

Metropolitan Stock Exchange of India Ltd.

Equity Spot

Trading Market Data API

Version 25.0.0.4
21/10/2026

Revision History

Version No.	Description	Revision Date
11.5	Initial Version Document created	09/05/2016
11.6	1. Updated Section System Behaviour and Exceptions 2. Added Block deal Price in Section List of Messages Supported . 3. Added Block Deal Price structure in Broadcasts	30/11/2023
25.0.0.0	Common Standards for the Document - Description has been updated - Xceed Zip functionality details has been removed LZ4 Compression Process - New section added System Behavior and Exceptions - Description has been updated Block Deal Price - A new row 'Reserved' has been added - Byte size of 'Total' has been updated to '45'	25/02/2025
25.0.0.1	In message Market Picture , 2 new 'Reserved' fields added at the end	30/04/2025
25.0.0.2	All broadcast messages will be sent using UDP only, hence points related to TCP protocol support is removed from Section Common Standards for the Document & System Behavior and Exceptions Under Section List of Messages Supported Message "30022/30033 MBOMBP Subscription or Unsubscription Requests" is removed	19/01/2026
25.0.0.3	System Behaviour and Exceptions is updated w.r.t. ATO price point In message Market Picture , following changes has been done: - field 'Indicative Open Price Volume' has been renamed as 'Indicative Flag'. Description of the field also updated. - Field 'Close Price' has been renamed as 'Previous Close Price' - Two new fields 'Indicative Close Price' and Imbalance Quantity' added - Description of field 'Total Quantity Traded' has been updated	05/06/2026
25.0.0.4	In message Market Picture , following changes have been done: - For field 'Indicative Flag' & 'Indicative Close Price' Description has been updated. Under Section List of Messages Supported - Message 31800 "Final VWAP & Reference Price" has been added. Added 'Final VWAP & Reference Price Info' in Nested Message Structures Added 'Final VWAP & Reference Price' structure in Broadcasts	21/10/2026

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Section A: Introduction

1. Executive Summary

This document describes the protocol to be used for Open Interface to receive market data broadcasts from MSE Trading System. All fields in the messages are sequentially presented.

The exchange requires that the vendor/exchange's member undergo a conformance test upon completing development of the interface. The vendor/exchange's member must contact the exchange to schedule an appropriate period for testing.

The vendor/exchange's member may contact the Information Technology Division of the exchange to seek clarification at:

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3. Target Audience

This document is generated for information technology personnel, especially system designers and programmers of user organizations and third-party software developers (referred as vendor/exchange member).

4. Common Standards for the Document

1. The document assumes that the vendor needs to join the multicast group and listen to the defined port to receive broadcast.

All messages sent by or received from the system the system should be compressed or uncompressed using LZ4 version 1.9.4.0

Download it from the following link:

<https://github.com/lz4/lz4/releases/download/v1.9.4>

2. The first 5 characters of the message shall be uncompressed and shall contain the length of message which is compressed. The compressed message shall contain an array of messages which will again have first 5 characters as the message length followed by the actual message.

For example a system broadcast may look like `<01024><Compressed messages>`.

On uncompressing `<Compressed messages>`, the message shall contain message or series of messages in following manner:

`<00075><Message><00100><Message>.....`

where `<00075>`, `<00100>` shall be the length of the messages that follow. These following messages are uncompressed and should be processed as received.

5. LZ4 Compression Process

1. LZ4 compression functionality is provided by msys-lz4-1.dll.
2. Methods used are LZ4_compress_fast and LZ4_decompress_safe for compressing and decompressing data respectively.
3. Follow the steps to use msys-lz4-1.dll as given in dummy code snippet.

5.1. Implementation in C#

Step 1: To Compress

```
//User Pointer
IntPtr ptrCompressedBuffer = Marshal.AllocCoTaskMem(dest.Length);
IntPtr ptrSource = Marshal.AllocCoTaskMem(srcLen);
Marshal.Copy(src, srcOffset, ptrSource, srcLen);

destLen = LZ4_compress_fast(ptrSource, ptrCompressedBuffer, srcLen, dest.Length,
m_Acceleration);

Marshal.Copy(ptrCompressedBuffer, dest, destOffset, destLen);

Marshal.FreeCoTaskMem(ptrSource);
Marshal.FreeCoTaskMem(ptrCompressedBuffer);
```

