SOLA Derivatives
SAIL Specification
Technical Specification

V 2.0 – July 2012

Table of Contents

1 Introduction

1.1 Purpose

The purpose of this publication is to provide participants with the knowledge and technical details necessary for accessing and using the LSEG's derivatives trading system.

This SAIL specification provides essential information for participants and independent software vendors in the functional design of their application in order to interface with the Exchange using the native SOLA Access Information Language (SAIL) protocol.

1.2 Readership

The target audience for this publication is the business or Information Technology level of an organisation interested in the functional design of the LSEG's derivatives platform.

1.3 Revision History

This document has been through the following iterations:

Issue	Date	Description
1.0	21 December 2010	Publication of initial version
2.0	27 July 2012	Message modification and new messages introduced with the updated version for Sola 5

2 Overview

2.1 Introduction

The SAIL protocol is defined at two levels: technical and business. The technical level deals with the delivery of data while the business level defines business-related data content. This document is organized to reflect the distinction.

2.2 Message Format

All technical and business SAIL messages start with 4 bytes of Endian coded message length. An End of Text (ETX) binary 3 is added after the last character of each business message, and it is padded with spaces to have a message length multiple of 4 bytes, for alignment.

Example:

```
Message: <21>xxxxxxxxxxxxxxxxxxxxx<ETX><  >
<0021> (4 bytes) length of business message. Codification Little Endian.
<xxxxxxxxxxxxxxxxxxxxx>: (21 bytes) Business Message body
<ETX>: (1 byte) End of Text, binary 3
<        > 2 spaces for alignment
```

2.3 Required Fields

Each message within the protocol is comprised of fields which are either:

R = Required
O = Optional
C = Conditional (fields which are required based on the presence, or value of other fields).

Systems should be designed to operate only when the required and conditionally required fields are present.

3 Technical Messages

A complete breakdown of all field definitions contained within these messages can be found in Section 6.

3.1 TC: User Connection

Participant to Exchange

User Connection is the first message to be sent by the participant at the beginning of the day.

Field Name		Field Type	R/O/C
Message Type: TC		Message Type	R
Protocol Version		Protocol	R
User ID		User ID	R
Password (MD5 Encryption)		Password	R
Session ID		Session ID	O
Time (CET)		Time	R
Exchange Message ID		Exchange Message ID	O
Inactivity Interval		Numeric (2)	O
Number of Message types to be received		Numeric (2)	R
(1 to 99 occurrences)	Message types to be received	Message Type	R

The key fields for this message are described below.

3.1.1 Session ID

If set to blank spaces, means that the participant wants to connect to the current session ID.

3.1.2 Exchange Message ID

If equal to zeroes: start from 1st message of the session.
If equal to blanks: start from next message for Participant.
If valid Exchange Message ID: start at this message ID or the next message for the Participant.

3.1.3 Inactivity Interval

Number of missed heartbeats before considering the user disconnected. If set to 0, the user is never considered as disconnected by the system.

3.1.4 Number of Message Types to be Received

Indicates the number of message types (specified further in the message) the Participant wants to receive.

3.1.5 Message Types to be Received

A list (max 99 occurrences) of message types requested by the participant.
The following messages are sent to the Participant even if they are not part of the list: ER, TE, TO, TH, and TT.

3.2 TD: User Disconnection

Participant to Exchange

The Trader Disconnection message is sent by the participant to the Exchange when it wants to disconnect from the system.

Field Name	Field Type	R/O/C
Message Type = TD	Message Type	R
User ID	User ID	R
Session ID	Session ID	O

3.3 TA: Disconnection Instruction

Participant to Exchange

This message is used by a participant to indicate the instruction(s) to execute if the connection ends.

<table>
<tr><th colspan="2">Field Name</th><th>Field Type</th><th>R/O/C</th></tr>
<tr><td colspan="2">Message Type = TA</td><td>Message Type</td><td>R</td></tr>
<tr><td colspan="2">Number of Instructions present in the message</td><td>Numeric (2)</td><td>R</td></tr>
<tr><td rowspan="3">1 to 99 occurrences</td><td>Trader ID</td><td>Trader ID</td><td>R</td></tr>
<tr><td>Type of Cancellation</td><td>Type of Cancellation</td><td>R</td></tr>
<tr><td>Active: Y (ON) N (OFF)</td><td>Flag</td><td>R</td></tr>
</table>

3.4 TH: Heartbeat (Question)

Exchange to Participant

This message is sent by the Exchange to the participant at the beginning of every Heartbeat period. For each connection, participants are allowed to send a configured number of messages per second.

This message indicates the first message to be processed in the Heartbeat period. If there is no pending message from the participant, the field User Sequence ID represents the next expected User Sequence ID.

Field Name	Field Type	R/O/C
Message Type = TH	Message Type	R
User Sequence ID (first User Sequence ID for next/current	User Sequence ID	R
Last Exchange Message ID (sent to participant)	Exchange Message ID	R
Time (CET)	Time	R

3.5 TI: Heartbeat (Response)

Participant to Exchange

A Heartbeat message sent from the Exchange to the participant at the beginning of every Heartbeat period, must receive a response from the participant application within 'n' units specified in the Connection message. The response can be any message. If a Heartbeat is not responded to, the participant is considered as not connected and the disconnection instructions specified in the Disconnection Instructions message (TA: Disconnection Instruction) are executed.

Message TI is used to respond to a Heartbeat (TH) if no other message needs to be sent.

Field Name	Field Type	R/O/C
Message Type = TI	Message Type	R
User Sequence ID (first User Sequence ID for next/current Heartbeat period)	User Sequence ID	R
Last Exchange Message ID (sent to participant)	Exchange Message ID	R
Time (CET)	Time	R

3.6 TO: Out of Sequence

Exchange to Participant

This message is sent by the Exchange when the User Sequence ID in the message is out of sequence. Participant must reconnect.

