TURQUOISE

Technical Specification
FIX 4.4 Specification

Version 1.9
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Contents

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1. About This Document

1.1 Introduction

The Financial Information Exchange (FIX) protocol enables access to the Turquoise Trading System (TTS), using a messaging standard developed for real-time electronic exchange of security transactions.

FIX enables access to the trading services and security information within Turquoise. This document describes a conceptual overview of the FIX 4.4 protocol as well as providing technical guidance on adopting FIX to connect to Turquoise.

Using the FIX protocol, participants are able to access the TQ-LENS and TQ-MTF services at Turquoise; this specification illustrates the requirements for routing to TQ-LENS via the FIX protocol and trading with the TQ-MTF.

Note: for Turquoise MTF functionality, the proprietary tags implemented within the FIX 4.4 Turquoise Specification are not mandatory and can be added or removed upon request. For further information, contact Technical Account Management at Turquoise.

http://www.fixprotocol.org

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2. Message Types

2.1 FIX Message Structure

A FIX message consists of three elements, a Header, a Body and a Trailer.

- **Header**: Identifies the message type, length, routing & addressing information.

- **Body**: Defines the content of the actual business level message; the payload.

- **Trailer**: Defines the three digit character representation of a check sum value.

2.2 Supported Session Messages

FIX Message	FIX Message Type	Inbound (to TTS) / Outbound (from TTS)
Logon	A	Incoming/Outgoing
Heartbeat	0	Incoming/Outgoing
Test Request	1	Incoming/Outgoing
Resend Request	2	Incoming/Outgoing
Reject	3	Outgoing
Sequence Request	4	Incoming/Outgoing
Logout	5	Incoming/Outgoing

2.3 Supported Application Messages

FIX Message	FIX Message Type	Inbound (to TTS) / Outbound (from TTS)
New Order Single	D	Incoming
Order Cancel Request	F	Incoming
Order Cancel Replace Request	G	Incoming
Order Mass Status Request	AF	Incoming
Order Mass Cancel Request	q	Incoming
Order Mass Cancel Report	r	Outgoing
Mass Quote	I	Incoming
Quote Cancel	Z	Incoming
Quote Acknowledgment	b	Outgoing
Execution Report	8	Outgoing
Security Definition Request	c	Incoming
Security Definition	d	Outgoing
Security List Request	x	Incoming
Security List	y	Outgoing
News Message	B	Outgoing
Don't Know Trade	Q	Incoming
Order Cancel Reject	9	Outgoing

Note: Quoting functionality is for use by participants who are registered market makers only.

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2.4 Data Types

Each field within a FIX message has an associated data type allowing for data validation. The table below defines the meaning of each data type described within this document.

Data Type	Description
Int	Sequence of digits without commas or decimals and optional sign character (ASCII characters "-" and "0" - "9"). The sign character utilizes one byte (i.e. positive int is "99999" while negative int is "-99999"). Note that int values may contain leading zeros (e.g. "00023" = "23").
Qty	Value capable of storing either a whole number (no decimal places) of "shares" (securities denominated in whole units) or a decimal value containing decimal places for non-share quantity asset classes (securities denominated in fractional units).
String	Alpha-numeric free format strings; can include any character or punctuation except the delimiter. All char fields are case sensitive (i.e. morstatt != Morstatt).
Boolean	char field containing one of two values: 'Y' = True/Yes 'N' = False/No
Currency	Representing a currency type using ISO 4217 Currency code (3 character) values.
UTC Timestamp	Representing Time/date combination represented in UTC (Universal Time Coordinated, also known as "GMT") only accepted in this format : YYYYMMDD-HH:MM:SS (whole seconds).
Char	Char value, can include any alphanumeric character or punctuation except the delimiter. All char fields are case sensitive (i.e. m != M).
Price	Value representing a price. Note the number of decimal places may vary.
Length	Representing the length in bytes. Value must be positive
SeqNum	Representing a message sequence number. Value must be positive
Float	Sequence of digits with optional decimal point and sign character (ASCII characters "-", "0" - "9" and "."); the absence of the decimal point within the string will be interpreted as the float representation of an integer value. All float fields must accommodate up to fifteen significant digits. The number of decimal places used should be a factor of business/market needs and mutual agreement between counterparties. Note that float values may contain leading zeros (e.g. "00023.23" = "23.23") and may contain or omit trailing zeros after the decimal point (e.g. "23.0" = "23.0000" = "23" = "23."). Note that fields which are derived from float may contain negative values unless explicitly specified otherwise
NumInGroup	Value that represents the number of repeating values in a group
MultipleValueString	Field Containing one or more space delimited values.

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3. Session Handling

Session handling is according to the FIX 4.4 specification standard.

3.1   Resend Order Flow

Resend requests are accepted and processed by the Turquoise Trading System, the response will include all application messages, for more information please refer to section 3.2.6.

3.2   Session Message Details

3.2.1   Message Header

All FIX messages for the Turquoise Trading System use the Standard Message Header, as specified by the FIX 4.4 specification, below describes the tags associated with the message header.

The tags BeginString, BodyLength, and MsgType must always be the first three tags of every FIX message in the correct sequence as below. Any message that does not have these tags in the correct order will be rejected.

Tag	Field Name	Data Type	Required
8	BeginString	String	Y
9	BodyLength	Length	Y
35	MsgType	String	Y
49	SenderCompID	String	Y
50	SenderSubID	String	N
56	TargetCompID	String	Y
57	TargetSubID	String	N
34	MsgSeqNum	SeqNum	Y
43	PossDupFlag	Boolean	N
97	PossResend	Boolean	N
115	OnBehalfOfCompID	String	N
116	OnBehalfOfSubID	String	N
128	DeliverToCompID	String	N
129	DeliverToSubID	String	N
52	SendingTime	UTCTimestamp	Y

Note: Messages from Turquoise to a client application has the value TTS set as tag 49 SenderCompID

3.2.2   Message Trailer

Each message is terminated by a standard trailer. The trailer is used to segregate messages and contains the three digit character representation of a checksum value:

Tag	Field Name	Data Type	Required
10	Checksum	String	Y

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3.2.3 Logon

The initial messages exchanged in a FIX session are the Logon Request and the Logon Response. The logon request is initiated from the client, which will then follow a response from Turquoise. The main purpose of the Logon request and response is:

- To authenticate the client
- To agree on the sequence numbers
- To decide on Heartbeat handling

FIX Message	Logon (Message Type = A)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
98	EncryptMethod	Int	Y
108	HeartBtInt	Int	Y
141	ResetSeqNumFlag	Boolean	N
789	NextExpectedMsgSeqNum	SeqNum	N
553	Username	String	N
554	Password	String	N

Note: Username and Password are not required tags. To validate a session the FIX gateway will authenticate the IP, Port and SenderCompID before a connection is established. If a participant requires to also use the Username and Password, Turquoise can implement this accordingly on a per request basis.

3.2.4 Heartbeat

Upon logon a request for a heartbeat interval can be set using the `HeartBtInt` (tag 108) to determine if the session is still active.

FIX Message	Heartbeat (Message Type = 0)
Direction	From client to Turquoise and from Turquoise to client.

Tag	Field Name	Data Type	Required
112	TestReqID	String	N

The FIX gateway at Turquoise will only send Heartbeat requests at the requested interval if no other activity has been sent before that time.

Once a session has been established Heartbeats must be sent from both sides, if `HeartBtInt=0` no Heartbeat messages will be sent from Turquoise; Turquoise does not require Heartbeat messages from the opposing SenderCompID.

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3.2.5 Test Request

This message is utilised when the heartbeat is a result of a Test Request message, useful for checking sequence numbers or verifying the communication line status.

The FIX gateway at Turquoise supports Test requests in both directions. The response message will always be a heartbeat message with the TestReqID which will verify the heartbeat is a result of a Test Request message and not a normal timeout.

FIX Message	Test Request (Message Type = 1)
Direction	From client to Turquoise and from Turquoise to client.

