



MetaTrader 4

MetaTrader 4

User Guide

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Alpari (UK) Limited
201 Bishopsgate
London, EC2M 3AB
United Kingdom

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MT4 User Guide

Table of Contents

About This Document	11
Audience	11
Assumptions	11
Scope	11
Typographical Conventions	11
Lists	11
Interface Naming.....	11
About the Procedures	11
About the Interfaces in This Guide	12
Documentation Feedback	12
Technical Support and Product Inquiries	12
Client Services Contact Information.....	12
By Phone.....	12
By Email	12
Product and Sales Information.....	12
Getting Started	13
Opening Accounts	14
Demo Accounts	14
Live Accounts	17
SymbolSystem	18
Live Update	18
User Interface	19
Main Menu	21
File Menu (Detailed)	22

MT4 User Guide

View Menu (Detailed).....24

Insert Menu26

Charts Menu.....27

Tools Menu29

Window Menu30

Toolbars31

Standard Toolbar.....32

Charts Toolbar.....34

Line Studies Toolbar35

Periodicity Toolbar36

Market Watch37

Data Window39

Navigator Window40

Terminal Window.....42

Trade tab (detailed)..... 43

Account History Tab (detailed)..... 45

News Tab (detailed) 47

Alerts Tab (detailed)..... 48

Mailbox (detailed)..... 50

Experts 51

Journal 52

Strategy tester window53

Strategy Tester Window - Settings Tab (Detailed) 54

Expert Properties Window 55

Strategy Tester Window - Results Tab (Detailed) 57

Strategy Tester Window - Graph Tab (Detailed) 58

Strategy Tester Window - Journal Tab (Detailed)..... 61

Strategy Tester Window - Optimization Results Tab (Detailed) 62

MT4 User Guide

Strategy Tester Window - Optimization Graph (Detailed)..... 63

Fast Navigation 64

Fast Navigation - Fast Navigation Box (detailed) 64

Fast Navigation – Hot Keys (detailed)..... 65

Working with Charts 67

Chart Opening 67

Offline Charts..... 67

Chart Setup 68

Charts Management 71

Chart Type 71

Saving 71

Print 71

Full Screen 71

Attaching of MQL4 Programs..... 72

Working with Objects 72

Period Change 72

Zooming 72

Scrolling, Auto Scrolling, and Shifting of the Chart 72

Chart Positioning..... 73

Working with Templates..... 73

Data Updating 73

Use of Mouse 74

Chart Management with Context Menu Commands..... 75

Chart Printing 77

Deleted Charts 77

Templates..... 78

Profiles 79

Analytics 80

MT4 User Guide

Graphical Objects.....80

Object Properties.....82

Graphical Objects – Line Studies (detailed)83

Technical Indicators..... 87

Acceleration/Deceleration — AC88

Accumulation/Distribution (A/D).....89

Alligator.....90

Average Directional Movement Index91

Average True Range.....92

Awesome Oscillator93

Bear Powers.....95

Bollinger Bands.....96

Bulls Power.....98

Commodity Channel Index.....99

DeMarker100

Envelopes101

Force Index102

Fractals103

Gator Oscillator104

Ichimoku Kinko Hyo105

Market Facilitation Index.....107

Momentum108

Money Flow Index.....109

Moving Average.....110

Moving Average Convergence/Divergence113

MT4 User Guide

On Balance Volume115

Parabolic SAR 117

Relative Strength Index.....118

Relative Vigor Index119

Standard Deviation119

Stochastic Oscillator120

Williams' Percent Range121

Trading 122

Order types122

 Market Order 122

 Pending Order 122

 Stop Loss 123

 Take Profit 123

 Trailing stop 123

Types of Execution.....124

 Instant Execution..... 124

 Request Execution 124

 Execution by Market..... 124

Trade Positions.....125

Open Positions126

Market Order126

Pending orders128

Modifying of Positions129

Position Closing130

 Single Position Closing 130

 Close by Opposite Positions 131

 Multiple Close by Opposite Positions..... 132

MT4 User Guide

Placing of Pending Orders.....133

Modifying Pending Orders 134

 Modifying/Deleting an Order 134

Auto Trading..... 136

MetaQuotes Language 4 136

MetaEditor.....137

Expert Advisors 138

Creation of an Expert 139

Editing of Experts..... 140

Expert Setup 141

Launch of an Expert Advisor 142

Expert Shutdown..... 143

Strategy Testing 144

Symbol and Its Period..... 145

Methods of Modeling..... 145

Time Range..... 146

Testing Visualization..... 147

Testing Results..... 148

 Results 148

 Graph 148

Journal 151

MQL 152

Optimization of Experts 154

Optimization Setup..... 154

 Creation of an Indicator..... 155

 Indicator Setup 155

MT4 User Guide

Imposing of an Indicator 155

Deletion of an Indicator 155

Creation..... 155

Modifying of Custom Indicators 157

Custom Indicators Setup 157

How to Attach Custom Indicators to a Chart 159

 Removing of a Custom Indicator from the Chart 160

Scripts 161

Creation of a Script 162

Editing of Scripts..... 163

Scripts Setup 163

Launching Scripts 164

Script Shutdown 165

Terminal Configuration 166

Common Settings..... 166

FTP Settings 167

EA Settings 168

Expert and/or Script Single-Launch Settings 169

Settings of the Strategy Tester Launch 170

History Center 171

 Load of Historical Data..... 171

 Exports and Imports of Historical Data 171

Historical File Format (HST Files)..... 173

Export of Quotes 174

Global Variables 175

Contract Specification 176

MT4 User Guide

Languages Support..... 177

Datacenter.ini 178

MT4 User Guide

About This Document

The *MT4 User Guide* provides an overview of *MT4* and step-by-step procedures for using it to perform trading activities.

Audience

The audience for this document is *MT4* end users.

Assumptions

This User Guide assumes that the user has a basic familiarity with the Windows operating system. The user guide refers to windows functions such as context menus, on text menus can be accessed by selecting the right click button on the mouse on the object the user desires the menu for. Financial Instruments traded using *MT4*, whether FX, Stocks or Commodities are all referred to as “Symbols”. *MT4* is also referred to in this user guide as the “Terminal or Client Terminal”

Scope

This guide contains the information and procedures for all the major *MT4* features and functions.

Typographical Conventions

This User Guide has a few typographical conventions that you should be aware of.

Lists

- Sequential procedures are numbered lists.
- Simple lists of items (ordered or not) are bolded.

Interface Naming

- The names of interface elements (such as field names, button names, links, etc.), appear in speech marked.

For example:

Click either “Buy” or “Sell” in the “Instrument Panel”, whichever is appropriate.

About the Procedures

All procedures start with logging in and continue through the completion of the procedure.

MT4 User Guide

About the Interfaces in This Guide

This guide is prepared with Windows XP. If you are using Windows Vista or Windows 7, there may be some variations of the screens.

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Technical Support and Product Inquiries

Client Services Contact Information

By Phone

London

+44 20 7426 2930

By Email

ics@alpari.co.uk

Product and Sales Information

- Sales - sales@alpari.co.uk
- General Inquiries - info@alpari.co.uk

Please note: Alpari UK does not provide any support for Expert Advisors, Custom Indicators or Scripts. All charting indicators described in this document are for reference purposes only.

Getting Started

The Client Terminal is a part of the online trading system. It is installed on the user's computer and is intended for:

- receiving quotes and news in the online mode;
- Trading
- controlling and managing of open positions and pending orders;
- conducting of technical analysis;
- writing of expert advisors, custom indicators, scripts, and functions in MetaQuotes Language 4 (MQL4);
- Testing and optimizing of trading strategies.

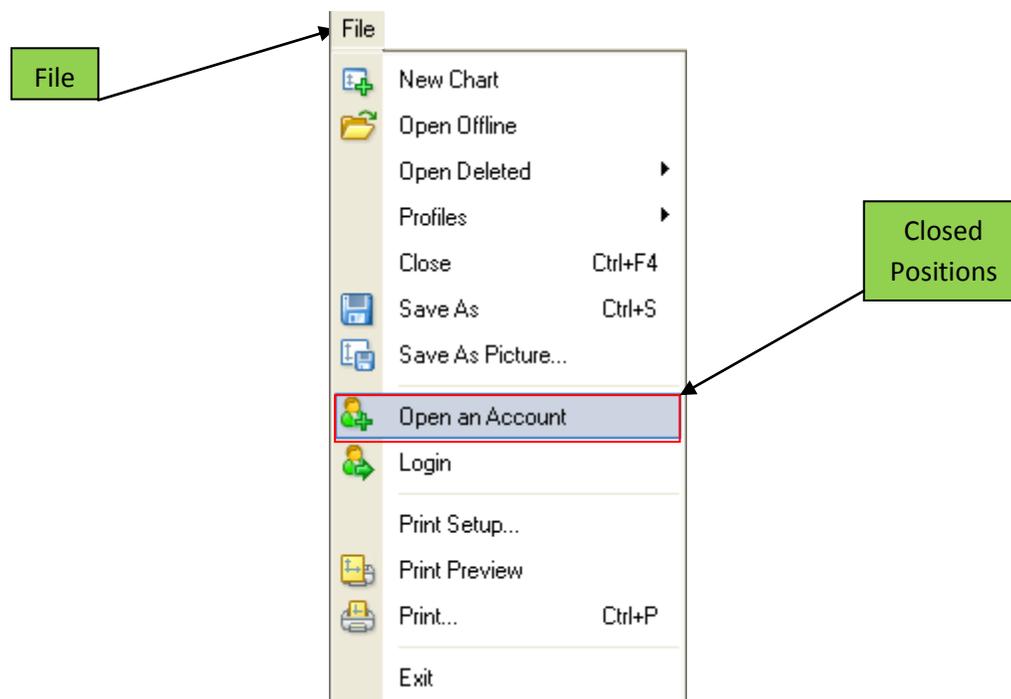
Quotes and news are delivered to the terminal in the real-time mode. On the basis of on-line delivered quotes, it is possible to analyze markets using technical indicators and line studies. Expert advisors allow working off the routine of observing markets and current positions. To ensure more flexible control over positions, several order types are built into the terminal.

The Client Terminal can operate under Microsoft Windows 98SE/ME/2000/XP/VISTA/ along with windows 7.

Opening Accounts

Demo Accounts

A demo account can be opened by selecting “Open an account” within the “File” menu.



The following data fields have to be completed in order to open a demo account.

Name: The user's full name;

Country: Country of residence;

State: Area (region, territory, state, etc.) of residence;

City: City of residence;

Zip code: Zip code;

Address: Exact mailing address (street name, house and apartment numbers);

Phone: Contact telephone number;

Email: Email address;

Account Type: Account type to be selected from the list defined by the Alpari;

Currency: The basic currency of the deposit to be set automatically depending on the account type selected;

Leverage: The ratio between the borrowed and owned funds for trading;

Deposit: The amount of the initial deposit in terms of the basic currency.

Open an Account

Personal details
To open an account, please fill out all the following fields:

Name:

Country: State:

City: Zip code:

Address:

Phone: Email:

Account Type: Currency:

Leverage: Deposit:

I agree to subscribe to your newsletters

< Back Next > Cancel

Please note, once all fields are filled, the user must flag “I agree to subscribe to your newsletters” option to proceed. Once “Next” is selected a trading servers window will appear. By default the Alpari Demo Server will be configured. The User can continue by selecting “Next”.

Open an Account

Trading Servers
Select a more suitable trading server:

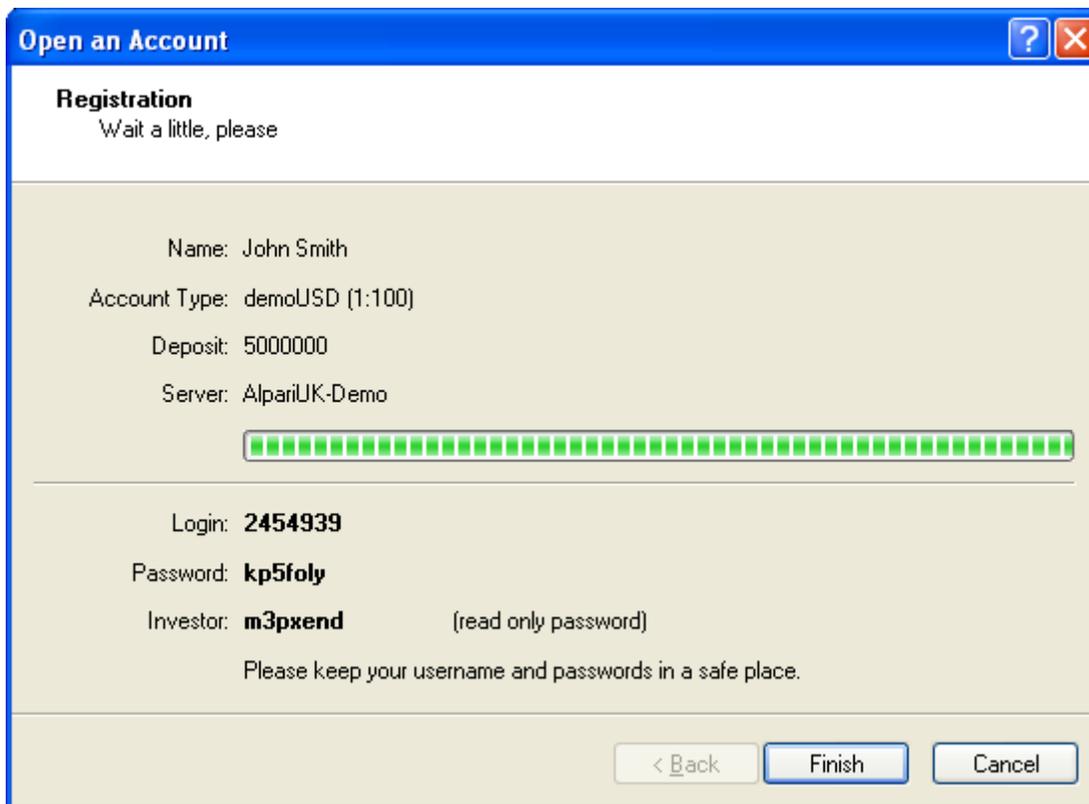
Address	Company	Ping
AlpariUK-Demo	Alpari (UK) Ltd.	0 ms

Scan

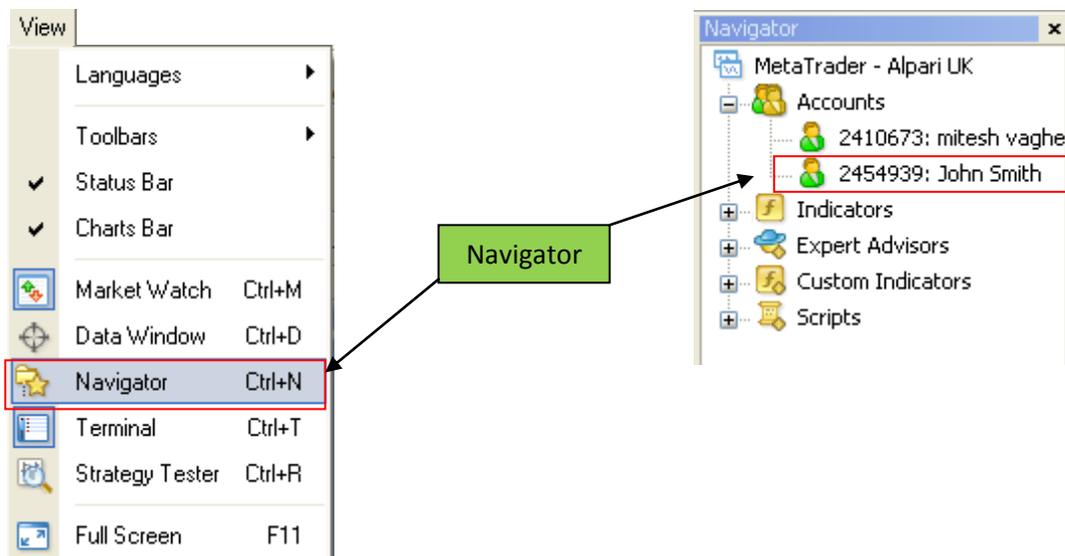
< Back Next > Cancel

MT4 User Guide

The final window will appear listing the demo account details.