Field Name	Field Type	R/O/C
Message Type = TO	Message Type	R
Received User Sequence ID	User Sequence ID	R
Expected Last User Sequence ID	User Sequence ID	R
Message Time (CET)	Time	R

3.7 TE: Technical Error Notice

Exchange to Participant

This message is sent by the Exchange when a technical error is encountered in the message sent by the participant. Refer to Section 5 for a full list of error codes.

Field Name	Field Type	R/O/C
Message Type = TE	Message Type	R
Received Message Type	Message Type	R
Preceding User Sequence ID received (zeroes if	User Sequence ID	R
Error Code	Error Code	R
Error Position	Numeric (4)	R
Error Message	String (100)	R
Start of message in error	String (100)	R

3.7.1 Received Message Type

Refers to the message which contained the error.

3.7.2 Error Position

Determines the bytes at which an error has been detected.

3.7.3 Start of Message in Error

The first 100 characters of an erroneous message.

3.8 TM: Disconnection Instruction Acknowledgement

Exchange to Participant

This message is sent to acknowledge receipt of **TA: Disconnection Instruction** message.

Field Name	Field Type	R/O/C
Message Type = TM	Message Type	R
Current Session ID	Session ID	R
Last User Sequence ID received	User Sequence ID	O

3.9 TK: Connection Acknowledgement

Exchange to Participant

This message is sent to acknowledge receipt of **TC: User Connection** message.

Field Name	Field Type	R/O/C
Message Type = TK	Message Type	R
Current Session ID	Session ID	R
Last User Sequence ID received	User Sequence ID	O

3.10 TL: Disconnection Acknowledgement

Exchange to Participant

This message is sent to acknowledge receipt of **TD: User Disconnection** message.

Field Name	Field Type	R/O/C
Message Type = TL	Message Type	R
Current Session ID	Session ID	R
Last User Sequence ID received	User Sequence ID	O

3.11 TT: End of Transmission

Exchange to Participant

This message is sent to indicate that the session's transmission is completed. Participant is disconnected.

Field Name	Field Type	R/O/C
Message Type = TT	Message Type	R
Ended Session ID	Session ID	R
Last User Sequence ID received	User Sequence ID	O
Time (CET)	Time	R

4 Business Messages

A complete breakdown of all field definitions contained within these messages can be found in Section 6.

4.1 Message Headers

4.1.1 Incoming Messages Header

Size: 24

This is the header required on all incoming participant business messages.

Field Name	Field Type	R/O/C
Message Type	Message Type	R
User Time (CET)	Time	R
Trader ID	Trader ID	R
User Sequence ID	User Sequence ID	R

4.1.1.1 *User Sequence ID*

This field contains a unique sequential number that the participant must set in all business messages. The first business message must have this number set to 1, the second set to 2, and so on.

4.1.2 Outgoing Messages Header

Size: 24

This is the header included on all outgoing messages from the Exchange.

Field Name	Field Type	R/O/C
Message Type	Message Type	R
Message Timestamp (CET)	Time	R
User Sequence ID	User Sequence ID	O
Exchange Message ID	Exchange Message ID	O
Gap Sequence ID	Numeric (2)	R

4.1.2.1 *User Sequence ID*

- This field contains the identical User Sequence ID number present in the incoming message or it contains zeroes.
- It is set for acknowledgement only.
- For unsolicited messages (trade notice, group state change, instrument state change, etc…) it is set to zeroes.

4.1.2.2 *Exchange Message ID*

It represents the Exchange's identifier of the message for the current session. It is used in a Connection message as a retransmission starting point. If it contains spaces, it means that this field is not subject to re-transmission.

4.1.2.3 *Gap Sequence ID*

It is a Sequence Numeric (base 10) used to track gaps. It runs from 0 to 99 over and over.
If the participant detects a gap, he has to reconnect with a Trader Connection message.

4.2 Data Types

4.2.1 Owner Data

Size: 50

Owner data is an optional order reference for the participant that may appear within certain messages. This field is not subject to processing.

Field Name	Field Type	R/O/C
Memo	String (50)	O

4.2.2 Clearing Data

Size: 20

Clearing Data contains the participant's clearing data that must appear on specified messages.

Field Name	Field Type	R/O/C
Clearing Instruction	Clearing Instruction	R
Account Type	Account Type	R
Open/Close	Open/Close	R
Hedge/Spec	Hedge/Spec	R
Clearing Operation Mode	Clearing Operation Mode	O
Filler (must be spaces)	String (4)	R

4.3 OE: Order Entry

Participant to Exchange

This message is used to enter a regular order in the system.

Field Name	Field Type	R/O/C
Incoming Messages Header (Message type = OE)	Message Type	R
Group	Group ID	R
Instrument	Instrument ID	R
Price Type	Price Type	R
Verb (Side)	Verb	R
Quantity	Quantity	R
Price	Price	C
Special Price Term	Special Price Term	O
Additional Price	Price	R
Quantity Term	Quantity Term	O
Additional Quantity	Quantity	C
Duration Type	Duration Type	R
GTD Date	Date	C
Opposite Firm	Firm ID	R
Filler (must be spaces)	String (1)	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R

4.4 KE: Order Acknowledgment

Exchange to Participant

This message is used to acknowledge an OE: Order Entry message.

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Order ID	Order ID	R
Order Status	Status	R
Verb (Side)	Verb	R
Quantity	Quantity	R
Assigned Price	Price	R
Clearing Data (Refer to Section 4.2.2)		O

Owner Data (Refer to Section 4.2.1)		R
Original Order ID	Order ID	R
Filler (zeroes)	Numeric (6)	R

4.5 OM: Order Modification

Participant to Exchange

This message is used to modify a regular order entered through an OE: Order Entry message. The modified order has to be booked.