Tag	Field Name	Data Type	Required
112	TestReqID	String	Y

3.2.6 Resend Request

A Resend Request is sent to initiate the retransmission of messages, utilised for example if a sequence number gap is detected.

FIX Message	Resend Request (Message Type = 2)
Direction	From client to Turquoise and from Turquoise to client

Tag	Field Name	Data Type	Required
7	BeginSeqNo	SeqNum	Y
16	EndSeqNo	SeqNum	Y

- If the request is for a single message:
  BeginSeqNo = EndSeqNo

- If the request is for all messages subsequent to a particular message:
  EndSeqNo = 0 (representing infinity)

3.2.7 Reject

The FIX gateway at Turquoise may reject transactions at the session level in the following example cases:

- A logon request with ResetSeqNumFlag set to Y.
- A logon request using a user that is disabled or not authorized to access the system.
- A gateway fault.

FIX Message	Reject (Message Type = 3)
Direction	From client to Turquoise or from Turquoise to client.

Tag	Field Name	Data Type	Required
45	RefSeqNum	SeqNum	Y
371	RefTagID	Int	N
372	RefMsgType	String	N
373	SessionRejectReason	Int	N
58	Text	String	N

3.2.8 Sequence Reset

Sequence Reset is used to reset the incoming sequence number on the opposing side, this message can be used in the following scenarios:

- Gap Fill mode which will be used as the response to a Resend Request

- Reset mode which will be used to reset the sequence number after an unrecoverable application failure, a Sequence Reset can only ever increase the sequence number.

FIX Message	Sequence Reset (Message Type = 4)
Direction	From client to Turquoise or from Turquoise to client.

Tag	Field Name	Data Type	Required
123	GapFillFlag	Boolean	N
36	NewSeqNo	SeqNum	Y

3.2.9 Logout

FIX clients should terminate their session by logging out. It is not advisable to terminate a FIX session without sending a logout message first.

If a FIX user is disabled by Turquoise Market Operations while the user is logged in, a Logout message will be sent to the client communicating the reason for the logout and the FIX session will be disconnected.

FIX Message	Logout (Message Type = 5)
Direction	From client to Turquoise or from Turquoise to client.

Tag	Field Name	Data Type	Required
58	Text	String	N

3.2.10 Lost Connections

If the connection with the FIX gateway drops and the session has been lost it is advisable to perform the following actions:

1. Re-establish the connection (if needed to a secondary access point).

2. Resend any application or session messages that have not been acknowledged by the FIX gateway (35=2).

Note: Resent messages will need to have the PossResend flag set in case the instruction has already been received by the FIX gateway. If the message has already been processed it will not be processed again.

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3.2.11 Service Not Available

If an outgoing FIX message from Turquoise is received with 'Service Not Available' it is recommended to progress with the following action:

1. Wait five seconds then retry the rejected transaction on the same session. When resending the transaction the PossResend flag should be set.

2. If the problem is persistently occurring contact Turquoise Market Operations to find out more information.

Note: If a certain transaction results in 'Service Not Available' being returned it does not necessarily mean other transactions of the same type will be rejected. This is due to the fact that the system is partitioned, i.e. different instruments are handled by different matching engines within Turquoise. This means that a client can send other transactions while waiting to resend rejected transactions.

3.2.12 No Acknowledgment Returned

If an acknowledgement is not returned in response to a transaction there may be a problem with the link between the application and the central matching system. It is advisable in this scenario to contact Turquoise Market Operations to find out the status of the transaction and determine why an acknowledgement was not received. It can then be decided if a logout and new session will need to be established.

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4. Application Messages

Application messages conform to the FIX 4.4 specification.

4.1 Common Components

4.1.1 Instrument Identification

Instruments are identified within Turquoise by:

- SecurityID (ISIN Code)
- Currency

Or

- Symbol

Tag	Field Name	Data Type	Required
22	SecurityIDSource	String	N
48	SecurityID	String	N
15	Currency	Currency	N
55	Symbol	String	N

Note: If the Turquoise symbol is supplied, then SecurityID, SecurityIDSource, and Currency are not required. Either the Symbol or ISIN/Currency combination must be supplied.

4.1.2 Peg Instructions

Peg instructions using FIX are required to adopt the following tags:

Tag	Field Name	Data Type	Required
211	PegOffsetValue	Float	N
835	PegMoveType	Int	Y
836	PegOffsetType	Int	Y
840	PegScope	Int	Y

4.1.3 Parties

Party information is used to specify the clearing firm and adopts the following tags:

Tag	Field Name	Data Type	Required
453	NoPartyIDs	NumInGroup	N
448	PartyID	String	N
452	PartyRole	Int	N

Note: If party information is not supplied, Turquoise applys the default clearing code.

4.2   New Order Single

A message type used to enter orders within Turquoise.

FIX Message	New Order Single (Message Type = D)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
1	Account	String	N
11	ClOrdId	String	Y
18	ExecInst	Multiple Value String	N
21	HandlInst	Char	N
38	OrderQty	Qty	Y
40	OrdType	Char	Y
44	Price	Price	N
54	Side	Char	Y
58	Text	String	N
59	TimeInForce	Char	N
60	TransactTime	UTC Timestamp	Y
100	ExDestination	String	N
110	MinQty	Qty	N
210	MaxShow	Qty	N
126	ExpireTime	UTC Timestamp	N
168	EffectiveTime	UTC Timestamp	N
111	MaxFloor	Qty	N
<Instrument>			Y
<Parties>			N
<Peg Instruction>			N
528	OrderCapacity		N

4.3   New Order Single (TQ-LENS)

A message type used to enter orders within Turquoise.

FIX Message	New Order Single (Message Type = D)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
1	Account	String	N
11	ClOrdId	String	Y
18	ExecInst	Multiple Value String	N
21	HandlInst	Char	N
38	OrderQty	Qty	Y
40	OrdType	Char	Y
44	Price	Price	N
54	Side	Char	Y
58	Text	String	N
59	TimeInForce	Char	N
60	TransactTime	UTC Timestamp	Y
100	ExDestination	String	N
110	MinQty	Qty	N
210	MaxShow	Qty	N
126	ExpireTime	UTC Timestamp	N
168	EffectiveTime	UTC Timestamp	N
111	MaxFloor	Qty	N
<Instrument>			Y
<Parties>			N
<Peg Instruction>			N
528	OrderCapacity	Char	N
9007	TQLStrategy	Int	N
9008	TQLTimestamp	UTC Timestamp	N

9010	TQLCustomisedStrategy	String	N
9011	TQLGrouping	Int	N
9012	TQLExecMethod	Price	N
9014	DPMaxQty	Qty	N

4.4   Order Cancel Request

A message type used to request cancellation of all or part of the remaining quantity of an existing order.

FIX Message	Order Cancel Request (Message Type = F)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
11	ClOrdId	String	Y
37	OrderID	String	N
41	OrigClOrdId	String	Y
54	Side	Char	Y
38	OrderQty	Qty	Y
<Instrument>			Y
<Parties>			N
60	TransactTime	UTCTimestamp	Y

4.5   Order Cancel Replace Request

A message type used to change the parameters of an existing order, this will then be acknowledged by means of an execution report.

FIX Message	New Cancel Replace Request (Message Type = G)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
1	Account	String	N
11	ClOrdId	String	Y
37	OrderID	String	N
38	OrderQty	Qty	Y
40	OrdType	Char	Y
41	OrigClOrdId	String	Y
44	Price	Price	N
54	Side	Char	Y
<Instrument>			Y
59	TimeInForce	Char	N
60	TransactTime	UTCTimestamp	Y
100	ExDestination	String	N
110	MinQty	Qty	N
126	ExpireTime	UTCTimestamp	N
168	EffectiveTime	UTCTimestamp	N
210	MaxShow	Qty	Y
<Parties>			N
<Peg Instruction>			N
9007	TQLStrategy	Int	N
9008	TQLTimestamp	UTC Timestamp	N
9010	TQLCustomisedStrategy	String	N
9011	TQLGrouping	Int	N
9012	TQLExecMethod	Price	N
9014	DPMaxQty	Qty	N
528	OrderCapacity	Char	N

Note: The tags populated as part of the Order Cancel Replace Request message must at a minimum match the tags populated as part of the New Order Single message aswell as any additional fields needed for the amendment.