The demo account will now be ready to use. If the demo account has not automatically logged in, users can do this manually by selecting the “Navigator” option within the “View”. The account will appear in the account section. Here the user selects the account they registered and selects login when prompted.



MT4 User Guide

Please note: Users registration can be also be found in the mailbox within Meta trader. A more in depth overview of the mailbox can be found in the [Mailbox Section](#).

Live Accounts

Live accounts cannot be processed through the terminal; the user will have to following Alpari's account opening procedures in accordance to the FSA. For more details please see:

<https://my.alpari.co.uk/en/openliveaccount/>

MT4 User Guide

Security System

Data exchange between the Terminal and the server is performed by encryption based on 128-bit keys. This is sufficient to ensure security of trading. However, besides this system, the terminal allows to use one more system: An advanced security system based on a digital signature algorithm of RSA. It is an asymmetric encryption algorithm that implies presence of a public and a private key. The public key can be freely distributed and used for checking the authenticity of a message signed with a private key. Knowing of the public key is guaranteed not to be possible basis for decoding the private one within an acceptable period of time.

The Advanced security system is based on electronic digital signatures that can be enabled on the server.

If the Advanced security system is enabled for a trading account, to use a different computer, it is necessary for the user to transfer the generated RSA keys into the computer the user intends to use. The keys represent files with KEY extension and are stored in the /profiles folder.

If either key has been lost or damaged, please report this to support.

Live Update

A live update system (LiveUpdate) is built into the terminal. It allows the user to be informed and install newer versions of software. This system is always enabled.

The terminal checks for new versions of the program when it connects to the server. If a new version has been discovered, a new window named "Live Update" will appear. The client will be asked to download the update(s). To download these updates, the "Start" button must be select. The updating process and the list of files to be downloaded can be observed in this window. After the updates have been downloaded, the new version of the terminal will be automatically installed and restarted. Please note, if there is no connection to the server, the live updating process will not start

User Interface

The MT4 user interface consists of the following components:

Main Menu: All commands and functions that can be executed in the client terminal are collected in its main menu. It contains: "File", "View", "Insert", "Charts", "Tools", "Window", "Help". More details can be found in the "[Main Menu](#)" section.

Toolbars: Four toolbars are built into the terminal: "Standard", "Charts", "Line Studies", and "Periodicity". The toolbars contain duplicated commands and functions of the main menu. However, these toolbars are customizable, so one can collect only mostly used widgets in them. More details can be found in the "[Toolbars](#)" section.

Market Watch: This window contains the symbol list. Commands of this window allow to control trade positions and charts. More details can be found in the "[Market Watch](#)" section.

Data Window: This window shows information about prices, as well as indicators and expert advisors imposed. This data window does not allow performing any actions. More details can be found in the "[Data Window](#)" section.

Navigator: Open accounts, expert advisors, indicators, and scripts are grouped in the navigation window. The "Navigator" can help to control them promptly. More details can be found in the "[Navigator Window](#)" section.

Terminal: Terminal is a multifunctional window intended for working with trade positions, news, account history, alerts, internal mail, and logs of the program and of expert advisors. The "Terminal" window allows to open and modify orders of different kinds and manage trade positions. More details can be found in the "[Terminal](#)" section.

Tester: This window is intended for testing of expert advisors. Besides testing and viewing of various reports, the expert parameters can be optimized in this window, as well. More details can be found in the "[Tester](#)" section.

Tick Charts: A tick chart is the basis of data analysis. Besides price changes, various analytical objects can be located in the chart: line studies, technical and custom indicators, texts, and geometrical figures. More details can be found in the "[Working with Charts](#)" section.

Status Bar: For additional information to be visualized, the status bar is used in the terminal. The status bar contains indicator of the server connection, names of active template and profile, as well as command prompts and price data.

Fast Navigation Tools: Hot keys, acceleration keys, and fast navigation bar are intended for quick work with the terminal. Using of keys allows to execute various commands of the program promptly, and the fast navigation bar makes it possible to move the chart along its time base precisely, change its timeframe, and even the symbol itself. More details can be found in the "[Fast Navigation Tools](#)"

Main Menu

Toolbars

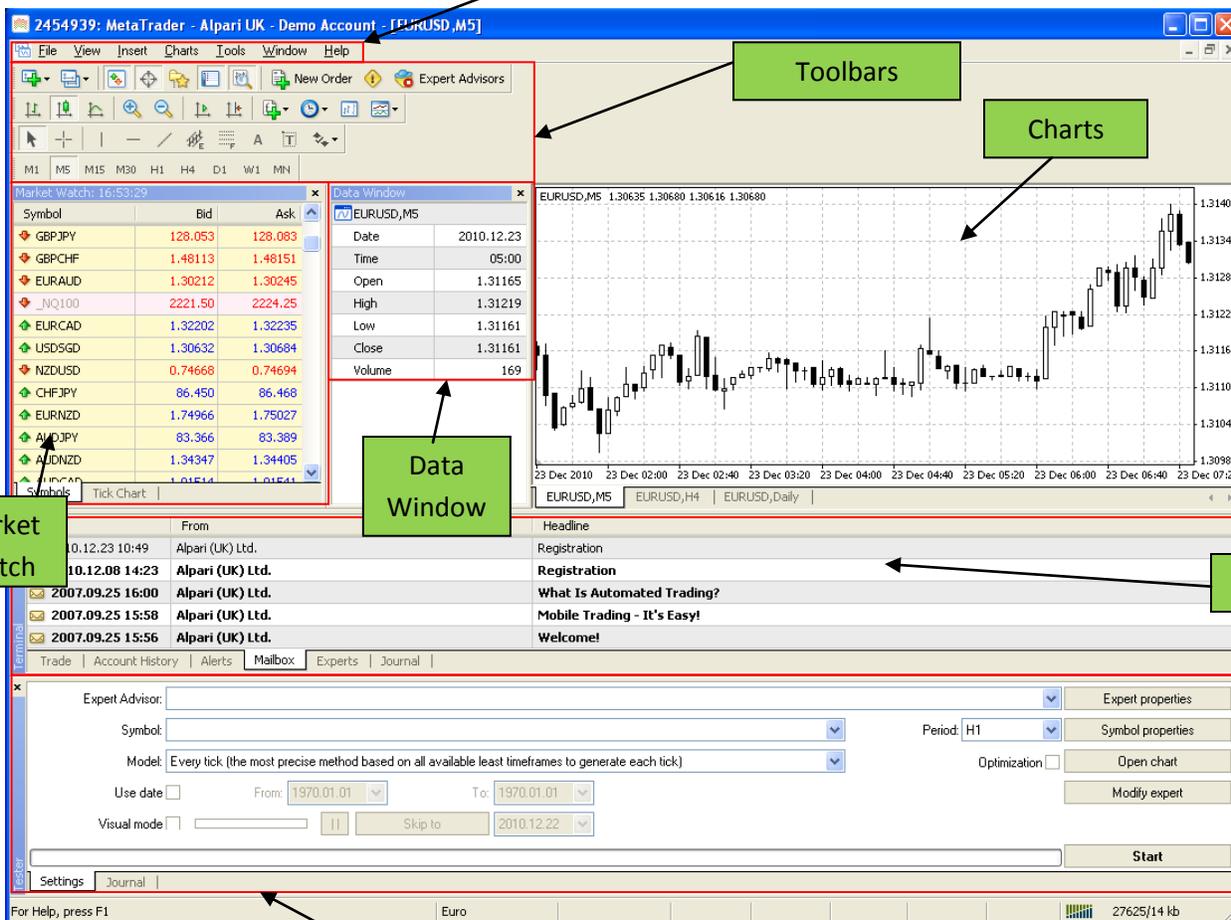
Charts

Data Window

Market Watch

Terminal

Tester



MT4 User Guide

Main Menu

The main menu of the terminal is located under the program heading and represents a set of sub-menus.

The main menu consists of:



File: Working with charts, storing of history data and profiles, and print.

View: Setting of toolbar, managing of command windows ("Market Watch", "Data Window", "Navigator", "Terminal", "Tester") and the program interface language.

Insert: Managing of technical indicators, line studies, and other objects.

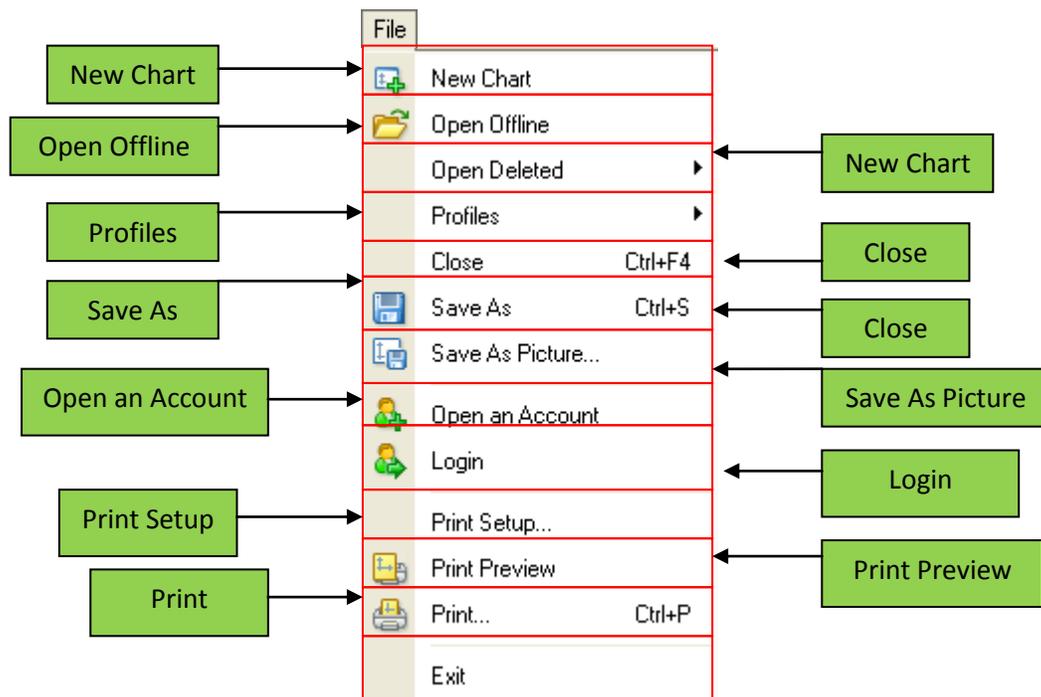
Charts: Setting of bars displaying, scale, managing of the imposed objects, presence of grid, chart properties.

Tools: General settings of the client terminal, History Center, global variables, and MetaEditor (MetaQuotes Language 4 editor).

Window: The list of open charts and their locations.

Help: User guide and information

File Menu (Detailed)



Commands for working with charts, managing of profiles, storing of history data and charts are collected in this menu, as well as charts printing properties. The following commands are available in the menu:

New Chart: Open a new chart window for the symbol. At the command execution, the list of available symbols will appear. Having selected a symbol from the list, one can open a new chart. The same actions can be performed by the  button of the "Standard" toolbar.

Open Offline: Open a symbol chart offline. By using this command, the user will be able to select a necessary file with its history data being stored. The new quotes for this symbol will not be shown in the chart. Offline chart opening can be useful at testing of expert advisors.

Open Deleted: Restore a deleted chart. The deleted charts will be restored if the "Save deleted charts to reopen" is enabled in the terminal settings. All deleted charts templates are stored in the /DELETED directory. The command will lead to the corresponding chart being opened.

Profiles: Open sub-menu for managing profiles. Profiles can be stored or deleted from this sub-menu, as well as previously stored ones can be downloaded. This profile managing sub-menu can also be called by the  button of the "Standard" toolbar. More details can be found in the "Profiles and Templates" section.

Close: Close the current chart.

Save As: Save history data as a text file in "CSV", "PRN", or "HTM" format.

Save As Picture: Save the chart in "BMP" or "GIF" format.

Open an Account: Opens a new demo account.

MT4 User Guide

Login: During the execution of this command, the terminal tries to connect to the server using the account selected. Successful authorization will trigger incoming quotes and news data. It is possible to authorize having executed the "Login" command in the context menu within the "Navigator — Accounts" window or double-clicking on the account name.

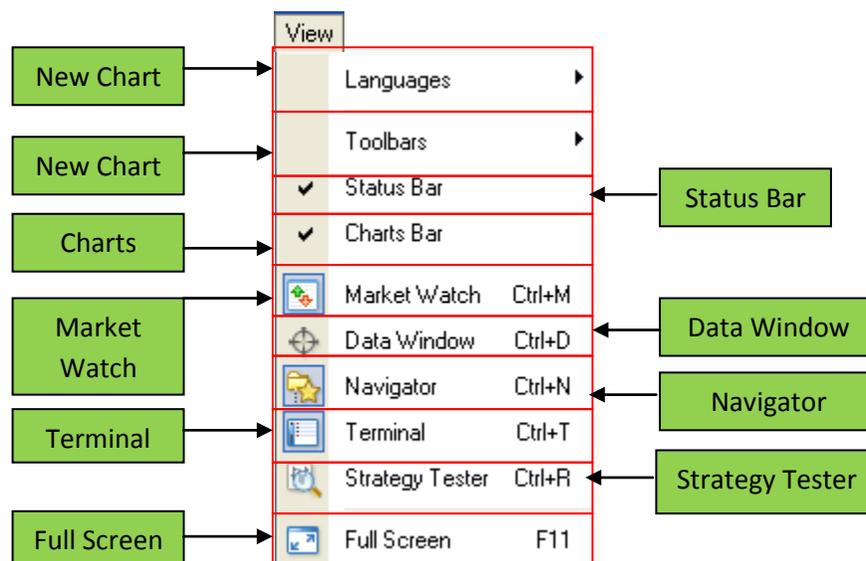
Print Setup: General setup of printing parameters — printing device, page size and orientation, etc.

Print Preview: Preview the chart before printing it. The settings of the selected printer are used at this. This command helps to preview before printing whether all desired data can be printed with the settings given. The same actions can be performed having pressed the  button of the "Standard" toolbar or having executed the chart context menu command of the same name.

Print: This command will print the chart selected.

Exit: Shutdowns Terminal.

View Menu (Detailed)



Commands managing signal windows, toolbars, and the program interface language, are listed in this menu. Some of these commands are duplicated in the "Standard" toolbar. The following commands are available in the menu:

Languages: Calls the sub-menu managing languages of the Client Terminal. Having selected a desired language, the user can switch the terminal interface to this language. For the changes to take effect, the program must be restarted;

Toolbars: Calls the sub-menu managing toolbars. Active toolbars are checked. Selection of a toolbar allows enabling or disabling it. The "Customize..." command allows assigning any buttons for any toolbars. A new window containing the list of toolbar elements available will open. The "Insert" and "Remove" buttons allow adding or removing an element from the toolbar. The "Up" and "Down" buttons are intended for defining the location of a button in the toolbar. To reset the toolbar to appear as it did initially, the user has to select the "Reset" button.

Status Bar: Enable/disable status bar located in the lower part of the terminal window. This data bar contains (from left to right): menu managing profiles, time and prices of the bar selected, and indicator of server connection and amounts of incoming/outgoing traffic. Having selected the current profile name, the user can open the menu managing profiles. The user can store or remove profiles in this menu, as well as download those previously stored. The sub-menu for managing profiles can also be called by the "File — Profiles" menu command.

Charts Bar: Enable/disable the chart window names (tabs) bar located in the lower part of the workspace. Using this bar, the user can switch among open charts.

