



EquiductITCHMD Specification

Version 1.18

Revision History

Version	Date	Notes
V1.2	June 2010	Updated document to reflect UMTF symbology changes
V1.3	November 2010	Added new values for field Side in Trade message for Uncrossing trades and Trade Reports
V1.4	January 2011	Added a description for the format of the Order ID field which is applicable for VBBO prices
V1.5	February 2011	Added support for Equiduct Consolidated Tape
V1.6	May 2011	Added long-form ITCH messages for Consolidated Tape
V1.7	August 2012	Added text to explain end-of-day/overnight behaviour
V1.8	January 2014	Added long-form ITCH messages for HybridBook
V1.9	March 2014	Added Price message for real-time index values
V1.10	September 2015	Update to VBBO feed to include PartnerEx and SpotVBBO maximum trade sizes.
V1.11	January 2016	Update to include details of data feed segmentation
V1.12	Spring 2017	<p><u>Changes for MiFID II</u></p> <p>Added <i>Trade Flags</i> to Order Executed and Trade messages.</p> <p>Added description of MMT mappings for trades.</p> <p>Removed Trade Cancel message. Trade cancels are published as a Trade message with the <i>Trade Flags Modification Indicator</i> set to "C".</p>
V1.13	Autumn 2017	<p><u>Further MiFID II change</u></p> <p>Timestamps now provide microsecond resolution.</p> <p>Also clarified uniqueness of Order and Trade IDs.</p>
V1.14	April 2018	<p>New trading status detail in the <i>Reason</i> field of the Instrument Trading Status message.</p> <p>Updated trade type descriptions and MMT mappings for trades occurring at the VBBO.</p> <p>Removed references to reported trades which are no longer supported on Equiduct.</p> <p>Added Section 3.5 – Recovery.</p>
V1.15	July 2020	<p>Enhanced Instrument Trading Status Reasons.</p> <p>Added Off-book / On-Exchange Negotiated Trade Report Trade Type</p>
V1.15a	July 2020	Clarification of specific use of Off-book / On-Exchange Negotiated Trade Report Trade Type
V1.15b	June 2021	Update references of PartnerEx to Apex, SpotVBBO to Zenith
V1.16	November 2021	<p>Added Apex Liquidity Provision orders and resultant trades.</p> <p>Update to include ALP order market data feed</p>
V1.17	January 2023	<p>Add Trade (Extended) message to support trade reporting service – see Section 5.10</p> <p>Removed Trade type = "N" from existing Trade and Trade (Long form) messages</p>
V1.18	July 2023	Included "Not specified" ("-") as a valid value for MMT Level 3.2 in section 5.10.1 Extended Trade Flags

Related Documents

Name	Link	Version	Comment
Equiduct Market Model Description	www.equiduct.com	4.6	
Equiduct Market Configuration	www.equiduct.com	Feb 2022	
Equiduct FIX Specification	www.equiduct.com	2.23	
Market Model Typology	https://www.fixtrading.org/mmt/		

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1 Introduction

1.1 Document Purpose

This document describes how to programmatically access the Equiduct ITCHMD feed for Equiduct Market Data.

1.2 Intended Audience

This document is aimed at systems developers of Equiduct members and Market Data Vendors who want to develop applications to consume Equiduct market data.

This document does not provide all the business level information pertinent to Equiduct: see “Related Documents” for details of further system documentation. Updates to this and other key documents can be found at www.equiduct.com.

2 Functional Overview

For a full specification of Equiduct functions please see the appropriate Market Model Description documents available from Equiduct.

The EquiductITCHMD interface provides four separate data feeds:

1. *Equiduct HybridBook*, providing:
 - Full order book depth (*excluding* Apex Liquidity Provision orders)
 - Equiduct trades (including cross and auction trades)
 - Instrument (security) trading status
2. *Equiduct VBBO*: pre-trade transparency for the Apex and Zenith trading services
3. *Equiduct Market by Limit*, providing:
 - Consolidated pan-European order book
 - Consolidated pan-European trades
4. *Equiduct ALP Order Feed*, providing:
 - Full book depth for Apex Liquidity Provision orders only
 - Instrument (security) trading status

In general, the EquiductITCHMD feed specification and behaviour is consistent with the ITCH-flavoured feeds delivered by other European markets.

3 ITCHMD Session Protocol

An ITCHMD session is built on top of a standard TCP/IP connection. Message exchange consists of unsequenced session level messages and sequenced application level messages. Sequenced messages can be recovered/replayed in failure scenarios.