Field Name	Field Type	R/O/C
Incoming Messages Header (Message type = OM)	Message Type	R
Group	Group ID	R
Instrument	Instrument ID	R
Price Type	Price Type	R
Verb (Side)	Verb	R
Quantity Sign	Quantity Sign	R
Quantity	Quantity	R
Price	Price	C
Special Price Term	Special Price Term	R
Additional Price	Price	R
Quantity Term	Quantity Term	R
Additional Quantity	Quantity	R
Duration Type	Duration Type	R
GTD Date	Date	C
Filler (must be spaces)	String (4)	R
Filler (must be spaces)	String (1)	R
Modified Order ID	Order ID	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R

4.6 KM: Order Modification Acknowledgment

Exchange to Participant

This message is used to acknowledge an OM: Order Modification message.

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R

Instrument	Instrument ID	R
Trader ID	Trader ID	R
Order ID	Order ID	R
Order Status	Status	R
Verb (Side)	Verb	R
Quantity	Quantity	R
Assigned Price	Price	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Original Order ID	Order ID	R
Filler (zeroes)	Numeric (6)	R

4.7 XE: Order Cancellation

Participant to Exchange

This message is sent by the Participant to cancel an order present in the book.

Field Name	Field Type	R/O/C
Incoming Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Cancelled Order ID	Order ID	R

4.8 KZ: Order Cancellation Acknowledgement

Exchange to Participant

This message is used to acknowledge an XE: Order Cancellation message.

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Order ID	Order ID	R
Order Status	Status	R
Verb (Side)	Verb	R
Quantity	Quantity	R
Assigned Price	Price	R
Clearing Data (Refer to Section 4.2.2)		O

Owner Data (Refer to Section 4.2.1)		R
Original Order ID	Order ID	R
Filler (zeroes)	Numeric (6)	R

4.9 NZ: Order Cancellation Notice (By System)

Exchange to Participant

This message is used when an order is cancelled by the Exchange or by the system (expiration).

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Order ID	Order ID	R
Order Status	Status	R
Verb (Side)	Verb	R
Quantity	Quantity	R
Assigned Price	Price	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Original Order ID	Order ID	R
Filler (zeroes)	Numeric (6)	R

4.10 BD: Bulk Quote Data

Participant to Exchange

This message contains specific protection data and trader's data valid for further Bulk Quotes. A new BD message replaces previously entered data.

Field Name	Field Type	R/O/C
Incoming Messages Header (Message type = BD)		R
Group	Group ID	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Protection Number of Trades	Numeric (2)	O
Protection Trade Quantity	Quantity	O
Filler (must be blanks)	String (2)	R
Calculation Time Interval (number of seconds)	Numeric (8)	C

Maximum Volume	Quantity	C
Maximum Value	Numeric (8)	C
Maximum Delta Volume	Quantity	C
Maximum Delta Value	Numeric (8)	C

4.11 KD: Bulk Quote Data Acknowledgment

Exchange to Participant

This message is used to acknowledge a BD - Bulk Quote Data message.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message type = KD)		R
Group	Group ID	R
Trader ID	Trader ID	R

4.12 Q<i>: Bulk Quote

Participant to Exchange

This is a set of messages to enter Bulk Quotes. The second letter of Message Type indicates the quantity and price formats.

<i> = A to P (See table below)

X\Y 1	2	4	6	8
	A	E	I	M
	B	F	J	N
	C	G	K	O
	D	H	L	P

Example: A QC Message is formatted with Price 8 bytes in length and Quantity 2 bytes in length.

Field Name		Field Type	R/O/C
Incoming Messages Header (Message type Q<i>)			R
Group		Group ID	R
Quote ID (identifies trader's quote on this group)		Order ID	R
Number of Quotes		Numeric (3)	R
1 to 280* occurrences *** on IDEM market the maximum is of 100 due to**	**Group**	Group ID	R
	Instrument	Instrument ID	R
	Verb (Side)	Verb	R
	Quantity Sign (+ - =)	Quantity Sign	R

the regulation	**Quantity**	Quantity	O
	Price	Price	O

4.13 LA: Bulk Quote Acknowledgment

Exchange to Participant

This message acknowledges the receipt of a Bulk Quotes message

Field Name		Field Type	R/O/C
Outgoing Messages Header			R
Group		Group ID	R
Quote ID (identifies trader's quote on this group)		Order ID	R
Number of Quotes in Error		Numeric (3)	R
1 to 280* occurrences * on IDEM market the maximum is of 100 due to the regulation	Quote number	Numeric (3)	R
	Error code	Error Code	R

4.14 OX: Cross Entry

Participant to Exchange

This message is used to enter a cross order (involving the same firm on both sides).

Field Name	Field Type	R/O/C
Incoming Messages Header		**R**
Group	Group ID	R
Instrument	Instrument ID	R
Filler	String(1)	R
Quantity	Quantity	R
Price	Price	R
Buying Clearing Data	Clearing Data	R
Selling Clearing Data	Clearing Data	R
Buying Owner Data	Owner Data	R
Selling Owner Data	Owner Data	R

4.15 GC: Global Cancellation

Participant to Exchange

This message is sent by the Participant when he wants to cancel his quotes.

Field Name	Field Type	R/O/C
Incoming Messages Header		R
Group	Group ID	R
Type of Cancellation	Type of Cancellation	R

4.16 KG: Global Cancellation Confirmation

Exchange to Participant

This message is used to acknowledge a Global Cancellation message and is sent to a participant when his quotes have been cancelled.

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R
Trader ID	Trader ID	R
Type of Cancellation	Type of Cancellation	R

4.17 NP: Cancellation of All Quotes Notices

Exchange to Participant

This message is an advice sent to a participant when his quotes have been cancelled (by the system).

