
Vendor Interface Specification

For

Shanghai Stock Exchange (SSE) Low latency Data Distribution System (LDDS)
Market Data Transmission System – Level 2
Technical Development Draft of the science and technology innovation board

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		Version	2.0.4
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Document History

Date	Version	Description
2017/01/10	1.0.0	Initial draft
2018/01/09	1.0.1	1. Add virtual aggregate auction volume unit description 2. Update trading time table
2018/08/13	1.1.1	1. Update UA3202 messages description 2. Update trading time table 3. Update trading status (Instrument Status) indicator, add CCALL, remove BETW and BREAK
2018/10/30	2.0.0	1. Cancel UA3107 messages, replaced with snapshot messages UA3202 (the same mechanism with closing auction). 2. Start time of UA3202 messages adjust from 09:25 to 08:45. 3. The trading status of UA3202 (Tag 10135) will be START (market open) and OCALL (opening auction) 4. Adjust the send mechanism and trading status of UA3202 message during the period of suspension.
2018-12-07	2.0.1	1. Adjust the trading timetable, extend the closing time of bond repo products to 15:30. 2. Update the instrument Status field, remove the unused instrument status. 3. Adjust the description of bond repo products in UA3202 message.
2019-06-05	2.0.2	1. Adjust the trading timetable. 2. Add “after-market fixed price trading market data” UA3108. 3. Add “after-market fixed price trading tick by tick market data” UA3209. 4. Support the rebuilding of “after-market fixed price trading tick by tick market data”
2019-11-19	2.0.3	Adjust the updating frequency of tick-by-tick message
2020-05-22	2.0.4	1. Adjust the tick-by-tick message interface to add BizIndex tag 10021 field, which is the serial number after the unified sorting of tick-by-tick order queue and transaction. 2. Add tick-by-tick order queue message. 3. Cancel 4.5 user number upload interface
2020-05-26	2.0.4	Adjust the remarks of OrderType and OrderBSFlag in UA 5801.

Chapter 1 – Introduction

1.1 Purpose

This document describes the technical aspects of the LDDS system Level-2 market data, a detailed description of the Level-2 real-time data format.

1.2 Data Scope

For all Information Vendor (IV) and LDDS developer & technical support user.

1.3 Reference Document

Table1-1 List of reference document

Document Name	Source of Document
《上海证券交易所低延时行情发布系统(LDDS)接口说明书》	SSEInfoNet
《IS101 上海证券交易所竞价撮合平台市场参与者接口规格说明书》	SSEInfoNet technical website

The SSEInfoNet technical website:

<http://www.sse.com.cn/services/tradingservice/tradingtech/technical/data/>

Chapter 2 – Connection Configuration

LDDS system can provide real-time market data service to the client by authorize the access right on IDC. The client do not necessary to modify any configuration than the service will be automatic generated on VDE. For more details, please contact with our marketing team (Email: marketing@ciis.com.hk) or refer to 《上海证券交易所低延时行情发布系统(LDDS)接口说明书》.

Chapter 3 – The definition of data

3.1 Scope

Level-2 real-time market data with **three** type of data channel (Snapshot / tick-by-tick transaction/ tick-by-tick order): Snapshot data type (tag10142=6 & 56), **tick-by-tick** transaction data type (tag10142=7 & 57) and **tick-by-tick order queue data type** (tag10142=58) are the different types in Level 2 real-time data. Snapshot data generated by the market data host server and in a constant cycle to disseminate on production platform, the priority is higher than the per transaction data.

3.2 Content

Snapshot data of auction type (tag10142) CategoryID = 6, included multiple message data. Snapshot data of auction will just sent out “Delta” for update. UA3202 also will provide full image data in a constant cycle. The system will automatic broadcast the full market snapshot at 15:45 PM (GMT+8) per trading day.

Snapshot data of after-market fixed price trading market data type (tag10142) CategoryID = 56, included per transaction data only (UA3108).

Transaction data of auction type (tag10142) CategoryID = 7, included per transaction data only (UA3201).

Tick by tick data of after-market fixed price trading market data type (tag10142) CategoryID = 57, included per transaction data only (UA3209).

Tick by tick order queue data type (tag10142) CategoryID = 58, included per transaction data only (UA5801).

3.3 Time table

3.3.1 Trading day

Table 3-1 time table

Time (GMT+8)	VDE
0830-1600	Static data ready, VSS create the Rebuild request.
0845-1600	Market Data, Index market data and Market Overview Data
1500-1600	After-market fixed price trading market data
0925-1535	Tick by tick transaction message
1505-1535	Tick by tick transaction message of after-market fixed price trading
0925-1600	Tick by tick transaction data rebuild

3.3.2 Public holiday

Release the heartbeat for UA1202 only.

3.4 Data format

- The static data will release be a file format and through “tag96” embedded in STEP data.

Chapter 4 - Data Description

4.1 Snapshot data

4.1.1 Market data

- The market data provides the index and other securities of the basic market information, 10 market depth and the top 50 bid / ask trade order quantity.
- Snapshot per 3 seconds each update.
- B share of currency unit and the price unit are USD. Everything else are CNY. Related to the number of units and specific securities, stock for share, Unit for fund, lot for bond and repurchase (1 lot= 10 sheets, each value of 100 dollars).
- UA3202 provide 10 bid /ask market depth total volume but also provide top 50 bid / ask trade order quantity.

- Yesterday effective closing price (tag140) in UA3202 will release at 09:25 after the call auction. In case of the yesterday effective closing price (more than 0) does not match the securities initialization data file, please take the real time data as accurate.
- Received the securities initialize data but not include the securities code in Snapshot, the information provider should add the code to the stock list.
- SSE closing price is the last minute of the average trading price, tag 31 in UA3202 included the latest trading price. The last trading price not equal that day closing price. Please refer tag10204 for the effect closing price.
- UA3202 contained the completely data (tag10146=1) and the update data (tag10146=2). Completely data can be replace existing data. Update data must calculate existing data then release the market depth data and commissioned queue information data. Leve 2 system measured as the cyclically adjusted the completely data (UA3202), other times release the update data only. Do not update if the data lost. Please receive the completely data of UA3202 for that stock.