3.1 Message Format

ITCHMD messages are fixed-length sequences of ASCII bytes.

Certain messages exist in a standard form and an alternative 'long form'. Long form messages are generated automatically when the price or quantity values cannot be accommodated by the standard messages.

Messages are made up of fields of four possible types:

- **Text** (alphanumeric) fields are padded on the right with spaces up to their specified field width.
- **Integer** fields are padded on the left with spaces.
- **Price** fields are sent as integers with an implied decimal point; standard prices are ten digits with the implied decimal point after the sixth digit (i.e. four decimal places). Long form prices are nineteen digits with the implied decimal point after twelve digits (i.e. seven decimal places).
- **Timestamp** fields are integers, giving the number of microseconds elapsed since midnight UTC.

Equiduct reserves the right to add new message types, and to extend existing messages by adding new fields before the terminator (0x0A). In order to be future-proof, a client application should ignore unknown message types and support messages being extended beyond their specified size (by ignoring unexpected data at the end of a message).

3.2 Order and Trade Identification

The ITCHMD feed publishes 12-character alphanumeric identifiers for Orders (*Order ID*) and for Trades (*Execution ID*). *Order IDs* are globally unique at any point of the trading day but may be re-used after an order has been cancelled or filled. *Execution IDs* are globally unique for a given trading day.

Note: The *Order IDs* used for Equiduct VBBO prices will have "RMS", "SMS", "PEX" or "SVB" as the first three characters as applicable, with "PEX" indicating Apex and "SVB" indicating Zenith liquidity.

3.3 Symbology

In common with several other European markets, Equiduct uses *uniform symbology* where symbols consist of six characters or less and are constructed from the home market code with a trailing lowercase character that identifies the home market. For example: VODI, FTEp, VOWd.

3.4 Overnight Behaviour

When a new ITCH session is started at the start of a new trading day, a 'snapshot' containing all currently active orders is delivered to client applications, meaning that client

systems can and should 'forget' orders left in the book at the end of the previous session/trading day.

3.5 Recovery

When a client system reconnects after an intraday disconnection, the default behaviour should be to provide the previously active session and the last-received sequence number in the **Login Request** message. If the requested session is still active, the ITCHMD gateway will immediately transmit any missed messages and resume normal message dissemination.

In rare outage cases, the previously active session may no longer be available. In such cases, client applications should revert to start-of-day behaviour (see *3.4 Overnight Behaviour* above).

3.6 Connectivity and Instrument Universe Availability

The ITCH data feed is available for all Equiduct traded instruments. Each instrument is statically allocated to one of (currently) four trading groups, and as such, the feed is segmented across four network ports. To receive all instruments, it is necessary to connect to all network ports. Port details will be provided to clients subscribing to the ITCH data feed.

4 Session Level Messages

4.1 Inbound

Messages sent from client applications to the ITCHMD server.

4.1.1 Login Request

LOGIN REQUEST				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"L"	
Username	1	6	Text	
Password	7	10	Text	
Session ID	17	10	Text	If blank this indicates a request for the <i>current</i> session – should be used at start-of-day. Otherwise, should contain the session ID from a previous login session – used in conjunction with <i>Sequence #</i> when recovering after an intraday disconnection.
Sequence #	27	10	Integer	Requested starting sequence number: 0 – current system sequence (no recovery) 1 – start-of-day (all messages) N – replay starting at N
Terminator	37	1	0x0A	

4.1.2 Logout Request

There is no response to the **Logout Request** message, upon receipt the server will drop the connection automatically.

LOGOUT REQUEST				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"O"	
Terminator	1	1	0x0A	

4.1.3 Heartbeat

Client applications should send periodic heartbeats to Equiduct to maintain their session. If the ITCHMD feed observes that a client has not sent a heartbeat for more than fifteen seconds, it may assume the client is no longer listening and drop the connection.

HEARTBEAT				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"R"	
Terminator	1	1	0x0A	

4.1.4 Debug Message

Can be used for testing and troubleshooting and will be ignored by the ITCHMD server.

DEBUG MESSAGE				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"+"	
Text	1	Variable	Text	Free form text
Terminator	Variable	1	0x0A	

4.2 Outbound

Messages sent to client applications from the ITCHMD server.