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Cancel Reason	Quote Cancel Reason	R

4.18 NT: Execution Notice

Exchange to Participant

This message is an execution notice for a trade.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NT)		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Reference ID (Order ID or Quote ID)	Order ID	R
Verb (Side)	Verb	R
Quantity Traded	Quantity	R
Trade Price	Price	R
Time of the Trade (CET)	Time	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Special Trade Indicator	Special Trade Indicator	R
Price Type	Price Type	R
Trade Type	Trade Type	R
Filler (zeroes)	Numeric (6)	O
Trade Number	Trade Number	R
Trade Memo	String (50)	R
Original Reference ID	Order ID	R
ID Code for the Counterpart Participant	Firm ID	R

4.19 NX: Execution Cancellation Notice

Exchange to Participant

This message is an execution cancellation notice.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NX)		R
Group	Group ID	R
Instrument	Instrument ID	R
Trader ID	Trader ID	R
Reference ID (Order ID or Quote ID)	Order ID	R
Verb (Side)	Verb	R
Quantity Traded	Quantity	R
Trade Price	Price	R

Time of the Trade (CET)	Time	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Special Trade Indicator	Special Trade Indicator	R
Price Type	Price Type	R
Trade Type	Trade Type	R
Filler (zeroes)	Numeric (6)	O
Trade Number	Trade Number	R
Trade Memo	String (50)	R
Original Reference ID	Order ID	R
ID Code for the Counterpart Participant	Firm ID	R

4.20 NL: Leg Execution Notice

Exchange to Participant

This message reports the execution notice for a leg of a strategy trade.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NL)		R
Group	Group ID	R
Instrument ID	Instrument ID	R
Trader ID	Trader ID	R
Reference ID	Order ID	R
Verb (Side)	Verb	R
Quantity Traded	Quantity	O
Trade Price	Price	R
Trade Time (CET)	Time	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Special Trade Indicator	Special Trade Indicator	O
Price Type	Price Type	R
Trade Type	Trade Type	R
Filler (zeroes)	Numeric (6)	R
Trade Number	Trade Number	R
Trade Memo (when captured by the Exchange)	String (50)	O
Original Reference ID	Order ID	R
ID Code for the Counterpart Participant	Firm ID	R
Strategy Group	Group ID	R
Strategy Instrument ID	Instrument ID	R
Strategy Verb (Side)	Verb	R

Strategy Trade Number	Trade Number	R
Leg Number	Leg Number	R

4.21 NY: Leg Execution Cancellation Notice

Exchange to Participant

This message reports the execution cancellation notice for a leg of the strategy trade.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NY)		R
Group	Group ID	R
Instrument ID	Instrument ID	R
Trader ID	Trader ID	R
Reference ID	Order ID	R
Verb (Side)	Verb	R
Quantity Traded	Quantity	O
Trade Price	Price	R
Trade Time (CET)	Time	R
Clearing Data (Refer to Section 4.2.2)		O
Owner Data (Refer to Section 4.2.1)		R
Special Trade Indicator	Special Trade Indicator	O
Price Type	Price Type	R
Trade Type	Trade Type	R
Filler (zeroes)	Numeric (6)	R
Trade Number	Trade Number	R
Trade Memo (when captured by the Exchange)	String (50)	O
Original Reference ID	Order ID	R
ID Code for the Counterpart Participant	Firm ID	R
Strategy Group	Group ID	R
Strategy Instrument ID	Instrument ID	R
Strategy Verb (Side)	Verb	R
Strategy Trade Number	Trade Number	R
Leg Number	Leg Number	R

4.22 ER: Error Notice

Exchange to Participant

This message is an error notification. It is sent in response to a message from the participant when the system cannot process it.

Field Name	Field Type	R/O/C
Outgoing Messages Header		R
Error Code	Error Code	R
Error Description	String (100)	R

4.23 RQ: Request for Quote

Participant to Exchange

This message is sent by the participant to broadcast a Request for Quote message to other participants.

Field Name	Field Type	R/O/C
Incoming Messages Header		R
Group	Group ID	R
Instrument	Instrument ID	R
Quantity	Quantity	O

4.24 KO: Standard Acknowledgment

Exchange to Participant

This message is sent as an acknowledgment for the RQ: Request for Quote message.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = KO)		R
Trader ID	Trade Type	R
Original Message Type (RQ)	Message Type	R

4.25 NG: Group State Change

Exchange to Participant

This message indicates a Group state change.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NG)		R
Group	Group ID	R
Group State	Group State	R

4.26 NI: Instrument State Change

Exchange to Participant

This message indicates an Instrument state change.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = NI)		R
Group	Group ID	R
Instrument	Instrument ID	R
Instrument State	Instrument State	R

4.27 ON: New Instrument

Participant to Exchange

This message is used to enter a request to create a new strategy instrument.

Field Name		Field Type	R/O/C
Incoming Messages Header			R
Number of Legs (N)		Numeric (2)	R
1 to 4 Times	**Leg Group**	Group ID	R
	Leg Instrument	Instrument ID	R
	Verb	Verb	R
	Filler	String (1)	R
	Ratio	Quantity	R

4.28 KN: New Instrument Acknowledgement

Exchange to Participant

This message is used to acknowledge the creation of a strategy instrument.

Field Name		Field Type	R/O/C
Outgoing Messages Header (Message Type = KN)			R
Strategy Group		Group ID	R
Strategy Instrument ID		Instrument ID	R
Creation Status		Creation Status	R
Number of Legs (N)		Numeric(2)	R
N Times (max of 4)	**Leg Group**	Group ID	R
	Leg Instrument	Instrument ID	R
	Verb	Verb	R
	Filler	String(1)	R
	Ratio	Quantity	R

4.29 MU: Monitoring ATM Series

Exchange to Participant

This message is used to send customer the updates on ATM series.