Step2: To Decompress

```
IntPtr ptrUnCompressedBuffer = Marshal.AllocCoTaskMem(m_Capacity);
IntPtr ptrSource = Marshal.AllocCoTaskMem(srcLen);
Marshal.Copy(src, srcOffset, ptrSource, srcLen);

destLen = LZ4_decompress_safe(ptrSource, ptrUnCompressedBuffer, srcLen,
m_Capacity);

Marshal.Copy(ptrUnCompressedBuffer, dest, destOffset, destLen);

Marshal.FreeCoTaskMem(ptrSource);
Marshal.FreeCoTaskMem(ptrUnCompressedBuffer)
```

5.2. Implementation in C++

```
#include <string>
#include ".\lz4.h"
Step 1: To Compress
void lz4_compress(const char* in, char* out, int inLen, int& outLen)
{
    outLen = LZ4_compress_fast(in, out, inLen, outLen, 40);
}

Step2: To Decompress
void lz4_decompress(const char* in, char* out, int inLen, int& outLen)
{
    outLen = LZ4_decompress_safe(in, out, inLen, outLen);
}

Sample:
int main()
{
    char data[285];
    memset(data, 0, 285);
    int inputDataLen = strlen("This is Text String");
    strncpy_s(data, "This is Text String", inputDataLen);

    char CompressedData[1024];
    memset(CompressedData, 0, 1024);
    int CompressedDataLen = 1024;
    lz4_compress(data, CompressedData, inputDataLen, CompressedDataLen);

    char UnCompressedData[285];
    memset(UnCompressedData, 0, 285);
    int UnCompressedDataLen = 285;
    lz4_decompress(CompressedData, UnCompressedData, CompressedDataLen,
    UnCompressedDataLen);

    printf("%s: %d\n", UnCompressedData, UnCompressedDataLen);
    return 1;
}
```

6. Assumptions and Dependencies

1. The member must take the latest instrument master daily to receive instrument updates.
2. All the messages contain a message header at start of the message.
3. All date time fields shall be specified in number of seconds since '01-01-1970 00:00:00' Hrs (Local time of Exchange and not UTC).
4. All numeric fields are unsigned unless specified.
5. All string fields are filled with trailing spaces terminated by a null character.
6. All messages are byte aligned.
7. All reserved fields shall contain space for string and '0' for numeric unless specified.
8. All numeric fields are denoted in decimal system.
9. All timestamp validation should refer to the Exchange Time Stamp in the Message Header.

7. System Behaviour and Exceptions

1. All messages defined under section [List Of messages Supported](#) will be sent using multicast/UDP protocol as available from the exchange.
2. All system quantities will be in terms of LOT only.
3. All price fields shall be subject to implicit decimal as identified in the Decimal Locator Field of the instrument master.
 - a. For example, ` 5974.50 will be specified as 597450 with value in Decimal Locator as 100. ` 59.7450 will be specified as 597450 with value in Decimal Locator as 10000.
4. Broadcast of Block deal price should be available only during the Block deal session.
5. Buy Price or Sell price will be zero to indicate market order during Pre-open/Special Pre-Open/Auction/Closing Auction sessions. This can be referred to as ATO/ATA price point.

Note:
ATO: At The Opening
ATA: At The Auction

Section B: Market Data Messages

8. List of Messages Supported

The Broadcast Server supports the following messages:

Message Type	Description
31038	<i>Market Picture</i>
1833	<i>Market Close Statistics</i>
6501	<i>Exchange Messages</i>
7215	<i>Most Active Products By Volume and Value Info</i>
7216	<i>Top Gainers/Losers Product Info</i>
31705	<i>Block Deal Price</i>
31800	Final VWAP & Reference Price

9. Nested Message Structures

Appended below are message structures referred to in the messages below:

9.1 Broadcast Message Header

This message contains details related to message header

Name	Type	Byte Size	Description
Exchange Time Stamp	Long	4	Date and Time when the message/response was generated by exchange in terms of seconds from 01-01-1970 00:00:00 hours.
Message Code	Short	2	Contains the Message number for the Message received or sent. A message is invalid without this.
Reserved	Short	2	
Reserved	Long	4	
Message Size	Short	2	Describes the length of the entire message including the length of the Message Header.
Reserved	Short	2	
Total		16	

9.2. Broadcast Instrument Information

This message contains details related to instrument information

Name	Type	Byte Size	Description
Reserved	String	7	
Instrument Code	String	11	The Underlying Asset / Product Code is specified by Exchange for permitted Underlying Asset / Products for trading.
Reserved	String	5	
Reserved	Long	4	
Reserved	String	11	
Total		38	

9.3. Order By Price

This message contains details related to order by price

Name	Type	Byte Size	Description
Quantity	Long	4	Total Quantity for which orders are available in the market.
Order Price	Long	4	Price at which orders are pending in the market.
Total Number of Orders	Long	4	Total Number of Orders at the price forming the Quantity
Buy back indicator	Short	2	1 – Indicates presence of buy back order(s) at the price referred herein.
Total		14	