4.2.1 Login Accepted

LOGIN ACCEPTED				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"A"	
Session ID	1	10	Text	Current session for this connection
Sequence #	11	10	Integer	Sequence number for <u>next</u> sequenced message to be received
Terminator	21	1	0x0A	

4.2.2 Login Rejected

LOGIN REJECTED				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"J"	
Reason	1	1	Text	Reason for login failure: A – Invalid username/password S – Invalid session ID requested
Terminator	2	1	0x0A	

4.2.3 Heartbeat

HEARTBEAT				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"H"	
Terminator	1	1	0x0A	

4.2.4 Debug Message

Can be used for testing/troubleshooting. Should be ignored by client applications.

DEBUG MESSAGE				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"+"	
Text	1	Variable	Text	Free form text
Terminator	Variable	1	0x0A	

4.2.5 Sequenced Message

Sequenced data packets are used to transmit market data information and are reliable in that they can be recovered after a disconnection. As the underlying transport is sequenced and reliable (TCP/IP) there is no need for explicit sequence numbers – the first message for a given session ID has implied sequence number one and this increments for each subsequent message.

SEQUENCED DATA				
Field	Offset	Length	Type/Value	Comments
Message type	0	1	"S"	
Data	1	Variable	ASCII text	Message body
Terminator	Variable	1	0x0A	Always follows the message body

5 Market Data Messages

Market data messages are sequenced messages sent from ITCHMD to client applications to communicate changes in the Equiduct book, trades etc.

Note that the Equiduct VBBO and ALP Order feeds do not disseminate trades so the Order Executed and Trade messages can be ignored by clients intending to process VBBO/ALP only.

5.1 System Event

This message signals an event which affects the entire Equiduct trading platform.

SYSTEM EVENT				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"S"	
Event code	12	1	Text	"S" – Start-of-day (first message of the day) "E" – End-of-day (last message of the day) <i>Note: Not currently supported</i>

5.2 Add Order

The Add Order message is used to signal the arrival of a new order into the book and may also be used to increase the quantity of an order already in the book.

ADD ORDER				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"A"	
Order ID	12	12	Text	Order ID, globally unique at any point in time, may be re-used once the previous order is filled or cancelled
Side	24	1	Text	"B" – Buy "S" – Sell
Quantity	25	6	Integer	Visible order quantity
Instrument	31	6	Text	e.g. VODI, RDSAa
Price	37	10	Price	
Display flag	47	1	Text	"Y" – HybridBook "N" – VBBO "T" – Market by Limit ("tape") "A" – ALP order

5.3 Add Order (Long Form)

ADD ORDER (LONG)				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"a"	
Order ID	12	12	Text	Order ID, globally unique at any point in time, may be re-used once the previous order is filled or cancelled
Side	24	1	Text	"B" – Buy "S" – Sell

Quantity	25	10	Integer	Visible order quantity
Instrument	35	6	Text	e.g. VODI, RDSAa
Price	41	19	Long Price	
Display flag	60	1	Text	"Y" – HybridBook "N" – VBBO "T" – Market by Limit ("tape") "A" – ALP order

5.4 Order Executed

The **Order Executed** (and corresponding 'long form') message is used to report trades in Equiduct's central limit order book. In MMT terms this corresponds to Market Mechanism '1' (Central limit order book), Trading Mode '2' (Continuous trading).

Note that the price of the trade is always equal to the price of the order which has been executed, and so is omitted from this message.

ORDER EXECUTED				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"E"	
Order ID	12	12	Text	Identifier of the Order which has been partially or fully traded
Shares traded	24	6	Integer	
Execution ID	30	12	Text	Day-unique trade identifier
Trade flags	42	2	Text	See Section 5.4.1 – Trade Flags

5.4.1 Trade Flags

Messages which report a trade all include a two-character 'flags' field to provide further information about the trade. Where possible these flags are consistent with the MMT standard – as a result, where flag does not apply this is indicated by the presence of a '-' character.

TRADE FLAGS			
Offset	MMT Level	MMT Fieldname	Comments
0	3.4	Modification Indicator	"C" – Trade Cancellation "–" – New trade
1	3.9	Algorithmic Indicator	"H" – Algorithmic trade "–" – Non-algorithmic trade

5.5 Order Executed (Long Form)

ORDER EXECUTED (LONG)				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"e"	
Order ID	12	12	Text	Identifier of the Order which has been partially or fully traded
Shares traded	24	10	Integer	
Execution ID	34	12	Text	Day-unique trade identifier
Trade flags	46	2	Text	See Section 5.4.1 – Trade Flags

5.6 Order Cancel

Used when the visible quantity of an Order is decreased, or the Order is removed from the book. Note that once an Order is removed from the book the corresponding ID becomes available for re-use and so may be sent in a new **Add Order** message.