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4.6 Order Mass Status Request

A mass status request is assigned an ID and is treated as a separate entity.

On entry of this request no acknowledgement is returned, instead execution Reports with ExecType = I (Order Status) are returned for all orders matching the criteria provided on the request.

If an instrument is supplied, execution reports will be generated for all open orders for the instrument specified.

FIX Message	Order Mass Status Request (Message Type = AF)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
584	MassStatusReqID	String	Y
585	MassStatusReqType	Int	Y
<Instrument>			N

4.7 Order Mass Cancel Request

The Order Mass Cancel Request message requests the cancellation of all of the remaining quantity of a group of orders matching criteria specified within the request.

An Order Mass Cancel Request must be assigned a unique ClOrdID and be treated as a separate entity, the ClOrdID is then acknowledged within the Order Mass Cancel Report.

FIX Message	Order Mass Cancel Request (Message Type = q)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
11	ClOrdID	String	Y
530	MassCancelRequestType	Char	Y
60	TransactTime	UTCTimestamp	Y
58	Text	String	N

If you would like to cancel all orders for a specific instrument this can be requested by contacting Turquoise Market Operations. An unsolicited cancel execution message is then returned for each cancelled order.

4.8 Order Mass Cancel Report

The Order Mass Cancel Report is used to acknowledge an Order Mass Cancel Request. Each affected order that is cancelled is acknowledged by an Execution Report or Order Cancel Reject message.

FIX Message	Order Mass Cancel Report (Message Type = r)
Direction	From Turquoise to client

Tag	Field Name	Data Type	Required
11	ClOrdID	String	Y
37	OrderID	String	Y
530	MassCancelRequestType	Char	Y
531	MassCancelResponse	Char	Y
532	MassCancelRejectReason	Char	N
54	Side	Char	N
60	TransactTime	UTCTimestamp	Y
58	Text	String	N

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4.9 Order Cancel Reject

An order cancel reject will specify the reason for a cancel request not being acted upon.

FIX Message	Order Cancel Reject (Message Type = 9)
Direction	From Turquoise to Client

Tag	Field Name	Data Type	Required
1	Account	String	N
11	ClOrdID	String	Y
37	OrderID	String	N
39	OrdStatus	Char	Y
41	OrigClOrdId	String	Y
60	TransactTime	UTCTimestamp	N
434	CxlRejResponseTo	Char	Y
102	CxlRejReason	Qty	N
58	Text	String	N

4.10 Mass Quote

A Mass Quote is used to insert and update a Quote request to Turquoise. Each specific Quote entry within the Mass Quote is given a unique QuoteEntryID and is placed within a repeating group as specified in the table below.

To replace an existing Quote entry, a new Mass Quote message using the original QuoteID is required to be sent. It is important to note that amendments are performed on an instrument level, a new Quote entry will replace anything currently existing within the QuoteID for the same instrument.

For example, if within a Mass Quote four quote entries exist for a specific instrument and a Mass Quote is amended with only two quote entries for this instrument, then the other two quotes will be removed from Turquoise.

If this behaviour is not desirable it may be suggested that where more than one Quote entry is required for the same instrument, the Quote Entries can be split between Mass Quote messages.

FIX Message	Mass Quote (Message Type = i)
Direction	From Client to Turquoise

Tag		Field Name	Data Type	Required
117		QuoteID	String	Y
293		DefBidSize	Qty	N
294		DefOfferSize	Qty	N
60		TransactTime	UTCTimestamp	N
296		NoQuoteSets	Qty	Y
➔	299	QuoteEntryID	Qty	Y
➔	55	Symbol	String	N
➔	48	SecurityID	String	N
➔	132	BidPx	Price	N
➔	133	OfferPx	Price	N
➔	134	BidSize	Qty	N
➔	135	OfferSize	Qty	N
➔	15	Currency	Price	N
➔	9010	IsPassive	String	N

4.11 Quote Cancel

Quote cancellations within Turquoise are performed on an instrument level using the QuoteID from the original Mass Quote request. To cancel all quotes for a specific QuoteID each instrument must be specified within the repeating group.

FIX Message	Quote Cancel (Message Type = Z)
Direction	From Client to Turquoise

Tag		Field Name	Data Type	Required
117		QuoteID	String	Y
298		QuoteCancelType	Int	N
295		NoQuoteEntries	Qty	Y
→	55	Symbol	String	N
→	48	SecurityID	String	N
→	15	Currency	Price	N

4.12 Quote Acknowledgement

A quote acknowledgement is returned on receipt of a Mass Quote or a Quote Cancel message.

FIX Message	Quote Acknowledgement (Message Type = b)
Direction	From Turquoise to Client

Tag		Field Name	Data Type	Required
117		QuoteID	String	N
297		QuoteAckStatus	Int	Y
300		QuoteRejectReason	Int	N
58		Text	String	N
60		TransactTime	UTCTimestamp	N
296		NoQuoteSets	Qty	Y
→	299	QuoteEntryID	String	N
→	55	Symbol	String	N
→	48	SecurityID	String	N
→	132	BidPx	Price	N
→	133	OfferPx	Price	N
→	134	BidSize	Qty	N
→	135	OfferSize	Qty	N
→	15	Currency	Price	N
→	9010	IsPassive	String	N

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4.13 Execution Report

An execution report sent to the client will :

- Confirm the receipt of an order.
- Confirm changes to an existing order.
- Relay Order Status Information.
- Relay fill information on working orders.
- Send Rejected orders.

FIX Message	Execution Report (Message Type = 8)
Direction	From Turquoise to client

Tag	Field Name	Data Type	Required
1	Account	String	N
6	AvgPx	Price	Y
11	ClOrdId	String	N
14	CumQty	Qty	Y
17	ExecId	String	Y
18	ExecInst	MultipleValueString	N
30	LastMkt	String	N
31	LastPx	Price	N
32	LastQty	Qty	N
37	OrderID	String	Y
38	OrderQty	Qty	N
39	OrderStatus	Char	Y
40	OrdType	Char	N
41	OrigClOrdId	String	N
44	Price	Price	N
54	Side	Char	Y
<Instrument>			Y
58	Text	String	N
59	TimeInForce	Char	N
60	TransactTime	UTCTimestamp	N
103	OrdRejReason	Int	N
100	ExDestination	String	N
110	MinQty	Qty	N
111	MaxFloor	Qty	N
126	ExpireTime	UTCTimestamp	N
150	ExecType	Char	Y
151	LeavesQty	Qty	Y
168	EffectiveTime	UTCTimestamp	N
839	PeggedPrice	Price	N
378	ExecRestatementReason	Char	N
<Peg Instruction>			N
528	OrderCapacity	Char	N
851	LastLiquidityInd	Int	N
9002	TBBOBid	Price	N
9003	TBBOAsk	Price	N
9004	ABBOBid	Price	N
9005	ABBOAsk	Price	N
9006	TypeOfTrade	String	N
9009	TQLSelfCrossed	Int	N
9012	TQLExecMethod	Price	N
9013	TQLExecFee	Price	N
9014	DPMaxQty	Qty	N

Note: Tags 9002-9014 are proprietary tags to the Turquoise platform.

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4.14 Security List Request

This message type will subscribe to all the tradable securities within the Turquoise environment.

- If SecurityExchange is supplied within the request only instruments for that exchange will be returned in the Security List.

- If the SecurityListRequestType is set to 5, there will be separate Security List messages for each security exchange.

- If SecruityListRequestType is set to 4, all of the instruments for all of the supported exchanges will be sent on one message.

FIX Message	Security List Request (Message Type = x)
Direction	From Client to Turquoise

Tag	Field Name	Data Type	Required
320	SecurityReqId	String	Y
559	SecurityListRequestType	String	Y
207	SecurityExchange	String	N

4.15 Security List

This message is the response to the security list request containing the list of tradable instruments.

