UBS MTF FIX Interface
Rules of Engagement

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Table of Contents

Version	Date	Changes and remarks
3.1	October 2015	Loosened requirement to send tags 47 and 59 on replace. Reject reasons documented for tags 102 and 103. Corrected description of replace request handling for unacknowledged orders.
3.0	September 2015	Major update for new connectivity model. Transact time now sent on all execution reports.
2.5	June 2015	New layout. Timestamp precision increased.
2.4	December 2014	Updated to reflect new names of external organisations.
2.3	September 2013	Clarified MinQty usage.
2.2	June 2012	Tag 9004 – internalization.
2.1	April 2012	Minor clarifications.
2.0	September 2011	Sent LastLiquidityInd on execution reports.
1.9	August 2011	Refer to ESMA, rather than CESR.
1.8	August 2011	Introduces Bid and Offer order books.
1.7	March 2011	Minor clarifications for pegged orders.
1.6	November 2010	Initial version at launch.

1.   Introduction

This document defines UBS MTF's implementation of the FIX protocol.
The document is designed to facilitate the work required to establish trading connectivity and is intended to supplement the published FIX protocol specification [1] and the UBS MTF Rule Book [2].

2.   Background

The Markets in Financial Instruments Directive (MiFID) was a catalyst for change in the European execution market place, with the result that the importance of credible electronic trading technology and the ability to harness technology to source liquidity have become paramount for the broking community.

UBS MTF operates as a "dark order book" and continuous matching is performed at the mid, bid or offer price of the primary market.

Access to UBS MTF is restricted to its members and requires seperate documentation to the standard trading terms and conditions that regulate other execution services provided by UBS. This documentation can be obtained via your usual relationship manager, on the web at http://ubs.com/mtf/, or by contacting UBS MTF directly at ubs_mtf@ubs.com .

3.   Functional Overview

3.1.   General

UBS MTF accepts and matches Pegged orders only, on a non-discretionary basis using a price/time priority at the Bid, Mid or Offer of the Primary market. There is no minimum order size on UBS MTF. Members of UBS MTF may send either IOC or Day duration orders, and have the ability to set a Minimum Acceptable Quantity and Limit Price on all orders. Open orders are automatically cancelled at the end of each trading day.

3.2.   Order Priority

Orders are matched according to prce and time. If multiple orders are eligible to execute at the prevailing reference price, they are executed in the order in which they were received.

3.3. Minimum Acceptable Quantity (MAQ)

Where a partial fill occurs on an order that had an MAQ, should the remaining quantity on that order be below the MAQ the Minimum Acceptable Quantity will fall to one share. Orders received by UBS MTF with an MAQ that is greater than the order quantity are rejected.

3.4. Internalization

By default, orders will be from a member may be self-crossed.

Members can use a FIX instruction of '9004=4' on orders to prevent self-trading or intra-team trading (within the same member entity, see section 6 below).

Where a member operates under more than one member code, these may be configured by UBS MTF to act as a single family for the purpose of this instruction.

3.5. Session Times

UBS MTF operates during regular market hours in Europe, between 08:00 and 16:30 (UK time), and session times match those of the primary market where the underlying security is listed.

Matching is not performed outside the primary market's continuous trading phase.
There is no trading during auctions or halts. If trading on the primary market is suspended UBS MTF will suspend execution for each affected instrument until continuous trading is resumed. During these times orders may be entered, amended, and cancelled, but will not be executed.

3.6. Time Stamps

The *UTCTimestamp* fields (TransactTime, SendingTime, and OrigSendingTime) may be sent to UBS MTF in either whole seconds, or milliseconds UTC.

Members may elect to receive timestamps from UBS MTF at either second- or millisecond-level precision. This is configured on a per-session basis, and defaults to milliseconds for new sessions.

3.7. Cancel on Disconnect

Order entry sessions are configured by default to automatically cancel all open orders in the event of disconnection. Any outstanding execution reports will be returned during session recovery when connectivity is re-established.

3.8. Pending messages

UBS MTF allows cancellation when a new order has not yet been acknowledged, i.e. the order is in a 'Pending New' state. Amends / Cancels will be rejected by UBS MTF if the order is already in a 'Pending Amend' or 'Pending Cancel' state.

