LMAX | Global

LMAX Global API FAQs

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This document contains a list of FAQs to assist customers with their development work during the on-boarding process. If you have any questions, please get in touch by emailing the LMAX Global Technical Account Management team using tam@lmax.com

CONTENT

General FAQ Info

What instruments does LMAX Global offer?

LMAX Global clients have access to LMAX Exchange liquidity globally and are able to trade over 100 instruments: FX, metals, equity indices, spot commodities and crypto CFDs. You can download our product files from the links below:

LD4: https://static-www.lmax.com/csv/LMAX-Instruments.csv
TY3: https://static-www.lmax.com/csv/LMAX-Instruments-Tokyo.csv
NY4: https://static-www.lmax.com/csv/LMAX-Instruments-New-York.csv

Does LMAX Global offer last look?

LMAX Global does not offer last look. The price you see is an actual firm price that can be executed.

Our liquidity providers do not have the ability to refuse a trade request as in other ECNs. To protect our liquidity LMAX Global actively manages the type of order flow.

What order types does LMAX Global offer?

Order Type	Web GUI	FIX	JAVA/.NET
Market IOC	X	X	X
Market FOK		X	X
Limit IOC		X	X
Limit FOK		X	X
Limit GTC	X	X	X
Limit GFD	X	X	X
Stop GTC	X	X	X
Stop GFD	X	X	X
Stop Limit GTC		X	
Stop Limit GFD		X	
Take Profit	X		X
Stop Loss	X		X

How do I login to the LMAX Global Demo environment?

LMAX Global Demo Web GUI: https://web-order.london-demo.lmax.com

What are the main differences between LMAX FIX and the LMAX API's (.NET/JAVA)?

Feature	.NET/JAVA APIs	FIX API
Order history		X
Account and Position Events	X	
Supports Cancel on Disconnect		X
Offers Good Session Management		X
Offers Multiple Unique Logons to the same Trading Account		X
Offers Multiple Logons to the Same Trading Account	X	
Supports Contingent Orders	X	

Does the LMAX Global Demo market data stream reflect that of the Live environment?

The LMAX Global Demo platform does reflect the pricing and trading in the LMAX Production environment. It is a functional testing environment and should therefore be treated in that manner.

Samples are taken from the LMAX Global Live top of book prices at "x" second intervals and some market depth is synthesised based on these LMAX Live top of book prices.

Customer orders submitted to LMAX Demo are reflected in the Demo Market Data feed as well as the prices submitted by the synthesised pricing as mention above.

What is the maximum position size for FX pairs on LMAX Global?

The maximum position size differs for each instrument. This information, as well as information on other instrument parameters can be found by clicking the 'i' button next to the instrument when using the LMAX Global Web GUI.

What do Tick Size, Tick Value and Contract Size mean?

Tick Size defines the granularity of the price of each product – e.g. the tick size for EUR/USD on LMAX Global is 0.00001, which means the price of EUR/USD can be up to 5dp Any smaller increments will be rejected as invalid prices.

Contract Size (lot size) defines the notional value of each contract on LMAX Global.

Tick Value (Tick Size x Contract Size) the value of the smallest possible price change. This allows you to calculate your P&L based on the difference between the tick difference of the opening and closing prices of a trade.

What is the maximum frequency of price updates available on LMAX Global?

Customers that are cross-connected to LMAX Global in either LD4 (London), TY3 (Tokyo) or NY4 (New York) will be able to receive up to 1000 messages per second per instrument, which is 1 message per millisecond.

LMAX Global currently publishes on the "millisecond end" and publishes the current order book state (millisecond time pulse).

When LMAX Global Live accounts are created the default, frequency is 10 updates per second per instrument. We aim to tailor a customer's setup depending on where their servers are located around the world and factoring in the available bandwidth. Please contact tam@lmax.com to discuss your requirements.

Does LMAX Global disconnect open connections over the weekend?

We perform new releases or maintenance on our systems on weekends so connections will often be terminated during this period. There may, however, be some weekends where connectivity will remain up throughout.