UA3202 data have double cycle. First layer control the price, the position according by the price. Increase, update or delete the price on the message and modify the commissioned queue. Second layer operating the price of the commissioned queue, the position according by the order. Delete, update and increase the commission order. Delete the order meaning that the transaction has been completed, canceled or does not show, Update the order meaning that the part of transaction has been completed. The commission queue increases from the tail. The order start from 0.k

Level 2 release 10 market depth data and top 50 one blocks order. Base on the calculate of update and delectation, the price of the order (tag10068、tag10069) may more than 10 but not over 20, The similarly related commissioned queue(tag73) between 50 to 100.

UA3202 messages instrument status show as “OCALL” means start of opening auction time interval. During the period, UA3202 will provide opening auction market data including Bid 1 & Ask 1 as virtual matched reference price, the quantity of Bid 1 & Ask 1 are virtual matched quantity. Bid 2 & Ask 2 as imbalance bid quantity & imbalance ask quantity.

UA3202 messages instrument status show as “CCALL” means start of closing auction

time interval (14: 57~15: 00) . During the period, UA3202 will provide closing auction market data include Bid 1 & Ask 1 as virtual matched reference price , the quantity of Bid 1 & Ask 1 are virtual matched quantity. Bid 2 & Ask 2 as imbalance bid quantity & imbalance ask quantity.

Table 4-1 Market data STEP

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA3202
10142	CategoryID	Y	Int	6
10072	MsgSeqID	Y	Int	Message serial
95	RawDataLength	Y	Length	FAST data length
96	RawData	Y	Data	FAST data
	<i>Standard Trailer</i>	Y		

Table 4-2 Market data FAST

ID	Variable	Require	FAST operator	Type	Remark
999	TemplateID	Y	copy	Int	Template code = 3202
35	MessageType	Y	constant	String	UA3202
10178	DataTimeStamp	Y	copy	Int	Latest order time(Second) 143025 meaning 14:30:25
10121	DataStatus	N	default	Int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
48	SecurityID	Y	none	String	Security code
10146	ImageStatus	Y	none	Int	Snapshot type 1=Completely 2=Update
140	PreClosePx	N	default	Int	Yesterday closing price
10018	OpenPx	N	default	Int	Opening price
332	HighPx	N	default	Int	Highest price
333	LowPx	N	default	Int	Lowest price
31	LastPx	N	default	Int	Last
10204	ClosePx	N	default	Int	Closing price

10135	InstrumentStatus	N	default	String	Current instrument status
8538	TradingPhaseCode	N	default	String	Current product status For more details, please refer to “ TradingPhaseCode “ of “mktdt00.txt“ on 《IS101 上海证券交易所竞价撮合平台市场参与者接口规格说明书》.
8503	NumTrades	N	default	Int	Number of transactions
387	TotalVolumeTrade	N	default	64-bit int	Total volume of transactions Stock: Share Warrants: Share Bonds: Lot
8504	TotalValueTrade	N	default	64-bit int	Total value of transactions
10043	TotalBidQty	N	default	64-bit int	Total quantity of bid Stock: Share Warrants: Share Bonds: Lot
10039	WeightedAvgBidPx	N	default	int	Weighted average buy price (Dollar)
10116	AltWeightedAvgBidPx	N	default	int	Bond weighted average buy price (Dollar)
10044	TotalOfferQty	N	default	64-bit int	Total quantity of offer
10040	WeightedAvgOfferPx	N	default	int	Weighted average sell price (Dollar)
10117	AltWeightedAvgOfferPx	N	default	int	Bond weighted average sell price (Dollar)
10057	IOPV	N	default	int	ETF net value
10193	EtfBuyNumber	N	default	int	ETF buy quantity
10194	EtfBuyAmount	N	default	64-bit int	ETF buy amount

10195	EtfBuyMoney	N	default	64-bit int	ETF buy price
10196	EtfSellNumber	N	default	int	ETF sell quantity
10197	EtfSellAmount	N	default	64-bit int	ETF sell amount
10198	EtfSellMoney	N	default	64-bit int	ETF sell money
10060	YieldToMaturity	N	default	int	Yield to maturity
10138	TotalWarrantExecQty	N	default	64-bit int	Total quantity of warrant exec
10139	WarLowerPx	N	default	64-bit int	Warrant lower price(dollar)
10140	WarUpperPx	N	default	64-bit int	Warrant upper price(dollar)
10184	WithdrawBuyNumber	N	default	int	The buy quantity of withdrawal
10185	WithdrawBuyAmount	N	default	64-bit int	The buy amount of withdrawal
10186	WithdrawBuyMoney	N	default	64-bit int	The buy price of withdrawal
10187	WithdrawSellNumber	N	default	int	The sell quantity of withdrawal
10188	WithdrawSellAmount	N	default	64-bit int	The sell amount of withdrawal
10189	WithdrawSellMoney	N	default	64-bit int	The sell price of withdrawal
10190	TotalBidNumber	N	default	int	Total quantity of buy
10191	TotalOfferNumber	N	default	int	Total quantity of sell
10203	BidTradeMaxDuration	N	default	int	The duration of maximum bid of trade
10202	OfferTradeMaxDuration	N	default	int	The duration of maximum offer of trade

10070	NumBidOrders	N	default	int	The quantity of bid orders	
10071	NumOfferOrders	N	default	int	The quantity of offer orders	
10068	NoBidLevel	N	none	int	The number of bid level 10146=1 mean the quantity of buy. If that less than 10, please clear the redundant snapshot. If equal 10, please update 10 betting odds data. 10146=2 meaning the buy quantity must more than 10.	
→ repeating group	10147	PriceLevel Operator	N	default	int	Price of the operation 1=Add 2=Update 3=Delete If 10146=completely, does not request the calculate, so 10147 will not release, that will update directly.
→ repeating group	44	Price	Y	default	int	Price
→ repeating group	39	OrderQty	Y	default		The quantity of order Stock: Share Warrants: Share Bonds: Lot
→ repeating group	10067	NumOrders	Y	default	int	Total quantity of the order.