FIX Message	Security List (Message Type = y)
Direction	From Turquoise to client

Tag	Field Name	Data Type	Required
320	SecurityReqId	String	Y
322	SecurityResponseId	String	Y
393	TotalNumSecurities	Int	N
560	SecurityRequestResult	Int	Y
146	NoRelatedSym	NumInGroup	Y
→55	Symbol	String	Y
→22	SecurityIDSource	String	Y
→48	SecurityID	String	Y
→207	SecurityExchange	String	Y
→15	Currency	Currency	Y
→210	MaxShow	Qty	N
→9000	TestInst	Char	Y
→9001	LisLimit	Price	N

Note: Tags 9000 and 9001 are proprietary tags to the Turquoise platform. If a participant does not prefer to receive these tags, Turquoise can prevent them from being disseminated.

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4.16 Security Definition Request

This message type will subscribe to the tradable securities listed on Turquoise. If a SecurityExchange is supplied, only instruments for that exchange will be returned in the Security Definition. If it is not supplied, the Security Definition will contain all of the securities on the Turquoise environment.

FIX Message	Security Definition Request (Message Type = c)
Direction	From Client to Turquoise

Tag	Field Name	Data Type	Required
320	SecurityReqId	String	Y
207	SecurityExchange	String	N

4.17 Security Definition

This message is the response to the Security Definition Request containing the list of tradable instruments. If a security exchange is supplied there will be a separate Security Definition for each Security Exchange.

FIX Message	Security Definition (Message Type = d)
Direction	From Turquoise to client

Tag	Field Name	Data Type	Required
320	SecurityReqId	String	Y
322	SecurityResponseId	String	Y
393	TotalNumSecurities	Int	N
146	NoRelatedSym	NumInGroup	Y
→311	UnderlyingSymbol	String	Y
→305	UnderlyingIDSource	String	Y
→309	UnderlyingSecurityID	String	Y
→308	UnderlyingSecurityExchange	String	Y
→318	UnderlyingCurrency	Currency	Y
→210	MaxShow	Qty	N
→9000	TestInst	Char	Y
→9001	LisLimit	Price	N

Note: Tags 9000-9001 are proprietary tags to the Turquoise platform. If a particiopant does not prefer to receive these tags, Turquoise can prevent them from being disseminated.

4.18 Don't Know Trade

Don't Know Trade messages are sent from the client to Turquoise upon receipt of an erroneous Execution Report, i.e. when the client is unable to map/match an Execution Report.
The system will respond to a Don't Know Trade message by generating an internal alarm. Manual interventions will then be required to arrive at a resolution.

FIX Message	Don't Know Trade (Message Type = Q)
Direction	From client to Turquoise

Tag	Field Name	Data Type	Required
17	ExecID	String	Y
31	LastPx	Price	N
32	LastQty	Qty	N
37	OrderID	String	Y
38	OrderQty	Qty	Y
54	Side	Char	Y
<Instrument>			Y

58	Text	String	N
127	DKReason	Char	Y

4.19 News Message

News messages are distributed by Market Operations at Turquoise to provide information related to the activities and operations of the trading platform. These are broadcast messages and are disabled as default, upon request Turquoise Market Operations will enable the News and disseminate the messages for a particular session.

FIX Message	News Message (Message Type = B)
Direction	From Client to Turquoise

Tag	Field Name	Data Type	Required
60	TransactTime	UTCTimestamp	Y
148	Headline	String	Y

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5. Field Definitions

This table provides definitions of all the FIX tags adopted at Turquoise and the platform they are applicable to:

- Turquoise Trading System only (MTF)
- TQ-LENS only (TQL)
- Both the Turquoise Trading System and TQ-LENS (TQL/MTF)

Tag	Field Name	Definition	Platform
1	Account	Account mnemonic as agreed between buy and sell sides	TQL/MTF
6	AvgPx	Average price of fills on an order. This is always returned as 0.0.	TQL/MTF
7	BeginSeqNo	Message sequence number of the first message in range to be resent.	TQL/MTF
8	BeginString	This is the first field in a FIX message identifying the FIX version; within Turquoise this is always version FIX 4.4.	TQL/MTF
9	BodyLength	The length of the message in bytes.	TQL/MTF
10	CheckSum	Three byte, simple checksum. Always the last field in a message; i.e. serves, with the trailing <SOH>, as the end-of-message delimiter.	TQL/MTF
11	ClOrderID	Firms, particularly those which electronically submit multi-day orders, trade globally or throughout market close periods, should ensure uniqueness across days and user identity, for example by embedding a date within the ClOrdID field. Otherwise uniqueness throughout the day per user is required. An example format is as follows: 51756345624-31041408 If a fill occurs from a Quote this field will be returned on the execution report and contain the QuoteEntryID and either a 'B' or 'S' depending on the side of the order, i.e. 5175634562S	TQL/MTF
14	CumQty	Total quantity filled on an order.	TQL/MTF
15	Currency	This field is mandatory if ISIN and currency is used to identify an Orderbook (Instrument). If instead a symbol is populated (tag 55) on order entry then currency will be returned on the execution report from Turquoise.	TQL/MTF
16	EndSeqNo	Message sequence number of the last message in range to be resent.	TQL/MTF
17	ExecID	Unique identifier for execution message. For an execution that is a partial fill or fill, this field will contain the Turquoise Trade ID plus the Side of the trade.	TQL/MTF
18	ExecInst	Instructions for order handling at the exchange trading floor. If more than one instruction is applicable to an order, this field can contain multiple instructions separated by space. Valid values: | 2	Work	TQL/MTF
Q	Cancel on system failure	TQL/MTF
M	Mid Price Peg	MTF
X	Exclude Self. This value ensures that participants do not cross with themselves when the order is routed to the dark order pool	TQL
T	Fixed Peg to Local best bid or offer at time of order entry.	MTF		TQL/MTF

		Note:	
		• If tag ExDestination(100) is specified as TQL with tag ExecInst(18) set to 2, the order is pegged inside the spread at Turquoise partner liquidy venues. The order is pegged to the midpoint on the Turquoise MTF. • If tag ExDestination(100) is specified as MTF with tag ExecInst(18) set to M, the order is pegged to the midpoint on the Turquoise MTF. • If tag ExDestination(100) is specified as TQL with tag ExecInst(18) set to M, the order is rejected. • Visible Immediate or Cancel (IOC) / Fill and Kill to Integrated orderbook: TimeInForce(59)=3, OrderType(40)=P, ExecInst(18)=M • Dark Immediate or Cancel (IOC) / Fill and Kill to Dark orderbook: TimeInForce(59)=3, OrderType(40)=P, ExecInst(18)=M, MaxShow(210)=0	
21	HandInst	Instructions for order handling on the broker trading floor. Valid values: 1 Automated execution order	TQL/MTF
22	SecurityIDSource	Identifies the class or source of the security ID (tag 48). Valid Values: 4 ISIN	TQL/MTF
30	LastMkt	Market of execution returned on the execution report from a fill or partial fill within TQ-LENS, when TQLStrategy is set to 1 or 2. Valid Values: TQL TRQX	TQL
31	LastPx	Price of last fill.	TQL/MTF
32	LastQty	Quantity bought and sold on last fill.	TQL/MTF
34	MsgSeqNum	The integer number (within the current FIX session) associated with the FIX message.	TQL/MTF
35	MsgType	Defines the message type. Only message types specified in this document are valid values for this field.	TQL/MTF
36	NewSeqNo	New sequence number	TQL/MTF
37	OrderID	Unique identifier for the order as assigned by the sell side (Broker or exchange). Uniqueness for this field must be guaranteed within a single trading day.	TQL/MTF
38	OrderQty	Quantity ordered.	TQL/MTF
39	OrderStatus	Identifies the current status of the order. Valid values: 0 New 1 Partially filled 2 Filled 4 Cancelled 6 Pending Cancel C Expired E Pending Replace 8 Rejected	TQL/MTF
40	OrdType	Type of order, valid values: 1 Market MTF 2 Limit MTF P Pegged MTF/TQL	TQL/MTF
41	OrigClOrdID	Derived from ClOrdId from the previous order assigned by the institution.	TQL/MTF
43	PossDupFlag	Indicates that the details within the FIX message may have been sent before, with the same sequence number, on the same FIX session. The Boolean values for this field can	TQL/MTF