Does LMAX Global have problems with arbitrage strategies?

LMAX Global does not allow arbitrage strategies.

Why was my Market FOK order spread over multiple fills?

Market Orders will always be fully filled at the best available prices.

You may receive one or more fills (multiple execution reports) for your fully filled Market FOK order.

API (.NET/Java) FAQ Info

How far back in time does your historical market data go?

The LMAX Global historical market data starts from October 2010 in the LMAX Live environment. The LMAX Demo environment includes a few months worth of historical data.

How do you access LMAX Global historical market data using the API?

In addition to subscribing to real-time market data, the API provides a mechanism for retrieving historic market data.

Two types of historic market data are supported:

- TopOfBookHistoricMarketDataRequest - Best bid & ask tick data.
- AggregateHistoricMarketDataRequest - Aggregated price & volume data by day or minute.

The data is delivered as a gzip-compressed CSV file.

The following steps are required to receive historic market data:

1. Implement and register a historic market data delegate
2. Subscribe to historic market data events
3. Make historic market data requests
4. Retrieve URLs within an authenticated session

The code snippets below are extracted from the class HistoricMarketDataRequester in the API samples.

1) Implement and register a historic market data delegate

To receive historic market data, you must first implement a delegate matching the signature of LmaxApi.OnHistoricMarketDataEvent and register the delegate with the session:

```
// Implement the delegate
private void OnHistoricMarketData(string instructionId, List uris)
{
    // do something with the URLs... see number 4 for a sample implementation
}

// Register the delegate
_session.HistoricMarketDataReceived += OnHistoricMarketData;
```

2) Subscribe to historic market data events

Use the standard _session.Subscribe() mechanism to subscribe to historic market data requests:

```
_session.Subscribe(new HistoricMarketDataSubscriptionRequest(),
                   () => Console.WriteLine("Successful subscription"),
                   failureResponse => Console.Error.WriteLine("Failed to subscribe: {0}", failureResponse));
```

As with other subscriptions, you can Subscribe before you call _session.Start().

3) Make historic market data requests

To request historic market data for a specific instrument and date range, create an instance of TopOfBookHistoricMarketDataRequest or AggregateHistoricMarketDataRequest and call the requestHistoricMarketData method on the session:

```
_session.RequestHistoricMarketData(new AggregateHistoricMarketDataRequest(instructionId,
instrumentId,
                                                    DateTime.Parse("2011-05-11"),
                                                    DateTime.Parse("2011-06-13"),
                                                    Resolution.Day, Format.Csv,
                                                    Option.Bid),
                                   () => Console.WriteLine("Successful request"),
                                   failureResponse => Console.Error.WriteLine("Failed request: {0}",
failureResponse));
```

4) Retrieve URLs within an authenticated session

When the data is ready, the delegate you registered in step 15.1 will receive an asynchronous message with a list of URLs. The asynchronous message also includes the instructionId you included with the request.

The URLs must be retrieved using an authenticated connection. You can use the session's OpenUri() method to open each URL. The files at the URLs are compressed with gzip. The code snippet below shows how to retrieve the URL and print out the uncompressed data:

```
private void OnHistoricMarketData(string instructionId, List uris)
{
   foreach (var uri in uris)
   {
      _session.OpenUri(uri, OnUriResponse, FailureCallback("open uri"));
   }
}

private static void OnUriResponse(Uri uri, BinaryReader reader)
{
   using (var stream = new GZipStream(reader.BaseStream, CompressionMode.Decompress))
   {
      const int size = 1024;
      var buffer = new byte[size];
      var numBytes = stream.Read(buffer, 0, size);
```

```
        while (numBytes > 0)
        {
            Console.Write(Encoding.UTF8.GetString(buffer, 0, numBytes));
            numBytes = stream.Read(buffer, 0, size);
        }
    }
}
```

Some examples from .NET and JAVA Historical Market Data Download:

Open Price – the first price in the Aggregation Interval.

High Price – the highest price in the Aggregation Interval.

Low Price – the lowest price in the Aggregation Interval.