Market Watch: open/close the "Market Watch" signal window where the current quotes are published.

The same action can be performed by acceleration buttons Ctrl+M or by pressing the  button of the "Standard" toolbar.

MT4 User Guide

Data Window: Open/closes the "Data Window". Prices of the bar selected and information about indicators imposed are published in this window. The same action can be performed with acceleration buttons Ctrl+D or by the  button on the "Standard" toolbar.

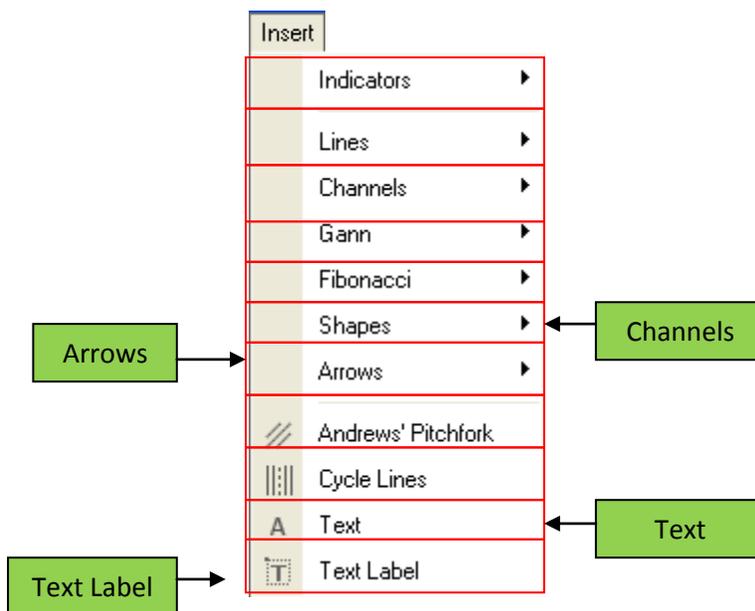
Navigator: Open/closes the "Navigator" window. Lists of open accounts, technical indicators, experts, custom indicators and scripts are located in the form of tree in this window. The same action can be performed by acceleration buttons Ctrl+N or by selecting the  button in the "Standard" toolbar.

Terminal: Open/closes the "Terminal" window. The user can manage orders and signals in this window, look through the account history, news, emails, journal of events and that of expert advisors. The same action can be performed by selecting Ctrl+T or by the  button in the "Standard" toolbar.

Strategy Tester: Open/closes the "Tester" window. This window is intended for testing and optimization of expert advisors. The same action can be performed by selecting keys Ctrl+R or the  button of the "Standard" toolbar.

Full Screen: Enable/disables the full screen mode. As soon as this option is enabled, toolbars and status bar will be disabled and all signal windows will be closed. The client terminal heading, main menu, workspace (charts) and the charts windows tabs remain in the screen. The repeated execution of the command returns the terminal to the initial appearance. The same action can be performed with F11 button or by the  button of the "Standard" toolbar.

Insert Menu



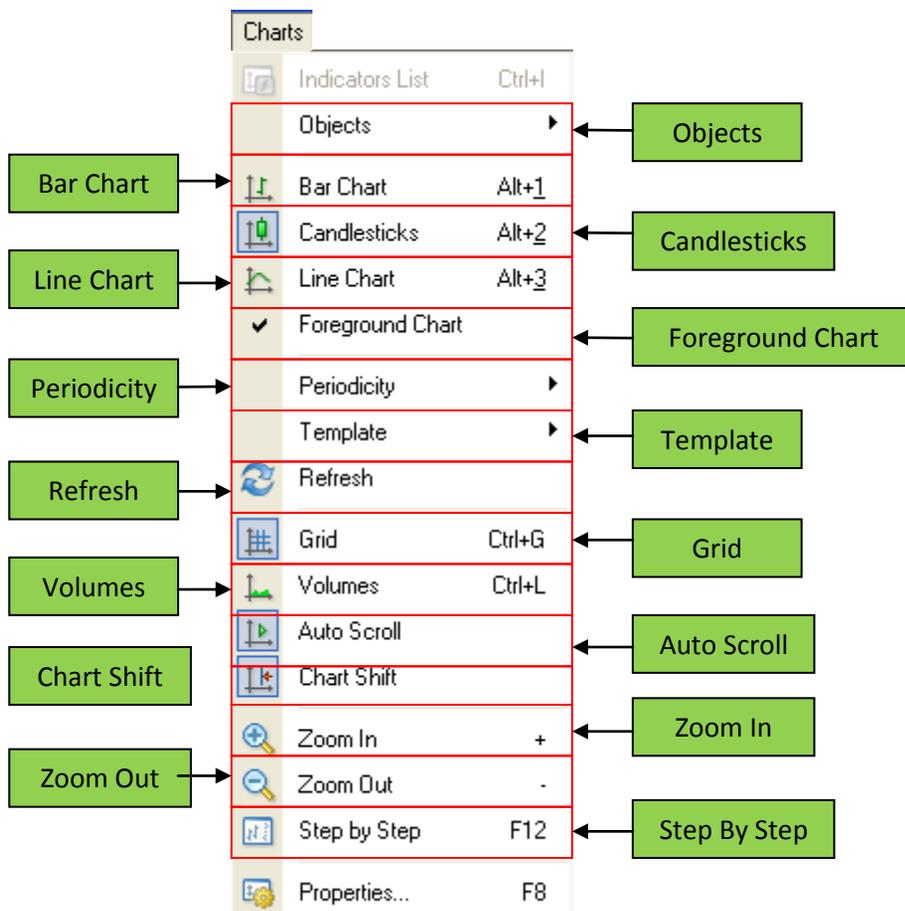
Tools used for charting are listed within the “insert” menu. Users can choose from a number of built in indicators and line studies. Listed below is a brief description of some of the tools available in the “insert” menu.

Shapes: Geometrical figures (rectangle, triangle, ellipse) that allow selecting various areas in the chart;

Arrows: Symbols (arrows, check signs, stop signs, price signs) that allow selecting the most important points in the chart;

Text: Texts intended for adding of comments to the chart. They are anchored to the chart and move together with the chart when it is scrolled;

Text Label: Texts intended for adding of comments and anchored to the window coordinates, not to the chart. At the chart scrolling, the text label will not move.



Technical indicators along with other charting tools are listed within the “charts” menu. Here are the options listed in the menu:

Indicators List: Calls window managing indicators imposed in the active chart. The full list of indicators imposed (including custom indicators) is given in the window. Having selected an indicator, one can change its settings or remove it from the chart. The same action can be performed by the chart context menu command of the same name or by acceleration keys Ctrl+I;

Objects: Calls sub-menu managing imposed objects. The following commands are available in the sub-menu:

- Objects List — Call window managing the imposed objects. Objects include line studies, signs, shapes, and texts.
- Delete Last — Delete the last imposed object from the chart. The same action can be performed by pressing the Backspace button;
- Delete All Selected — Delete all selected objects from the chart window. The same action can be performed by pressing the Delete button;
- Delete All Arrows — Delete all objects from the chart window;
- Unselect All — Unselect all the objects imposed in the chart;
- Undo Delete — Return the deleted object back into the chart. The same action can be performed by selecting the Ctrl+Z keys;

MT4 User Guide

Bar Chart: Displays the chart as a sequence of bars. Execution of this command is the same as pressing the  button of the "Charts" toolbar or acceleration keys Alt+1;

Candlesticks: Displays the chart as a sequence of "candlesticks". Execution of this command is the same as selecting the  button in the "Charts" toolbar or acceleration keys Alt+2;

Line Chart: Displays the chart as a broken line connecting close prices of bars. Execution of this command is the same as pressing of the  button in the "Charts" toolbar or selecting acceleration keys Alt+3;

Foreground Chart: Reorganizes the chart in the "foreground". If this function is enabled, all analytical objects (technical indicators and graphical objects) will be placed "behind the chart", instead of over it;

Periodicity: Chart timeframe option. After this command has been executed, a sub-menu will appear where the active chart timeframe can be selected. The chart timeframe can also be changed with help of the "Periodicity" toolbar;

Template: Calls the template managing sub-menu. From this sub-menu, one can impose any template into the active chart. Moreover, a new template can be stored based on the active chart, or an existing one can be deleted.

The sub-menu managing templates can also be called by pressing of the button of the "Charts" toolbar.

Refresh: Refresh history data. All missing data within the existing history will be downloaded.

Grid: Show/hide grid in the chart window.

Volumes: Show/hide volumes in the chart.

Auto Scroll: Enable/disable automatic shifting of the chart to the left after a new bar has started to form. If this option is enabled, the last bar will always be shown in the chart.

Chart Shift: Shift the chart from the left window border to the shift label of the chart. The shift label of the chart (a grey triangle in the upper part of the window) can be moved with the mouse horizontally within 10 to 50% of the window size. Execution of this command is the same as pressing of the button of the "Charts" toolbar;

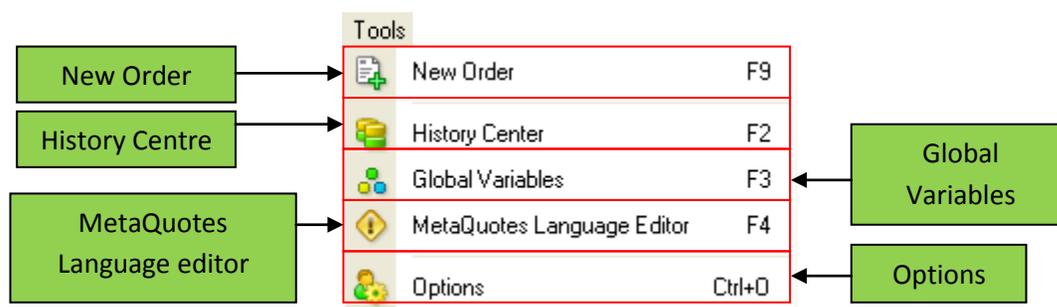
Zoom In: Zoom into the the chart.

Zoom Out: Zoom out the chart.

Step by Step: Shift the chart by one bar to the left.

Properties: Sets up chart parameters. This command execution, the chart setup window will appear. The same actions can be performed through the chart context menu command or by pressing of F8.

Tools Menu



Combinations of options are listed in the tools menu:

New Order: This option allows users to manage orders. The user can place market or pending orders from this window. The "Order" window can also be called by context menu commands of the "Market Watch" and "Terminal — Trading" windows, by mouse double-click on the symbol in the "Market Watch" window, by F9 button or by pressing of the button of the "Standard" toolbar;

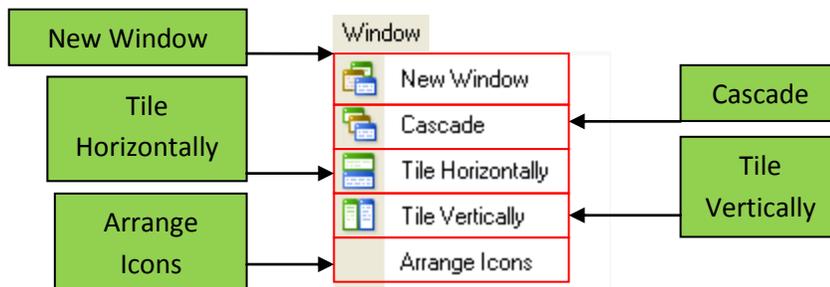
History Center: This option allows users to manage historical chart data. Quotes used for the building of charts can be edited in the History Center. This window can also be called by selecting F2;

Global Variables: This option allows users to view lists of terminal global variables. Global are variables common for all expert advisors, custom indicators, and scripts. More details about global variables can be found in the corresponding section. The Global Variables window can also be called by F3 button;

MetaQuotes Language Editor: By selecting this option, users can open the MetaEditor. Using the MetaEditor, the user can create and edit experts, custom indicators, and scripts. The MetaEditor can also be called by F4 button;

Options: This option allows users to set up parameters for connection, trades, charts, experts, and others. More details can be found in the "Client Terminal Settings" section. The Options window can also be called by selecting acceleration keys Ctrl+O.

Window Menu



Commands managing the chart windows are listed in this menu. Charts arrangement in the workspace can be chosen or a new chart window can be opened from here:

New Window: Create a new symbol chart window. At this command execution, a sub-menu will open that contains a list of symbols available. Having selected a symbol name from this list, one can open the corresponding chart. A new window can also be opened by pressing the button of the "Standard" toolbar or by the command of the "File — New Chart" menu;

Cascade: Arrange the chart windows in stages;

Tile Horizontally: Arrange the chart windows horizontally;

Tile Vertically: Arrange the chart windows vertically;

Arrange Icons: Arrange minimized windows. Windows of all open charts are minimized and located in the lower part of the workspace. This is useful when one works with a number of charts at the same time.

A list of all open chart windows is located in the lower part of this menu. The current window is checked. To activate another chart, the user has to select the corresponding symbol from this list.

MT4 User Guide

Toolbars

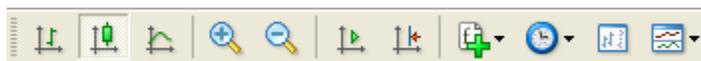
There are four toolbars in-built into the terminal. The main commands used in the terminal are duplicated in the toolbars in form of buttons. Normally, the toolbars are placed under the main menu, but they can be moved in any window area. Toolbars can be shown or hidden by the selecting "View" then "Toolbars".

All toolbars are fully customizable. All commands are grouped in toolbars according to their functions:

Standard: General commands of terminal managing;



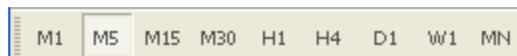
Charts: Commands for the managing of charts;



Line Studies: Managing of objects to be imposed into charts;



Periodicity: Chart Timeframe management.



Please note: The above are examples of the four toolbars available. As toolbars are fully customizable there may be some buttons missing from the toolbars shown

MT4 User Guide

Standard Toolbar

General commands managing the terminal are listed in this toolbar:



Create a new symbol in the chart window. The command opens the list of financial instruments (symbols). The user can open a new chart having selected a necessary name in this list. The same action can be performed after the "File — New Chart" or "Window — New Window" menu commands have been executed.



Menu used to manage profiles. The user can activate a profile having selected it in this menu. A profile can be deleted in this menu, and a new profile can be stored based on the current chart windows configuration.

Attention: the DEFAULT profile cannot be deleted.

To work with profiles, the user can also execute the "File — Profiles" menu command;



Open/close the "Market Watch" window. The current quotes for all available symbols are published in this window. This window allows to open symbol charts and place orders. More details about working with this window are given in the "[Market Watch](#)" section. The "View — Market Watch" menu command and acceleration keys Ctrl+M allow to open or close this window also;



Open/close data window named "Market Watch". Information about prices and indicators imposed is published in this window. More details about working with this window can be found in the "[Data Window](#)" section. The "View — Data Window" menu command and acceleration keys Ctrl+D allow to open or close this window, as well;



Open/closes the "Navigator" window. All open accounts, available experts, technical indicators, and scripts are placed in this window. More details about working with this window can be found in the "[Navigator](#)" section. The "View — Navigator" menu command and acceleration keys Ctrl+N allow to open or close this window.