		either be Y or N.	
44	Price	Price per unit of quantity. If OrdType = P then this field contains the peg cap price and is mandatory. Should the pegged price become more aggressive than the price stated here, then the order will cease to track the BBO and be assigned this price. Should the pegged price return to below the cap price, the pegged order will resume tracking the BBO. This field is also mandatory if OrdType = 2.	TQL/MTF
45	RefSeqNum	Reference message sequence number.	TQL/MTF
48	SecurityID	A valid ISIN	TQL/MTF
49	SenderCompID	Identifies the originator of the message. Messages sent from a client to Turquoise use the user ID specified in the logon message to which the FIX session belongs or the CompID.	TQL/MTF
50	SenderSubID	Assigned value used to identify specific message originator (desk, trader, etc). The value in this tag is returned on an execution in the TargetSubID field (tag 57).	TQL/MTF
52	SendingTime	Time of message transmission specified using the UTC timestamp.	TQL/MTF
54	Side of order	The side of the order. Valid values: 1 Buy 2 Sell	TQL/MTF
55	Symbol	A valid Turquoise symbol. This field is not required if Currency and SecurityID are supplied. If used when Currency and SecurityID are supplied then it should be set to N/A.	TQL/MTF
56	TargetCompID	Identifies the receiver of the message	TQL/MTF
57	TargetSubID	Assigned value used to identify specific individual or unit intended to receive message. This tag is populated on execution messages with the value contained in the SenderSubID tag (50) of the order message.	TQL/MTF
58	Text	Free format text string. If a fill is sent back from a Mass quote this value will contain 'From Quote' on the execution report returned.	TQL/MTF
59	TimeInForce	Specifies how long the order remains in effect. Absence of this field is interpreted as a Day order. Valid Values:	TQL/MTF
60	TransactTime	UTC Timestamp illustrating the time of execution/order creation.	TQL/MTF
97	PossResend	Indicates that the details within the FIX message may have been sent before, with *a different* sequence number, on the same FIX session. The Boolean values for this field can either be Y or N.	TQL/MTF
98	EncryptMethod	Method of encryption. 0 None	TQL/MTF
100	ExDestination	As defined by the client when an order is entered to determine the destinatyiob of the order. Valid values: MTF TQL Note: If this tag is not populated the default value will be MTF.	TQL/MTF

TimeInForce (tag 59) values:

0	Day	TQL/MTF
2	At the opening	MTF
3	Immediate or cancel (IOC). TTS interprets this order type as fill and kill (FAK)	MTF
4	Fill or Kill (FOK)	MTF
8	Good From Next AutoMatch	MTF

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102	CxlRejReason	Identify the reason for cancel rejection. Valid Values: 0 Too late to cancel — TQL/MTF 1 Unknown order — TQL/MTF 2 Broker/exchange option — TQL/MTF 3 Order already in pending cancel or pending replace status. — TQL/MTF 4 Unable to process order mass cancel request. — MTF 6 Duplicate ClOrdID received. — TQL/MTF		TQL/MTF
103	OrdRejReason	Set if ExecType=8 (rejected). Valid Values: 0 Other — TQL/MTF 1 Unknown symbol — TQL/MTF 2 Exchange closed. — TQL/MTF 6 Duplicate order — TQL/MTF 11 Unsupported order characteristics. — TQL/MTF 12 Time in Force outside Limits. — TQL/MTF 13 Price outside limits. — MTF 14 Quantity outside limits. — TQL/MTF		TQL/MTF
107	SecurityDesc	Optional textual description for a financial instrument.		TQL/MTF
108	HeartBtInt	Heartbeat interval specified in seconds, a value of 0 will turn off the heartbeat handling.		TQL/MTF
110	MinQty	Minimum quantity of an order to be executed acting as an MAQ within Turquoise and used for TQ-LENS. The value placed in tag 110 must be either null or set to a quantity that is equal or less than the total order quantity (tag 30).		TQL/MTF
111	MaxFloor	The quantity to be displayed. This tag is used for iceberg orders to specify the minimum display volume.		MTF
112	TestReqID	The string value that will be returned in the resulting Heartbeat.		TQL/MTF
115	OnBehalfOfCompID	Assigned value used to identify a firm originating message if the message was delivered by a third party. The third party would then be displayed in the SenderCompID. The information in this field on the order is returned in the DeliverToCompID (tag 128) field on each execution related to that order.		TQL/MTF
116	OnBehalfOfSubID	Assigned value used to identify specific message originator (i.e. trader) if the message was delivered by a third party. The information in this field on the order is returned in the DeliverToSubID (tag 129) field on each execution related to that order.		TQL/MTF
117	QuoteID	Unique identifier for a mass quote message.		MTF
122	OrigSendingTime	UTC/GMT timestamp expressed as YYYYMMDD-HH:MM:ss indicating the original sending time of an order on return from a Resend Request.		TQL/MTF
123	GapFillFlag	Indicates that the sequence reset message is replacing administrative or application messages which will not be resent. Valid values: Y Gap fill message, MsgSeqNumber field valid. N Sequence reset, ignore MsgSeqNum.		TQL/MTF
126	ExpireTime	Conditionally required if TimeInForce = 0. Used to place Good Till Time orders. Time expressed as YYYYMMDD-HH:MM:ss. TQ-LENS has a minimum time an order can remain in the liquidity pools of nnn milliseconds, if expire time is less than nnn milliseconds the order will be rejected. Note: Turquoise does not support overnight orders therefore YYYMMDD must always be the current date.		TQL/MTF

127	DKReason	Reason for execution rejection. Valid values: 	A	Unknown symbol
B	Wrong side
C	Quantity exceeds order
D	No matching order
E	Price exceeds limit.
F	Calculation difference
Z	Other		TQL/MTF
128	DeliverToCompID	Assigned value used to identify the firm targeted to receive the message if the message is delivered by a third party. The third party firm identifier would be delivered in the TargetCompID (56) field. This tag is populated on execution messages with the information that was contained in the OnBehalfOfCompID tag (115) of the order message.	TQL/MTF
129	DeliverToSubID	Assigned value used to identify specific message recipient (i.e. trader) if the message is delivered by a third party. This tag is populated on execution messages with the information that was contained in the OnBehalfOfSubID tag (116) of the order message.	TQL/MTF
132	BidPx	The bid price for a single quote.	MTF
133	OfferPx	The offer price for a single quote.	MTF
134	BidSize	The quantity of the bid on a single quote.	MTF
135	OfferSize	The quantity of the offer on a single quote.	MTF
141	ResetSeqNumFlag	Indicates that both sides of the FIX session should reset sequence numbers. Valid Values: Y Sequence Reset N No Reset	TQL/MTF
146	NoRelatedSym	The number of repeating symbols specified.	TQL/MTF
148	Headline	Used for News Messages. This tag contains the information broadcast from Turquoise Market Operations. The template format of a message is: • OrderbookID/TQsymbol WIDE @ hh:mm:ss • OrderbookID/TQsymbol OUT @ hh:mm:ss	MTF
150	ExecType	Describes type of Execution Report. Valid values: | 0	New
4	Cancel
5	Replace
6	Pending cancel
8	Rejected
C	Expired
D	Restated
E	Pending replace
F	Trade
I	Order status
H	Trade cancel		TQL/MTF
151	LeavesQty	Quantity open for further execution	TQL/MTF
168	EffectiveTime	Conditionally required if TimeInForce = 0. Used to place Good From Time orders; i.e. specify the time at which the order should be considered valid. UTC/GMT timestamp expressed as YYYYMMDD-HH:MM:ss Effective Time can only be used with TQ-LENS if the TQL Strategy chosen is strategy one, this must also be less than the TQLTimestamp. Note: Turquoise does not support overnight orders therefore YYYYMMDD must always be the current date.	TQL/MTF
207	SecurityExchange	Market used to help identify a security. This field is only found on the Security List and Security Definition messages. Valid values include: | XMAD	Bolsa De Madrid
MTAA	Borsa Italiana
XETR	Deutsche Borse – Xetra
XDUB	Irish Stock Exchange
XLON	London Stock Exchange
XAMS	NYSE Euronext Amsterdam		TQL/MTF