Close Price – the last price in the Aggregation Interval.

Up Volume – The total volume offered on Up Ticks (see below for defn) during the Aggregation Interval.

Down Volume – The total volume offered on Down Ticks (see below for defn) during the Aggregation Interval.

Unchanged Volume – The total volume offered on Unchanged Ticks (see below for defn) during the Aggregation Interval.

Up Ticks – the number of ticks on the side of the OrderBook being aggregated where the price went up during the Aggregation Interval.

Down Ticks – the number of ticks of the price on the side of the OrderBook being aggregated where the price went down during the Aggregation Interval.

Unchanged Ticks – the number of ticks of the price on the side of the OrderBook being aggregated where the price was unchanged, but the volume offered at that price changed during the Aggregation Interval.

Why is there a discrepancy between LMAX Global live market data updates seen via FIX and the downloadable historical data using the API?

The difference is due to throttling that is applied to a customer's account/username. The historical data files always include every single top of book tick (not limited to the 1000 updates per second per instrument).

Even with an unthrottled FIX or API feed that will provide up to a maximum of 1000 updates per second (1 message per m/s), there is no guarantee that the data will match what you see in the historical data files as these files will always include every top of book tick.

How can I request a list of all my working orders & positions in the market via API?

You will need to make a *PositionSubscriptionRequest* and register a *PositionEventListener* in order to receive updates on your net (current open) positions, in addition to the individual orders.

How do I receive my current balance, equity and free margin via API?

You can receive those details by requesting the instruction “Account State” via .NET API, where you can receive the following details about your account state:

_balance;
_availableFunds;
_availableToWithdraw;
_unrealisedProfitAndLoss;
_margin;
_walletByCurrency;

You would need to setup a listener in order to give the .NET API an instruction to follow after receiving this information.

Can CancelOrder raise an InstructionReject error (similar to PlaceMarketOrder & PlaceLimitOrder) or does the verification end on Success and Failure Callbacks?

Yes, CancelOrder can raise an InstructionReject.

Our API is asynchronous and the call to the callback "onSucess" only means that the instructions have reached the LMAX Global gateways and they have been able to parse it. This does not mean that the order has been executed.

Upon successful execution, LMAX Global will send an event (for example an OrderStateEvent) and customers should listen and manage these events. If the instruction is rejected, you will receive an InstructionReject event. You need to have a listener to these events and react as convenient.

How do I get the swap for each instrument from the .NET API?

1. Retrieve security definitions to get a List<Instrument> (as per section 14 "Retrieve Security Definitions" of the Tutorial)

2. For the chosen instrument, get the commercial agreements using the instrument.Commercial getter

3. Get the long and short swap rates from the CommercialInfo object

How do I close a position via API?

You can do this by constructing a “ClosingOrderSpecification”.

This allows you to place a market order in the opposite direction of an existing position, which closes out a given quantity.

How can I get my profit and loss per day via API?

You will need to create an instruction on the API to calculate this yourself. You can receive your unrealised profit and loss by requesting the instruction “AccountStateEvent”.

What are the meanings of the fields returned in a PositionEvent and an AccountStateEvent?

PositionEvent:

valuation - the impact of this position on the overall valuation of the account (i.e. unrealised P&L - margin required for this position) in instrument currency. This is only updated when the position size changes and not in response to changes in market price.

shortUnfilledCost - the total notional value of working orders to sell contracts in the position instrument, in instrument currency

longUnfilledCost - the total notional value of working orders to buy contracts in the position instrument, in instrument currency

cumulativeCost - the total notional value of all trades in the position instrument, signed (sells are negative), in instrument currency

openCost - the notional value of the open position for mark-to-market purposes, signed (short positions are negative), in instrument currency. For positions combined purely from opening orders this is equal to cumulativeCost. As closing orders are applied to the position these values diverge reflecting the profit or loss realised on the closing orders

AccountStateEvent:

availableToWithdraw - current valuation in account currency of the amount of the total account balance which can be withdrawn. This will vary in response to changes in market exposure.

unrealisedProfitAndLoss - current valuation in account currency of the profit or loss that would be realised if all positions were instantaneously liquidated at the best price in the market.

margin - current margin requirement for all open positions and working orders in account currency.