Open/close the "Terminal" window. This window allows the user to place trading orders, view the account history and receive news. More details about working with this window can be found in the "[Terminal](#)" section. The "View — Terminal" menu command and acceleration keys Ctrl+T allow to open or close this window, as well;



Open/close the "Tester" window. This window is intended for testing and the optimization of expert advisors. More details about working with this window can be found in the "[Strategy Testing](#)" section. The "View — Strategy Tester" menu command and acceleration keys Ctrl+R allow to open or close this window, as well;



Place a new order. The command opens the window that allows to place a market or a pending order. More details can be found in the "[Trading](#)" section. This window can also be opened by the "Tools — New Order" menu command, the "Market Watch — New Order" window or "Terminal — Trading — New Order" window context menu commands, as well as by pressing of F9;



Launch MetaEditor. This editing program allows creating and editing expert advisors, custom indicators, scripts, and MQL 4 libraries. More details about working with this editing program can be found in the "[MetaEditor](#)" section and in its own help files. This action can also be performed by the "Tools — MetaQuotes Language Editor" menu command or by pressing of F4;

MT4 User Guide



Enable experts. If this option is disabled, no expert attached to the charts will be executed. Detailed description of working with experts can be found in the "Auto Trading" section. The "Enable Experts" option in the terminal settings performs the same action;



Opens the terminal settings window. All basic settings of the terminal are made in this window. The window of terminal settings can also be opened by the "Tools — Options" menu command or by selecting acceleration keys Ctrl+O;



Enable/disable the full-screen mode. When this option is enabled, toolbars and status bar are hidden, and all service windows are closed. The client terminal name, main menu, workspace (charts), and chart windows tabs remain in the screen. The repeated execution of this command will result in return to the initial status. The same actions can be performed by pressing F11 or by the "View — Full Screen" menu command;



Print the chart.



Chart preview before it is printed.



Call the help files. After this button has been pressed, the user should click on the desired interface element to call the corresponding help section.

Charts Toolbar

Options for the managing of charts and technical indicators are listed in this toolbar:



Display the chart as a sequence of bars (transform into the bar chart). The same action can also be performed by the "Charts — Bar Chart" menu command or by pressing acceleration keys of Alt+1;



Display the chart as a sequence of candlesticks (transform into the candlestick chart). The same action can be performed by the "Charts — Candlesticks" menu command or by pressing acceleration keys of Alt+2;



Display the chart as a broken line (transform into the line chart). The same action can also be performed by the "Charts — Line Chart" menu command or by pressing acceleration keys of Alt+3;



Zoom in the chart. The same action can be performed by the "Charts — Zoom In" menu command, the corresponding chart context menu command, or by pressing the "+" key;



Zoom out the chart. The same action can be performed by the "Charts — Zoom Out" menu command, the corresponding chart context menu command, or by pressing the "-" key;



Automatic scrolling of charts. If this option is enabled, the latest bars will always be displayed in the screen. The same action can be performed by the "Charts — Auto Scroll" menu command;



Shift the chart from the window right border to the shift label of the chart. The chart shift label (a grey triangle in the upper part of the window) can be moved horizontally with the mouse within 10 to 50% of the window size. The same action can be performed by the "Charts — Chart Shift" menu command;



Call the sub-menu to manage indicators. All built-in technical indicators are grouped here. Having chosen a name in the list, one can impose the indicator into the active chart. More details can be found in the "Technical Indicators" section. The same actions can be performed by the "Insert — Indicators" menu command;



Sub-menu to manage the chart periods. When a period is selected in this sub-menu, the corresponding changes will appear in the active chart. Switching among chart periods can be performed by the "Charts — Periodicity" menu command, the corresponding chart context menu command, or the corresponding buttons of the "Periodicity" toolbar;



Call the sub-menu to manage templates. Any template can be imposed into the active chart from this sub-menu. A new template can be stored based on the active chart or an existing template can be deleted. More details about working with templates can be found in the "Templates and Profiles" section. The same actions can be performed by the "Charts — Template" menu command or the corresponding chart context menu command.

MT4 User Guide

Line Studies Toolbar

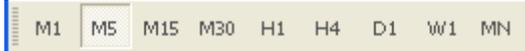
Users can add graphical objects to graphs by selecting the buttons listed on the Line Studies Toolbar:

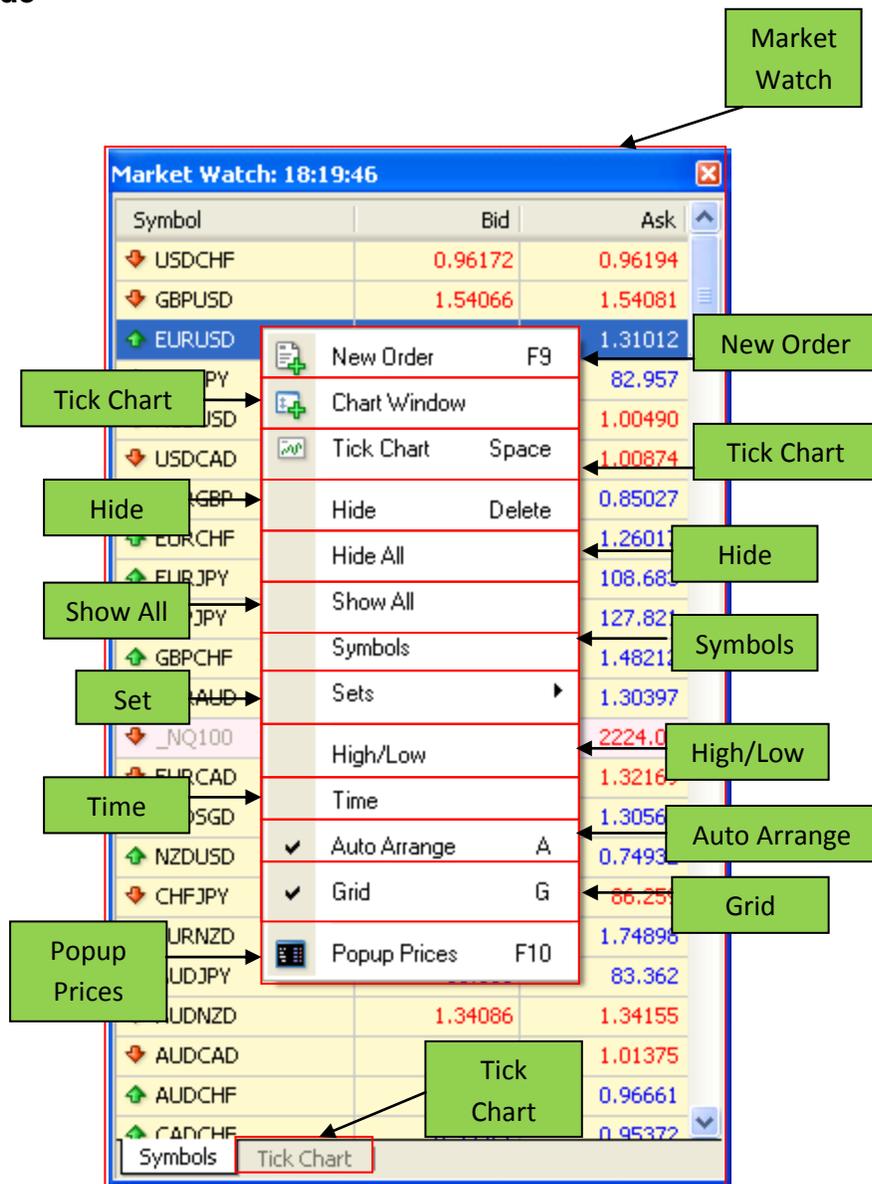
-  Draw an ellipse. This shape helps to select various areas in the chart. More details about working with objects can be found in the section of the same name. The "Insert — Shapes — Ellipse" menu command allows to draw this figure, as well;
-  Draw a triangle. This shape helps to select various areas in the chart. More details about working with objects can be found in the section of the same name. The "Insert — Shapes — Triangle" menu command allows to draw this figure, as well;
-  Draw a rectangle. This shape helps to select various areas in the chart. More details about working with objects can be found in the section of the same name. The "Insert — Shapes — Rectangle" menu command allows to draw this figure, as well;
-  Add a text label. After this button has been pressed, one should select a point in the chart where the label should be placed. Unlike the text (described below), the text label is attached not to the chart, but to the chart window. When the chart is scrolled, the text label does not move. The "Insert — Text Label" menu command will also add comment into the chart;
-  Add a comment into the chart. It will be anchored directly to the chart. When the chart is scrolled, the text will move together with it. The "Insert — Text" menu command will also add comment into the chart;
-  Menu to manage graphical symbols. One can add graphical signs into the chart or delete all the imposed signs from it using this menu. These objects can also be imposed into the chart by the "Insert — Arrows" menu command;
-  A crosshair. Cursor in this mode allows to highlight coordinates of the selected point in the chart or indicator window. This mode can only work within the active chart window. If, being in the "Crosshair" mode, one keeps the left mouse button pressed and moves the cursor, a line connecting these two points will be drawn. The distance between the points and the current price value will be highlighted to the right of the second point of the line. This will look as [amount of bars between two points] / [amount of points between two points] / [the current price value in the second point]. This tool is named electronic ruler. Cursor can also be switched to the crosshair mode by pressing acceleration keys of Ctrl+F or the third mouse button;
-  A standard cursor (selection mode). The cursor in this mode allows to select various objects in the chart.

MT4 User Guide

Periodicity Toolbar

This tool bar allows users to switch time frames of charts.





The “Market Watch” window within the client terminal lists all quotes sent from the server. The quotes are listed by symbolname and the “bid” and “ask” prices. The “Market Watch” window can be opened by selecting the  button within the standard tool bar; alternatively the user can select “Market View” from the “View” menu. The Market Watch window can also be opened or closed by selecting Ctrl+M.

This window allows to place market and pending orders and open new charts. When the right mouse button is clicked in the "Market Watch" window, the context menu will appear where the following commands are available:

New Order: Here users can open the "New Order" window where the user can prepare and place a market or a pending order for the symbol selected. In the order preparation, the user can specify the Stop Loss and Take Profit levels. More details can be found in the "[Open Positions](#)" section. The "New Order" window can also be opened by double clicking on the symbolname in the "Market Watch"

MT4 User Guide

window, by the "Tools — New Order" menu command, by the "Terminal — Trade — New Order" window context menu command, the  button of the "Standard" toolbar, or by selecting F9;

Chart Window: Here the user can open the chart of the symbol selected.. The symbol chart can also be opened by the "File — New Chart" and "Window — New Window" menu commands and by selecting the  button in the "Standard" toolbar;

Tick Chart: This option allows the user to open the tick chart of the symbol selected. Unlike normal charts, the tick chart is located directly in the "Market Watch" window. The tick chart of the selected symbol can also be viewed by switching to the tab of the same name in the same window;

Hide: Delete (hide) the symbol from the list. To minimize the traffic, it is recommended to hide unused symbols from the quotes window by this command or by pressing of the Delete button.

Please note: If there are open positions or pending orders for the symbol, or its chart is open, the symbol cannot be deleted.

Hide All: This option will delete all symbols from the list. This command does not apply to symbols for which there are open positions or the charts of which were opened in the current working session;

Show All: Show the list of all available symbols. After this command has been executed, quotes will income for all these symbols;

Symbols: This option calls the Symbols window. Where there is a list of all available symbols. Symbols are grouped in the window according to their types. The "Show Symbol" command allows to add necessary symbols to the quotes window, and that of "Hide Symbol" — to delete a symbol from it. The "Properties" window command allows viewing the symbol parameters;

Sets: Open the sub-menu that manages the symbol sets. The current set of symbols can be stored in this sub-menu, as well as delete or select an already existing one;

High/Low: Add the highest and the lowest values of the daily price to the quotes displayed;

Time: show time of incoming quotes;

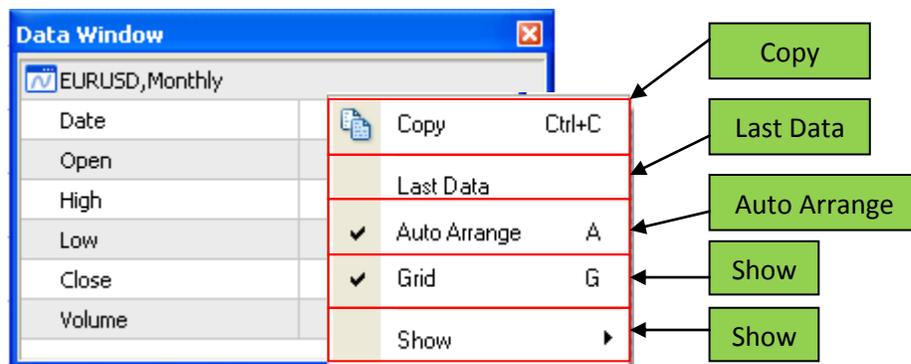
Auto Arrange: automatic arranging of columns when changing the window size. Auto Arrange can also be enabled by selecting the A button;

Grid: Show/hide the grid separating columns. The grid can also be shown by pressing G button;

Popup Prices: This option opens an additional quotes window. The list of symbols in this window is the same as that in the "Market Watch" window at the moment of the command execution. Changes in the symbol list in the "Market Watch" window will not influence symbols in the "Popup Prices". It is an information window, but trading operations can also be performed from it. To do so, the user simply double-clicks with the left mouse button on the desired security. In the context menu of this window, there are commands allowing setting up data displaying parameters, enable the full screen mode, or locate the window over all others.

MT4 User Guide

Data Window



This window displays price information. The data window is to be used in conjunction with the chart window as the price information displayed reflects the specific bars the user has selected in the chart. Users can make use of the following options when opening a Data Window.

Context menu commands of this window allow:

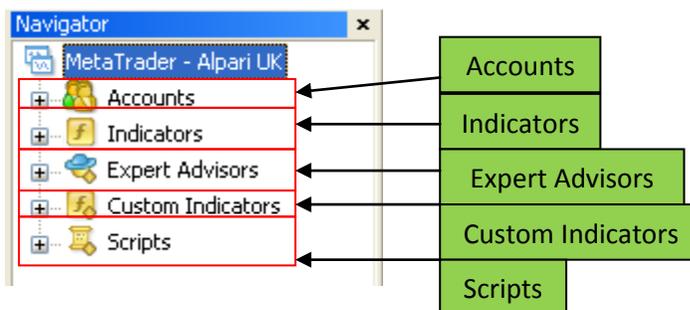
Copy: Copy data from this window into the clipboard for further use in other applications. The same action can be performed by pressing of acceleration keys Ctrl+C;

Last Data: Show/hide the latest data column. An additional column containing the last bar data will appear in the window;

Auto Arrange: Set up the column size automatically when the window size changes;

Grid: Show/hide grid to separate columns;

Show: Show/hide information fields. Any of the bar prices (OHLC), date or volume can be selected in the sub-menu that appears. If the element has not been checked, it will not be shown.



This window allows quick access to various features of the terminal. This window can be opened/closed by pressing acceleration keys of Ctrl+N, by the "View — Navigator" menu command, or by pressing of the  button of the "Standard" toolbar.

The lists of features are listed as a tree and contain five groups: "**Accounts**", "**Indicators**", "**Expert Advisors**", "**Custom Indicators**", and "**Scripts**". The "**Accounts**" group includes the list of open accounts. Using a context menu, one can open a new demo account or delete the old one. An unlimited amount of demo accounts can be opened from the terminal. To do so, the user has to execute the "Open an Account" context menu command or press the Insert button. To authorize an existing account (whether a demo or a real one), the user has to execute the "Login" command or double-click with the left mouse button on the desired account line.

Please note: Real accounts cannot be applied from the terminal; the user will have to apply through Alpari first.

The "**Indicators**" group includes the list of built-in technical indicators. They represent the main tools for analyzing the price dynamics. Double-clicking with the left mouse button or the "Attach to a chart" context menu command allows imposing the indicator selected into the active chart.

The "**Expert Advisors**" group contains the list of all available expert advisors. Expert Advisors in the terminal are programs allowing automating analytical and trading activities. To create and modify them, the built-in editor, MetaEditor, is used. More details about creation and working with experts can be found in the "Auto Trading" section.

The "Create" context menu command allows to create a new expert, "Modify" — to modify an existing one, and "Delete" — to delete an expert from the terminal. The "Attach to a Chart" command or double-click with the left mouse button allow to impose the expert into the active chart. A new incoming tick will trigger the start of the expert. Experts can be imposed into any chart with the "Drag and Drop" technique. Experts' icons colored in grey mean that these experts cannot be used. Such expert must be compiled first.

