

High-frequency Trading Using Hlaiman EA Generator

Usage of the High-frequency Trading Module (HFT) for MT4

The HFT module operates basing on the difference of quotes of two brokers. HFT module supports MT4 as a terminal for trading. As the terminal for quotes comparison, you can use both MT4 and MT5 terminals.

In order to test the module, please, download the terminal “Global Clearing Group” for trading and “Renesource Capital” for quotes comparison. Install the terminals. Turn off the “Launch terminal after install” option during install. HFT module uses terminals in «portable» mode by default.

Open the Hlaiman EA Generator installation folder (for example, “C:\Program Files\Hlaiman\”).

The file “mt4.ex4” should be copied from the folder “Hlaiman\MQL4\Experts\” to the every MT4 terminal data folder “MQL4\Experts\”. If you are using MT5 terminal for quotes comparison, file “mt5.ex5” should be copied.

Specify correct paths to the installed terminals in the file “ActiveX\Scripts\MT4_Frontrun_Example.pas” (for example, using a standard application “Notepad”) in strings:

```
TERMINALS = 'C:\Program Files\MetaTrader - Global Clearing Group\terminal.exe' + #13 +  
            ' C:\Program Files\Renesource Capital MetaTrader\terminal.exe';
```

The first terminal is for trading, and the second one is for quotes comparison.

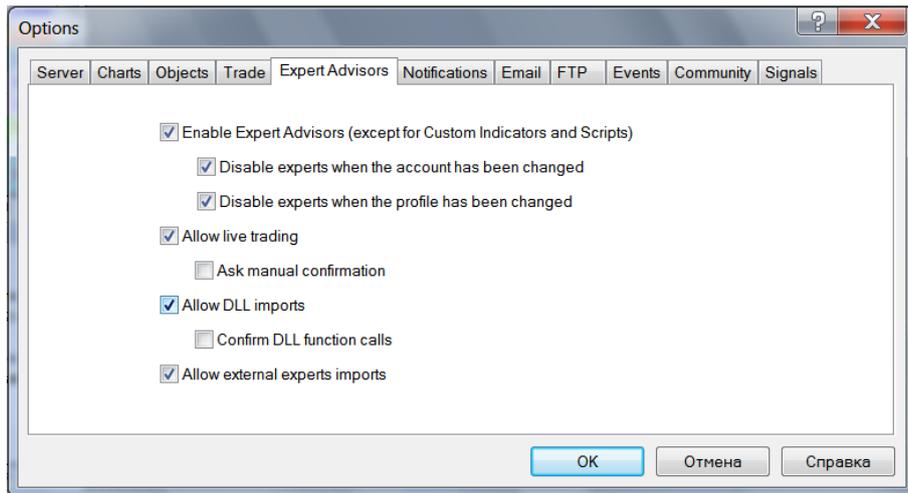
Specify the full correct path to the file “ActiveX\Scripts\MT4_Frontrun_Example.pas” in the file “ActiveX\HFT Launch.js”, the string:

```
SCRIPT = "C:\\Program Files\\Hlaiman\\ActiveX\\Scripts\\MT4_Frontrun_Example.pas";
```

Please, notice, that the symbol “\” should be replaced with “\\”.