		XBRU	NYSE Euronext Brussels	
		XLIS	NYSE Euronext Lisbon	
		XPAR	NYSE Euronext Paris	
		XCSE	OMX Copenhagen	
		XHEL	OMX Helsinki	
		XSTO	OMX Stockholm	
		XOSL	Oslo Bors	
		XVTX	Swiss Stock Exchange	
		WBAH	Vienna Stock Exchange	

210	MaxShow	This field illustrates the transparency of the order, valid fields should include: 0: Dark Order <INTEGER>: Full order quantity. To enter a transparent order in the integrated environment MaxShow will need to be the full order quantity. If MaxShow tag is not included the order will default to transparent. Similarly if the instrument is in the dark only environment and the MaxShow tag is not included, (210=0) the order will default to dark.	MTF
211	PegOffsetValue	Mandatory if OrdType=P this tag contains the amount (signed) added to the peg for a pegged order in the context of the PegScope. Pegoffsetvalue <0 if bid, else > 0. The Peg Offset value may also be a fraction of a tick.	MTF
293	DefBidSize	This tag will provide a default bid size for all quotes contained within a mass quote message if BidSize (134) is not explicitly provided within the repeating group.	MTF
294	DefOfferSize	This tag will provide a default offer size for all quotes contained within a mass quote message if OfferSize (135) is not explicitly provided within the repeating group.	MTF
295	NoQuoteEntries	Cancelling quotes is done on an instrument level. This tag illustrates the number of instruments to be cancelled within the Mass Quote.	MTF
296	NoQuoteSets	The number of quote sets within a Mass Quote message.	MTF
297	QuoteAckStatus	Identifies the status of the quote returned on the quote acknowledgment. Valid Values: 0 Accepted 1 Cancelled for Instrument(s) 4 Cancelled All 5 Rejected	MTF
298	QuoteCancelType	Identifies the type of quote cancel. Valid Values: 1 Cancel for Symbol(s) 4 Cancel all quotes	MTF
299	QuoteEntryID	Uniquely identifies a single quote from part of a mass quote message.	MTF
300	QuoteRejectReason	This tag specifies the reason why a quote was rejected. Valid Values: 1 Unknown instrument 2 Trading system not available 4 Too late to enter 5 Unknown Quote 7 Invalid bid/ask spread 8 Invalid price 9 Not authorised to quote	MTF
305	UnderlyingIDSource	Identifies the class or source of the security ID (tag 48) value. Valid Values: 4 ISIN	TQL/MTF
308	UnderlyingSecurityExchange	Market used to help identify a security. This field is only found on the Security List and Security Definition messages.	TQL/MTF

309	UnderlyingSecurityID	A valid ISIN	TQL/MTF
311	UnderlyingSymbol	The Turquoise symbol for an instrument.	TQL/MTF
318	UnderlyingCurrency	The currency of an instrument.	TQL/MTF
320	SecurityReqID	Unique ID of security definition request.	TQL/MTF
322	SecuritytResponceID	Unique ID of a Security Definition message.	TQL/MTF
373	SessionRejectReason	A code to identify the reason for the session level rejects. Valid values include: 0 Invalid tag number 1 Required tag missing. 2 Tag not defined for this message type. 3 Undefined tag 4 Tag specified without a value. 5 Value is incorrect (out of range) for this tag. 6 Incorrect data format for value. 7 Decryption problem. 9 CompID problem 10 Sending Time accuracy problem 11 Invalid MsgType 13 Tag Appears more than once. 14 Tag specified out of required order. 15 Repeating group field out of order. 16 Incorrect number in group count for repeating group. 17 Non data value includes field delimiter SOH character. 99 Other 101 Service not available at this time.	TQL/MTF
378	ExecRestatementReason	If an order has been repriced i.e. a pegged order this fields informs the user of the change in price. Valid values: 3 Repricing of an order	MTF
393	TotalNumSecurities	Total number of securities.	TQL/MTF
434	CxlRejectResponceTo	Identifies the type of request that a Cancel Reject is in response to. 1 Order Cancel Request 2 Order Cancel replace request.	TQL/MTF
448	PartyID	The clearing member	TQL/MTF
452	PartyRole	Identifies the type of role of the PartyID, valid values: 4 = clearing firm	TQL/MTF
453	NoPartyIDs	Number of parties supplied. This should always be set to 1.	TQL/MTF
528	OrderCapacity	Designates the capacity of the firm placing the order. Valid values: A Agency P Principal Default value is Agency (A).	TQL/MTF
530	MassCancelRequestType	Scope of order mass cancel request. valid values: 7 Cancel all orders for a current session.	TQL/MTF
531	MassCancelResponce	Indicates the action taken by the counterparty order handling system as a result of the Cancel Request. Valid values: 0 Cancel request rejected. 7 Cancelled all orders	TQL/MTF
532	MassCancelRejectReason	Required if MassCancelResponse = 0, specifying the reason for the order mass cancel request rejection. Valid Values: 0 Mass Cancel not supported. 2 Invalid or unknown underlying. 99 Other	TQL/MTF
553	Username	An optional string provided on the message from the client to Turquoise.	TQL/MTF

554	Password	A tag that must be populated if a username is provided on logon.	TQL/MTF
559	SecurityListRequestType	Identifies the criteria of the security list request. Valid Values: <table><tr><td>4</td><td>All securities</td></tr><tr><td>5</td><td>Separate List Messages by Security Exchange</td></tr></table>	TQL/MTF
560	SecurityRequestResult	Results returned from security request message. Valid values: <table><tr><td>0</td><td>Valid request</td></tr><tr><td>8</td><td>Invalid or unsupported request</td></tr><tr><td>3</td><td>No instruments found.</td></tr></table>	TQL/MTF
561	RoundLot	The trading lot size of a security.	TQL/MTF
562	MinTradeVol	The minimum trading volume for a security.	TQL/MTF
584	MassStatusReqID	String value assigned by the issuer of Mass Status Request to uniquely identify the request.	TQL/MTF
585	MassStatusReqType	The status request: valid values: <table><tr><td>1</td><td>Status of orders for an instrument.</td></tr><tr><td>7</td><td>Status for all orders</td></tr></table>	TQL/MTF
789	NextExpectedMsgSeqNum	This field is mandatory and will contain the next expected MsgSeqNum from Turquoise.	TQL/MTF
835	PegMoveType	Describes whether a peg is static or floats. Valid values: 1 FIXED	TQL/MTF
836	PegOffsetType	Type of peg offset value. Valid values: 2 Ticks	TQL/MTF
839	PeggedPrice	The current price the order is pegged at.	TQL/MTF
840	PegScope	Required if OrdType = P and defines the scope of the peg Valid values: 1 Local (Exchange, TBBO) 3 Global (EBBO)	TQL/MTF
851	LastLiquidityInd	This tag displays the Liquidity indicator for partially or filled executions, as well as providing an indication of whether an execution took place during auction. Valid values include: <table><tr><td>1</td><td>Passive</td></tr><tr><td>2</td><td>Aggressive</td></tr><tr><td>4</td><td>Auction</td></tr></table>	MTF
9000	TestInst	Used on Security List and Security Definition messages to identify whether an instrument is a test instrument. Valid values: N Instrument is not a test instrument Y Instrument is a test instrument	TQL/MTF
9001	LisLimit	Limit size for large in scale orders, i.e. the minimum size required for an order to be allowed to be Dark. The size of the order is calculated as the Reference price multiplied with the order quantity.	TQL/MTF
9002	TBBOBid	The Turquoise BBO bid price at the time when the matching engine received the order.	MTF
9003	TBBOAsk	The Turquoise BBO ask price at the time when the matching engine received the order.	MTF
9004	ABBOBid	The away BBO bid price at the time when the matching engine received the order.	MTF
9005	ABBOAsk	The away BBO ask price at the time when the matching engine received the order.	MTF
9006	TypeOfTrade	A description of the type of trade that has occurred. This field is only displayed on execution reports with an OrdStatus of partial fill or filled. DARK_TO_DARK DARK_TO_TRANSPARENT TRANSPARENT_TO_TRANSPARENT TRADE_REPORT MANUAL_LAST_TRADE_PRICE MANUAL_LAST_AUCTION_PRICE	MTF