The "**Custom Indicators**" group includes the list of all available custom indicators (counterparts of built-in technical indicators), and the "**Scripts**" group contains the list of available scripts (programs executed only once). Custom indicators and scripts are managed by using of the context menu similar to that of experts. More details can be found in the sections of "Custom Indicators" and "Scripts".

Hot keys can be assigned to call any elements of the "Navigator" window, except for those in the "Accounts" group. To set a hot key for an element, one has to execute the "Set hotkey" command of this element's context menu. The hot keys set have a higher priority being compared to those predefined. For example, Ctrl+O is predefined to call the terminal setting window.

MT4 User Guide

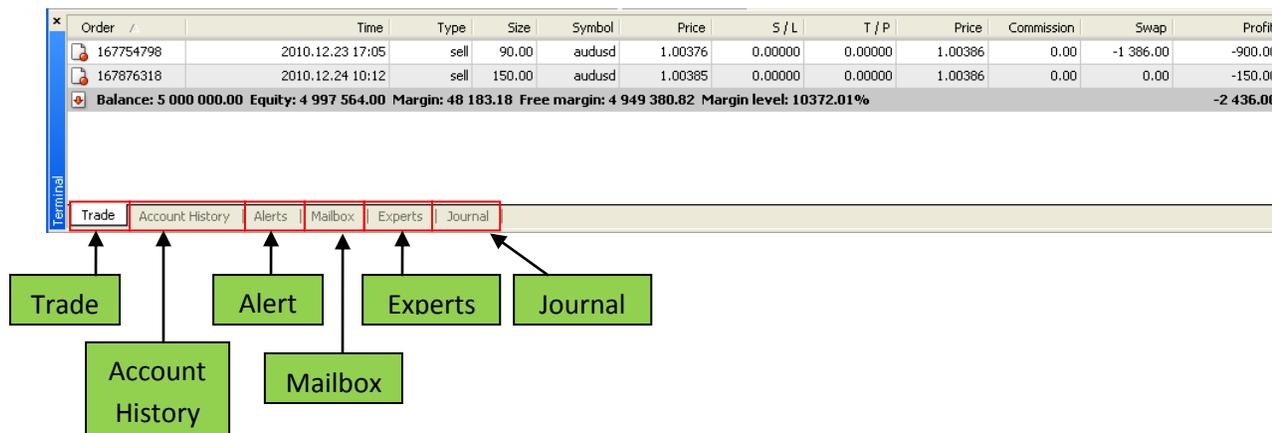
Favorites Tab

Users can add functions regularly used within the navigator in the favorites tab. In this tab, for example, only necessary accounts, indicators, scripts, and experts can be placed. To move a necessary object into the "Favorites" tab, the user has to execute the corresponding context menu command. If the object is not necessary anymore, it can be deleted from the tab using the "Delete from favorites" context menu command.

MT4 User Guide

Terminal Window

The Terminal Window allows quick user access to trade activity, account history, alerts, mailbox, experts and the journal.



Trade: This tab allows the user to view the status of open positions and pending orders, as well as manage all trading activities.

Account History: History for all performed trade operations and balance without taking open positions into consideration are published here. The efficiency of all trade activities can be estimated with the results given in this tab;

News: All financial news incoming to the terminal can be viewed from this tab.

Alerts: Various alerts can be viewed and set here. Any files executable in the operational environment (including wave files) and messages to be sent by email can be used as alerts;

Mailbox: Incoming/outgoing emails are stored here.

Expert Advisors: Information about functioning of the attached experts, including opening/closing of positions, order modifying, the expert's own messages are published in this tab;

Journal: Information about terminal launching and events during its operation, including all trading operations performed is stored in the journal.

MT4 User Guide

Trade tab (detailed)

The trade tab contains information in regards to the status of the account. Open positions are listed along with account balance, margin/free margin and equity.

The screenshot shows the Trade tab interface with the following columns: Order, Time, Type, Size, Symbol, Price, S/L, T/P, Price, Commission, Swap, Profit. Below the table, summary statistics are displayed: Balance: 5 000 000.00, Equity: 4 977 404.00, Margin: 48 183.18, Free margin: 4 929 220.82, Margin level: 10330.17%, and a total profit/loss of -22 596.00. Callouts point to the Order, Time, Type, Size, Symbol, Price, S/L, T/P, Price, Commission, Swap, Profit, and Trade tabs.

Order	Time	Type	Size	Symbol	Price	S / L	T / P	Price	Commission	Swap	Profit
167754798	2010.12.23 17:05	sell	90.00	audusd	1.00376	0.00000	0.00000	1.00470	0.00	-1 386.00	-8 460.00
167876318	2010.12.24 10:12	sell	150.00	audusd	1.00385	0.00000	0.00000	1.00470	0.00	0.00	-12 750.00

Balance: 5 000 000.00 Equity: 4 977 404.00 Margin: 48 183.18 Free margin: 4 929 220.82 Margin level: 10330.17% -22 596.00

Order: Unique Ticket ID.

Time: Time of position opening. The time is represented as YYYY.MM.DD HH:MM (year.month.day hour:minute). This is the time at which the position was opened;

Type: Type of the trade operation. There are several types of trading operations that can appear here: "Buy" — long position, "Sell" — short position, and pending orders named Sell Stop, Sell Limit, Buy Stop, and Buy Limit;

Lots: The amount of lots participating in the trade;

Symbol: This field displays the name of the symbol traded;

Price: Price of position opening (no to be mixed up with the current price described below). This is the price at which the position was opened;

S/L: The placed Stop Loss order level. If the order has not been placed, a zero value will be presented in this field.

T/P: The placed Take Profit order level. If the order has not been placed, a zero value will be presented in this field.

Price: The current price of the symbol(not to be mixed up with that of position opening described above);

Commission: Any commission charges will be listed here;

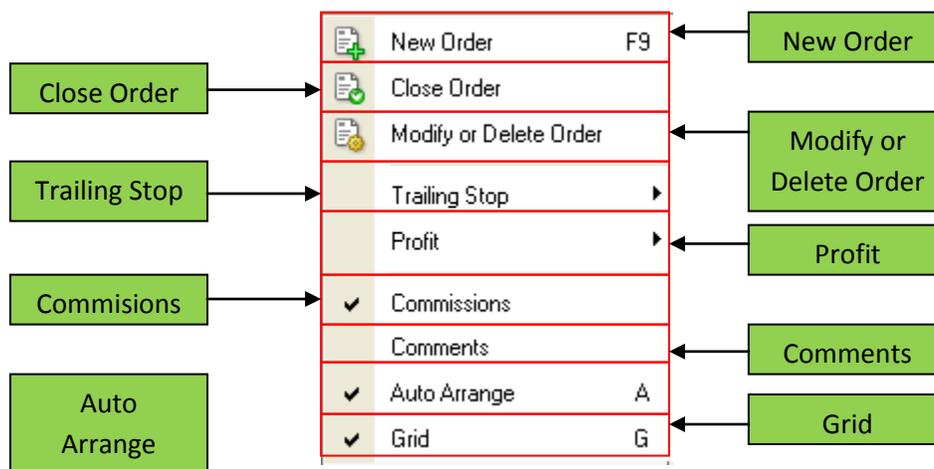
Swap: Charging of swaps is stored in this cell;

Profit: The financial result of the transaction made will be written in this field taking the current price into consideration. Positive result means that the transaction was profitable, and negative one means that it was unprofitable;

Comments: Comments on trade operations are stored in this column. A comment can only be written at the position opening or at placing of an order.

MT4 User Guide

Users can also manage their trading activities from the trade tab by right clicking. The following the open will appear:



New Order: This option allows users to open a new order. The orders managing window will appear at this command. A new position can be opened and a pending order can be placed in it. At that, the following must be specified: the security, amount of lots, order type (market order or a pending one), as well as Stop Loss and Take Profit order levels.

Close Order: From here clients can close a position. This command becomes active only if the context menu has been called at an open position. The order managing window appears at this command.

Modify or Delete Order: This option allows users to alter the "Stop Loss" and "Take Profit" values of open positions or the pending order price. If the Stop Loss and Take Profit levels specified are too close to the current price, the error message will appear, and the levels will not be placed.

Trailing Stop: Users can place, modify, or delete the "Trailing Stop" level. Having selected the corresponding level in the menu, the user can activate the trailing stop with the given parameter. The "None" value is used for disabling of the order. "Delete all" — disable all trailing stops.

Profit: Shows profit/loss as points, as term currency, or as deposit currency. Changes in this parameter are displayed in the "Profit" field. If the parameter of "show profit in the term currency" (quote currency) is selected had, there are, for example, open positions for USDJPY, the profit will be shown in Japanese Yen;

Commissions: Show/hide the "Commissions" column where the commission for each of the performed trade operations will be displayed;

Comments: show/hide the "Comment" column. Comments to trade operations are written in this column. A comment can be written only if a position is being opened or an order is being placed. It cannot be changed at modifying of an order or of a position.

Auto Arrange: automatic arrangement of columns at changing of the window size;

Grid: show/hide grid to separate columns.

MT4 User Guide

Account History Tab (detailed)

Trading history is listed in the Account History Tab. The entire history is listed in the following fields:

The screenshot shows the Account History tab in the MT4 terminal. The table has the following columns: Order, Time, Type, Size, Symbol, Price, S/L, T/P, Time, Price, Swap, Profit. Labels with arrows point to these columns: Order, Time, Type, Size, Price, S/L, T/P, Time, Price, Profit. Below the table, labels point to the 'Symbol' and 'Swap' columns. At the bottom, a label points to the 'Account History' tab in the terminal's menu bar.

Order	Time	Type	Size	Symbol	Price	S/L	T/P	Time	Price	Swap	Profit
167665483	2010.12.23 10:49	balance								Deposit	5 000 000.00
167754798	2010.12.23 17:05	sell	90.00	auusd	1.00376	0.00000	0.00000	2010.12.24 16:06	1.00442	-1 386.00	-5 940.00
167876318	2010.12.24 10:12	sell	150.00	auusd	1.00385	0.00000	0.00000	2010.12.24 16:06	1.00442	0.00	-8 550.00

Profit/Loss: -15 876.00 Credit: 0.00 Deposit: 5 000 000.00 Withdrawal: 0.00 4 984 124.00

Order: Unique ticket ID.

Time: Time when position was opened.

Type: Type of operation. Only three types of trade operations can be found here: "Balance" — entering of funds in the account, "Buy" — a long position, and "Sell" — a short position;

Lots: Amount of lots traded;

Symbol: The name of the symboltraded;

Price: This is the price at which the position was opened;

S/L: Level of the Stop Loss order placed. If a trade position was closed by this order, its corresponding cell will be colored in red, and "[s/l]" will appear in the field of comments. If no order was placed, zero value will appear in this field;

T/P: Level of the Take Profit order placed. If a trade position was closed by this order, its corresponding cell will be colored in green, and "[t/p]" will appear in the field of comments. If no order was placed, zero value will appear in this field;

Time: Time when position was closed;

Price: Price when position was closed;

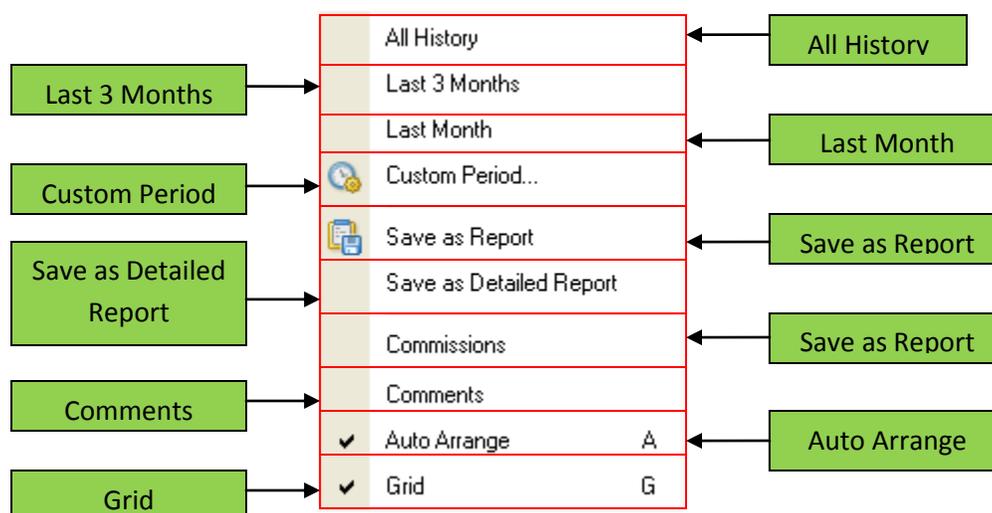
Commission: Commissions charges on trade;

Swap: Swap charges on trade;

Profit: The Profit or loss of the trade.

Comments: Comments on trade operations are stored in this column. A comment can be input only at opening of a position or placing an order. The comment cannot be changed when an order or a position are being modified.

MT4 User Guide



Commands allowing the user to manage the history range and data performance, as well as commands allowing the export of historical data is grouped in the context menu:

All History: Show the entire account history. At this command execution, the whole financial history of the account will appear in the screen without any limitations by time;

Last 3 Months: Show only the last 3-months history;

Last Month: show only the last month history;

Custom Period: Show history for the selected period. At this command execution, the window that manages the history range will appear where one can select one of the pre-defined ranges (the "Period" field) or specify them manually in the fields of "From" and "to";

Save as Report: Save the account history as a HTML file. A window allowing to select a path for saving of the file will appear;

Save as Detailed Report: Save the account history as a HTML file. A detailed report differs from a normal one for an additional set of parameters. After this command has been executed, a window allowing selecting a path for saving the file will appear;

Commissions: Show/hide the "Commissions" column;

Comments: show/hide the "Comments" column. Comments to trade operations are stored in this column. A comment can only be input at opening of a position or at placing of an order. Besides, the brokerage company can write a comment to the trade operation, as well;

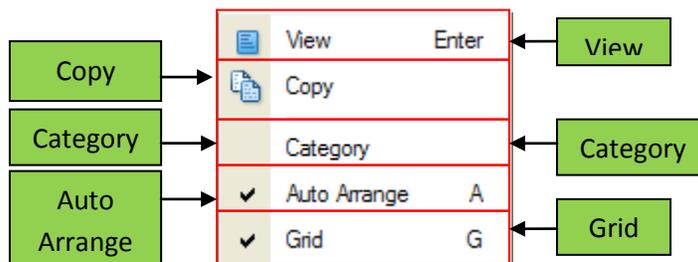
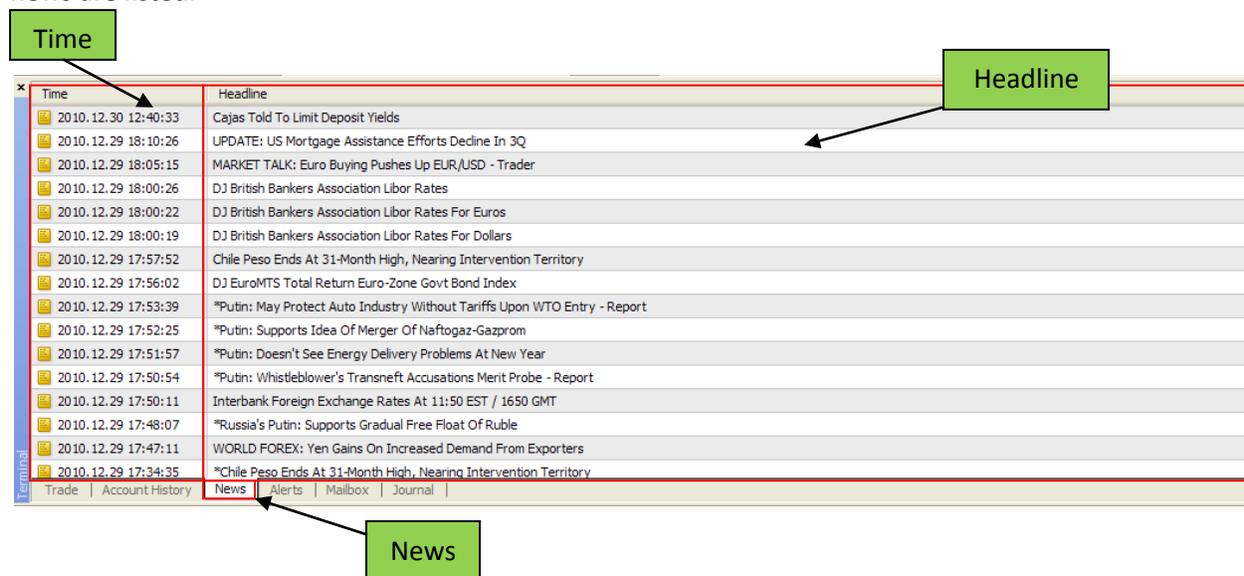
Auto Arrange: automatic arrangement of column sizes at changing of the window size;

Grid: show/hide grid for separating of columns.