Field Name		Field Type	R/O/C
Outgoing Messages Header (Message Type = MU)			R
Group		Group ID	R
Filler		String (2)	R
1 to 200 Instrument	Number Of Updates	Numeric (4)	R
	Instrument	Instrument ID	R

4.30 IX: Underlying Price

Exchange to Participant

This message is used to send customer the updates on Underlying Price used to calculate the ATM series.

Field Name	Field Type	R/O/C
Outgoing Messages Header (Message Type = IX)		R
Group	Group ID	R
Sail Underlying Price Type	Underlying Price Type	R
Filler	String (1)	R
Underlying Price	Price	R

4.31 RP: Market Maker Protection Subscription

Participant to Exchange

This message has two purposes:

- Specifies to the Exchange Trading System what kind of Market Maker Protection should be enabled (standard or advanced).
- Reactivates quoting when Advanced Market Maker Protection has been triggered.

Field Name	Field Type	R/O/C
Incoming Messages Header		R
Group	Group ID	R
Protection Type	Protection Type	R

4.32 MM: Monitoring Status

Exchange to Participant

This message is used to notify a Market Maker that he has either, not achieved, or has achieved his obligation of attaining a successful quote.

<table>
<tr><th colspan="2">Field Name</th><th>Field Type</th><th>R/O/C</th></tr>
<tr><td colspan="2">Outgoing Messages Header (Message Type = MM)</td><td></td><td>R</td></tr>
<tr><td colspan="2">Group</td><td>Group ID</td><td>R</td></tr>
<tr><td colspan="2">MM Obligation Type</td><td>MM Monitoring Activity</td><td>R</td></tr>
<tr><td colspan="2">Number of Instrument Updates</td><td>Numeric (4)</td><td>R</td></tr>
<tr><td rowspan="12">1 to 200 occurrences</td><td>Instrument</td><td>Instrument ID</td><td>R</td></tr>
<tr><td>Previous MM Alert Level</td><td>MM Alert Level</td><td>R</td></tr>
<tr><td>Previous MM Alert Type</td><td>MM Alert Type</td><td>R</td></tr>
<tr><td>MM Alert Level</td><td>MM Alert Level</td><td>R</td></tr>
<tr><td>MM Alert Type</td><td>MM Alert Type</td><td>R</td></tr>
<tr><td>Previous State Duration</td><td>Numeric (6)</td><td>R</td></tr>
<tr><td>Alert Start Time (CET)</td><td>Time (6)</td><td>R</td></tr>
<tr><td>Infraction Start Time (CET)</td><td>Time (6)</td><td>R</td></tr>
<tr><td>Daily Warning Count</td><td>Numeric (4)</td><td>R</td></tr>
<tr><td>Daily Infraction Count</td><td>Numeric (4)</td><td>R</td></tr>
<tr><td>Daily Warning Duration</td><td>Numeric (6)</td><td>R</td></tr>
<tr><td>Daily Infraction Duration</td><td>Numeric (6)</td><td>R</td></tr>
</table>

4.33 Drop Copy

This feature allows a Drop Copy user to receive a copy of all order acknowledgements and trade notifications that belong to a specific member. All messages are sent using the SAIL protocol. The following messages are included in the Drop Copy connection:

- KE: Order Acknowledgement
- KM: Order Modification Acknowledgment
- KZ: Order Cancellation Acknowledgment
- NZ: Order Cancellation Notice
- NT: Execution Notice
- NL: Leg Execution Notice
- NX: Execution Cancellation Notice
- NY: Leg Execution Cancellation Notice

These messages have been extended in order to provide complete order information, the added fields are the ones flagged with 'Y' in the drop copy only column on the tables below. All incoming messages sent by Drop Copy user are rejected.

4.33.1 NT: Execution Notice, NL: Leg Execution Notice, NX: Execution Cancellation Notice, NY: Leg Execution Cancellation Notice for Drop Copy only

Field Name	Field Type	Drop Copy Only
Incoming Messages Header		
Group	Group ID	
Instrument	Instrument ID	
Trader ID	Trader ID	
Reference ID	Order ID	
Verb	Verb	
Quantity Traded	Quantity	
Trade Price	Price	
Time of the Trade	Time	
Clearing Data	Clearing Data	
Owner Data	Owner Data	
Special Trade Indicator	Special Trade Indicator	
Price Type	Price Type	
Trade Type	Trade Type	
Filler	String (6)	
Trade Number	Trade Number	
Trade Memo	String (50)	

Original Order ID	Order ID	
ID Code for the Counterpart Participant	Firm ID	
Previous Booked Quantity	Quantity	Y
Previous Booked Price	Price	Y
Displayed Quantity	Quantity	Y
Order Type	Order Type	Y
Liquidity Status	Liquidity Status	Y
End of Message Block	Yes/No	Y
Remaining Quantity	Quantity	Y
Filler	String (4)	Y
Timestamp	Date Time MS	Y
Price Variation (vs. Last)	Price	Y
Net Change (vs. reference day)	Price	Y
Open Price	Price	Y
High Price	Price	Y
Low Price	Price	Y
Last Price	Price	Y
Opening trade	Yes/No	Y
Filler	String (1)	Y
Filler	String (10)	Y
Filler	String (10)	Y
Internal Market Bid before this trade	Price	Y
Internal Market Ask before this trade	Price	Y
Opposite Msg Type	Message Type	Y
Original Price	Price	Y
Special Price Term	Special Price Term	Y
Additional Price	Price	Y
Additional Quantity Type	Quantity Term	Y
Additional Quantity	Quantity	Y
Duration Type	Duration Type	Y
GTD Date	Date	Y
Filler	String (1)	Y
Clearing Firm	String (8)	Y
Connection ID	String (11)	Y
Exchange ID	Exchange ID	Y
Order Trading Mode	Order Trading Mode	Y
Order Timestamp	Date Time MS	Y
Strategy Group	Group ID	Y