In summary:

Current Order State � Request � Outcome
Pending New ➔ Pending Cancel ➔ **Allowed**
Pending New ➔ Pending Amend ➔ **Amend is Rejected**
Pending Amend / Pending Cancel ➔ Pending Amend/ Pending Cancel ➔ **Second Request is Rejected**

3.9. Drop Copy

Members may request a drop copy feed for executions on their FIX sessions.   The format of the execution reports provided by this feed, and session-level messages, correspond to the details in section 7 below.

4.   Connectivity

UBS MTF is vendor neutral, although there is existing connectivity with the following providers: Radianz, TNS and Fnetetix. It is also possible for members to cross-connect if they have presence in the Equinix LD4 Data Centre in Slough.

A restricting factor on the number of FIX sessions a member can have is the overall bandwidth of the member's line. The suggested bandwidth for a managed service is a 1MB line and 1G or 10G for a direct cross-connect.

Each member is allocated a TCP/IP port per connection – this port is unique to the member and a single connection is allowed per port.

In UAT, the use of an Internet session is recommended, as this allows members to begin testing and certification whilst awaiting the establishment of production connectivity. A UAT session via the member's chosen transport vendor is also possible, but certification would be delayed until this connectivity is in place.

5.   Symbology

UBS MTF lists a subset of stocks in the ESMA list of approved securities for regulated markets, as well as Swiss listed stocks.

5.1.   Uniform Symbology

In all cases the Symbol[55] value must be the Uniform Symbology (UMTF) code. This code has been adopted by a number of European execution venues to uniformly identify securities traded across Europe. The following details on how this code is generated have been extracted from the Wikipedia article - Uniform Symbology [1].

The Uniform Symbology Algorithm is designed to be human readable, fit into 6 characters, have no symbol clashes and where possible, be derivable from another, freely available code.

It will consist of a stock code followed by a single, lower case letter designating the primary listing exchange. The stock code will be derived from the "local code" published by the primary exchange. These will be truncated where necessary.

If the local code contains a single letter class designator of A through Z (eg. "STE A") then the single letter class designator shall be retained and the code will be truncated to a maximum of 4 characters, plus the single letter class (A through Z) designator. For some Nordic stocks the share designator will be prefixed with "SDB" (eg. "SDBA"). In this case the "SDB" should be removed and the single letter class (A through Z) designator will be retained.

Any codes containing spaces, periods, underscores or second words (other than the single letter class (A through Z) described above) will be truncated at the space, period, etc. All remaining non-alphanumeric characters should be removed.

Market codes by market centre (including examples)

Market Centre	MIC	Market Code	Sample Local Code	Sample UMTF Code	Sample Company Name	RIC Suffix
Copenhagen Stock Exchange	XCSE	c	DANSK	DANSKc	Danske Bank Ord	CO
Deutsche Borse/Germany	XETR	d	EXS1	EXS1d	iShares DAX ETF	DE
Euronext Amsterdam	XAMS	a	HEIA	HEIAa	Heineken	AS
Euronext Brussels	XBRU	b	INB	INBb	INBEV	BR
Euronext Paris	XPAR	p	RNO	RNOp	Renault	PA
Euronext Lisbon/Portugal	XLIS	u	ALTR	ALTRu	ALTRI SGPS	LS
Helsinki Stock Exchange	XHEL	h	NOK1V	NOK1Vh	Nokia	HE

Irish Stock Exchange	XDUB	i	GNC	GNCi	Greencore Group plc	I
Prague Stock Exchange	XPRA	k	BOREY	BOREY	Borealis Exploration	PR
London Stock Exchange	XLON	l	VOD	VODl	Vodafone Group Ord	L
Madrid/Spain (Espana)	XMCE	e	COL	COLe	INMOB Colonial	MC
Borsa Italiana/Milan	XMIL	m	SPM	SPMm	Saipem	MI
Oslo Stock Exchange	XOSL	o	NHY	NHYo	Norsk Hydro	OL
Stockholm Stock Exchange	XSTO	s	VOLB	VOLBs	Volvo B Ord	ST
Budapest Stock Exchange	XBUD	t	OTP	OTPt	OTP Bank PLC	BU
Vienna Stock Exchange	XWBO	v	VIG	VIGv	Vienna Insurance Group	VI
Swiss Exchange/Zurich (blue chip)	XVTX	z	UBSG	UBSGz	UBS Group AG	VX
Swiss Exchange/Zurich (non-blue chip)	XSWX	z	ACIN	ACINz	Acino Holding AG	S

5.2. Exchange Codes

UBS MTF sends its assigned ISO 10383 MIC Code in the LastMkt<30> field on execution reports. The MIC code for UBS MTF is **XUBS**.
On the incoming order, there is no need to specify an exchange and hence ExDestination<100> is not required. Any value sent in this field will be ignored.