→ repeating group	73	<i>NoOrders</i>	N	default	int	If 10146=1(Completely) , 73 is the number of published. If 10147=1, 73 is the number of published. If 10147=2, 73 is the number of update. If 10147=3, no 73 and delete the order.
→ repeating group	10148	<i>OrderQueueOperator</i>	N	default	int	The queue of the order operator. 1=add, the new order must add from tail. So 10149 will not release. 2=update 3=delete If 10146=1 completely data or 10147=1 the new price of commissioned queue. 10148 and 10149 will not appear and update by 38 order.
→ repeating group	10149	<i>OrderQueueOperatorEntryID</i>	N	default	int	The position of order, start from 0. Required delete and update the previous order position. If 10148=1, 10149 will not appear and 38 add from tail.
→ repeating group	38	<i>OrderQty</i>	N	default	64-bit int	The quantity of order
10069	<i>NoOfferLevel</i>		N	none	int	The quantity of sell price.

→ repeating group	10147	PriceLevel Operator	N	default	int	The price of the operator 1=Add 2=Update 3=Delete If 10146=completely data, no calculations are required, so 10147 will not appear, that will update directly.
→ repeating group	44	Price	Y	default	int	Price
→ repeating group	39	OrderQty	Y	default		The quantity of order Stock: Share Warrants: Share Bonds: Lot
→ repeating group	10067	NumOrders	Y	default	int	Total number of commissioned order.
→ repeating group	73	NoOrders	N	default	int	If 10147=1 , 73 is the number of published. If 10147=2 , 73 is the number of update. If 10147=3 , no 73 and delete the order.
→ repeating group	10148	OrderQueueOperator	N	default	int	1=Add 2=Update 3=Delete
→ repeating group	10149	OrderQueueOperatorEntryID	N	default	int	Position of the operator
→ repeating group	38	OrderQty	N	default	64-bit int	The quantity of the order.

Table 4-3 Instrument Status Description

Instrument Status	Instrument Status Description
•START	Start
•OCALL	Opening call auction
•TRADE	Automatic continuous match
•SUSP	Suspension
•CCALL	Closing auction
•CLOSE	Closing, automatically calculate the closing price
•ENDTR	The end of the transaction

The description of the status of the transaction:

The trading status is published on UA3202(except for bond repo products), 08:45 to 9:15 will show as “START”; 09:15 to 9:25 opening call auction period ,will show as “OCALL”; 9:25 to 14:57 will show as “TRADE” status; 14:57 to 15:00 will show “CCALL” status; After 15:00 will show as “CLOSE” status then change to “ENDTR” status until next trading day.

For the bond repo products, 08:45 to 9:15 will show as “START”; 09:15 to 9:25 opening call auction period ,will show as “OCALL”; 9:25 to 15:30 will show as “TRADE” status ; After 15:30 will show as “CLOSE” status then change to “ENDTR” status until next trading day.

No status of whole market close are available in Level-2, there is market close status for each security. The securities is suspended on that day, you can receive “SUSP”, “CLOSE”, “ENDTR” status in turn. If the suspension is continuous then you receive a snapshot of this security and “SUSP” status.

An example of the market snapshot (UA3202): (Completely data, ICBC buy price 4.52, total 54 lots of the commissions, release top 50 commissions.)

8=STEP.1.0.0<SOH>9=1632<SOH>35=UA3202<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20110425-

09:27:25<SOH>10142=6<SOH>10072=7075<SOH>10178=92510<SOH>48=60139
8<SOH>10146=1<SOH>140=4.540<SOH>10018=4.510<SOH>332=4.510<SOH>3
33=4.510<SOH>31=4.510<SOH>10204=0.000<SOH>10135=TRADE<SOH>8503=
107<SOH>387=259400.000<SOH>8504=1169894.00000<SOH>10043=2060400.00
0<SOH>10039=4.428<SOH>10044=7449135.000<SOH>10040=4.709<SOH>10181
=0<SOH>10182=0.000<SOH>10183=0.00000<SOH>10199=0<SOH>10200=0.000