Strategy Instrument	Instrument ID	Y
Strategy Verb	Verb	Y
Strategy Trade Number	Trade Number	Y
Leg Number	Leg Number	Y
Match Number	Match Number	Y
Number In Match	Numeric (4)	Y

4.33.2 KM: Order Modification Acknowledgment for Drop Copy only

Field Name	Field Type	Drop Copy Only
SAIL Message Header		
Group	Group ID	
Instrument	Instrument ID	
Trader ID	Trader ID	
Order ID	Order ID	
Order Status	Status	
Verb	Verb	
Quantity	Quantity	
Assigned Price	Price	
Clearing Data	Clearing Data	
Owner Data	Owner Data	
Original Order ID	Order ID	
Filler (zeroes)	Numeric (6)	
Price Type	Price Type	Y
Previous Displayed Quantity	Quantity	Y
Previous Booked Price	Price	Y
Displayed Quantity	Quantity	Y
Filler	String (1)	Y
System Best Bid	Price	Y
System Best Ask	Price	Y
Filler	String (10)	Y
Filler	String (10)	Y
End of Message Block	Yes/No	Y
Special Price Term	Special Price Term	Y
Additional Price	Price	Y
Quantity Term	Quantity Term	Y
Additional Quantity	Quantity	Y
Guaranteed Quantity	Quantity	Y
Duration Type	Duration Type	Y

GTD Date	Date	Y
Opposite Firm	Firm ID	Y
Filler	String (1)	Y
Order Type	Order Type	Y
Previous Order ID	Order ID	Y
Linked Quantity	Quantity	Y
Filler	String (1)	Y
Filler	String (8)	Y
Remaining Quantity	Quantity	Y
Filler	String (1)	Y

5 Error Codes

The following table displays the error codes and text that will appear in error responses.

Error Code	Error Description
0001	User Identification is not correct
0002	Protocol Version is not supported
0003	Message Type is not supported
0004	Session ID is not active
0006	Message Type requested is not supported
0008	Message is too short
0009	Message is too long
0010	Message contains Binary Data
0011	No Heartbeat Activity: Disconnection
0012	Message Type is Out Of Context
0013	User ID has been deactivated: Disconnection
0014	Syntax Error + <detailed text>
0015	Field value is too small
0016	Field value is too big
0100	Firm is Forbidden to trade on this Group
0101	Duration Type is Forbidden for current Group state
0102	Verb field (Side) cannot be modified
0103	Order is not active
0104	Price Type is forbidden for this instrument
0105	Price Term is Forbidden for current Instrument state
0108	Duration Type is Forbidden for current Instrument state
0109	Order cannot be processed: No opposite limit
0110	Price does not represent a valid tick increment for this Instrument
0111	Duration Type is invalid for this Price Type
0112	Cross Order price must be within the Instrument trading limits
0113	Cross Order price is outside bid/ask price spread
0114	Opposite firm must be filled for committed order
0116	Cross order is not allowed
0117	Cross order quantity is outside limits
0118	Duration Type Is Invalid For This Price Term
0201	GTD date must be equal to or greater than current day
0202	GTD date must be equal to or less than Instrument expiration date
0203	GTD date must be filled only if Duration Type is equal to GTD
0300	Quantity Term is Forbidden for current Instrument state
0302	Quantity must be less than or equal to Maximum Improvement Quantity

0303	Quantity Term is not authorized for this Order Type
0304	Additional Quantity must be less than Order Quantity
0305	Additional Quantity is too small
0306	Minimum quantity cannot be modified
0307	Quantity Term is forbidden for Duration Type
0308	Order quantity is outside the instrument quantity threshold
0309	Quantities must be multiples of lot size
0402	Trader ID field cannot be modified
0403	Market Maker not authorized for Group
0500	Order price is outside the instrument price threshold
0501	Price field is mandatory for Limit Orders
0502	Price field must not be filled for this Price Type
0503	Order cannot be modified or cancelled
0504	Additional Price is forbidden for Price Term
0505	Order price must be greater than additional price
0506	Order price must be lower than additional price
0507	Additional price must be lower than last price or last day price
0508	Additional price must be greater than last price or last day price
0509	Order rejected. Cannot trade outside instrument price thresholds.
0510	Order cannot be modified
0511	Order price is outside circuit breaker limits
0512	Price Term Invalid For Price Type
0700	Only one quote per Instrument and per Side is accepted
0701	Quote is not present in the Instrument Book
0702	Market Maker Protection in progress; Quote not processed.
0703	Advanced Market Maker Protection not enabled for this Group
0704	Buy and Sell must not cross for the same instrument
0705	Number of quotes is not in sync with the message length
0707	Market Maker Protection state must be re-activated
0708	Trader ID has no quote for this Group
0709	All the Instruments must belong to the same Group
0710	Clearing Data has not been initialized
1000	Cross orders forbidden in Pre-opening phase.
1001	Instrument does not exist
1002	Group ID does not exist
1003	Trader ID is invalid
1004	Message Type is forbidden for current Instrument state
1007	Participant must use A2 protocol version
1008	RFQ currently underway for this instrument
1009	Action not allowed under current configuration
1010	Number of entries is invalid

1107	Firm or trader had been disabled
1108	Instrument mandatory when using MM Monitoring mode forced
1109	Market maker has no obligation for this group
1110	Participant not authorized for this Group
1111	Participant not authorized for this Account Type
2000	Technical error; function not performed. Contact Technical Help Desk.
2001	Gateway State forbids this command. Contact Technical Help Desk.
2002	Function only partially performed. Contact Technical Help Desk.
3017	Open Close Missing Invalid
3041	Unknown Clearing Operation Mode
3042	Invalid Price Type
9017	Invalid number of legs
9018	Invalid leg information
9019	Unknown strategy type
9020	Firm creation quota has been reached
9021	Leg instrument is not active
9022	Strategy has unpriced legs
9023	Group state does not allow this function
9024	Legs have different Multi-group Strategy Key
9025	Legs have different Multi-group Strategy Group
9026	Order rejected. Cannot assign a valid price to all legs

6 Field Definitions

The following table displays the format, length, and description for each field and further explanation of the field types.