FIX FAQ Info

What version of FIX does LMAX Global use on the non-market maker side, also known as the LMAX Professional/Broker side?

FIX 4.4
(Please note the LMAX Global market-maker side uses FIX4.2)

How do I connect to the LMAX Global Demo environment?

LMAX FIX Demo Market Data:
DNS: fix-marketdata.london-demo.lmax.com
TargetCompId: LMXBDM
Port: 443

LMAX FIX Demo Trading:
DNS: fix-order.london-demo.lmax.com
TargetCompId: LMXBD
Port: 443

The FIX logon will need to include your LMAX Global username in FIX tags 49 and 553.

Do I need to use encryption when connecting to both the LMAX Live or LMAX Demo environments?

Yes, SSL encryption is required. LMAX Global will drop the TCP connection attempt if encryption is not used or setup correctly. Note you will need to send a message within 5 seconds of establishing the TCP connection, otherwise we will disconnect you.

Do you have an example of a stunnel configuration? (Please note a customer may need to adapt this example to meet their purposes).

fips = yes

[Demo-Trading]
client = yes
accept = 127.0.0.1:40001
connect = fix-order.london-demo.lmax.com:443
sslVersion = TLSv1
options = NO_SSLv2
options = NO_SSLv3

[Demo – Market Data]
client = yes
accept = 127.0.0.1:40003
connect = fix-marketdata.london-demo.lmax.com:443

sslVersion = TLSv1
options = NO_SSLv2
options = NO_SSLv3

Please note that SSLv3 has been decommissioned for security reasons, so you must use TLSv1 or higher.

I can connect on the TCP level, but my FIX messages are not being sent from QuickFIX to LMAX, could you please assist?

We have found that this issue is specific to QuickFIXJ users. You can fix this by adjust your QuickFIXJ configuration.

If `SocketUseSSL=Y` in your QuickFIXJ config, do not use stunnel because in this case QuickFIXJ will try to do the TLS encryption itself. In this case you should connect to fix-marketdata.london-demo.lmax.com:443 or fix-order.london-demo.lmax.com

If you are using stunnel, adjust your configuration to `SocketUseSSL=N` and connect to `localhost:40003` (or whatever port is specified in your stunnel config)

Here is a working config snippet:

```
SocketConnectHost=fix-marketdata.london-demo.lmax.com
SocketConnectPort=443
#SocketConnectPort=4003
#SocketConnectHost=127.0.0.1
SocketUseSSL=Y
```

What is the FIX session schedule?

Connectivity is available every day of the week, except during scheduled maintenance periods.

We enforce a daily disconnect and reset of sequence numbers on the market data gateway at 17:02:00 NY, and a weekly disconnect and reset of sequence numbers on the trading gateway on Saturdays at 17:02:00 NY.

Can I get information about my balance and positions via FIX?

This information is not available via LMAX FIX.

In the Demo environment you can view balance and positions using the LMAX Global Demo Web GUI – https://web-order.london-demo.lmax.com

Alternatively, you could write a small piece of code using the LMAX .NET or Java API to request this information. If required, please send an email to tam@lmax.com to request the LMAX API documentation and specify whether you prefer Java or .NET.

If an instrument is suspended, do you send indicative rates?

We do not send out indicative rates. If an instrument is suspended, the market data stream would stop. We allow our Liquidity Providers (Market Makers) to cancel their orders during a suspension so it is possible to receive Market Data updates to reflect the removal of liquidity
e.g. 35=W with NoMDEntries 268=0.

Once the instrument is re-opened the market data stream will start up again. If an order is sent, an execution report with reject INSTRUMENT_SUSPENSION will be sent in response.

Can you provide some examples of common Session Level Reject messages (35=3)?