ORDER CANCEL				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"X"	
Order ID	12	12	Text	Identifier of the Order which has been cancelled or had a quantity decrease
Quantity decrement	24	6	Integer	Number of shares removed – will be equal to the Order quantity for a cancellation

5.7 Order Cancel (Long Form)

ORDER CANCEL (LONG)				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"x"	
Order ID	12	12	Text	Identifier of the Order which has been cancelled or had a quantity decrease
Quantity decrement	24	10	Integer	Number of shares removed – will be equal to the Order quantity for a cancellation

5.8 Trade

The **Trade** message is sent for on-Exchange executions which do not correspond to a visible order, for example auction trades. It is also used to report trade cancels, regardless of whether the original trade was reported via an **Order Executed** message or a **Trade** message.

This message is also used to report consolidated trades in the Market by Limit feed.

TRADE				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"P"	
Order ID	12	12	Text	Non-visible order identifier
Trade type	24	1	Text	"B" – VBBO trade (buy side aggressor) "S" – VBBO trade (sell side aggressor) "b" – ALP order trade (buy side aggressor) "s" – ALP order trade (sell side aggressor) "A" – Auction trade "O" – Opening cross trade "C" – Closing cross trade "U" – Uncrossing trade "T" – Consolidated trade (Market by Limit)
Shares traded	25	6	Integer	
Instrument	31	6	Text	
Price	37	10	Price	Trade price
Execution ID	47	12	Text	Day-unique trade identifier
Trade flags	59	2	Text	See Section 5.4.1 – Trade Flags

5.8.1 MMT Mappings

The Trade Type flag in the **Trade** message can be mapped to MMT flags as follows:

TRADE TYPE TO MMT MAPPING			
MMT Level	MMT Fieldname	MMT Value	Trade Type(s)
1	Market Mechanism	"1" – Central limit order book	"T", "O", "U", "A", "C", "b", "s"
1	Market Mechanism	"7" – Hybrid	"B", "S"
2	Trading Mode	"2" – Continuous trading	"B", "S", "b", "s", "T"
2	Trading Mode	"O" – Opening auction	"O", "U"
2	Trading Mode	"K" – Closing auction	"C"
2	Trading Mode	"U" – Unscheduled auction	"A"

To avoid confusion, please note that the *HybridBook* is Equiduct's central limit order book and is not related to the MMT *Hybrid* Market Mechanism, the latter being applicable for VBBO trading on Equiduct.

Additional trade typology information may be provided in the *Trade flags* field, see Section 5.4.1 – Trade Flags. To view detailed MMT mappings, see Appendix A.

5.9 Trade (Long Form)

Note that due to historical message size limitations, the **Trade (Long Form)** message drops the *Order ID* field from the **Trade** message and includes only the *Execution ID* field.

TRADE (LONG)				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"p"	
Execution ID	12	12	Text	Day-unique trade identifier
Trade type	24	1	Text	"B" – VBBO trade (buy side aggressor) "S" – VBBO trade (sell side aggressor) "b" – ALP order trade (buy side aggressor) "s" – ALP order trade (sell side aggressor) "A" – Auction trade "O" – Opening cross trade "C" – Closing cross trade "U" – Uncrossing trade "T" – Consolidated Trade (Market by Limit)
Shares traded	25	10	Integer	
Instrument	35	6	Text	
Price	41	19	Long Price	Trade price
Trade flags	60	2	Text	See Section 5.4.1 – Trade Flags

5.10 Trade (Extended)

The Trade (Extended) message is sent for off-book on-exchange trade reporting.

Trade (Extended)				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"v"	
Execution ID	12	12	Text	Day-unique trade identifier
Shares traded	24	10	Integer	
Instrument	34	6	Text	
Price	40	19	Long Price	
Trade date	59	8	Text	Date on which trade occurred in YYYYMMDD format
Trade time	67	5	Integer	Time at which trade occurred, encoded as number of seconds since midnight UTC on the Trade date
Extended trade flags	72	7	Text	MMT trade flags – see Section 5.10.1 Extended trade flags

