

# Dukascopy FIX API

Programming Guide

Revision 3.4.2

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# **Introduction**

## **General Information**

Dukascopy FIX API is based on FIX4.4 protocol. The API is used to receive a real-time data feed, submit orders, set / modify / cancel orders, and receive automated notifications of trading activities. Dukascopy follows the International Organization for Standardization (ISO) currency pair symbol convention of CCY1/CCY2.

## Overall Description

### Connection Schema

Both clients' and Dukascopy FIX engines communicate using SSL-encrypted TCP sockets. No special SSL certificates needed for now. Client can use either resource provided by FIX engine or using SSL tunneling. The SSL-tunneling functionality is provided by freely-available open source products.

There are two FIX connections per client which are used for the FIX interface: one for data feed and one for other messages.

In order to connect to Dukascopy FIX API server, user must obtain from Dukascopy:

- TargetCompId
- two SenderCompId
- username
- password

Client must connect to Dukascopy FIX API server from previously agreed IP addresses and ports. The following system messages are used:

- **Logon** – a message sent by a client to initiate a FIX session to Dukascopy. The Logon message establishes the communication session, authenticates the connecting client, and initializes the message sequence number.
- **Heartbeat** – a message sent by Dukascopy during periods of application inactivity to ensure connection validity. The FIX client will automatically respond to the heartbeat messages upon receipt.
- **Resend Request** – a message that can be sent by either Dukascopy or a client, to request certain messages for resending. The resend is used when gaps are detected in the sequence numbering, message losing, or during the initialization process.
- **Logout** – a message warns about the normal termination of the trading session. Sessions terminated without a Logout message will be considered an abnormal

condition. The Dukascopy FIX gateway treats a client as logged out whenever the communication session is dropped.

## Message flow

The following page describes typical message flows.

### Message Flow Matrix (FIX 4.4)

API Client	Direction	Dukascopy	Comments
Market Data Request (Subscribe)	→		1..n Market Data Requests
	←	Market Data Request Reject	If not a valid request
	←	Market Data Snapshot	Streaming prices for subscribed symbols
	←	Quote Status Report	Information about current status of instruments
Market Data Request (Unsubscr)	→		Client sends unsubscribe request
New Order Single (Market, Limit, Stop or Quote)	→		Client sends an Order (Market, Immediate or Cancel, Limit, Stop or Quote)
Order Cancel Request	→		Client sends order cancel request to cancel pending limit orders or executing quote orders.
Order Cancel / Replace Request	→		Client sends order cancel request to edit pending limit orders or executing quote orders
	←	Execution Report	Order Acknowledged/Rejected (OrdStatus)
OrderMassStatus Request	←		Client sends request to resend all pending orders
	←	Notification	Text information about system events and order execution process
	←	AccountInfo	Text information regarding user account

### FIX 4.4 messages format

All message formats meet the FIX 4.4 specification. All fields required by FIX are required by Dukascopy API, and the order must be according to the FIX specification.

All messages must have all required FIX header / footer fields, BeginString, BodyLength, MsgType, SenderCompID, TargetCompID, MsgSeqNum, SendingTime, and CheckSum in their appropriate places according to the FIX 4.4 specification.

## Data feed interface

### Market Data Request (MsgType = V)

User must send market data request for subscription or un-subscription to / from data feed.

Tag	Tag name	Description
263	SubscriptionRequestType	«Snapshot + Updates (Subscribe)» and «Disable previous Snapshot + Update Request (Unsubscribe)» is supported only
264	MarketDepth	Valid values: '1' Top of Book '2' - '5'
265	MDUpdateType	Full Refresh (0) is supported only
267	NoMDEntryTypes	Must contain both MDEntryType(269) Bid(0) and Offer(1)
146	NoRelatedSym	Must be set to 1 – ONE (or all) instrument only
55	Symbol (Instrument block)	Currency pair symbol ('EUR/USD' for example) for subscription to the instruments must be set.

### Market Data - Snapshot/Full Refresh (MsgType = W)

As a response to «Market Data request» Market Data – Snapshot / Full Refresh starts sending data to client

Tag	Tag name	Description
55	Symbol (Instrument block)	Currency pair for which the market data applies. 'EUR/USD' for example
268	NoMDEntries	Number of entries(MDEntryType) in Market Data message(Market depth)
269	MDEntryType	Bid(0) or offer(1)
270	MDEntryPx	Price of current bid or offer
271	MDEntrySize	Value of current bid or offer

## Quote Status Report (MsgType = AI)

The message is used to deliver information about current status of instrument. Dukascopy API server will automatically send those messages without request; client doesn't need to subscribe for receiving this information. Use this message to define available instruments.