<SOH>10201=0.00000<SOH>10184=23<SOH>10185=3051115.000<SOH>10186=11439090.25000<SOH>10187=32<SOH>10188=1519452.000<SOH>10189=5734285.91000<SOH>10190=360<SOH>10191=973<SOH>10203=28<SOH>10202=143<SOH>10070=31<SOH>10071=37<SOH>10068=10<SOH>44=4.510<SOH>39=232500.000<SOH>10067=54<SOH>73=50<SOH>38=1200.000<SOH>38=5000.000<SOH>38=1300.000<SOH>38=5000.000<SOH>38=5000.000<SOH>38=5000.000<SOH>38=1000.000<SOH>38=400.000<SOH>38=1000.000<SOH>38=1000.000<SOH>38=3000.000<SOH>38=5000.000<SOH>38=3000.000<SOH>38=2000.000<SOH>38=2000.000<SOH>38=10000.000<SOH>38=700.000<SOH>38=2000.000<SOH>38=10000.000<SOH>38=1000.000<SOH>38=1000.000<SOH>38=500.000<SOH>38=3500.000<SOH>38=3000.000<SOH>38=4000.000<SOH>38=29900.000<SOH>38=500.000<SOH>38=2000.000<SOH>38=1000.000<SOH>38=1000.000<SOH>38=1000.000<SOH>38=1000.000<SOH>38=500.000<SOH>38=1500.000<SOH>38=20000.000<SOH>38=2000.000<SOH>38=500.000<SOH>38=6600.000<SOH>38=500.000<SOH>38=30000.000<SOH>38=100.000<SOH>38=400.000<SOH>38=3200.000<SOH>38=2500.000<SOH>38=5000.000<SOH>38=1000.000<SOH>38=500.000<SOH>38=300.000<SOH>38=5000.000<SOH>38=3000.000<SOH>38=5000.000<SOH>44=4.500<SOH>39=372200.000<SOH>10067=123<SOH>73=0<SOH>44=4.490<SOH>39=75300.000<SOH>10067=27<SOH>73=0<SOH>44=4.480<SOH>39=188400.000<SOH>10067=50<SOH>73=0<SOH>44=4.470<SOH>39=34800.000<SOH>10067=14<SOH>73=0<SOH>44=4.460<SOH>39=188500.000<SOH>10067=32<SOH>73=0<SOH>44=4.450<SOH>39=165100.000<SOH>10067=44<SOH>73=0<SOH>44=4.440<SOH>39=47100.000<SOH>10067=15<SOH>73=0<SOH>44=4.430<SOH>39=23400.000<SOH>10067=8<SOH>73=0<SOH>44=4.420<SOH>39=18800.000<SOH>10067=11<SOH>73=0<SOH>10069=10<SOH>44=4.520<SOH>39=51800.000<SOH>10067=1<SOH>73=1<SOH>38=51800.000<SOH>44=4.530<SOH>39=78153.000<SOH>10067=9<SOH>73=0<SOH>44=4.540<SOH>39=79200.000<SOH>10067=31<SOH>73=0<SOH>44=4.550<SOH>39=98600.000<SOH>10067=10<SOH>73=0<SOH>44=4.560<SOH>39=1035850.000<SOH>10067=20<SOH>73=0<SOH>44=4.570<SOH>39=182500.000<SOH>10067=14<SOH>73=0<SOH>44=4.580<SOH>39=182857.000<SOH>10067=38<SOH>73=0<SOH>44=4.590<SOH>39=357742.000<SOH>10067=41<SOH>73=0<SOH>44=4.600<SOH>39=923745.000<SOH>10067=89<SOH>73=0<SOH>44=4.610<SOH>39=99069.000<SOH>10067=30<SOH>73=0<SOH>8538=T 1<SOH>10=000<SOH>

An example of the market snapshot (UA3202): (Update data, updated three points of the buy price.)

8=STEP.1.0.0<SOH>9=532<SOH>35=UA3202<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20110425-09:28:16<SOH>10142=6<SOH>10072=7191<SOH>10178=93002<SOH>48=601398<SOH>10146=2<SOH>332=4.520<SOH>31=4.520<SOH>8503=108<SOH>387=309400.000<SOH>8504=1395894.00000<SOH>10043=2041900.000<SOH>10039=4.427<SOH>10044=7450135.000<SOH>10040=4.710<SOH>10068=3<SOH>10147=

2<SOH>44=4.500<SOH>39=348200.000<SOH>10067=122<SOH>73=0<SOH>10147=2<SOH>44=4.490<SOH>39=78300.000<SOH>10067=28<SOH>73=0<SOH>10147=2<SOH>44=4.480<SOH>39=190900.000<SOH>10067=51<SOH>73=0<SOH>10069=3<SOH>10147=2<SOH>44=4.520<SOH>39=1800.000<SOH>10067=1<SOH>73=1<SOH>10148=2<SOH>10149=0<SOH>38=1800.000<SOH>10147=2<SOH>44=4.540<SOH>39=109200.000<SOH>10067=32<SOH>73=0<SOH>10147=2<SOH>44=4.580<SOH>39=185857.000<SOH>10067=39<SOH>73=0<SOH>10=000<SOH>

An example of the market snapshot (UA3202): (Update data, ICBC buy price 4.52 and add three more commissions, deleted top 50 commissions on 4.51 dollars. The new commissioned queue is 4.52 [6433, 2000, 1000])