6. UBS MTF-Specific FIX Fields

The following FIX field is specific to UBS MTF:

Tag	Field Name	Notes	Required
9004	Internalization	Provides crossing restrictions **4** (Do not execute against own orders). See section 3.4 above.	N

7.   FIX Message details

7.1.   Components

7.1.1.   Standard Header

Tag	Name	Notes	Required
8	BeginString	FIX.4.2	Y
		Must be the first field in the message.	
9	BodyLength	Must be the second field in the message.	Y
35	MsgType	Must be the third field in the message.	Y
43	PossDupFlag	Always required for retransmitted messages, whether prompted by the sending system or as the result of a resend request.	N
52	SendingTime		Y
49	SenderCompID	As specified by UBS MTF	Y
56	TargetCompID	As specified by UBS MTF	Y
34	MsgSeqNum		Y
50	SenderSubID	May be used to provide the identity of the trader who entered the order.	N
97	PossResend	Required when message may be duplicate of another message sent under a different sequence number.	N
122	OrigSendingTime	Required for message resent as a result of a ResendRequest. If data is not available set to same value as SendingTime	N

7.1.2.   Standard Trailer

Tag	Name	Required	Required
10	Checksum	Three byte, simple checksum (see [2] Volume 2: "Checksum Calculation" for description).	Y

7.2.   Session-Level Messages

The following messages are supported in both directions:

MsgType	Description
A	Logon
0	Heartbeat
1	Test Request
2	Resend Request
3	Reject
4	Sequence Reset
5	Logout

7.2.1. Login

Tag	Field Name	Comments	Required
	Standard Header	MsgType = A	Y
98	EncryptMethod	0 (*Always unencrypted*)	N
108	HeartBtInt	Note same value used by both sides	Y
141	ResetSeqNumFlag	Indicates both sides of a FIX session should reset sequence numbers	N
	Standard Trailer		Y

7.2.2. Heartbeat

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 0	Y
112	TestReqID	Required when the heartbeat is the result of a Test Request message.	N
	Standard Trailer		Y

7.2.3. Test Request

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 1	Y
112	TestReqID		Y
	Standard Trailer		Y

7.2.4. Resend Request

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 2	Y
7	BeginSeqNo		Y
16	EndSeqNo		Y
	Standard Trailer		Y

7.2.5. Reject

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 3	Y
45	RefSeqNum	MsgSeqNum of rejected message	Y
371	RefTagID	The tag number of the FIX field being referenced.	N
372	RefMsgType	The MsgType of the FIX message being referenced.	N
373	SessionRejectReason	Code to identify reason for a session-level Reject message.	N
58	Text	Where possible, message to explain reason for rejection	N
	Standard Trailer		Y

7.2.6. Sequence Reset

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 4	Y
123	GapFillFlag		N
36	NewSeqNo		Y
	Standard Trailer		Y

7.2.7. Logout

Tag	Field Name	Comments	Required
	Standard Header	MsgType = 5	Y
58	Text		N
	Standard Trailer		Y

7.3. Messages from Member to UBS MTF

The following messages may be sent by a Member to UBS MTF:

MsgType	Description
D	New Order - Single
F	Order Cancel Request
G	Order Cancel/Replace Request
Q	Don't know trade

7.3.1. New Order Single

Tag	Name	Comments	Required	Possible Values
	Standard Header	MsgType =D	Y	
109	ClientID	The member ID. If not set will use default configured per session. We will validate set of members per session.	N	As assigned by UBS MTF
11	ClOrdID	Identifier of the order as assigned by the member. Must be unique per session, per day.	Y	
18	ExecInst	Instructions for order handling. Amendments to tag 18 are rejected.	Y	**M** if buying or selling at the mid
				P if buying at offer or selling at bid
				R if buying at bid or selling at offer