		UPDATED_REFERENCE_PRICE TRADE_REPORT_AUCTION. DARK_TO_DARK_AUCTION DARK_TO_TRANSPARENT_AUCTION TRANSPARENT_TO_TRANSPARENT_AUCTION	
9007	TQLStrategy	Indicates the dark pool aggregation strategy, when ExDestination=TQL. Valid Values: 1 Post to Turquoise first then seek non displayed liquidity. 2 IOC to Turquoise first then seek non displayed liquidity . 3 Seek non displayed liquidity 4 User Defined If the strategy is not defined and ExDestination(100) is set to TQL, the order is rejected.	TQL
9008	TQLTimestamp	Used to indicate the amount of time the order should reside at Turquoise before being routed to non-displayed liquidity pools. The TQLTimestamp is expressed using the UTC Timestamp. TQL Timestamp is mandatory when strategy 1 is selected, but not supported for strategy 2 or 3. TQLTimestamp should be less than the tag ExpireTime (126).	TQL
9009	TQLSelfCrossed	An indicator sent on an execution report to highlight whether an execution from a TQ-LENS order is a result of a self cross. Valid Values: 0 FALSE 1 TRUE Note: If this tag is not present then value 0 will be the default.	TQL
9010	TQLCustomisedStrategy	This field is mandatory if strategy 4 is specified as tag 9007 and indicates a user specific strategy as agreed between TQ-LENS and the user.	TQL
9011	TQLGrouping	Optional and can be used only if strategy 1, 2, or 3 is chosen with tag 9007. TQLGrouping is used when TQ-LENS and one or many liquidity providers agree to group one or many liquidiy providers into one distribution group.	TQL
9012	TQLExecMethod	With ExDestination(100) set to TQL, TQLExecMethod can be specified with the New Order Single message. TQLExecMethod indicates the type of the execution method a participant can specify for the order to be executed by TQ-LENS: 100 Flow 200 Block If TQLExecMethod is not populated within the New Order Single message, the execution method defaults to the value specified by the participant FIX session. TQLExecMethod is returned as part of the acknowledgement of the order as part of an Execution Report message.	TQL
9013	TQLExecFee	If ExDestination 100=TQL, TQLExecFee is returned on each fill and partial fill to indicate the fee applied for each execution.	TQL
9014	DPMaxQty	DPMaxQty allows a user to specify a limit on the number of shares distributed to each dark pool liquidity provider on each sweep. DPMaxQty can either be null or set to a value that is equal or less than the Order Quantity (tag 38).	TQL
9015	IsPassive	This tag is used to determine whether the quote is passive only. If set to Passive (Y) and a quote crosses an existing bid or offer (trades aggressively) then the quote will be rejected. Valid values:	MTF

		Y Passive Only Quote	
		N Passive Or Aggressive	
		If this tag is not populated then by default it will be N.	

6. Order State Change Matrices

Below are example FIX messages accepted by the Turquoise FIX gateway.

6.1 Limit Day Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	157	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	GH6781	
OnBehalfOfCompID(115)	ZXS234	
MsgSeqNum(34)	2	
SendingTime(52)	20080325-07:40:15	
ClOrdID (11)	123485624-31042208	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	2 (Work)	
Side (54)	1 (Buy)	
OrderQty (38)	1000	
OrdType (40)	2 (Limit)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	8 (Good From next automatch)	
MaxShow (210)	1000	
ExDestination (100)	MTF	
OrderCapacity(528)	P	
TransactTime (60)	20080325-10:05:15	
NoPartyIDs (453)	1	
PartyID (448)	RTY	
PartyRole (452)	4	
CheckSum(10)	088	

6.2 TQ-LENS Order Strategy 1

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	157	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	GH6781	
OnBehalfOfCompID(115)	ZXS234	
MsgSeqNum(34)	2	
SendingTime(52)	20080325-07:40:15	
ClOrdID (11)	123485624-31042208	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	<Valid Currency>	
ExecInst (18)	2 (Work) X (Exclude Self)	
Side (54)	1 (Buy)	
OrderQty (38)	1000	
OrdType (40)	P	
Price (44)	(Optional)	
TimeInForce (59)	0 (Day)	

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Sequence	1	2
ExDestination (100)	TQL	
OrderCapacity(528)	P	
TransactTime (60)	20090325-10:05:15	
NoPartyIDs (453)	1	
PartyID (448)	RTY	
PartyRole (452)	4	
TQLStrategy (9007)	1	
TQLTimestamp (9008)	20090325-11:06:30	
TQLExecMethod (9012)	100 or 200	
CheckSum(10)	088	

6.3 TQ-LENS Order Strategy 2

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	157	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	GH6781	
OnBehalfOfCompID(115)	ZXS234	
MsgSeqNum(34)	2	
SendingTime(52)	20080325-07:40:15	
ClOrdID (11)	123485624-31042208	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	<Valid Currency>	
ExecInst (18)	2 (Work) X (Exclude Self)	
Side (54)	1 (Buy)	
OrderQty (38)	1000	
OrdType (40)	P	
Price (44)	(Optional)	
TimeInForce (59)	0 (Day)	
ExDestination (100)	TQL	
OrderCapacity(528)	P	
TransactTime (60)	20090325-10:05:15	
NoPartyIDs (453)	1	
PartyID (448)	RTY	
PartyRole (452)	4	
TQLStrategy (9007)	2	
TQLExecMethod (9012)	100 or 200	
CheckSum(10)	088	

6.4 TQ-LENS Order Strategy 3

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	157	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	GH6781	
OnBehalfOfCompID(115)	ZXS234	
MsgSeqNum(34)	2	
SendingTime(52)	20080325-07:40:15	
ClOrdID (11)	123485624-31042208	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	<Valid Currency>	
ExecInst (18)	2 (Work) X (Exclude Self)	
Side (54)	1 (Buy)	
OrderQty (38)	80000	
OrdType (40)	P	
Price (44)	(Optional)	

Sequence	1	2
TimeInForce (59)	0 (Day)	
ExDestination (100)	TQL	
OrderCapacity(528)	P	
TransactTime (60)	20090325-10:05:15	
NoPartyIDs (453)	1	
PartyID (448)	RTY	
PartyRole (452)	4	
TQLStrategy (9007)	3	
TQLExecMethod (9012)	100 or 200	
DPMaxQty (9014)	15000	
CheckSum(10)	088	

6.5 Limit Dark Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	156	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
OnBehalfOfCompID(115)	ASD987	
OnBehalfOfSubID (116)	A9838832834	
MsgSeqNum(34)	9	
SendingTime(52)	20080320-11:05:15	
ClOrdID (11)	545795999-31121408	
Symbol(55)	VODI	
ExecInst (18)	2 (Work)	
Side (54)	1 (Buy)	
OrderQty (38)	300000	
OrdType (40)	2 (Limit)	
Price (44)	500 (Mandatory)	
TimeInForce (59)	0 (Day)	
MaxShow (210)	0 (Dark)	
ExDestination (100)	MTF	
OrderCapacity(528)	A	
TransactTime (60)	20080320-11:05:15	
NoPartyIDs (453)	1	
PartyID (448)	DSEW	
PartyRole (452)	4	
CheckSum(10)	088	

6.6 Market Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	166	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	SDF345	
OnBehalfOfCompID(115)	DFE4567	
OnBehalfOfSubID (116)	GHJU1243	
MsgSeqNum(34)	10	
SendingTime(52)	20080325-12:58:38	
ClOrdID (11)	54522224-31021408	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
Side (54)	1 (Buy)	
OrderQty (38)	600	
OrdType (40)	1 (Market)	
Price (44)	0 (No price)	
TimeInForce (59)	0	
MaxShow (210)	600	

