	U - September
N - February	R - June	V - October
O - March	S - July	W - November
P - April	T - August	X - December

7.2 Market Feed Indicators

FIRST LETTER	TYPE OF INSTRUMENT	SECOND LETTER	TYPE OF UNDERLYING
O	Options	X	Index
L	Long Term	E	Equities

7.3 Option Strike Price Codes

7.3.1 Equity Options Strike Price Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
5555	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200
205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300
305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400
405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600
605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700
705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800
805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900
905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000
1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100
1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200
1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300
1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400
1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500
1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600
1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700
1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800
1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900
1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100
2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200
2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300
2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400

2,5	Z	9	L	17	R	23	P	32,5	Z	67,5	U
3	G	11	M	17,5	W	24	S	37,5	U	72,5	V
4	H	12	N	18	S	26	T	42,5	V	77,5	W
6	I	12,5	V	19	T	27	U	47,5	W	82,5	X
7	J	13	O	21	L	27,5	Y	52,5	X	87,5	Y
7,5	U	14	P	22	O	28	V	57,5	Y	92,5	Z
8	K	16	Q	22,5	X	29	W	62,5	Z	97,5	U

7.3.2 Basic Convention

Since the full strike price will always be transmitted along with its associated code, users will be aware of the codes that have been determined to be used for strike prices outside the range displayed.

Section 8 Operating Sequence

8.1 Overview of a Regular Trading Day

EVENTS	APPROXIMATE TIME	HSVF MESSAGES DISSEMINATED
Dictionary is sent	1:35 am EST	Q, QS, J, JS, N, NS
Instrument Open Interest for the day	5:00 am EST	N
Market goes into pre-opening	7:00 am EST	GR, GS, F or H
Market goes into opening/trading	9:30 am EST	GR, GS
Market closing on equity options	4:00 pm EST	GR, GS
Market closing on ETF and index options	4:15 pm EST	GR, GS
End-of-Day summaries	4:40 pm EST	Q, QS, J, JS, N, NS
End-of-Day for HSVF	4:40 pm EST	S, U
Disconnection of clients	5:55 pm EST	

Section 9 ASCII Character Set

The following table represents the ASCII Character set.

HEX	ASCII	HEX	ASCII	HEX	ASCII	HEX	ASCII
00	NUL	27		4E	N	75	u
01	SOH	28	(4F	O	76	v
02	STX	29)	50	P	77	w
03	ETX	2A	*	51	Q	78	x
04	EOT	2B	+	52	R	79	y
05	ENQ	2C	,	53	S	7A	z
06	ACK	2D		54	T	7B	
07	BEL	2	.	55	U	7C	
08	BS	2F	/	56	V	7D	
09	HT	30	0	57	W	7E	
0A	LF	31	1	58	X	7F	DEL
0B	VT	32	2	59	Y		
0C	FF	33	3	5A	Z		
0D	CR	34	4	5B			
0E	SO	35	5	5C			
0F	SI	36	6	5D			
10	DLE	37	7	5E			
11	DC1	38	8	12			
12	DC2	39	9	60			
13	DC3	3A	:	61	a		
14	DC4	3B	;	62	b		
15	NAK	3C		63	c		
16	SYN	3D	=	64	d		
17	ETB	3E		65	e		
18	CAN	3F	?	66	f		
19	EM	40	@	67	g		
1A	SUB	41	A	68	h		
1B	ESC	42	B	69	i		
1C	FS	43	C	6A	j		
1D	GS	44	D	6B	k		
1E	RS	45	E	6C	l		
1F	US	46	F	6D	m		
20	SP	47	G	6E	n		
21	!	48	H	6F	o		

HEX	ASCII	HEX	ASCII	HEX	ASCII	HEX	ASCII
22		"49	I	70	p		
23	#	4A	J	71	q		
24	\$	4B	K	72	r		
25	%	4C	L	73	s		
26	&	4D	M	74	t		

Appendix A Contacts

The following lists the contact number for BOX.

Market Operation Center Support / Technical Help Desk

Toll Free: 1-866-768- 8845

boxmoc@boxexchange.com



Montréal Exchange Inc..
Tour de la Bourse,
P.O. Box 61, 800 Victoria Square
Montréal, Quebec H4Z 1A9
Canada

phone: 514.871.2424
toll free: 1.800.361.5353
fax: 514.871.3584
e-mail: SAMSUPPORT@m-x.ca
website: www.m-x.ca