9.4. Most Active Instruments Info

This message contains details related to active instrument info

Name	Type	Byte Size	Description
Instrument Identifier	Long	4	The Underlying Asset / Product Identifier as specified by Exchange for permitted Underlying Assets / Products for trading.
Total Quantity Traded	Double	8	Total Quantity Traded during the day.
Total Value Traded	Double	8	Total Value Traded during the day.
Last Traded Price	Long	4	Last Traded Price of the product
Total		24	

9.5. Top Gainers/Losers Instruments Info

This message contains details related to top gainer/loser instrument info

Name	Type	Byte Size	Description
Instrument Identifier	Long	4	The Underlying Asset / Product Identifier as specified by Exchange for permitted Underlying Assets / Products for trading.
Previous Close Price	Long	4	Previous Close Price of the product
Last Traded Price	Long	4	Last Traded Price of the product
Percentage Change	Long	4	% change with implicit 4 place decimal.
Total		16	

9.6. Final VWAP & Reference Price Info

This message contains details related to Final VWAP & Reference Price info

Name	Type	Byte Size	Description
Instrument Identifier	Long	4	The Underlying Asset/ Product Identifier is specified by Exchange for permitted Underlying Asset / Product for trading.
Final VWAP	Long	4	After CTS session ends, this field will contain final CTS VWAP for Instrument Identifier mapped in Closing Auction Session and for Index Instrument Identifier
Reference Price	Long	4	This field contains Reference Price computed for CAS Session.
Total		12	

10. Broadcasts

Appended below are messages sent by the exchange to vendors/exchange members.

10.1 Market Picture

This message contains details related to market picture

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 31038
Indicative Flag	Numeric	1	1 – Default 2 – Indicative open price will be set in 'Open Price' & Indicative Volume in 'Total Quantity Traded' for Pre-Open and Special Pre-Open. 3 – Indicative close price will be set in 'Indicative Close Price' & Indicative Volume in 'Total Quantity Traded' for Closing Auction 4 – For Instrument Identifier mapped in Closing Auction Session, Final close price will be set in 'Indicative Close Price' & Current Day Total Volume in 'Total Qty Traded'. 5 – Indicative CTS VWAP will be set in 'Indicative Close Price' during last 30 minutes before Normal Market Close.
Instrument Identifier	Long	4	The Underlying Asset / Product Identifier is specified by Exchange for permitted Underlying Asset / Products for trading.
Reserved	String	1	
Index Flag	String	1	'I' – Index Instrument Anything other than 'I' means non Index Instrument
Total Quantity Traded	Long	4	The total quantity of an Instrument Identifier as traded on the current day. During Pre-Open, Special Pre-Open and Closing auction sessions, this field contains Indicative Quantity (only for applicable Instrument Identifiers).
Last Traded Price	Long	4	Last Traded Price of the product
Last Traded Quantity	Long	4	Quantity Last Traded before getting this message.
Last Trade Time	Long	4	Time in terms of seconds from 01-01-1970 upto the last trade time.
Average Traded Price	Long	4	Average Trade Price for the instrument
Order By Price	Nested Structure Array [5]	70	Best 5 Buy Side of Market Depth in descending order
Order By Price	Nested Structure Array [5]	70	Best 5 Sell Side of Market Depth in ascending order
Total Buy Quantity	Double	8	Total Buy Quantity Pending in the Market.
Total Sell Quantity	Double	8	Total Sell Quantity Pending in the Market.
Reserved	String	2	
Previous Close Price	Long	4	Previous Day's Close Price.
Open Price	Long	4	Open Price for the day
High Price	Long	4	Highest Price during the day
Low Price	Long	4	Lowest Price during the day
BuyBackIndicatorFlag	Short	2	Indicates the presence of a buy back order in the complete order book.

Reserved	Long	4	
Total Trades	Long	4	Total Number of trades during the day.
52 Week High	Long	4	Highest Price recorded ever during last 52 Week time period of the product.
52 Week Low	Long	4	Lowest Price recorded ever during last 52 Week time period of the product.
Total Traded Value	Double	8	Value of total trades during the day.
Reserved	Long	4	
Reserved	Long	4	
Indicative Close Price	Long	4	For all Instrument Identifier eligible in Normal Market, this contains Indicative CTS VWAP in last 30 minutes before Normal Market Close. For Instrument Identifier mapped in Closing Auction Session, this contains Indicative Equilibrium Price during Closing Auction Session and final Close Price after Closing Auction Session end.
Imbalance Quantity	Long	4	Net Imbalance Quantity during Pre-Open session and Closing Auction Session considering Indicative Equilibrium Price (only for applicable Instrument Identifiers).
Total		259	

Note:

During the Pre-open/Closing Auction Session (CAS), for all eligible instruments, the indicative imbalance quantity for market orders is determined using the [Order By Price](#) data available in the 31038 message.