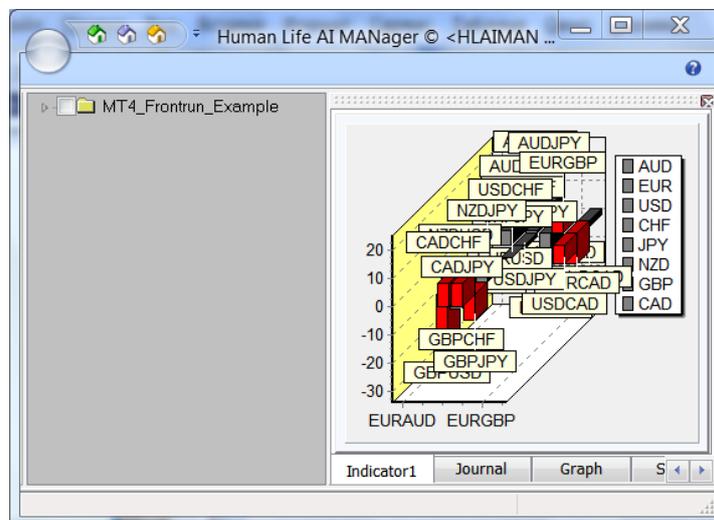
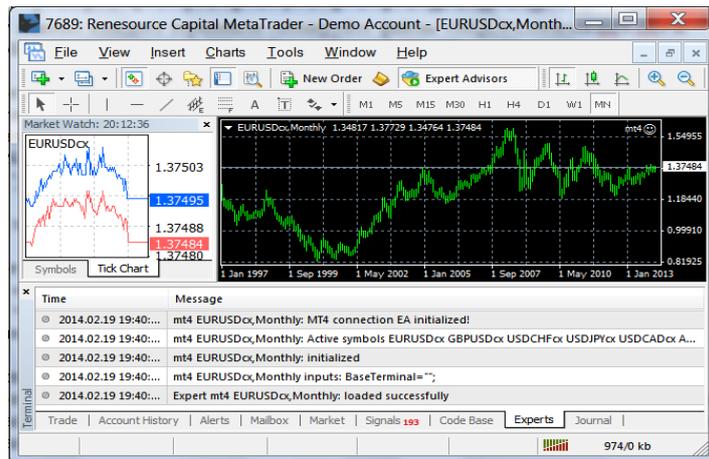
Note: please pay attention to the syntax (do not remove special symbols, etc.).

Launch the script “ActiveX\HFT Launch.js”. If all paths are specified correctly, a currency matrix, quotes visualization panel and both terminals will be opened. The first launch of the terminals may take some time. A chart EURUSD Month with an MT4 expert advisor will be opened in each terminal. Open new accounts for terminals or enter existing logins. Allow live trading for experts on the main terminal (terminal for trading).



Set up the "Market Watch" panel, add the currency pairs that you are going to use for high-frequency trading and delete unnecessary. To speed up it is recommended to close all graphics except EURUSD Month (with mt4 EA). Close the terminals. Close the Hlaiman window.

Launch the script "ActiveX\HFT Launch.js" again. After some time, information about successful initialization of the experts advisors will be displayed on the tab "Experts" of the both terminals: «Active symbols USDCHF GBPUSD EURUSD USDJPY USDCAD; MT4 connection EA initialized!»



	AUD	EUR	USD	CHF	JPY	NZD	GBP	CAD
AUD	ASK/BID		1 / -3	2 / -4	1 / -4	-1 / -1		-2 / 0
EUR	-5 / 2	ASK/BID	-1 / -1	0 / -2	-1 / -2	-7 / 1	3 / -4	-7 / 5
USD			ASK/BID	2 / -4	-2 / 0			-4 / 2
CHF				ASK/BID	-1 / -1			
JPY					ASK/BID			
NZD			0 / -3		0 / -3	ASK/BID		
GBP			-10 / 7	-4 / 2	-6 / 3		ASK/BID	
CAD				3 / -5	3 / -5			ASK/BID

Information about successful order opening or unsuccessful attempts of opening (requotes, etc) will be displayed on the tab “Experts” of the trading terminal.

You can change additional trading parameters in the file “ActiveX\Scripts\MT4_Frontrun_Example.pas”. After every parameters changing, you must restart HFT module.

HFT module parameters:

TERMINALS - full paths to the executable files of the terminals.

CURRENCIES - currencies used for HFT and to be displayed in a matrix of quotations.

DISABLE - list of currency pairs for which trade is disabled. Might look like this: 'EURSEK' + # 13 + 'CADJPY' + # 13 + 'AUDCAD' + # 13 + 'GBPCAD';

PORTABLE - enable\disable «portable» mode for terminals. Recommended to leave the default value.

ORDER_LIVE - maximum time in seconds during which the position will be kept open. "0" - closing position by timeout is disabled.