5.10.1 Extended Trade Flags

EXTENDED TRADE FLAGS MMT MAPPING			
Offset	MMT Level	MMT Fieldname	MMT Value
0	3.2	Negotiated Trade or Pre-Trade Transparency Waiver	"1" – Negotiated trade in liquid financial instrument (NLIQ) "2" – Negotiated trade in illiquid financial instrument (OLIQ) "3" – Negotiated trade subject to conditions other than the current market price (PRIC) "-" – Not specified
1	3.4	Modification Indicator	"A" – Modification of a previously reported trade "C" – Cancellation of a previously reported trade "-" – New reported trade
2	3.5	Benchmark Indicator	"B" – Benchmark "-" – Not specified
3	3.7	Off Book Automated Indicator	"Q" – Automated "M" – Manual "-" – Not specified
4	3.8	Contribution to Price Formation or the Price Discovery Process	"P" – Standard trade
5	3.9	Algorithmic Indicator	"H" – Algorithmic trade "-" – Non-algorithmic trade
6	4.1	Publication Mode / Post-Trade Deferral Reason	"1" – Trade reported late without permitted deferral "2" – Deferred LIS trade (LRGS) "-" – No deferral (immediate publication)

Not all MMT field values are supported on Equiduct – the table above shows those values which are possible on Equiduct.

Two key MMT fields not included in the message, because the values are always the same, are:

- 1: Market Mechanism, always "4" (Off Book)
- 2: Trading Mode, always "5" (Trade Reporting On Exchange)

For all other MMT fields not included in the message the applicable value is "-" meaning "Not Applicable" or "Not Specified".

5.11 Instrument Trading Status

INSTRUMENT TRADING STATUS				
Field	Offset	Length	Type/Value	Comments
Timestamp	0	11	Integer	
Message type	11	1	"H"	
Instrument	12	6	Text	
Trading status	18	1	Text	"T" – Trading "H" – Halted "A" – Auction* (* <i>HybridBook feed only</i>)
Reason	19	4	Text	For the HybridBook feed, provides more detailed trading status information (see 5.10.1 <i>Trading Status Reasons</i>). Otherwise reserved for future use.

5.11.1 Trading Status Reasons

When the *Trading status* is not "T" (Trading) the *Reason* field of the Instrument Trading Status message consists of one or more characters which provide detailed information about the current status of trading on Equiduct. The current set of possible values is as follows:

TRADING STATUS REASONS		
Trading Status	Reason	Description
H	S	Instrument is suspended from trading
H	H	Instrument is halted
H	HE	Instrument is halted due to external market status
H	CO	Instrument is in pre-opening phase (order management available)
H	CC	Instrument in post-closing phase (order management available)
H	C	Market is closed (order management not available)
A	AU	Unscheduled (intraday) auction
A	AE	Auction due to external market status
A	AV	Auction due to volatility interruption
A	AO	Opening procedure
A	AOF	Opening procedure, order book frozen
A	AC	Closing procedure
A	ACF	Closing procedure, order book frozen

Appendix A MMT Trade Type Mappings

These mappings apply for the Trade and Order Executed messages. The Trade (Extended) message includes detailed MMT flags.

Message Type	Trade Type	Description	Market Mechanism	Trading Mode	Transaction Category	Negotiated Indicator	Crossing Indicator	Modification Indicator	Benchmark Indicator	Dividend Indicator	Off Book Automated Indicator	Price Discovery Indicator	Algorithmic Indicator	Publication Mode/Post	Duplicative Indicator	
			1	2	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.1	5	
Order Executed	n/a	Standard CLOB trade	1	2	-	-	-	Set to Trade flags [0]	-	-	-	P	Set to Trade flags [1]	-	-	
Trade	B	VBBO trade (buy side aggressor)	7	2	-	-	-		-	-	-	P		-	-	-
Trade	S	VBBO trade (sell side aggressor)	7	2	-	-	-		-	-	-	P		-	-	-
Trade	b	ALP order trade (buy side aggressor)	1	2	-	-	-		-	-	-	P		-	-	-
Trade	s	ALP order trade (sell side aggressor)	1	2	-	-	-		-	-	-	P		-	-	-
Trade	A	Auction trade	1	U	-	-	-		-	-	-	P		-	-	-
Trade	O	Opening cross trade	1	O	-	-	-		-	-	-	P		-	-	-
Trade	C	Closing cross trade	1	K	-	-	-		-	-	-	P		-	-	-
Trade	U	Uncrossing trade	1	O	-	-	-		-	-	-	P		-	-	-
Trade	T	Consolidated trade (Market by Limit)	1	2	-	-	-		-	-	-	P		-	-	-
Trade (Extended)	n/a	Off-book, on-exchange trade reporting	4	5	-	*	-	*	*	-	*	P	*	*	-	

Fields marked (*) should be populated from the Extended trade flags provided in the Trade (Extended) message.