8=STEP.1.0.0<SOH>9=2089<SOH>35=UA3202<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20110425-
09:28:19<SOH>10142=6<SOH>10072=7242<SOH>10178=93003<SOH>48=601398<SOH>10146=2<SOH>8503=131<SOH>387=346592.000<SOH>8504=1563685.59000<SOH>10043=2373008.000<SOH>10039=4.434<SOH>10044=7479326.000<SOH>10040=4.709<SOH>10068=10<SOH>10147=1<SOH>44=4.520<SOH>39=9433.000<SOH>10067=3<SOH>73=3<SOH>38=6433.000<SOH>38=2000.000<SOH>38=1000.000<SOH>10147=2<SOH>44=4.510<SOH>39=226075.000<SOH>10067=59<SOH>73=50<SOH>10148=3<SOH>10149=0<SOH>10148=3<SOH>10149=1<SOH>10148=3<SOH>10149=2<SOH>10148=3<SOH>10149=3<SOH>10148=3<SOH>10149=4<SOH>10148=3<SOH>10149=5<SOH>10148=3<SOH>10149=6<SOH>10148=3<SOH>10149=7<SOH>10148=3<SOH>10149=8<SOH>10148=3<SOH>10149=9<SOH>10148=3<SOH>10149=10<SOH>10148=3<SOH>10149=11<SOH>10148=3<SOH>10149=12<SOH>10148=3<SOH>10149=13<SOH>10148=3<SOH>10149=14<SOH>10148=3<SOH>10149=15<SOH>10148=3<SOH>10149=16<SOH>10148=3<SOH>10149=17<SOH>10148=3<SOH>10149=18<SOH>10148=3<SOH>10149=19<SOH>10148=3<SOH>10149=20<SOH>10148=3<SOH>10149=21<SOH>10148=3<SOH>10149=22<SOH>10148=3<SOH>10149=23<SOH>10148=3<SOH>10149=24<SOH>10148=3<SOH>10149=25<SOH>10148=3<SOH>10149=26<SOH>10148=3<SOH>10149=27<SOH>10148=3<SOH>10149=28<SOH>10148=3<SOH>10149=29<SOH>10148=3<SOH>10149=30<SOH>10148=3<SOH>10149=31<SOH>10148=3<SOH>10149=32<SOH>10148=3<SOH>10149=33<SOH>10148=3<SOH>10149=34<SOH>10148=3<SOH>10149=35<SOH>10148=3<SOH>10149=36<SOH>10148=3<SOH>10149=37<SOH>10148=3<SOH>10149=38<SOH>10148=3<SOH>10149=39<SOH>10148=3<SOH>10149=40<SOH>10148=3<SOH>10149=41<SOH>10148=3<SOH>10149=42<SOH>10148=3<SOH>10149=43<SOH>10148=3<SOH>10149=44<SOH>10148=3<SOH>10149=45<SOH>10148=3<SOH>10149=46<SOH>10148=3<SOH>10149=47<SOH>10148=3<SOH>10149=48<SOH>10148=3<SOH>10149=49<SOH>10147=2<SOH>44=4.500<SOH>39=474900.000<SOH>10067=139<SOH>73=0<SOH>10147=2<SOH>44=4.490<SOH>39=106100.000<SOH>10067=40<SOH>73=0<SOH>10147=2<SOH>44=4.480<SOH>39=250800.000<

SOH>10067=66<SOH>73=0<SOH>10147=2<SOH>44=4.470<SOH>39=38200.000
 <SOH>10067=19<SOH>73=0<SOH>10147=2<SOH>44=4.460<SOH>39=198000.0
 00<SOH>10067=37<SOH>73=0<SOH>10147=2<SOH>44=4.450<SOH>39=24830
 0.000<SOH>10067=54<SOH>73=0<SOH>10147=2<SOH>44=4.440<SOH>39=477
 00.000<SOH>10067=16<SOH>73=0<SOH>10147=3<SOH>44=4.420<SOH>39=18
 800.000<SOH>10067=11<SOH>10069=9<SOH>10147=3<SOH>44=4.520<SOH>3
 9=1800.000<SOH>10067=1<SOH>10147=2<SOH>44=4.530<SOH>39=22653.000
 <SOH>10067=8<SOH>73=8<SOH>10148=1<SOH>38=300.000<SOH>10148=1<S
 OH>38=545.000<SOH>10148=1<SOH>38=6793.000<SOH>10148=1<SOH>38=73
 15.000<SOH>10148=1<SOH>38=3500.000<SOH>10148=1<SOH>38=1000.000<S
 OH>10148=1<SOH>38=2600.000<SOH>10148=1<SOH>38=600.000<SOH>10147
 =2<SOH>44=4.540<SOH>39=128000.000<SOH>10067=32<SOH>73=0<SOH>101
 47=2<SOH>44=4.550<SOH>39=384600.000<SOH>10067=19<SOH>73=0<SOH>1
 0147=2<SOH>44=4.560<SOH>39=1053550.000<SOH>10067=24<SOH>73=0<SO
 H>10147=2<SOH>44=4.580<SOH>39=182857.000<SOH>10067=38<SOH>73=0<
 SOH>10147=2<SOH>44=4.590<SOH>39=360942.000<SOH>10067=43<SOH>73=
 0<SOH>10147=2<SOH>44=4.600<SOH>39=633745.000<SOH>10067=89<SOH>7
 3=0<SOH>10147=1<SOH>44=4.620<SOH>39=187532.000<SOH>10067=42<SOH
 >73=0<SOH>10=000<SOH>

An example of the market snapshot (UA3202): (Update data, ICBC buy price 4.52 no change. Three commissions modify to seven commissions and update the commissions queue five times. Update the first commission from 6433 to 6228 and add four commissions from tail as 4.52 [6228, 2000, 1000, 5000, 500, 1000, 2000])

8=STEP.1.0.0<SOH>9=923<SOH>35=UA3202<SOH>49=VDE<SOH>56=VDR<S
 OH>34=0<SOH>52=20110425-
 09:28:22<SOH>10142=6<SOH>10072=7285<SOH>10178=93005<SOH>48=60139
 8<SOH>10146=2<SOH>332=4.530<SOH>8503=133<SOH>387=346797.000<SOH
 >8504=1564612.19000<SOH>10043=2508903.000<SOH>10039=4.437<SOH>1004
 4=7581012.000<SOH>10068=10<SOH>10147=2<SOH>44=4.520<SOH>39=17728.
 000<SOH>10067=7<SOH>73=5<SOH>10148=2<SOH>10149=0<SOH>38=6228.0
 00<SOH>10148=1<SOH>38=5000.000<SOH>10148=1<SOH>38=500.000<SOH>1
 0148=1<SOH>38=1000.000<SOH>10148=1<SOH>38=2000.000<SOH>10147=2<S
 OH>44=4.510<SOH>39=276175.000<SOH>10067=69<SOH>73=0<SOH>10147=2
 <SOH>44=4.500<SOH>39=476400.000<SOH>10067=141<SOH>73=0<SOH>1014
 7=2<SOH>44=4.490<SOH>39=138400.000<SOH>10067=45<SOH>73=0<SOH>10
 147=2<SOH>44=4.480<SOH>39=260600.000<SOH>10067=75<SOH>73=0<SOH>
 10147=2<SOH>44=4.470<SOH>39=39900.000<SOH>10067=21<SOH>73=0<SOH
 >10147=2<SOH>44=4.460<SOH>39=202400.000<SOH>10067=41<SOH>73=0<S
 OH>10147=2<SOH>44=4.450<SOH>39=261100.000<SOH>10067=58<SOH>73=0
 <SOH>10147=2<SOH>44=4.440<SOH>39=48700.000<SOH>10067=17<SOH>73=
 0<SOH>10147=2<SOH>44=4.430<SOH>39=25400.000<SOH>10067=9<SOH>73=