BUY_OPEN - arbitrage profit at open BUY position pips

SELL_OPEN - arbitrage profit at open BUY position pips

PROFIT_CLOSE - arbitrage profit at close position pips

MAX_SPREAD – maximum spread value

STOP_LOSS – stop loss

TAKE_PROFIT – take profit

Lots - trading lots

Slippage - slippage value

DrawDown - max drawn down balance percentage

Pay attention that some values could be applied with inaccuracy considering high operation speed of the HFT module. To close the HFT module, close the active window Hlaiman. A delay is possible due to synchronization.

It is recommended to use the HFT module on real accounts only after long-term testing on demo accounts. The broker for trading from the abovementioned example is chosen for demonstration of work of the HFT module. We decline all responsibility for possible problems with funds withdrawal from a broker account. The most important factors for profitable HFT trading are minimal spread, orders execution speed, connection quality with brokers, servers (ping), and correct choice of brokers for trading and quotes comparison.

Usage of the High-frequency Trading Module (HFT) for MT5

The HFT module operates basing on the difference of quotes of two brokers. The HFT supports MT5 as a terminal for trading. Both MT4 and MT5 can be used as the terminals for quotes comparison. To start using the HFT module, two terminals should be installed.

For example, let's install the first terminal to the folder "C:\Program Files\Donor MetaTrader 5\". Change the program group "MetaTrader 5" to "Donor MetaTrader 5" during installation. Install the second terminal, for example, to the folder "C:\Program Files\Acceptor MetaTrader 5\". Change the program group "MetaTrader 5" to "Acceptor MetaTrader 5" during installation.

Copy the following files for the "Acceptor" terminal:

"SignalHFT.mqh" from the Hlaiman data folder "MQL5\Include\Expert\Signal\" to the terminal data folder "MQL5\Include\Expert\Signal\".

"SampleHMT.ex5" and "SampleHMT.mq5" from the Hlaiman data folder "MQL5\Expert\Signal\" to the terminal data folder "MQL5\Include\Expert\Signal\".

The files would be copied automatically if the terminal installed earlier was used as "Acceptor" and the path to the terminal was specified during installation of Hlaiman EA Generator

Copy the following files for the "Donor" terminal:

"mt5.ex5" from the Hlaiman data folder "MQL5\Experts\" to the terminal data folder "MQL5\ Experts\".

If you use MT4 terminal for quotes comparison file "mt4.ex4" should be copied.

Launch the Hlaiman application. Open a terminal for trading (Acceptor). Open new account for terminal or enter existing login. For example it is recommended to open account on Metaquotes Demo server. Allow live trading and DLL imports for experts on the terminal. Set up the "Market Watch" panel, add the currency pairs that you are going to use for high-frequency trading and delete unnecessary. Open EURUSD M1 chart and launch SampleHMT EA on it. Specify full path to executable file of the terminal for quotes comparison (Donor) in «Arbitrage MT terminal» EA parameter. If path is specified correctly, terminal for quotes comparison (Donor) will be opened.

Open new account for Donor terminal or enter existing login. For example it is recommended to open account on ForexTime Demo server. Allow DLL imports for experts on the terminal. Set up the "Market Watch" panel, add the currency pairs that you are going to use for high-frequency trading and delete unnecessary. Open EURUSD H1 chart and launch mt5.ex5 (or mt4.ex4 for MT4) on it.

After some time, information about successful initialization of the expert advisor will be displayed on the tab "Experts" of the terminal: «Active symbols EURUSD GBPUSD USDCHF USDJPY USDCAD AUDUSD; TestMT5 initialization ok!»

After the first launch, keep the «SampleHMT» EA settings and stop it. Close the terminal for quotes comparison. Close Hlaiman application.

For the every next start of HFT module launch the Hlaiman application. Launch SampleHMT EA on EURUSD M1 chart, with previously saved settings. Terminal for quotes comparison will be opened automatically with mt5.ex5 EA on EURUSD H1 chart. All settings of «SampleHMT» EA, except «Arbitrage MT terminal», can be changed without restarting Hlaiman application.