- Focus specifically on the quantity at the buy/sell [ATO](#) price level within the [Order By Price](#) structure.
- The indicative imbalance quantity is calculated by taking the difference between the total buy quantity and total sell quantity at [ATO](#) price point.

10.2. Market Close Statistics

This message contains details related to market close statistics

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 1833
Reserved	String	2	
Broadcast Instrument Information	Nested Structure	38	
Reserved	Short	2	
Open Price	Long	4	Open Price for the day
High Price	Long	4	Highest Price during the day
Low Price	Long	4	Lowest Price during the day
Close Price	Long	4	Close Price for the day
Total Quantity Traded	Long	4	Total Quantity Traded during the day.
Total Value Traded	Double	8	Total Value (in 100 thousands) Traded during the day.
Previous Day's Close Price	Long	4	Close Price of Previous day.
52 Week High	Long	4	Highest Price recorded ever during last 52 Week time period of the product.
52 Week Low	Long	4	Lowest Price recorded ever during last 52 Week time period of the product.
Reserved	String	5	
Instrument Identifier	Long	4	The Underlying Asset/ Product Identifier is specified by Exchange for permitted Underlying Asset / Product for trading.
Reserved	Long	4	
Last Update Time	Long	4	Time in terms of seconds from 01-01-1970 00:00:00 hours upto the time when last price was updated for the product.
Total Trades	Long	4	Total Number of trades during the day.
Reserved	Long	4	
Reserved	Long	4	
Reserved	Long	4	
Average Traded Price	Long	4	Average Trade Price for the product.
Date of Market Statistics	Long	4	Date for which the statistics is being sent.
Session ID	Short	2	Session No. for which statistics is being sent. 0 indicates cumulative statistics for the day.
Total		141	

10.3. Exchange Messages

This message contains details related to exchange messages

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 6501
Reserved	String	12	
Reserved	String	34	
Message Length	Short	2	Length of Text message sent by exchange.
Message	String	239 + 1	Running Text as sent by exchange. Maximum width of Message (239)
Total		304	

10.4. Most Active Products By Volume and Value

This message contains details related to most active products by volume and value

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 7215
Instrument Class	Short	2	Classifier identification for the group of products.
Last Update Time	Long	4	Information last update time
Number Of Most Active Volume Elements	Short	2	Number of elements to be referred to in the following array
Array of Most Active Instrument Info by Volume	Array of nested structures	Each element of size 24 bytes	
Number Of Most Active Value Elements	Short	2	Number of elements to be referred to in the following array
Array of Most Active Instrument Info by Value	Array of nested structures	Each element of size 24 bytes	
Total		Is a variable length message based on the number of elements in the array.	

10.5. Top Gainers/ Losers Products

This message contains details related to top gainer/loser products

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 7216
Instrument Class	Short	2	Classifier identification for the group of products.
Last Update Time	Long	4	Information last update time
Number Of Top Gainer Elements	Short	2	Number of elements to be referred to in the following array
Array of Top Gainer Loser Instrument Info – Gainers	Array of nested structures	Each element of size 16 bytes	
Number Of Top Losers Elements	Short	2	Number of elements to be referred to in the following array
Array of Top Gainer Loser Instrument Info – Losers	Array of nested structures	Each element of size 16 bytes	
Total		Is a variable length message based on the number of elements in the array.	

10.6. Block Deal Price

This message contains details related to block deal price

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 31705
Instrument Identifier	Long	4	The Underlying Asset/ Product Identifier is specified by Exchange for permitted Underlying Asset / Product for trading.
Session Id	Short	2	Session Id for Block deal session.
Block Deal Price	Long	4	Reference Price for Instrument Identifier
Low Price Band	Long	4	Low DPR Price
High Price Band	Long	4	High DPR Price
Reserved	Char	1	
Reserved	Short	2	
Reserved	Double	8	
Total		45	

10.7. Final VWAP & Reference Price

This message contains details related to Final VWAP & Reference Price

Name	Type	Byte Size	Description
Broadcast Message Header	Nested Structure	16	Message Code 31800
Number of Final VWAP & Reference Price Info Elements	Short	2	Number of elements to be referred to in the following array. Max value can be 100.
Array of Final VWAP & Reference Price Info	Array of nested structures	Each element of size 12 bytes	
Total		Is a variable length message based on the number of elements in the array.	