0<SOH>10069=3<SOH>10147=2<SOH>44=4.530<SOH>39=27653.000<SOH>10067=9<SOH>73=1<SOH>10148=1<SOH>38=5000.000<SOH>10147=2<SOH>44=4.550<SOH>39=416600.000<SOH>10067=20<SOH>73=0<SOH>10147=2<SOH>44=4.560<SOH>39=1053650.000<SOH>10067=25<SOH>73=0<SOH>10=000<SOH>

4.1.2 Index market data

- Index data provide the basic information of the index.
- Index data per 5 seconds each update.
- UA3113 release the incremental or differential data at 09:00. Yesterday effective closing price will release at 09:00. In case of the yesterday effective closing price (more than 0) does not match the securities initialization data file, please take the real time data as accurate.
- Received the securities initialize data but not include the securities code in Snapshot, the information provider should add the code to the stock list.

Table 4-4 Market data STEP

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA3113
10142	CategoryID	Y	Int	6
10072	MsgSeqID	Y	Int	Message ID
95	RawDataLength	Y	Length	FAST data length
96	RawData	Y	Data	FAST data
	<i>Standard Trailer</i>			

Table 4-5 Market data FAST

ID	Variable	Require	FAST operator	Type	Remark
999	TemplateID	Y	copy	int	Template ID= 3113
35	MessageType	Y	constant	String	UA3113
10178	DataTimeStamp	Y	copy	int	Latest order time(Second) 14302 meaning 14:30:25
10121	DataStatus	N	default	int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
48	SecurityID	Y	none	String	Security code
10007	PreCloseIndex	N	default	64-bit int	Pre-closing index

10006	OpenIndex	N	default	64-bit int	Opening index
10118	Turnover	N	default	64-bit int	Calculate the corresponding index amount (dollar)
10009	HighIndex	N	default	64-bit int	Highest index
10010	LowIndex	N	default	64-bit int	Lowest index
10008	LastIndex	N	default	64-bit int	Latest index
10013	TradeTime	N	default	int	Trading hour
387	TotalVolumeTraded	N	default	64-bit int	The quantity of transactions in the corresponding index (lot)
10205	CloseIndex	N	default	64-bit int	Closing index (the valid number more than 0)

An example of Index data:

8=STEP.1.0.0<SOH>9=200<SOH>35=UA3113<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20101102-09:25:12<SOH>10142=6<SOH>10072=4792<SOH>10178=92514<SOH>48=000003<SOH>10006=300.02600<SOH>10118=2114513.5<SOH>10009=300.02600<SOH>10010=300.02600<SOH>10008=300.02600<SOH>10013=9250744<SOH>387=2771.00000<SOH>10=000<SOH>

4.1.3 Market overview data

- Market overview data provide the completely date and time.
- Market overview data per 3 seconds each update.

Table 4-6 Market overview STEP

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA3115
10142	CategoryID	Y	int	6
10072	MsgSeqID	Y	int	Message ID
95	RawDataLength	Y	Length	FAST data length
96	RawData	Y	Data	FAST data
	<i>Standard Trailer</i>			

Table 4-7 Market overview FAST

ID	Variable	Require	FAST Operator	Type	Remark
999	TemplateID	Y	copy	int	Template ID = 3115
35	Message Type	Y	constant	String	UA3115
10178	DataTimeStamp	Y	copy	int	Latest order time(Second) 14302 meaning 14:30:25
10121	DataStatus	N	default	int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
48	SecurityID	N	default	String	Security ID
42	OrigTime	N	default	int	Market Time (One hundredth of a second)
10003	OrigDate	N	default	int	Market date

An example of the market overview:

8=STEP.1.0.0<SOH>9=117<SOH>35=UA3115<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20101102-
09:25:15<SOH>10142=6<SOH>10072=4815<SOH>10178=92517<SOH>48=00000
0<SOH>42=9251700<SOH>10003=20101102<SOH>10=000<SOH>

4.1.4 After-market fixed price trading market data

After-market fixed price trading market data provide transaction volume, amount, quantity declared of buy/sell and so on of all the securities which take part in the after-market fixed price trading. Released at 15:00 every trading day.

After-market fixed price trading market data per 3 seconds each update.

Table 4-8 After-market fixed price trading market data STEP

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA3108
10142	CategoryID	Y	Int	56
10072	MsgSeqID	Y	Int	Message ID
95	RawDataLength	Y	Length	FAST Data Length
96	RawData	Y	Data	FAST Data
	<i>Standard Trailer</i>			

Table 4-9 After-market fixed price trading market data FAST

ID	Variable	Require	FAST operator	Type	Remark
999	TemplateID	Y	copy	Int	Template code = 3108
35	MessageType	Y	constant	String	UA3108
10178	DataTimeStamp	Y	copy	Int	Latest order time(Second) 151025000 meaning 14:10:25.000
10121	DataStatus	N	default	Int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
48	SecurityID	Y	none	String	Security code
10146	ImageStatus	Y	none	Int	Snapshot type 1=Complete
10204	ClosePx	N	default	Int	Closing price
10135	InstrumentStatus	N	default	String	Current instrument status
8503	NumTrades	N	default	Int	Number of transactions
387	TotalVolumeTrade	N	default	64-bit int	Total volume of transactions Stock: Share Warrants: Share Bonds: Lot
8504	TotalValueTrade	N	default	64-bit int	Total value of transactions
10043	TotalBidQty	N	default	64-bit int	Total quantity of bid Stock: Share Warrants: Share Bonds: Lot
10044	TotalOfferQty	N	default	64-bit int	Total quantity of offer
10184	WithdrawBuyNumber	N	default	int	The buy quantity of withdrawal
10185	WithdrawBuyAmount	N	default	64-bit int	The buy amount of withdrawal
10187	WithdrawSellNumber	N	default	int	The sell quantity of withdrawal