“SampleHMT” expert advisor settings:

“Arbitrage MT terminal” - full path to the terminal for quotes comparison, in case of change in the MetaEditor «\» should be replaced by «\\»

“Arbitrage MT symbols” - currency pairs for trade, through the ";" separator

“Arbitrage Ask price threshold” – price threshold for “Ask” in points for opening BUY trade, pips

“Arbitrage Bid price threshold” – price threshold for “Bid” in points for opening SELL trade, pips

“Arbitrage maximum Spread” – maximal spread of the used instrument, pips

“Arbitrage max live order time” - maximum time in seconds during which the position will be kept open.
"0" - closing position by timeout is disabled.

“Arbitrage Donor symbol prefix” - prefix value for currency pairs of Donor terminal, «empty» - there is no prefix.

“Arbitrage Donor symbol suffix” - suffix value for currency pairs of Donor terminal, «empty» - there is no suffix.

“Arbitrage Stop Loss level” – Stop Loss, pips

“Arbitrage Take Profit level” - Take Profit, pips

“Arbitrage fixed Volume” – trade volume

“Arbitrage term portable mode” - enable\disable «portable» mode for Donor terminal. Recommended to leave the default value.

Other expert advisor settings are not used if the expert advisor contains only the HFT signals module.

To correctly stop HFT module, stop «SampleHMT» EA, close Hlaiman application, terminal for quotes comparison will be closed automatically.

In case of the brokers reviewed in our example, it is recommended to use the HMT expert advisor for EURUSD approximately from 8:00 to 16:00 GMT, before the beginning of USA session active trading.

It is recommended to use the HFT module on real accounts only after testing on demo-accounts. The most important factors for profitable HFT trading are minimal spread, orders execution speed, connection quality with brokers’ servers (ping), and correct choice of brokers for trading and quotes comparison.

Usage of the High-frequency Quotes Monitor (QMonitor).

QMonitor allows to register backlog of quotes for several pairs of brokers, to store and analyze data in a convenient format. MT4 or MT5 terminals can be used to monitor. QMonitor can be used to identify the most profitable terminal pairs for the HFT, to identify the most favorable time slots for use HFT within the trading session.

In order to test the QMonitor, please, download "Global Clearing Group" and "Renesource Capital" terminals. Install the terminals. Turn off the "Launch terminal after install" option during install.

Open the Hlaiman EA Generator installation folder (for example, "C:\Program Files\Hlaiman\").

The file "mt4.ex4" should be copied from the folder "Hlaiman\MQL4\Experts\" to the every MT4 terminal data folder "MQL4\Experts\". For MT5 terminals, file "mt5.ex5" should be copied.

Specify correct paths to the installed terminals in the file "ActiveX\Scripts\QMonitor.pas" (for example, using a standard application "Notepad") in strings:

```
TERMINALS = 'C:\Program Files\MetaTrader - Global Clearing Group\terminal.exe' + #13 +  
            'C:\Program Files\Renesource Capital MetaTrader\terminal.exe';
```

If you use more terminals - add their paths through the '+ # 13 +' separator. For example:

```
TERMINALS = '..\MetaTrader 4 1st\terminal.exe' + #13 +  
            '..\MetaTrader 4 2nd\terminal.exe' + #13 +  
            '..\MetaTrader 5 3rd\terminal64.exe';
```

Specify the full correct path to the file "ActiveX\Scripts\QMonitor.pas" in the file "ActiveX\QMonitor.js", the string:

```
SCRIPT = "C:\\Program Files\\Hlaiman\\ActiveX\\Scripts\\QMonitor.pas ";
```

Please, notice, that the symbol "\" should be replaced with "\\".

Note: please pay attention to the syntax (do not remove special symbols, etc.).

Launch the script "ActiveX\QMonitor.js". If all paths are specified correctly, a currency matrix and all the terminals will be opened. The first launch of the terminals may take some time.