A session level reject message will be sent in response to a message which is structurally invalid. Tag 373 identifies the reason for a session level reject; below are some common values that are contained in this tag:

0 = Invalid tag number – *the client is sending a tag that is not supported on LMAX FIX 4.4*
1 = Required tag missing – *a mandatory tag is missing from the client's FIX message*
2 = Tag not defined for this message type – *the client is sending a tag that is not specified in our FIX Specification for this message type*
3 = Undefined Tag – *the client is sending a tag that is not supported on LMAX FIX 4.4*
4 = Tag specified without a value – *there is no value for a given fix tag (e.g. 48=)*
9 = CompID problem – *the client is sending an incorrect TargetCompID*
11 = Invalid MsgType – *LMAX FIX 4.4 does not support the MsgType being sent by the client*

What are some standard LMAX Global FIX rejection reasons?

Rejection	Reason
INSTRUMENT_DOES_NOT_EXIST	Instrument ID is not valid
INSTRUMENT_NOT_OPEN	Instrument is not currently open
PRICE_NOT_VALID	Invalid price specified on order: higher than maximum price; lower than minimum price; too many decimal places; not a valid price increment
QUANTITY_NOT_VALID	Invalid quantity specified on order: less than minimum order quantity; too many decimal places; not a valid quantity increment
EXPOSURE_CHECK_FAILURE	Account does not have sufficient trading resources to support the order
DUPLICATE_ORDER	Duplicate ClOrdID
UNKNOWN_ORDER	Unknown ClOrdID when cancelling or replacing an order

INVALID_MARKET_DEPTH	Market data request for more than 20 levels or an invalid value
INVALID_UPDATE_TYPE	Market data request with invalid MDUpdateType
INSTRUMENT_SUSPENDED	Instrument has been suspended
TEMPORARY_SUSPENSION	Automated suspension that happens when the order book is untrusted – see below for reasons why the order book may go untrusted
OUTSIDE_ALLOWED_PRICE_RANGE	Price is outside our volatility band parameters, i.e. more than x% away from the best price
WORKING_QUANTITY_EXCEEDED	Maker has exceeded its limit of Working Orders
MAXIMUM_POSITION_EXCEEDED	Accepting order would potentially lead to position limits being exceeded
ACCOUNT_IN_LIQUIDATION	Account is being liquidated and cannot accept new orders

Under what conditions would an order book become untrusted and the market temporarily suspended?

A temporary suspension occurs when the order book is untrusted. There are 4 ways an order book can be untrusted:

- No market maker prices on the book
- Market maker prices on only one side of the book
- Excessively wide prices from market makers (i.e. if prices go wider than our trusted spread parameters)
- Excessively inverted prices (i.e. if the market becomes inverted beyond our inversion parameters)

What are some standard LMAX Global FIX messages?

Trading

Logon

8=FIX.4.4|9=104|35=A|49=xxx|56=LMXBL|34=1|52=20150215-22:01:05|98=0|108=30|141=Y|553=xxx|554=############|10=005|

8=FIX.4.4|9=72|35=A|49=LMXBL|56=xxx|34=1|52=20150215-22:01:05.495|98=0|108=30|141=Y|10=065|

New Order

8=FIX.4.4|9=128|35=D|49=xxx|56=LMXBL|34=2028|52=20150213-15:05:14|11=54897|18=H|22=8|38=1000|40=1|48=4001|54=1|59=0|60=20150213-15:05:14.084|10=166|

Execution Report

8=FIX.4.4|9=215|35=8|49=LMXBL|56=xxx|34=2091|52=20150213-15:05:14.077|1=1820613222|11=54897|48=4001|22=8|54=1|37=AAGJHQAAAAJwThP5|59=3|40=1|60=20150213-15:05:14.077|6=0|17=bIRaZgAAAALC2TsW|527=0|39=0|150=0|14=0|151=1000|38=1000|10=220|

OrderCancelRequest

8=FIX.4.4|9=157|35=F|49=xxx|56=LMXBL|34=320814|52=20150220-09:15:03.524|41=1424379907-310727|11=1424379907-310733|48=100889|22=8|54=1|60=20150220-09:15:03.524|38=10|10=150|