MT4 User Guide

News Tab (detailed)

Incoming news is stored in the "News" tab within the terminal window. Headlines and time and date of news are listed.



The following commands are available in the context menu:

View: Here users can view the selected news. The user can also read news by double-clicking with the left mouse button on the topic;

Copy: Here users can copy the news to the clipboard;

Category: Show/hide the "Category" column;

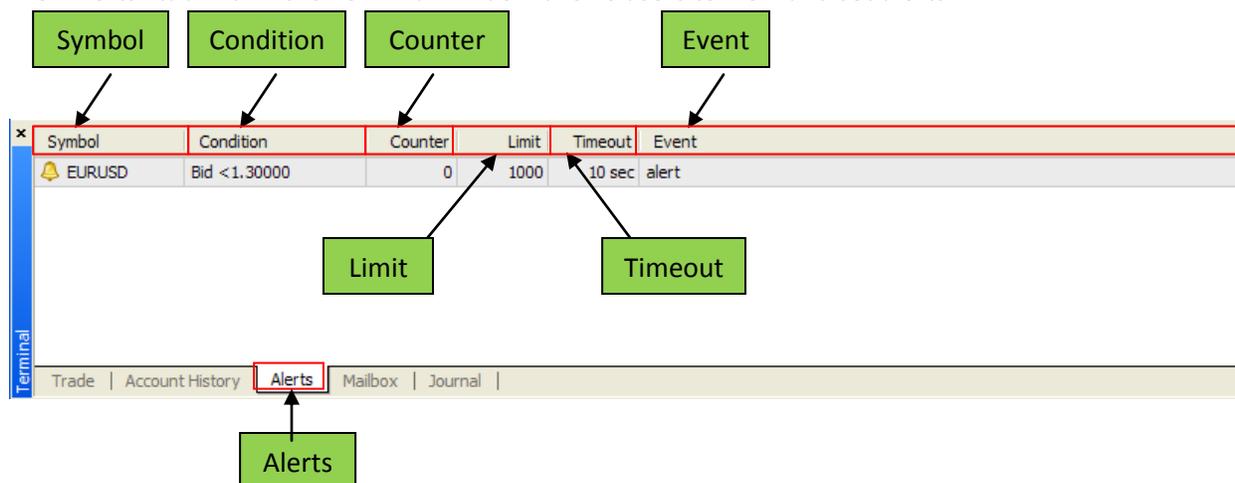
Auto Arrange: Automatic arrangement of columns when changing of the window size;

Grid: show/hide grid to separate columns.

MT4 User Guide

Alerts Tab (detailed)

The "Alerts" tab within the Terminal window allows users to view and set alerts.



All alerts in this tab are represented as a table with the following fields:

Symbol: Symbol the data on which the check for the condition is specified. If the "Time=" parameter (alert triggering at the pre-defined time) was selected as a condition, the symbol will not be taken into account;

Condition: Clients can set conditions under which the alert will trigger. The following can be used as a condition:

- Bid> - If the current Bid price exceeds the given value, the alert will trigger;
- Bid< - If the current Bid price falls below the given value, the alert will trigger;
- Ask> - If the current Ask price exceeds the given value, the alert will trigger;
- Ask< - If the current Ask price falls below the given value, the alert will trigger;
- Time – once the time defined by the user is reached the alert will trigger.

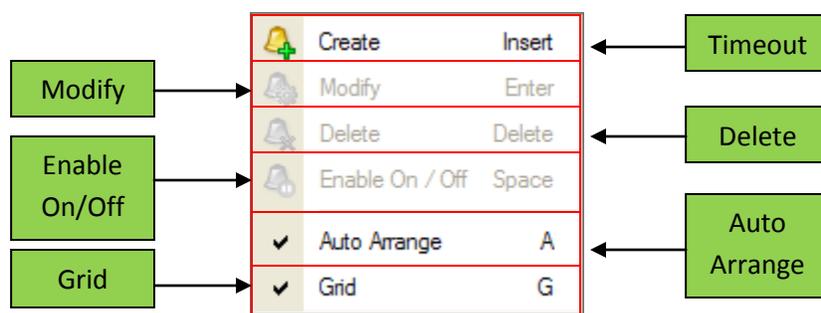
Counter: The number iterations played;

Limit: This represents the number of times the alert will play before the alert expires

Timeout: The period of time between alert iterations

Event: The action to be performed once the alert is triggered. This can be an audio signal, a file executable in an operational environment, or a message sent by email.

Alerts can be managed through the Alerts context menu;



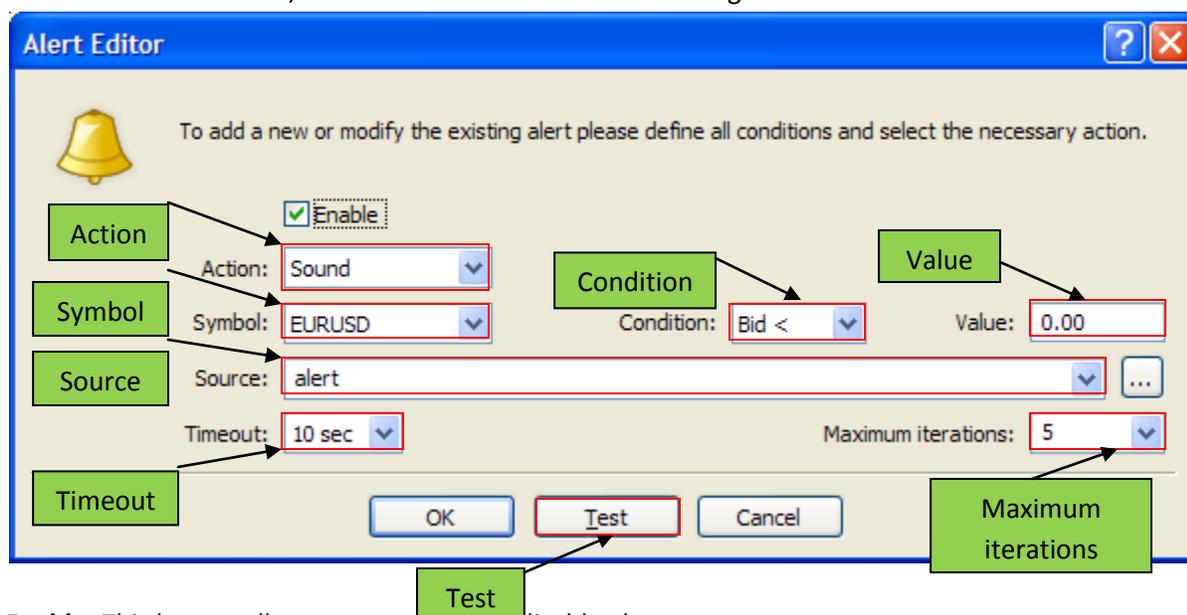
Create: Create a new alert. The same action can be performed by selecting the Insert key;

Modify: Edit the alert. The same action can be performed by double-clicking on the alert name in the table or by selecting the Enter key;

Delete: Delete the alert. This action can also be performed by selecting the Delete key;

Enable On/Off: This button allows users to enable/disable alerts set.

When create is selected, the user will have to fill the following fields:



Enable: This button allows users to enable/disable alerts set.

Action: Allows user to assign an action to be performed when an event is triggered: play a sound, run a file, or send an email. When playing a sound or running a file, the user should specify the corresponding files. At the sending of a message, the user should specify the topic and text of the message;

Symbol: Symbol the values of which will be used to check the condition;

Condition: Condition ("Time=", "Bid<", "Bid>", "Ask<", "Ask>") under which the alert will trigger;

Value: Value of the condition. If the symbol price is equal to this value, the alert will be triggered;

Source: the source of the alert. Users can choose between sound file, executable files or email messages as sources.

Timeout: the time period between the each trigger;

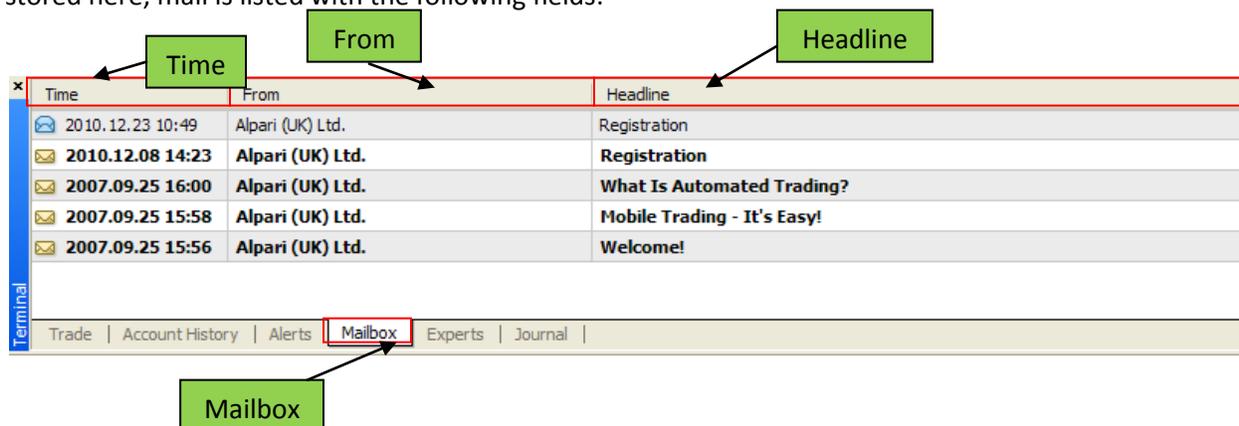
Maximum iterations: maximum amount of times the alert repeats itself.

The user can check the usability of the alert by selecting the "Test" button.

MT4 User Guide

Mailbox (detailed)

The User can access email from the “Mailbox” tab within the Terminal window. All incoming mail is stored here; mail is listed with the following fields:



Time	From	Headline
2010.12.23 10:49	Alpari (UK) Ltd.	Registration
2010.12.08 14:23	Alpari (UK) Ltd.	Registration
2007.09.25 16:00	Alpari (UK) Ltd.	What Is Automated Trading?
2007.09.25 15:58	Alpari (UK) Ltd.	Mobile Trading - It's Easy!
2007.09.25 15:56	Alpari (UK) Ltd.	Welcome!

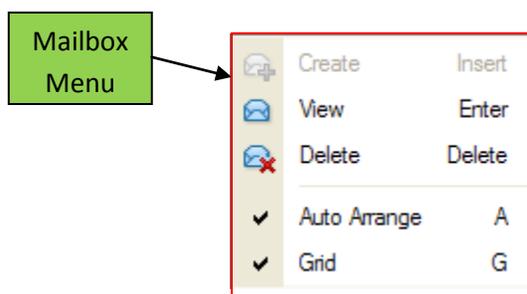
Terminal | Trade | Account History | Alerts | Mailbox | Experts | Journal

Time: The time and date of the message

From: Name of the sender

Headline: The subject of the message.

The context menu for the mailbox can be accessed by using the right mouse button.



MT4 User Guide

Experts

The "Experts" contains information about the attached expert, including opening/closing of positions, modifying of orders, the expert's messages. "[Experts](#)" will be explained in more detailed further into the use guide.

Time	Message
2010.12.31 11:02:31	period_converter EURUSD,M1: removed
2010.12.31 11:02:31	period_converter EURUSD,M1: uninit reason 0
2010.12.31 11:02:31	period_converter EURUSD,M1: deinitialized
2010.12.31 11:02:31	period_converter EURUSD,M1: expert stopped
2010.12.31 11:02:31	period_converter EURUSD,M1: dll calls are not allowed; 'user32.dll'-'PostMessageA'
2010.12.31 11:02:31	period_converter EURUSD,M1: Chart window detected
2010.12.31 11:01:59	period_converter EURUSD,M1: 300 record(s) written

Terminal | Trade | Account History | Alerts | Mailbox | **Experts** | Journal

Experts

MT4 User Guide

Journal

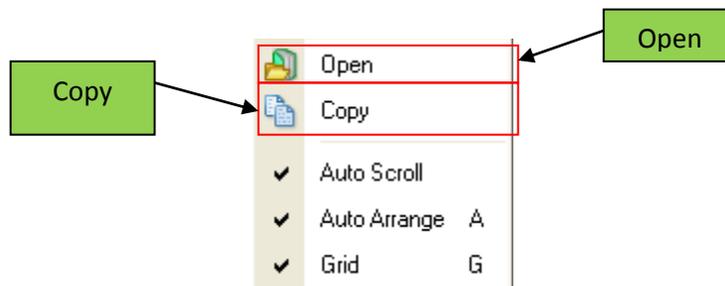
All operations and events performed are written to special statistics journals that are represented as text files. The "Journal" section of the "Toolbox" window allows viewing these entries. The information is represented in the form of the table containing the following fields:

Time: The date and time of an event;

Message: The description of an event.

Time	Message
2010.12.16 10:15:21	'2410673': login (4.00, #2DEAD50F)
2010.12.16 10:15:21	'2417648': login (4.00, #2DEAD50F)
2010.12.16 10:15:21	'2427771': login (4.00, #2DEAD50F)
2010.12.16 10:15:20	'2427778': login (4.00, #2DEAD50F)
2010.12.16 10:15:18	'2417648': login (4.00, #2DEAD50F)
2010.12.16 10:15:18	'2427778': login (4.00, #2DEAD50F)
2010.12.16 10:15:18	'2427771': login (4.00, #2DEAD50F)

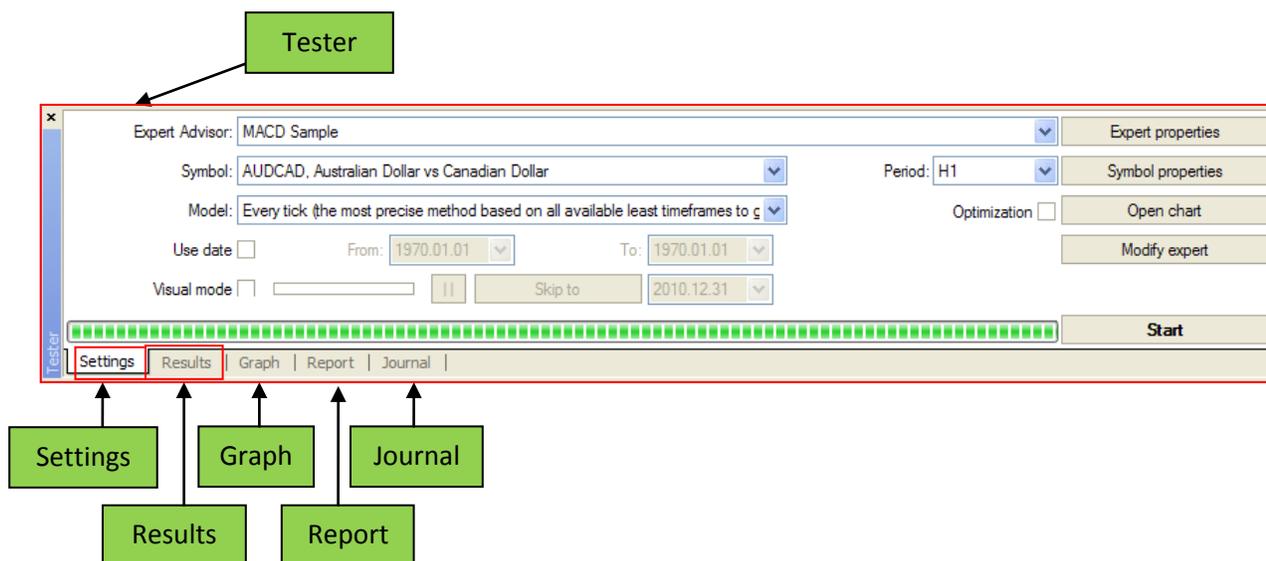
Only current day entries are presented in the journal. In order to view earlier entries the user must right click on an entry and select the open option present in the menu.