For all the terminals:

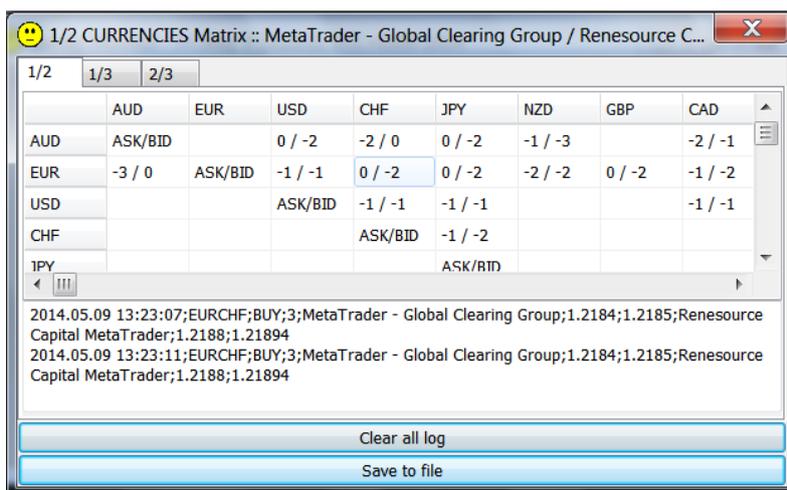
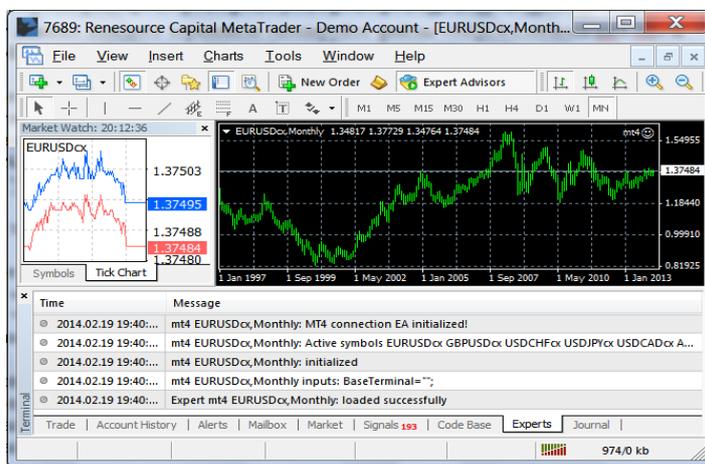
- Open new accounts or enter existing logins
- Set up the "Market Watch" panel, add the currency pairs that you are going to use for monitoring and delete unnecessary.
- Close all opened charts

Only for MT5 terminals:

- Allow DLL import for experts
- Open EURUSD MN chart and launch mt5 EA on it

Close all the terminals. Close Hlaiman application.

For every next lunch of the QMonitor a currency matrix and all the terminals will be opened. For all the terminals a EURUSD Month chart with mt4 EA will be opened (or mt5 EA for MT5 terminals). After some time, information about successful initialization of the experts will be displayed on the tab “Experts” of the terminals.



In the upper part of the currency matrix window there are tabs to switch pairs of brokers, at the bottom part there are data window and buttons for cleaning and saving data.

You can change additional trading parameters in the file “ActiveX\Scripts\QMonitor.pas”. After every parameters changing, you must restart QMonitor.

QMonitor parameters:

TERMINALS - full paths to the executable files of the terminals.

PORTABLE - enable/disable «portable» mode for terminals. Recommended to leave the default value.

COMBINATIONS - a combination of brokers for quotes comparison, will be displayed in the upper part of the currency matrix. Any number of combinations may be added.

CURRENCIES - currencies used for monitoring and to be displayed in a matrix of quotations.

DISABLE - list of currency pairs for which monitoring is disabled. Might look like this: 'EURSEK' + # 13 + 'CADJPY' + # 13 + 'AUDCAD' + # 13 + 'GBPCAD';

BUY_OPEN - arbitrage profit at open BUY position pips

SELL_OPEN - arbitrage profit at open BUY position pips

MAX_SPREAD – maximum spread value

To save the data, press «Save to file» and specify the path and file name with .csv extension. Files in this format can be opened with Excel application. When closing QMonitor, terminals will be closed automatically.

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