OrderCancelReplaceRequest

8=FIX.4.4|9=183|35=G|34=169077|49=xxx|52=20150220-09:14:42.661|56=LMXBL|11=Feb20026604DAX1|18=Q|22=8|38=50|40=2|41=Feb20026604DAX1|44=10986.3|48=100097|54=1|59=0|60=20150220-09:14:42.660|10=018|

OrderStatusRequest

8=FIX.4.4|9=85|35=H|49=xxx|56=LMXBL|34=2|52=20150220-10:17:54.279|11=57080.5|48=100637|22=8|54=2|10=141|

TradeCaptureReportRequest

8=FIX.4.4|9=146|35=AD|34=3349|49=xxx|52=20150220-10:50:04.148|56=LMXBL|263=0|568=390041488433|569=1|580=2|60=20150220-08:50:04.148|60=20150220-10:50:04.148|10=081|

Heartbeating

8=FIX.4.4|9=57|35=0|49=LMXBL|56=xxx|34=2105|52=20150213-15:05:44.079|10=137|

8=FIX.4.4|9=53|35=0|49=xxx|56=LMXBL|34=2029|52=20150213-15:05:44|10=188|

Market Data

Logon

8=FIX.4.4|9=104|35=A|49=xxx|56=LMXBLM|34=1|52=20150215-22:01:05|98=0|108=30|141=Y|553=xxx|554=###############|10=005|

8=FIX.4.4|9=72|35=A|49=LMXBLM|56=xxx|34=1|52=20150215-22:01:05.495|98=0|108=30|141=Y|10=065|

Market Data Request – Single Instrument

8=FIX.4.4|9=131|35=V|34=5866|49=xxx|52=20151117-21:59:56.707|56=LMXBLM|262=100800|263=1|264=0|265=0|146=1|48=100800|22=8|267=2|269=0|269=1|10=203|

Market Data Request – Multiple Instruments

8=FIX.4.4|9=1150|35=V|34=2|49=xxx|52=20141211-08:55:54|56=LMXBLM|262=20141211-08_55_54|263=1|264=1|265=0|267=2|269=0|269=1|146=71|48=4001|22=8|48=4008|22=8|48=4007|22=8|48=4009|22=8|48=4016|22=8|48=4015|22=8|48=4011|22=8|48=4003|22=8|48=4006|22=8|48=4001|22=8|48=4017|22=8|48=4014|22=8|48=4012|22=8|48=4005|22=8|48=4002|22=8|48=4013|22=8|48=4010|22=8|48=4004|22=8|48=100479|22=8|48=100481|22=8|48=100483|22=8|48=100485|22=8|48=100487|22=8|48=100489|22=8|48=100491|22=8|48=100493|22=8|48=100495|22=8|48=100497|22=8|48=100499|22=8|48=100501|22=8|48=100503|22=8|48=100505|22=8|48=100507|22=8|48=100509|22=8|48=100511|22=8|48=100513|22=8|48=100515|22=8|48=100517|22=8|48=100519|22=8|48=100521|22=8|48=100523|22=8|48=100525|22=8|48=100527|22=8|48=100529|22=8|48=100531|22=8|48=100533|22=8|48=100535|22=8|48=100537|22=8|48=100539|22=8|48=100541|22=8|48=100543|22=8|48=100545|22=8|48=100547|22=8|48=100613|22=8|48=100615|22=8|48=100617|22=8|48=100619|22=8|48=100667|22=8|48=100671|22=8|48=100669|22=8|48=100673|22=8|48=100675|22=8|48=100093|22=8|48=100677|22=8|48=100637|22=8|48=100639|22=8|48=100097|22=8|48=100806|22=8|48=100807|22=8|48=100679|22=8|48=100681|22=8|10=094|

Market Data Update

8=FIX.4.4|9=181|35=W|49=LMXBLM|56=xxx|34=2|52=20141211-08:55:53.459|262=20141211-08_55_54|48=100097|22=8|268=2|269=0|270=9855.2|271=20|272=20141211|273=08:55:53.261|269=1|270=9856.7|271=30|10=033|