10188	WithdrawSellAmount	N	default	64-bit int	The sell amount of withdrawal	
10068	NoBidLevel	N	none	int	The number of bid level 10146=1 mean the quantity of buy. If that less than 10, please clear the redundant snapshot. If equal10, please update 10 betting odds data. 10146=2 meaning the buy quantity must more than 10.	
→ repeating group	39	<i>OrderQty</i>	Y	default		The quantity of order Stock: Share
→ repeating group	10067	<i>NumOrders</i>	Y	default	int	Total quantity of the order.
→ repeating group	73	<i>NoOrders</i>	N	default	int	The number of published.
→ repeating group	38	<i>OrderQty</i>	N	default	64-bit int	The quantity of order
10069	<i>NoOfferLevel</i>	N	none	int	The quantity of sell price.	
→ repeating group	39	<i>OrderQty</i>	Y	default		The quantity of order Stock: Share
→ repeating group	10067	<i>NumOrders</i>	Y	default	int	Total number of commissioned order.
→ repeating group	73	<i>NoOrders</i>	N	default	int	The number of published.

→ repeating group	38	<i>OrderQty</i>	N	default	64-bit int	The quantity of the order.
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Table 4-10 Instrument Status Description

Instrument Status	Instrument Status Description
•INIT	Start (before market open) period
•PCALL	Centralized match period
•POSMT	Continuous match period
•ENDPT	The end of the transaction period
•POSSP	Suspension

Description of the Instrument Status:

15: 00~15: 05, PCALL;

15: 05~15: 30, POSMT;

After 15: 30, ENDPT

4.2 Tick by tick market data

- Level-2 through the transaction message send each transaction information to the trading system. Each transaction information and snapshot data have no priority relationship.

- Each transaction information have multi-channel for the transaction (TradeChannel), The trade number (TradeIndex) of each trade channel should be connected and start from 1. If VSS program checked any transaction channel is not continuous, it can be defined as a packet loss. Please rebuild the port for retrieve the lost data.

4.2.1 Tick by tick information

Each transaction information is sent through tick by tick message in Level-2.

Table 4-11 Tick by tick information STEP

ID	Variable	Require	Type	Remark

	<i>Standard Header</i>	Y		MsgType = UA3201
10142	CategoryID	Y	Int	7
10072	MsgSeqID	Y	Int	Message ID
95	RawDataLength	Y	Length	FAST Data Length
96	RawData	Y	Data	FAST Data
	<i>Standard Trailer</i>			

Table 4-12 Tick by tick information FAST

ID	Variable	Require	FAST Operator	Type	Remark
999	TemplateID	Y	Copy	int	Template ID =3201
35	MessageType	Y	constant	String	UA3201
10121	DataStatus	N	Default	int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
10011	TradeIndex	Y	increment	int	Trade Index Start from 1, continuous of TradeChannel
10115	TradeChannel	Y	Copy	int	Trade Channel
48	SecurityID	N	Copy	String	Security ID
10013	TradeTime	N	Copy	int	Trade Time (One hundredth of a second) 14302506 meaning 14:30:25.06
10014	TradePrice	N	Default	int	Trade price(dollar)
10015	TradeQty	N	Default	64-bit int	The quantity of order Stock: Share Warrants: Share Bonds: Lot
10016	TradeMoney	N	Default	64-bit int	Transaction amount(dollar)
10179	TradeBuyNo	N	Default	64-bit int	Buy order number
10180	TradeSellNo	N	Default	64-bit int	Sell order number.

10192	TradeBSFlag	N	Default	String	Inside and outside status: B – Outside, initiative to buy S – Inside, initiative to sell N – Unknown
10021	BizIndex	N	Default	String	Business serial number and transaction number are unified, starting from 1 and continuing by channel number

An example of the tick by tick information

```
8=STEP.1.0.0<SOH>9=182<SOH>35=UA3201<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20120801-
09:23:42<SOH>10142=7<SOH>10072=0<SOH>10011=5<SOH>10115=2<SOH>48
=600497<SOH>10013=9250071<SOH>10014=13.090<SOH>10015=900.000<SOH>
>10016=11781.00000<SOH>10179=25721<SOH>10180=7731<SOH>10192=N<SOH>
H>10=100<SOH>
```

4.2.2 Tick by tick message of after-market fixed price trading market data

Level-2 data feed send every after-market fixed price trading transaction information through tick by tick message of after-market fixed price trading market data.

Table 4-13 Tick by tick information of after-market fixed price trading STEP

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA3209
10142	CategoryID	Y	Int	57
10072	MsgSeqID	Y	Int	Message ID
95	RawDataLength	Y	Length	FAST Data Length
96	RawData	Y	Data	FAST Data
	<i>Standard Trailer</i>			

Table 4-14 Tick by tick information of after-market fixed price trading FAST

ID	Variable	Require	FAST Operator	Type	Remark
999	TemplateID	Y	Copy	int	Template ID =3209