55	Symbol	Ticker Symbol	Y	UMTF Code
54	Side	Side of order	Y	**1** Buy
				2 Sell
38	OrderQty	Number of shares ordered	Y	
40	OrdType	Order type	Y	**P** Pegged
60	TransactTime	Time the order was initiated	Y	
47	OrderCapacity	Designates the capacity of the firm placing the order	Y	**A** Agency (default)
				P Principal
				R Riskless Principal
59	TimeInForce	Day or IOC	Y	**0** Day
				3 IOC
44	Price	Optional price limit, specified in the currency of the instrument	N	
110	MinQty	Displaying the minimum quantity of an order to be executed acting as an MAQ within UBS MTF	N	The value placed in tag 110 must be either equal or less than the OrderQty (tag 38). If the remaining quantity of a partially filled order falls below the value given here, the effective MinQty becomes one (1) **Default**: 1
9004	Internalization	Self-execution prevention	N	**4** (Do not execute against own orders). See section 2.5. **Default**: Can cross against own orders
	Standard Trailer		Y	

7.3.2. Order Cancel Request

Tag	Name	Comments	Required
	Standard Header	MsgType =F	Y
109	ClientID	The member ID. If not set will use default configured per session. We will validate set of members per session.	N
11	ClOrdID	Unique identifier of cancel request as assigned by participant	Y
41	OrigClOrdID	ClOrdID of the originating order	Y

55	Symbol	Must match original order	Y
54	Side	Must match original order	Y
60	TransactTime	Time the cancel request was initiated	Y
	Standard Trailer		Y

7.3.3.   Order Cancel Replace Request

Tag	Name	Comments	Required	Possible Values
	Standard Header	MsgType =G	Y	
109	ClientID	The member ID. If not set will use default configured per session. We will validate set of members per session.	N	As assigned by UBS MTF
11	ClOrdID	Identifier of the order as assigned by the participant. Must be unique per session, per day.	Y	
41	OrigClOrdID	ClOrdID of the order to be replaced.	Y	
18	ExecInst	Must match original order.	Y	
55	Symbol	Must match original order.	Y	UMTF Code
54	Side	Must match original order.	Y	
38	OrderQty	New order quantity	Y	
40	OrdType	Must match original order.	Y	**P**
60	TransactTime	Time the replace request was initiated	Y	
47	OrderCapacity	Designates the capacity of the firm placing the order. Must match original order if set.	N[1]	**A** Agency (default) **P** Principal **R** Riskless Principal
59	TimeInForce	Must match original order if set.	N	
44	Price	New limit price	N	Optional price limit
110	MinQty	Displaying the minimum quantity of an order to be executed acting as an MAQ within UBS MTF.	N	The value placed in tag 110 must be either equal or less than the OrderQty (tag 38). If the remaining quantity of a partially filled order falls below the value given here, the effective MinQty becomes one (1)

[1] This will become mandatory in the next RoE update; expected in 2016.

				Default: 1
9004	Internalization	Must match original order	N	
	Standard Trailer		Y	

7.3.4. Don't Know Trade (DK)

Tag	Field Name	Comments	Required	Possible Values
	Standard Header	MsgType = Q	Y	
109	ClientID	The member ID. If not set will use default configured per session. We will validate set of members per session.	N	As assigned by UBS MTF
37	*OrderID*	Order ID as identified on problem execution	Y	
17	*ExecID*	Execution ID of problem execution	Y	
127	*DKReason*		Y	**A** = Unknown Symbol **B** = Wrong Side **C** Quantity exceeds order **D** No matching order **E** Price exceeds limit **Z** Other
55	*Symbol*	Must match original order	Y	
54	*Side*	Must match original order	Y	
38	*OrderQty*	Must match original order	N	
	Standard Trailer		Y	

7.4. Messages from UBS MTF to Member

UBS MTF may send the following messages to members:

7.4.1. Execution Report

Tag	Name	Comments	Required	Possible Values
	Standard Header	MsgType =8	Y	
37	OrderID	Identifier of the order as assigned by UBS MTF. Unique across all orders on a daily basis.	Y	
11	ClOrdID	Identifier of replacement order as assigned by participant.	Y	
41	OrigClOrdID	OrderID for which cancellation or replacment was requested	Y[2]	
17	ExecID	Identifier of the execution message. Unique on a daily basis.	Y	
150	ExecType	Describes the type of execution report	Y	**0** New
				1 Partial Fill
				2 Fill
				4 Cancelled
				5 Replaced
				8 Rejected
20	ExecTransType	Identifies transaction type	Y	**0** New
				1 Cancel
19	ExecRefID	Identifies cancelled execution	Y[3]	ExecId of the cancelled execution, if ExecTransType= 1
55	Symbol	As sent on the originating order	Y	
54	Side	As sent on the originating order	Y	
38	OrderQty	As sent on the originating order	Y	
39	OrdStatus	Current status of the order	Y	**0** New
				1 Partially Filled
				2 Filled
				4 Cancelled
				5 Replaced
				6 Pending Cancel (i.e. result of Order Cancel Request)
				8 Rejected
				E Pending Replace (i.e. result of Order

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[2] Required If sent in response to Cancel or Cancel/Replace
[3] If ExecTransType=1 (Trade cancel)

Tag	Name	Comments	Required	Possible Values
				Cancel/Replace Request)
32	LastShares	Quantity of shares bought/sold on this (last) fill	If 150=1 or 2	Integer
31	LastPx	Price of this (last) fill	If 150=1 or 2	
30	LastMkt	Venue of execution of this (last) fill	If 150=1 or 2	**XUBS**
29	LastCapacity	Capacity on order execution. This reflects the order capacity.	If 150=1 or 2	**1** Agent
				3 Riskless Principal
				4 Principal
151	LeavesQty	Amount of shares open for further execution	Y	
14	CumQty	Amount of executed shares on the order	Y	
6	AvgPx	Average price of all fills on the order	Y	
60	TransactTime	Time the transaction represented by this Execution Report occurred	Y	
851	LastLiquidityInd	Applicable only on ExecTransType(150) of Partial or Filled.		**1** Added Liquidity
				2 Removed Liquidity
58	Text	Additional information if ExecType=8(Rejected)	N	
103	OrdRejReason	Additional information if ExecType=8(Rejected)		**0** Broker Option **1** Unknown Symbol **2** Exchange Closed **6** Duplicate Order
	Standard Trailer		Y	

7.4.2.   Order Cancel Reject

Tag	Name	Comments	Required	Possible Values
	Standard Header	MsgType =9	Y	
37	OrderID	Identifier of the order as assigned by UBS MTF.	Y	

39	OrdStatus	Current status of the order	Y	**0** New **1** Partially Filled **2** Filled **4** Cancelled **5** Replaced **6** Pending **C**ancel (i.e. result of Order Cancel Request) **8** Rejected **E** Pending Replace (i.e. result of Order Cancel/Replace Request)
11	ClOrdID	ClOrdID as assigned by the order cancel or replace request	Y	
41	OrigClOrdID	As sent on the originating order	Y	
58	Text		N	
102		CxlRejReason	Y	**0** Too late to cancel
				1 Unknown order
				2 Exchange option
				3 Order already in Pending Cancel or Pending Replace status
434		CxlRejResponseTo	N	**1** Order cancel request
				2 Order cancel/replace request
	Standard Trailer		Y	

7.5. Order Rejection Codes

The following Rejection Codes may be sent back to Members in the event of an order reject; these are in addition to the reason code in tag 103. This is not a comprehensive list, and other messages may also appear in tag 58. Additional values for tags 102 and tag 103 are reserved for future use.

Code (Tag 58)	Description
XE001	System is not enabled
XE002	Market is not open
XE003	Order is not eligible for trading

XE004	Order is not eligible for crossing
XE006	Instrument is not open
XE007	Market manually disabled
XE008	Instrument manually disabled
XE010	Account disabled
XE011	Instrument suspended

8.   References

[1] Wikipedia contributors, "Uniform Symbology," Wikipedia, The Free Encyclopedia, July 2015. [Online]. Available: https://en.wikipedia.org/w/index.php?title=Uniform_Symbology&oldid=664368300.

[2] FIX Protocol Ltd, "FIX 4.2," 01 May 2001. [Online]. Available: http://www.fixtradingcommunity.org/pg/structure/tech-specs/fix-version/42. [Accessed 6 July 2015].

[3] UBS Ltd, "Member Information," 2015. [Online]. Available: http://www.ubs.com/mtf.

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