Sequence	1	2
OrderCapacity(528)	A	
TransactTime (60)	20080325-12:58:38	
NoPartyIDs (453)	1	
PartyID (448)	BGT	
PartyRole (452)	4	
CheckSum(10)	255	

6.7   Fill or Kill

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	166	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	15	
SendingTime(52)	20080325-14:58:38	
ClOrdID (11)	56890135645-31083108	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	2 (Work)	
Side (54)	1 (Buy)	
OrderQty (38)	100	
OrdType (40)	2 (Limit)	
Price (44)	200	
TimeInForce (59)	4 (Fill or Kill)	
TransactTime (60)	20080325-14:58:38	
ExDestination (100)	MTF	
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	REW	
PartyRole (452)	4	
CheckSum(10)	097	

6.8   Fill and Kill

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	166	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	28	
SendingTime(52)	20080325-11:58:38	
ClOrdID (11)	67489217834937-12040308	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	2 (Work) Q (Cxl On Disconnect)	
Side (54)	1 (Buy)	
OrderQty (38)	10000	
OrdType (40)	2 (Limit)	
Price (44)	200	
TimeInForce (59)	3 (Fill and Kill)	
MaxShow (210)	10000	
ExDestination (100)	MTF	
TransactTime (60)	20080325-11:58:38	
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	YER	
PartyRole (452)	4	
CheckSum(10)	080	

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6.9 Limit Good From Time Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	166	
MsgType(35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
OnBehalfOfCompID(115)	SD23546	
MsgSeqNum(34)	11	
SendingTime(52)	20080325-14:58:38	
ClOrdID (11)	823819364-12100108	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	2 (Work)	
Side (54)	1 (Buy)	
OrderQty (38)	4600	
OrdType (40)	2 (Limit)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
TransactTime (60)	20080325-14:58:38	
EffectiveTime (168)	20080325-15:58:38	
OrderCapacity(528)	A	
NoPartyIDs (453)	1	
PartyID (448)	REW	
PartyRole (452)	4	
CheckSum(10)	090	

6.10 Limit Good Till Time Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	300	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
SenderSubID(50)	KO9864	
OnBehalfOfCompID(115)	DF3445	
MsgSeqNum(34)	16	
SendingTime(52)	20080325-13:14:35	
ClOrdID (11)	658934758693-31120408	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	2 (Work) Q (Cxl On Disconnect)	
Side (54)	1 (Buy)	
OrderQty (38)	100	
OrdType (40)	6	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
TransactTime (60)	20080325-13:14:35	
ExpireTime (126)	20080325-16:14:35	
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	WQE	
PartyRole (452)	4	
CheckSum(10)	070	

6.11 Pegged against TBBO

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	196	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
OnBehalfOfCompID(115)	DER456	
MsgSeqNum(34)	18	
SendingTime(52)	20080325-14:58:38	
ClOrdID (11)	5648901478932-31043108	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	P (Market)	
Side (54)	1 (Buy)	
OrderQty (38)	100	
OrdType (40)	P (Pegged)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
TransactTime (60)	20080325-14:58:38	
PegOffsetValue (211)	-10 (must be < 0)	
PegMoveType (835)	1 (Fixed)	
PegOffsetType (836)	2 (Ticks)	
PegScope (840)	1 (Local)	
OrderCapacity(528)	A	
NoPartyIDs (453)	1	
PartyID (448)	RQW	
PartyRole (452)	4	
CheckSum(10)	211	

6.12 Dark Order Pegged against EBBO

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	196	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	9	
SendingTime(52)	689279874575467-31061208	
ClOrdID (11)	1	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	M (Mid price) Q (Cxl On Disconnect)	
Side (54)	1 (Buy)	
OrderQty (38)	1000000	
OrdType (40)	P (Pegged)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
MaxShow (210)	0	
TransactTime (60)	20080325-11:58:01	
PegOffsetValue (211)	-10 (must be < 0)	
PegMoveType (835)	1 (Fixed)	
PegOffsetType (836)	2 (Ticks)	
PegScope (840)	3 (Global)	

Sequence	1	2
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	WQA	
PartyRole (452)	4	
CheckSum(10)	665	

6.13 Iceberg Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	173	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	32	
SendingTime(52)	20080320-08:58:05	
ClOrdID (11)	5784306789237-12051408	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
Side (54)	1 (Buy)	
OrderQty (38)	100000	
OrdType (40)	2 (Limit)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
MaxFloor (111)	5000	
TransactTime (60)	20080320-08:58:05	
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	XZA	
PartyRole (452)	4	
CheckSum(10)	135	

6.14 Pegged TBBO Iceberg Order

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	190	
MsgType (35)	D	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	80	
SendingTime(52)	20080316-08:58:05	
ClOrdID (11)	6546756768-31041208	
Symbol(55)	[N/A]	
SecurityIDSource (22)	4	
SecurityID (48)	<valid ISIN>	
Currency (15)	GBX	
ExecInst (18)	P (Market) Q (Cxl On Disconnect)	
Side (54)	1 (Buy)	
OrderQty (38)	1000000	
OrdType (40)	P (Pegged)	
Price (44)	200 (Mandatory)	
TimeInForce (59)	0 (Day)	
MaxFloor(111)	6000	
TransactTime (60)	20080316-08:58:05	
PegOffsetValue (211)	-10 (must be < 0)	
PegMoveType (835)	1 (Fixed)	
PegOffsetType (836)	2 (Ticks)	
PegScope (840)	1 (Local)	
OrderCapacity(528)	P	
NoPartyIDs (453)	1	
PartyID (448)	QALS	
PartyRole (452)	4	
CheckSum(10)	148	

6.15 Mass Cancel Request

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	100	
MsgType (35)	q	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	22	
SendingTime(52)	20080316-08:58:05	
ClOrdID (11)	156476586785- 311208	
MassCancelRequestType (530)	7	
TransactTime (60)	20080316-08:58:05	
Text (58)		
CheckSum(10)	112	

6.16 Order Mass Status Request

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	200	
MsgType (35)	AF	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	34	
SendingTime(52)	20080322-08:58:05	
ClOrdID (11)	5313645689- 311208	
MassStatusReqID (584)	1246758	
MassStatusReqType (585)	7 (All Instruments)	
TransactTime (60)	20080316-08:58:05	
Text (58)		
CheckSum(10)	120	

6.17 Mass Quote

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	157	
MsgType(35)	i	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	1	
SendingTime(52)	20080325-10:05:15	
QuoteID (117)	20090102-17:03:41-22189	
TransactTime (60)	20080325-10:05:15	
NoQuoteSets (296)	2	
QuoteEntryID (299)	464196CM406TqNzu8d	
Symbol(55)	VODl	
BixPx (132)	15	
OfferPx (133)	15.5	
BidSize (134)	10000	
OfferSize (135)	20000	
IsPassive (9010)	N	
QuoteEntryID (299)	460146CA90A4vVTRUnw	
Symbol(55)	GSKl	
BixPx (132)	21	
OfferPx (133)	25	
BidSize (134)	35000	
OfferSize (135)	45000	
IsPassive (9010)	Y	
CheckSum(10)	080	

6.18 Security List Request

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	62	
MsgType (35)	x	
SenderCompID (49)	Client	TTS
TargetCompID (56)	TTS	Client
MsgSeqNum(34)	12	
SendingTime(52)	20080316-12:58:05	
SecurityReqId (320)	1	
SecurityListRequestType (559)	4 (All)	
CheckSum(10)	057	

6.19   News (Unsolicited Broadcast)

Sequence	1	2
BeginString(8)	4.4	
BodyLength(9)	20	
MsgType (35)	B	
SenderCompID (49)	TTS	Client
TargetCompID (56)	Client	TTS
MsgSeqNum(34)	12	
TransactTime (60)	20080316-08:58:05	
Headline(148)	1466/DPBGN_DE.TQ WIDE @ 15:52:28	
CheckSum(10)	057	