From the menu users can also copy an entry.

Strategy tester window

The “Tester Window” is a multifunctional window that allows the user to test trading strategies and optimize parameters within expert advisors. The “expert” is tested on historical data to estimate its profitability. The “Tester Window” can be open by selecting view from the main task menu and then selecting “Strategy” alternatively the user can select Ctrl+R on the keyboard. The window will appear and within, the following tabs:



Settings: Settings of testing and optimization. The parameters of expert advisors, period to be tested, the method of bars modeling can be set up in this tab;

Results: The results of trade operations performed by the expert, as well as the direction of balance changes;

Graph: Displaying of testing results in a graph;

Report: The detailed testing report. Many indications of testing and effectiveness of experts can be found here: the amount of bars modeled, the total profit, the most profitable and unprofitable positions, the amount of profit and loss trades, etc.;

Journal: A log where all actions and internal messages of the expert are recorded;

Optimization Results: Information about every pass, including inputs, profitability, draw downs, and other data;

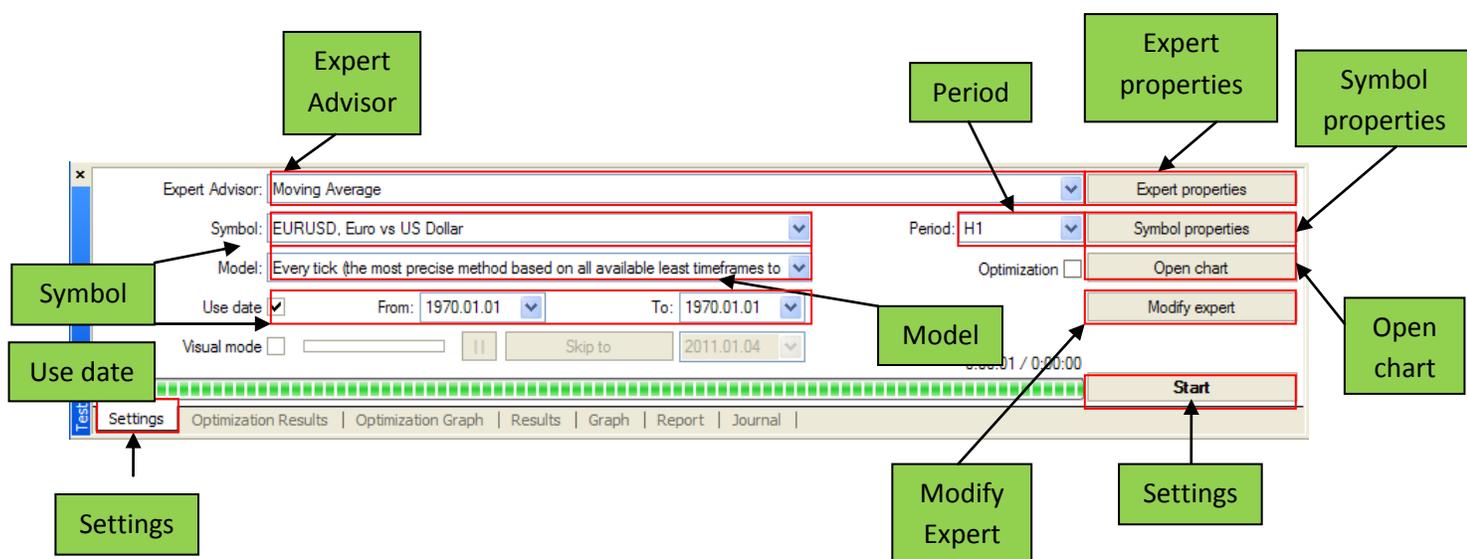
Optimization Graph: The results of expert optimization as a graph.

Please note: “Optimization Graph” and “Optimization Results” tabs can only be seen once an expert is optimized.

MT4 User Guide

Strategy Tester Window - Settings Tab (Detailed)

Testing parameters and expert optimization parameters can be set up in this tab. The user has to fill the following fields in order to set up an expert:



Expert Advisor: Users can select the expert to be tested in the list. The expert must be compiled and placed in the /EXPERTS directory. All newly created experts will be automatically placed into this directory;

Symbol: Users can select one of the symbols available for the expert to be tested on;

Period: Here, users can select the symbol timeframe;

Model: Users can select the following models:

- Every tick (based on all available least timeframes with fractal interpolation of every tick);
- Control points (based on the nearest less timeframe with fractal interpolation of 12 control points);
- Open prices only (fastest method to analyze the bar just completed);

Use date: Users can specify the precise dates for the expert to be tested upon.

Optimization: Enables the expert parameters to be optimized.

Expert properties: Here, users can adjust expert properties (further details on page..)

Symbol properties: Here, user can see symbol properties such spreads, contract size, rolling charges etc;

Open chart: Create a new chart window for the symbol selected for testing. When being tested, the expert works with a virtual chart. Signs of opening and closing of positions, objects and indicators used by the expert, are imposed in this chart. This chart can be opened only after the expert has been tested. For opening of a virtual chart, the TESTER.TPL template is used, and, if it is not available, the default settings are used;

MT4 User Guide

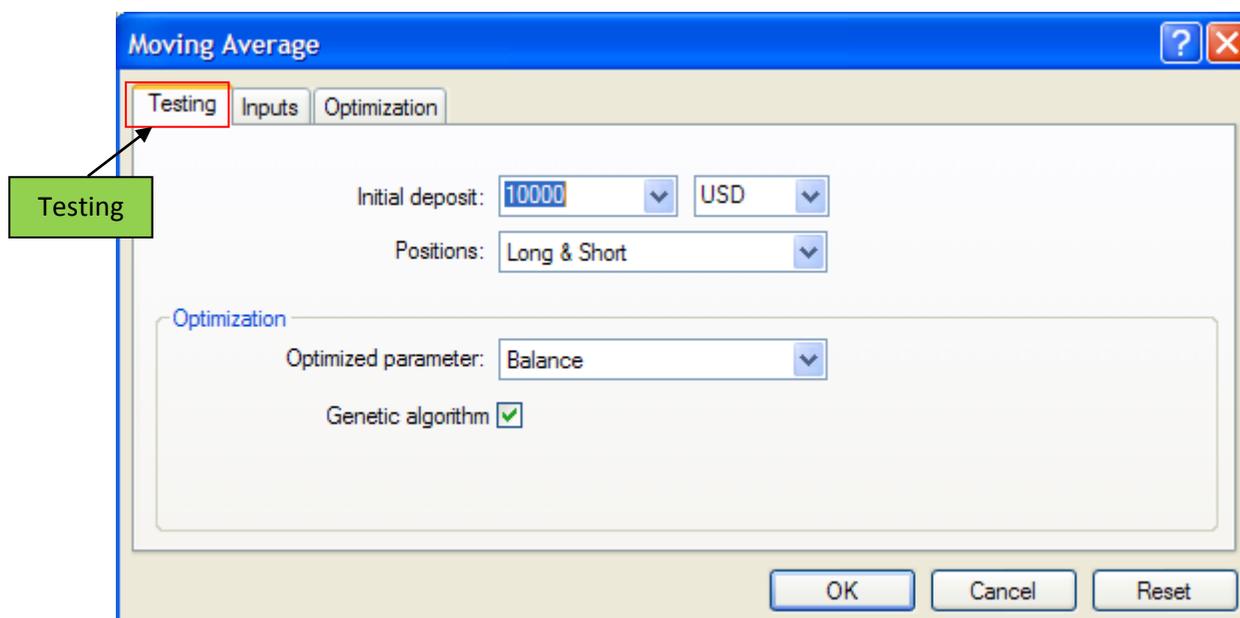
Modify expert: This option opens the "MetaEditor", here users can start to edit the selected expert. This is useful if there is a need to introduce small changes and recompile the expert quickly;

Start: Users can start the testing or optimization of an expert by selecting this button;

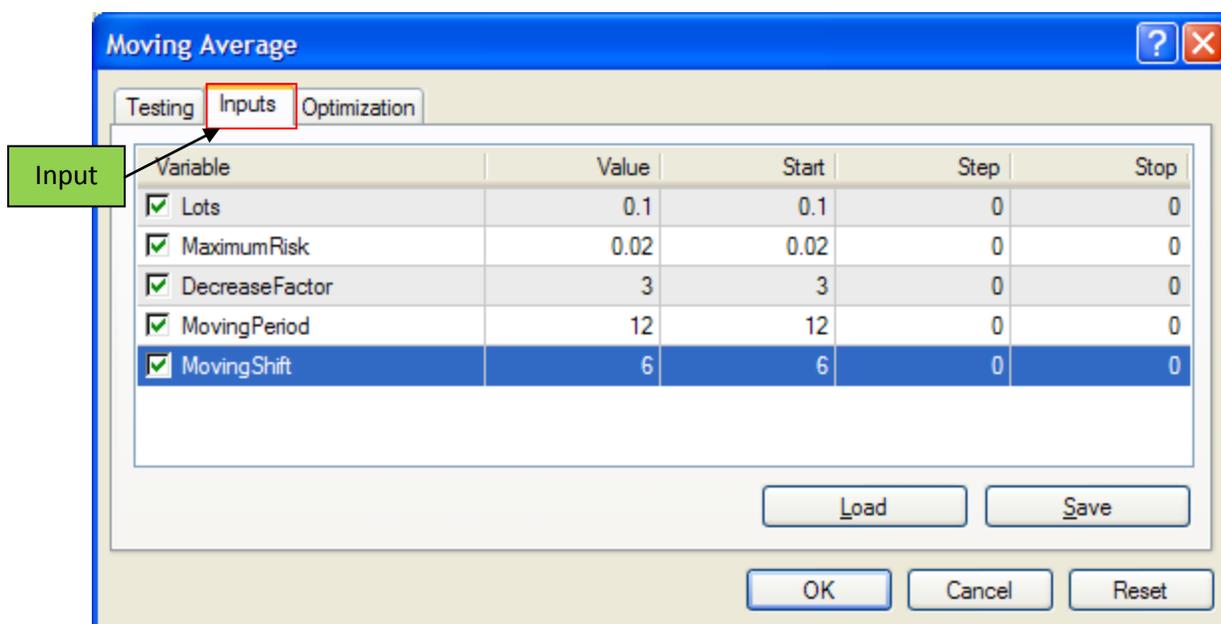
Expert Properties Window

Parameters of the virtual account and the expert advisor under test can be set up in this window. These data will later be used for testing or optimization of the expert parameters. There are three tabs in the window:

Testing: Parameters common for both testing and optimizations are placed in this tab. this is the volume and currency of the initial deposit. Types of positions can be selected here, for example "only short" "only long" etc.



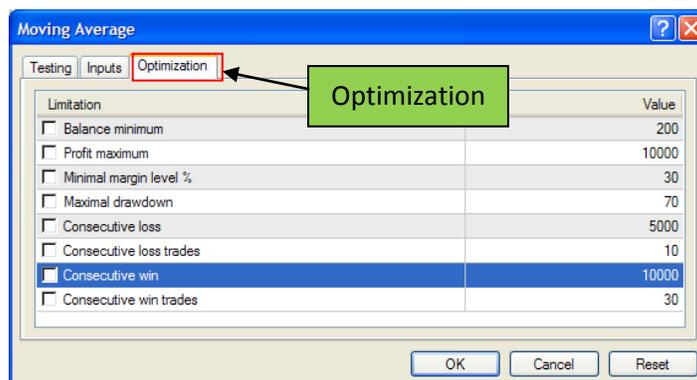
Inputs: The list of all inputs is given here as a table. Inputs are variables that influence the expert and can be changed directly from the client terminal. The amount therefore can vary from expert to expert. The current data to be used at testing of an expert will be written in the "Value" field. Data to be written in the fields of "Start", "Step" and "Stop" do not influence the expert testing, and are only used for its optimization. Initial value of the variable, step of change, and final value are written in this field. At optimization, expert with parameters within the range between initial and final values will be passed consecutively. Checking from the right of the variable names allows including the parameter into optimization process. If a variable has not been checked, it will not participate in optimization. Its value will not be changed in the optimization process, and the parameter written in the "Value" field will be used.



Please note, it is recommended that variables in the optimization are kept to a minimum. If too many variables are included optimization time can rapidly increase.

Optimization: This tab allows to manage optimization limits. If the real values meet those required in this tab, the current pass will be stopped and the next pass will start. Parameters limiting testing at optimization of the expert are:

- Balance minimum — minimum balance value in the deposit currency;
- Profit maximum — maximal profit in the deposit currency;
- Minimal margin level, % — minimal level of margin in per cents;
- Maximal drawdown, % — maximal drawdown in per cents;
- Consecutive loss — maximal total loss in one series of trades. A loss series is a certain amount of consecutive loss trades;
- Consecutive loss trades — maximal amount of loss trades in one series;
- Consecutive win — maximal total win in one series of trades. A win series is a certain amount of consecutive win trades;
- Consecutive win trades — maximal amount of win trades in one series.



Strategy Tester Window - Results Tab (Detailed)

Users can view test results by selecting the “results tab” within the tester window. All information is listed in table form. The following headings form the result values:

#	Time	Type	Order	Size	Price	S / L	T / P	Profit	Balance
1	2010.12.01 00:45	sell	1	1.00	1.29876				
2	2010.12.01 01:00	close	1	1.00	1.29971			-95.00	49905.00
3	2010.12.01 01:45	sell	2	1.00	1.29763				
4	2010.12.01 02:00	close	2	1.00	1.29945			-182.00	49723.00
5	2010.12.01 02:45	sell	3	0.30	1.29781				
6	2010.12.01 03:45	close	3	0.30	1.29950			-50.70	49672.30
7	2010.12.01 04:15	sell	4	0.10	1.29858				

Results

#: the sequence number of the trade;

Time: Time of the trade;

Type: The type of trade performed (sell, buy, s/l, t/p, modify, close at stop, etc.);

Order: The ticket number of a trading position or a pending order

Lots: The amount of lots traded;

Price: The price of the symbol at open/close;

S/L: The Stop Loss order value. No entries in this field mean that no order was placed;

T/P: The Take Profit order value. No entries in this field mean that no order was placed;

Profit: The P/L of a closed position (P/L will only show for closed trades);

Balance: The value of balance (change will balance will occur if a position is closed).

Through the context menu, users can copy the information presented in the results tab into excel or note pad.

Strategy Tester Window - Graph Tab (Detailed)



The account balance and trades can be seen graphically using the “graph” tab within the Strategy tester window. Double clicking on either the account balance or the trades will result in the tab being switched to the results tab. Users can save the graph from the context menu as a GIF file.