Tag	Tag name	Description
117	QuotelD	Instrument code
55	Symbol	Currency pair symbol. 'EUR/USD' for example
537	QuoteType	Trade status of current instrument. Can be Tradeable (1) and Restricted Tradeable (2)

## Market Data Request Reject (MsgType = Y)

If a Market Data Request is not accepted, Dukascopy will send a FIX 4.4 'Market Data Request Reject'.

Tag	Tag name	Description
262	MDReqID	Must refer to the MDReqID (262) of the request.
281	MDReqRejReason	Folowing values can be set: '0' Unknown symbol '4' Unsupported SubscriptionReq '5' Unsupported MarketDepth '6' Unsupported MDUpdateType '8' Unsupported MDEntryType
56	Text	Short explanation of reject reason

## Trading interface

After client successfully logged into a FIX API server, the server automatically sends to client Execution Reports about orders in pending or executing state.

### Execution report

If an order has been partially filled, then for each remaining order execution, an execution report will be sent to a client, showing the current executed amount in the CumQty field.

Tag	Tag name	Description
37	OrderID	OrderID of order. Set by Dukascopy FIX API
11	ClOrdID	Identifier of order. Set by client
17	ExecID	Unique OrderID of execution. Set by Dukascopy FIX API. For partially filled orders API server sends execution report for each execution with unique ExecID and same OrderID
39	OrdStatus	Following order states are supported: '2' Filled (if partly too) '4' Canceled '8' Rejected 'A' Pending New (Order has been received by FX system but not yet accepted for execution. ) 'B' Calculated (sent to execution)
150	ExecType	To get current status of order use OrdStatus. ExecType always set to 'I' - Order Status
55	Symbol	Currency pair symbol. 'EUR/USD' for example
14	CumQty	Currently executed amount
54	Side	Valid values: '1' Buy '2' Sell
40	OrdType	Valid values: '1' Market 'Q' Quote (Dukascopy specific) '3' Stop '4' Stop Limit
6	AvgPx	Price at which the trade was executed
126	ExpireTime	Time allowed for response to Quote request
60	TransactTime	Time of execution report. Sets by Dukascopy FIX API



## New Order – Single (MsgType = D)

**Market, Limit, Immediate or Cancel, Stop and Quote** orders are supported. In case of “Limit” and “Quote” orders, an order will be executed when market price is equal or better than requested price. “Market” order will be executed by the best available market price.

Tag	Tag name	Description
11	ClOrdID	Unique identifier for the order as assigned by client
44	Price	Price at which the trade was requested. Do not set for market orders
40	OrdType	Valid values: '1' Market '4' Stop Limit '3' Stop 'Q' Quote (Dukascopy specific)
59	TimeInForce	'1' Good Till Cancel (GTC) '3' Immediate or Cancel (IOC) – the sort of Limit order
55	Symbol	Currency pair symbol. 'EUR/USD' for example
38	OrderQty	Requested order amount
54	Side	Valid values: '1' Buy (Bid for OrdType = Quote) '2' Sell (Offer for OrdType = Quote)
126	ExpireTime	If order type is 'Quote', time allowed for response to Quote request

## Order Cancel Request (MsgType = F)

Please note that only limit orders in 'Pending New' status can be canceled.

Tag	Tag name	Description
37	OrderID	Unique OrderID of order that should be canceled
41	OrigClOrdID	ClOrdID of the previous non-rejected order
11	ClOrdID	Unique client ID of request

## 5.4 Order Cancel/Replace Request (MsgType = G)

Use this message for updating order details. Please note that limit orders in 'Pending New' status can be updated only.

Tag	Tag name	Description
37	OrderID	Unique OrderID of order that should be updated

41	OrigClOrdID	ClOrdID of the previous non-rejected order
11	ClOrdID	Unique client ID of request
38	OrderQty	New requested amount of order
44	Price	New stop price at which the trade was requested
54	Side	New side value

### 5.5 Notification (MsgType = 'U1')

It is Dukascopy specific message. The message is used for client information about current account state.

Tag	Tag name	Description
7003	NotifPriority	Valid values: '0' INFO '1' WARNING '2' ERROR '3' ALERT
58	Text	Text explanation of reason for rejection

### 5.6 Account info (MsgType = 'U2')

It is Dukascopy specific message. The message is used for client information about current account state

Tag	Tag name	Description
7004	AccountName	Account ID
7005	Leverage	Leverage of account
7006	UsableMargin	Current margin of account
7007	Equity	Current equity of account
15	Currency	Currency of account

### 5.7 OrderMassStatusRequest (MsgType = 'AF')

Client requests orders in pending status. Report will be sent by server for each pending order.

Tag	Tag name	Description
585	MassStatusReqType	
584	MassStatusReqID	