Under the Format column note that:

A = Alphabetic
N = Numeric
X = Alphanumeric

Field Name	Format	Length	Description
Account Type	X	1	Must contain one of the following values: 1: Client 2: House 4: Market Maker 5: Non-Segregated Client
Additional Price	X	10	If Special Price Term = S, this field represents the trigger price: i.e. the price from which a STOP order will be triggered. Mandatory if Special Price Term is different from spaces.
Additional Quantity	N	8	It must be different from 0 if Quantity Term = M or D. It must be lower than or equal to the number in the Quantity field.
Assigned Price	X	10	It is the price stored in the system. It would be the limit price for a limit order and the booked price assigned by the system to a partially filled order.
Clearing Instruction	X	12	Client Account Number
Clearing Operation Mode	X	1	Indicates the pre-posting action to be taken by the Clearing System when a trade has occurred. Space: No clearing operation mode
Creation Status	X	1	C : Created as specified M : Created with modifications
Date	X	8	YYYYMMDD (Year, Month and Day)
Date Time MS	X	17	YYYYMMDDHHMMSSmmm

Duration Type	X	1	Must contain one of the following values: J: Valid for the current Day only ((Day) D: Order is Valid until GTD date (GTD) F: Valid until instrument expiration (GTC) E: Immediate order, cannot be booked (FAK) W : WhileConnected
Error Code	N	4	All Error Codes can be found in Section 5.
Exchange Message ID	X	6	Identifies a message sent by the exchange for a Participant connection. If Exchange Message ID is blank, the message will not be included in retransmitted messages.
Firm ID	X	4	Identifies a firm referenced in the Exchange's database.
Flag	X	1	Y: Yes N: No
Group ID	X	2	Group Identification within the system. A Group is composed of instruments.
Group State	X	1	This parameter indicates the new status of the group. For message type NG, it contains one of the following values: C: Consultation Start E: No Cancel Period P: Pre-opening O: Opening S: Continuous Trading Session F: Consultation End N: Exchange Intervention M: Mini-batch B: Closing I: Prohibited Z: Interrupted
GTD Date	X	8	Year, Month and Day (YYYYMMDD) Must be present if Duration type = D. Represents the order's last active day.
Hedge/Spec	X	1	Must contain one of the following values: H: Hedger S: Speculator
ID Code for the Counterpart	X	4	Will contain counterpart firm when allowed by Exchange rules.
Instrument ID	X	4	Instrument identification within a Group

Instrument State	X	1	Can contain the following values: N: Normal. The instrument follows group state processing F: Forbidden. Trading is forbidden for this instrument. Orders and quotes are rejected. R: Preopening C: NotTrading (strategies) H: Hidden S: Suspended
Leg Number	N	2	ID. of the Leg of the Strategy Instrument. Maximum value of 40.
Liquidity Status	X	1	'M': Maker 'T': Taker ' ' : None
Match Number	N	8	Format GGxxxxxx GG = Group of strategy instrument X = numeric Unique ID to link all trades issued from a strategy-order match
Memo	X	50	Free text zone, which can be used to transmit Additional information for processing. No validations are carried out on this field.
Message Type	X	2	Type of Message
MM Alert Level	N	1	Indicates the severity level of the alert: 0: OK 1: Warning 2: Infraction
MM Alert Type	N	1	Indicates the reason for the alert: 0: OK 1: Prices missing 2: Bid Price missing 3: Ask Price missing 4: Spread too wide 5: Quantities too small 6: Bid Quantity too small 7: Ask Quantity too small 8 : Quote Minimum Lifetime Not Fulfilled
MM Monitoring Activity	X	1	Q : Quoting R : RFQ
Modified Order ID	X	1	Order ID of the original order being modified.

Numeric (x)	N	x	Absolute number. X determines field length in bytes.
Open/Close	X	1	This data field indicates how the participant's position will be handled by the clearing system. Must contain one of the following values: Any number of Legs or Single Security: O: All Legs are Open, or Single Security C: All Legs are Closed, or Single Security 2 Legged Strategy: 1: 1st Leg Open, 2nd Leg Close 2: 1st Leg Close, 2nd Leg Open 3 Legged Strategy: 3: 1st Leg Open, 2nd Leg Open, 3rd Leg Close 4: 1st Leg Open, 2nd Leg Close, 3rd Leg Open 5: 1st Leg Open, 2nd Leg Close, 3rd Leg Close 6: 1st Leg Close, 2nd Leg Open, 3rd Leg Open 7: 1st Leg Close, 2nd Leg Open, 3rd Leg Close 8: 1st Leg Close, 2nd Leg Close, 3rd Leg Open 4 Legged Strategy: A: 1st Leg Open, 2nd Leg Open, 3rd Leg Open, 4th Leg Close B: 1st Leg Open, 2nd Leg Open, 3rd Leg Close, 4th Leg Open D: 1st Leg Open, 2nd Leg Open, 3rd Leg Close, 4th Leg Close E: 1st Leg Open, 2nd Leg Close, 3rd Leg Open, 4th Leg Open F: 1st Leg Open, 2nd Leg Close, 3rd Leg Open, 4th Leg Close G: 1st Leg Open, 2nd Leg Close, 3rd Leg Close, 4th Leg Open H: 1st Leg Open, 2nd Leg Close, 3rd Leg Close, 4th Leg Close I: 1st Leg Close, 2nd Leg Open, 3rd Leg Open, 4th Leg Open J: 1st Leg Close, 2nd Leg Open, 3rd Leg Open,4th Leg Close K: 1st Leg Close, 2nd Leg Open, 3rd Leg Close, 4th Leg Open L: 1st Leg Close, 2nd Leg Open, 3rd Leg Close, 4th Leg Close M: 1st Leg Close, 2nd Leg Close, 3rd Leg Open, 4th Leg Open N: 1st Leg Close, 2nd Leg Close, 3rd Leg Open, 4th Leg Close P: 1st Leg Close, 2nd Leg Close, 3rd Leg Close, 4th Leg Open
Order ID	X	8	Identifies an order. Associated with Group ID and Instrument ID; it is the Order Key identifier.
Original Order ID	X	8	First Order ID assigned to the order by the trading system.
Original Reference ID	X	8	References either the Original Order ID of the traded order, or the Quote ID of the quote that has traded.
Password	X	8	This is used to validate the user's connection to the SAIL interface. The password is provided by service desk.