35	MessageType	Y	constant	String	UA3209
10121	DataStatus	N	Default	int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
10011	TradeIndex	Y	increment	int	Trade Index Start from 1, continuous of TradeChannel
10115	TradeChannel	Y	Copy	int	Trade Channel
48	SecurityID	N	Copy	String	Security ID
10013	TradeTime	N	Copy	int	Trade Time (One hundredth of a second) 14302506 meaning 14:30:25.06
10014	TradePrice	N	Default	int	Trade price(dollar)
10015	TradeQty	N	Default	64-bit int	The quantity of order Stock: Share Warrants: Share Bonds: Lot
10016	TradeMoney	N	Default	64-bit int	Transaction amount(dollar)
10179	TradeBuyNo	N	Default	64-bit int	Buy order number
10180	TradeSellNo	N	Default	64-bit int	Sell order number.
10192	TradeBSFlag	N	Default	String	Inside and outside status: B – Outside, initiative to buy S – Inside, initiative to sell N – Unknown

An example of the tick by tick information of after-market fixed price trading:

```
8=STEP.1.0.0<SOH>9=182<SOH>35=UA3209<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20120801-
09:23:42<SOH>10142=7<SOH>10072=0<SOH>10011=5<SOH>10115=2<SOH>48=600497<SOH>10013=9250071<SOH>10014=13.090<SOH>10015=900.000<SOH>10016=11781.00000<SOH>10179=25721<SOH>10180=7731<SOH>10192=N<SOH>10=100<SOH>
```

4.3 Tick-by-tick Order Queue market data

There are multiple channels for each tick-by-tick order queue. The order index of

each order channel should be continuous and start from 1. If the VSS program detects that the serial number of an order channel is not continuous, it can be judged as packet loss. Please connect the data rebuild port to request for the lost data.

In each channel the serial number BizIndex is generated and incremented from 1 by sorting the tick-by-tick transactions and order

4.3.1 Tick-by-tick Order Queue message data.

Level-2 data feed sends the order of each bidding through tick-by-tick order queue message one by one. The order is the remaining order after the auction matching transaction, which includes the new order, the deleted order and the status order changed during the transaction period. The tick-by-tick transaction and order data of the same security are published in the same channel.

The valid order received in call auction and suspension period is not released in real time, and will be unified released after the end of call auction or suspension stage.

The order data generated by after-market fixed price will not be published.

Table 4-15 Tick-by-tick Order Queue STEP message

ID	Variable	Require	Type	Remark
	<i>Standard Header</i>	Y		MsgType = UA5801
10142	CategoryID	Y	Int	58
10072	MsgSeqID	Y	Int	Message ID
95	RawDataLength	Y	Length	FAST Data Length
96	RawData	Y	Data	FAST Data
	<i>Standard Trailer</i>			

Table 4-16 Tick-by-tick Order Queue FAST message

ID	Variable	Require	FAST Operator	Type	Remark
999	TemplateID	Y	Copy	int	Template ID =5801
35	MessageType	Y	constant	String	UA5801

10121	DataStatus	N	Default	int	1= Duplicate data (Not for process and display, only for check the serial number is continuous.) 2= Not authorized
10011	OrderIndex	Y	increment	int	Order Index Start from 1, continuous of OrderChannel
10115	Channel	Y	Copy	int	Channel
48	SecurityID	N	Copy	String	Security ID
10013	OrderTime	N	Copy	int	Order Time (One hundredth of a second) 14302506 meaning 14:30:25.06
10022	OrderType	N	Default	String	Order Type A- Order Book (Add) B- Order Book (delete) S- Status Order
10023	OrderNo	N	Default	64-bit int	Original order number
44	OrderPrice	N	Default	int	Order price (Yuan)
39	Balance	N	Default	64-bit int	Remaining order number
10192	OrderBSFlag	N	Default	String	To Order Book: B –buy S – sell To Status Book: SUSP - suspension START- market start OCALL- opening call auction TRADE- continuous matching CCALL- closing call auction CLOSE- market close ENSTR- trade close

10021	BizIndex	N	Default	String	Business serial number and transaction number are unified, starting from 1 and continuing by channel number
-------	----------	---	---------	--------	---

An example of the tick by tick order queue information:

```
8=STEP.1.0.0<SOH>9=182<SOH>35=UA5801<SOH>49=VDE<SOH>56=VDR<SOH>34=0<SOH>52=20120801-
09:23:42<SOH>10142=58<SOH>10072=0<SOH>10011=5<SOH>10115=4<SOH>48=600497<SOH>10013=14302506<SOH>10021=A<SOH>10022=3590004013253908<SOH>10023=104069428<SOH>44=13.050<SOH>10024=3000.000<SOH>10192=B<SOH>10021=58<SOH>10=100<SOH>
```

4.4 Rebuild the tick by tick information

Rebuild the real time data required the connection with port 9130 on VDE and send the request to UA1201. Setup tag10075=3, tag10142=7 or 57 for rebuild the tick by tick information. Tag10077 meaning recover the transaction channel (tag 10115). Tag10073 is the start transaction number (tag10011) and tag10074 is the end number. Tag10142=7 means to rebuild the tick by tick information of auction, tag10142=57 means to rebuild the tick by tick information of after-market fixed price trading, All of the tick by tick information can be rebuild. We recommend the requisition under 1000.

An example of rebuild the tick by tick information of auction: (Rebuild No.4 channel, 6551 to 6553 transaction message.)

```
8=STEP.1.0.0<SOH>9=96<SOH>35=UA1201<SOH>49=VSS<SOH>56=VDE<SOH>34=0<SOH>52=20101102-
15:40:17<SOH>10075=3<SOH>10142=7<SOH>10073=6551<SOH>10074=6553<SOH>10077=4<SOH>10=025<SOH>
```

An example of rebuild the tick by tick information of after-market fixed price trading:

(Rebuild No.103 channel, 6551 to 6553 transaction message.)

```
8=STEP.1.0.0<SOH>9=96<SOH>35=UA1201<SOH>49=VSS<SOH>56=VDE<SOH>34=0<SOH>52=20101102-
15:40:17<SOH>10075=3<SOH>10142=57<SOH>10073=6551<SOH>10074=6553<SOH>10077=103<SOH>10=025<SOH>
```