Price	X	10	Price format with format indicator and price mantis. Format indicator (1): If the format indicator is Alpha, it means that the price is negative (A means negative value with no decimal, B means negative value with 1 decimal, C means negative value with 2 decimals, etc). If the format indicator is Numeric, it means that the price is positive (0 means positive value with no decimal, 1 means positive value with one decimal, 2 means positive value with 2 decimals, etc). The maximum is 4 decimal places for both positive and negative values. If the format indicator is set to spaces, it means that the price is not significant. Price mantis (9): The mantis represents the price value including the number of decimals defined in the format indicator. Examples: Format indicator = 2; Price mantis = 3509438; Price = 35094.38 Format indicator = A; Price mantis = 3567838; Price = -3567838 Format indicator = < >; Price mantis = 3567838; Price = not significant
Price Type	X	1	Must contain one of the following values for regular order: ' ' : Unknown L : Limit (price set in message) O: Opening M : At best opposite price (Top Order) W: At any price (Market Order) C : Committed
Protection Type	A	1	Type of protection requested by the Market Maker. Allowable values are: N: Standard Protection A: Advanced Protection
Protocol	X	2	Protocol ID. Current value is A3
Quantity	N	8	Number of contracts or shares

Quantity Sign	X	1	For a quote or an order update, it identifies how to handle the quantity: "+" : add the incoming quantity to the booked quantity "-" : subtract the incoming quantity from the booked quantity "=": replace the booked quantity with the incoming quantity Note: The "+" and "-"are available only for Quotes. They are not available for Orders.
Quantity Term	X	1	M: Minimum D: Disclosed Space: None
Quote Cancel Reason	X	1	S : CancelledBySystem M : CancelledByMarketControl A : CancelledByTrader C: CancelledByCircuitBreaker P : MMPNbTrades T : MMPVolume R : MMPValue N : MMPDeltaVolume V : MMPDeltaValue B : EliminatedOutofLimits I : EliminatedOnDisconnect
Reference ID	X	8	It references the order (Order ID) or the quote (Quote ID) that has traded.
Session ID	X	4	Identifies the current session ID
Special Price Term	X	1	Can contain the following values: ' ' : No term S : Stop T : IfTouched E : StopOn Bid F : IfBidTouched I : StopOnAsk H : IfAskTouched

Special Trade Indicator	X	1	Identifies a particular trade type. ' ' : Normal Trade A : As Of Trade L : Late Trade 1 : Exchange Granted 1 (EG1) 2 : Exchange Granted 2 (EG2) B : Block K : CommittedBlock T : Committed D : Crossed
Status	X	1	This parameter indicates the processing result of the order entry, order modification, or order cancellation. This parameter takes the following values: ' ' : Order put in the Order Book (having possibly been partially executed) X: Order executed in full (or partially and the remaining part could not be put in the Order Book) (Fill & Kill) E: The order has been eliminated by the trading System A: Order cancelled by the trader B : EliminatedOutOfLimits C : EliminatedByCircuitBreaker M : EliminatedByMarketControl I : EliminatedOnDisconnect U : EliminatedDueToUnpriced Leg S : InTheBookAsStop
Strategy Group	X	2	Strategy Group Identification within the system. A Group is composed of instruments.
Strategy Instrument ID	X	4	Strategy Instrument identification within a Group
Strategy Verb	X	1	Verb of the Strategy Order as specified in the NT message of the Strategy.
Strategy Trade Number	N	8	Trade Number of the Strategy Order as specified in the NT message of the Strategy.
String (x)		x	Free text depending on the context
Time	N	6	HHMMSS Time should always be in Central European Time (CET).

Trade Memo	X	50	Text entered by the Exchange when it is a Manual Trade Entry.
Trade Number	N	8	Identifies the trade number for an instrument and one day
Trade Type	X	1	Identifies the origin of the trade: M: Trade entered by the Exchange F: Traded during Continuous Trading following FIFO Algorithm
Trader ID	X	8	Identifies the trader: 4 first characters: Firm Identifier 4 Last characters: Trader Identifier
Type of Cancellation	X	1	It must be 'Q' for quotes. Automatic cancellation of orders upon disconnection is not supported.
Underlying Price Type	X	1	Identifies the type of the Update: Possible values are: N: normal C:closing A: At the money Update
User ID	X	8	Identifies the User for a connection. The User ID must be referenced in the Exchange's configuration database.
User Sequence ID	N	8	Identifies all the incoming business messages for one connection. Must be sequential and start at 1 at the beginning of the day. Used by the Exchange to track gaps in message sequence.
Verb	X	1	Identifies an order/quote side: B : Buy S : Sell