MT4 User Guide

Report Tab

The summarized results of experts testing and some key indices are represented in the "Report" tab. Such reports allow comparing different experts to each other in a quick mode. The following data is published in reports:

Bars in test: The amount of modeled history data in bars;

Ticks modeled: The amount of modeled ticks;

Modeling quality: the quality of ticks modeled during testing in per cents. Modeling is schematically displayed as a band in the next line of the report. This band can be of one of three colors:

- **Gray:** This part of the data available was not tested. Grey appears, if the range of dates was given in tester settings;
- **Red:** Modeling was not performed within this sub range since no data of a smaller period was available. Only data from the period selected in the tester settings was used;
- **Green:** Modeling was performed within this sub range. The brighter the color is the better in quality the modeling was. For example, when testing at the period of H1, the dark-green band can mean that M30-period data was used for testing, and the brightest means that those of M1 period were used;

Initial deposit: The volume of the initial deposit;

Total net profit: Financial result of all trades. This index represents a difference between the "Gross profit" and "Gross loss";

Gross profit: The sum of all profitable trades;

Gross loss: The sum of all unprofitable trades;

Profit factor: The ratio between gross profit and gross loss in percent.

Expected payoff: This statistically calculated index represents the average profit/loss factor of a trade. It can also be considered for representing the expected profit/loss factor of the next trade;

Absolute drawdown: The lowest amount away from the initial deposit value during the testing period;

Maximal drawdown (%): Maximum difference in percent terms between highest point above initial deposit and lowest point below initial deposit;

Total trades: The total amount of trades;

Short positions (won %): The amount of short positions;

Long positions (won %): The amount of long positions;

Profit trades (% of total): The amount of profitable trade positions and their percentage in the total trades;

Loss trades (% of total): The amount of profitable trade positions and their percentage in the total trades;

Largest profit trade: The largest profit among all profitable positions;

Largest loss trade: The largest loss among all unprofitable positions;

Average profit trade: Average profit value for a trade (the sum of profits divided by the amount of profitable trades);

MT4 User Guide

Average loss trade: Average loss value for a trade (the sum of losses divided by the amount of unprofitable trades);

Maximum consecutive wins (profit in money): The longest series of profitable trade positions and the sum of their wins;

Maximum consecutive losses (loss in money): The longest series of unprofitable trade positions and the sum of their losses;

Maximal consecutive profit (count of wins): The maximum profit of a series of profitable trades and the amount of profitable trades corresponding with it;

Maximal consecutive loss (count of losses): The maximum loss of a series of unprofitable trades and the amount of unprofitable trades corresponding with it;

Average consecutive wins: the average amount of profitable positions in consecutive profitable series;

Average consecutive losses: the average amount of unprofitable positions in consecutive unprofitable series.

Bars in test	32772	Ticks modelled	633173	Modelling quality	n/a
Mismatched charts errors	72				
Initial deposit	50000.00				
Total net profit	-1100.18	Gross profit	4107.11	Gross loss	-5207.29
Profit factor	0.79	Expected payoff	-0.97		
Absolute drawdown	1514.59	Maximal drawdown	1612.74 (3.22%)	Relative drawdown	3.22% (1612.74)
Total trades	1140	Short positions (won %)	553 (91.68%)	Long positions (won %)	587 (95.06%)
		Profit trades (% of total)	1065 (93.42%)	Loss trades (% of total)	75 (6.58%)
		Largest profit trade	5.00	loss trade	-196.02
		Average profit trade	3.86	loss trade	-69.43
		Maximum consecutive wins (profit in money)	63 (230.81)	consecutive losses (loss in money)	2 (-225.12)
		Maximal consecutive profit (count of wins)	230.81 (63)	consecutive loss (count of losses)	-225.12 (2)
		Average consecutive wins	15	consecutive losses	1

Settings | Optimization Results | Optimization Graph | Results | Graph | **Report** | Journal

Report

Users can save the the report through the context menu. The file is saved as a HTM file that can be opened in a browser.

Strategy Tester Window - Journal Tab (Detailed)

All messages in regards to expert testing are listed in the “Journal tab” set in the tester window. Users can copy the logs using the context menu, alternatively logs can be accessed by navigating to the following folder: **MetaTrader - Alpari UK\tester\logs**

Time	Message
2011.01.04 12:47:12	2011.01.04 09:23 Tester: take profit #1140 at 1.33664 (1.33701 / 1.33709)
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: BUY order opened : 1.3361
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: open #1140 buy 0.10 EURUSD at 1.33614 tp: 1.33664 ok
2011.01.04 12:47:12	2011.01.04 08:35 Tester: take profit #1139 at 1.33601 (1.33606 / 1.33614)
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: BUY order opened : 1.3355
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: open #1139 buy 0.10 EURUSD at 1.33551 tp: 1.33601 ok
2011.01.04 12:47:12	2011.01.04 06:59 Tester: stop loss #1138 at 1.33438 (1.33437 / 1.33445)
2011.01.04 12:47:12	2011.01.04 06:58 MACD Sample EURUSD,M15: modify #1138 sell 0.10 EURUSD at 1.33455 sl: 1.33438 tp: 1.33405 ok
2011.01.04 12:47:12	2011.01.04 06:13 MACD Sample EURUSD,M15: SELL order opened : 1.3345
2011.01.04 12:47:12	2011.01.04 06:13 MACD Sample EURUSD,M15: open #1138 sell 0.10 EURUSD at 1.33455 tp: 1.33405 ok
2011.01.04 12:47:12	2011.01.04 03:48 Tester: take profit #1137 at 1.33541 (1.33557 / 1.33565)
2011.01.04 12:47:12	2011.01.04 03:47 MACD Sample EURUSD,M15: modify #1137 buy 0.10 EURUSD at 1.33491 sl: 1.33504 tp: 1.33541 ok
2011.01.04 12:47:12	2011.01.04 03:42 MACD Sample EURUSD,M15: BUY order opened : 1.3349
2011.01.04 12:47:12	2011.01.04 03:42 MACD Sample EURUSD,M15: open #1137 buy 0.10 EURUSD at 1.33491 tp: 1.33541 ok

Journal

MT4 User Guide

Strategy Tester Window - Optimization Results Tab (Detailed)

Users can view optimization results in the “Optimization results tab”. Optimization is performed in passes using suitable parameters where profitability is at its highest. To enable optimization, users must flag the “Optimization” field in the “Settings” tab. Once “Start” is selected the “Optimization Results” and “Optimization Graph” tabs will appear.

Pass	Profit	Total trades	Profit factor	Expected Payoff	Drawdown \$	Drawdown %	Inputs
1	4108.94	84	1.09	48.92	18690.50	32.05	Lots=0.1; MaximumRisk=0.02; DecreaseFactor=3; MovingPeriod=12; Movi...

Optimization
Results

The result published in the tab reports each pass. All data is represented in table format with the following fields:

Pass: The pass number (number of times tested);

Profit: Net profit (gross profit minus gross loss);

Total trades: The total amount of open trade positions;

Profit factor: The ratio between total profit and total loss in per cents. One means that total profit is equal to total loss;

Expected Payoff: Mathematical expectation of win. This statistically calculable figure shows average profitability/unprofitableness of one trade. It is considered to show the estimate profitability/unprofitableness of the next trade;

Drawdown \$: Maximum drawdown relating to the initial deposit in the deposit currency;

Drawdown %: Maximum drawdown relating to the initial deposit in percentage form;

Inputs: dynamic values of inputs at each pass.

Users can save the results by accessing the context menu along with the following:

Skip Useless Results: show/hide the results of loss passes;

Show Input Parameters: show/hide the "Inputs" column;

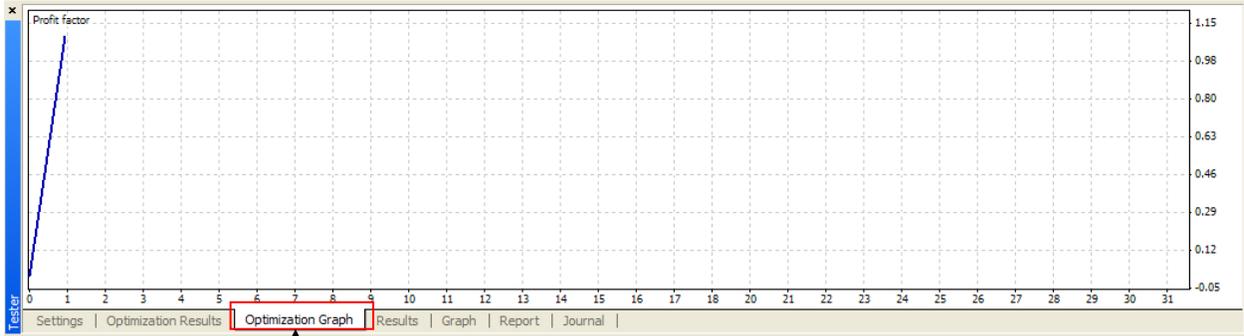
Auto Arrange: automatic setting of column sizes when the window size changes. The same action can be done by pressing of A;

Grid: show/hide grid to separate columns. The same action can be done by pressing of G.

MT4 User Guide

Strategy Tester Window - Optimization Graph (Detailed)

The "Optimization graph" shows all passes graphically. The graph allows the user to estimate profitability of the different combinations of inputs.



Optimization
Graph

MT4 User Guide

Fast Navigation

Users can navigate faster around the terminal using the following:

Fast navigation box: a small box that appears in the lower left corner of the chart and allows to manage it;

Acceleration (hot) keys: key combinations that are intended for quick access to various functions of the program.

Fast Navigation - Fast Navigation Box (detailed)



Users can access the Fast navigation box by double clicking on the bottom left of the chart. The box can be used for quick switching between charts or chart periods.

The following are the format of commands that can be entered in the Fast navigation box:

- [time (hours:minutes)] example: 08:30; 8:30;
- [date] example: 2004.10.16; 16.10.2004; 16.10.04;
- [date and time] example: 2004.10.16 8:30; 16.10.2004 8:30; 16.10.04 8:30;
- [symbol] example: GBPUSD; EURUSD;
- [chart period] example: M1; M5; M15; M30; H1; H4; D1; W1; MN;
- [symbol], [chart period] example: GBPUSD, M30; EURUSD, D1;

Fast Navigation – Hot Keys (detailed)

Users can access functions within the terminal by using the following functions:

-  Chart scrolling to the left;
-  Chart scrolling to the right;
-  fast chart scrolling to the left or, if the scale is defined, chart scrolling up;
-  "☒" fast chart scrolling to the right or, if the scale is defined, chart scrolling down;

Numpad 5: Restoring of automatic chart vertical scale after its being changed. If the scale was defined, this hot key will return the chart into the visible range;

Page Up: Fast chart scrolling to the left;

Page Down: Fast chart scrolling to the right;

Home: Move the chart to the start point;

End: Move the chart to the end point;

"-": Chart zooms out;

"+": Chart zooms in;

Delete: Delete all selected graphical objects;

Backspace: delete the latest objects imposed into the chart window;

Enter: Open/close fast navigation window;

Esc: Close the dialog window;

F1: Opens MT4 help guide;

F2: Open the "History Center" window;

F3: Open the "Global Variables" window;

F4: Download MetaEditor;

F6: Call the "Tester" window for testing the expert attached to the chart window;

F7: Call the properties window of the expert attached to their chart window in order to change settings;

F8: Call the chart setup window;

F9: Call the "New Order" window;

F10: Open the "Popup prices" window;

F11: Enable/disable the full screen mode;

F12: Move the chart by one bar to the left;

Shift+F12: Move the chart by one bar to the right;

Shift+F5: Switch to the previous profile;

MT4 User Guide

- Alt+1:** Display the chart as a sequence of bars (transform into bar chart);
- Alt+2:** Display the chart as a sequence of candlesticks (transform into candlesticks);
- Alt+3:** Display the chart as a broken line (transform into line chart);
- Alt+A:** Copy all test/optimization results into the clipboard;
- Alt+W:** Call the chart managing window;
- Alt+F4:** Close the client terminal;
- Alt+Backspace** or **Ctrl+Z:** Undo object deletion;
- Ctrl+A:** Arrange all indicator windows heights by default;
- Ctrl+B:** Call the "Objects List" window;
- Ctrl+C** or **Ctrl+Insert** : Copy to the clipboard;
- Ctrl+E:** Enable/disable expert advisor;
- Ctrl+F:** Enable "Crosshair";
- Ctrl+G:** Show/hide grid;
- Ctrl+H:** Show/hide OHLC line;
- Ctrl+I:** Call the "Indicators List" window;
- Ctrl+L:** Show/hide volumes;
- Ctrl+P:** Print the chart;
- Ctrl+S:** Save the chart in a file having extensions: "CSV", "PRN", "HTM";
- Ctrl+W** or **Ctrl+F4:** Close the chart window;
- Ctrl+Y:** Show/hide period separators;
- Ctrl+Z** or **Alt+Backspace:** Undo the object deletion;
- Ctrl+D:** Open/close the "Data Window";
- Ctrl+M:** Open/close the "Market Watch" window;
- Ctrl+N:** Open/close the "Navigator" window;
- Ctrl+O:** Open the "Setup" window;
- Ctrl+R:** Open/close the "Tester" window;
- Ctrl+T:** Open/close the "Terminal" window;
- Ctrl+F5:** Switch to the next profile;
- Ctrl+F6:** Activate the next chart window;
- Ctrl+F9:** Open the "Terminal — Trade" window and switch the focus into it. After this, the trading activities can be managed with keyboard.

Working with Charts

Chart Opening

Prices of symbols can be analyzed by using charts. Charts are necessary for technical analysis, Expert advisors and testing. Up to ninety –nine charts can be open at any given time on the terminal.

A new chart can be opened by selecting "File — New Chart" menu, "Window — New Window" menu command, or by selecting the  button in the "Standard" toolbar. The list of symbols available will appear at performing of any of the above actions. Having selected the necessary symbol from this list, the user can open its chart. New charts can also be opened from the "Market Watch" window, holding Ctrl and dragging the element of the list (the symbol) from the window into any point of the workspace of the terminal, or having executed the "Chart Window" command of the context menu. All new charts are opened with the DEFAULT.TPL template created during the terminal installation. This template cannot be deleted, but it can be modified.

Historical data used for charting is stored on the hard disk. When opening a chart, the data is taken from the hard drive and the missing data is spooled from the trading server. If there is no historical data for the symbol on the hard disk, the latest 512 bars of historical data will be downloaded. To spool the earlier data, the user has to move the chart to the desired area. After the chart has been opened, information about the current quotes will start to filter to the terminal, the further price changes will be shown in the real-time mode. This information will be stored and used at the reopening of this chart in future.

Please note: The "Max. bars in history" and "Max. bars in chart" parameters are defined in the terminal settings. These parameters allow the user to control the amount of historic data is displayed and stored on the hard disk.

Offline Charts

The terminal allows the users to access offline charts. The chart data is stored on the hard disk in HST format. Offline charts do not update from the server, they are normally used to study non standard periods.

To open a new chart in offline mode, the user has to execute the "File — Open Offline" menu command. Then, a symbol must be selected in the window that appears, and the "Open" button must be selected. The OFFLINE.TPL template is applied to the chart automatically. The "(offline)" inscription will appear added in the heading of the offline chart.

At testing of an expert, the data file in FXT format is created and used. It differs from a standard chart, but it can be opened offline.

MT4 User Guide

Chart Setup

Appearance and properties of each chart in the terminal can be set up individually. To do so, one has to execute the "Charts — Properties..." menu command, the chart context menu command of the same name, or press F8. These actions result in appearing of the "Properties" window that can be used for setting of the color of various elements of the chart (the "Colors") tab:

Background: chart background color;

Foreground: color of axes, scales, OHLC line;

Grid: chart grid color;

Bar Up: bar up, shades and fringing of the Bull Candle body;

Bar Down: bar down, shades and fringing of the Bear Candle body;

Bull candle: color of the Bull Candle body;

Bear candle: color of the Bear Candle body;

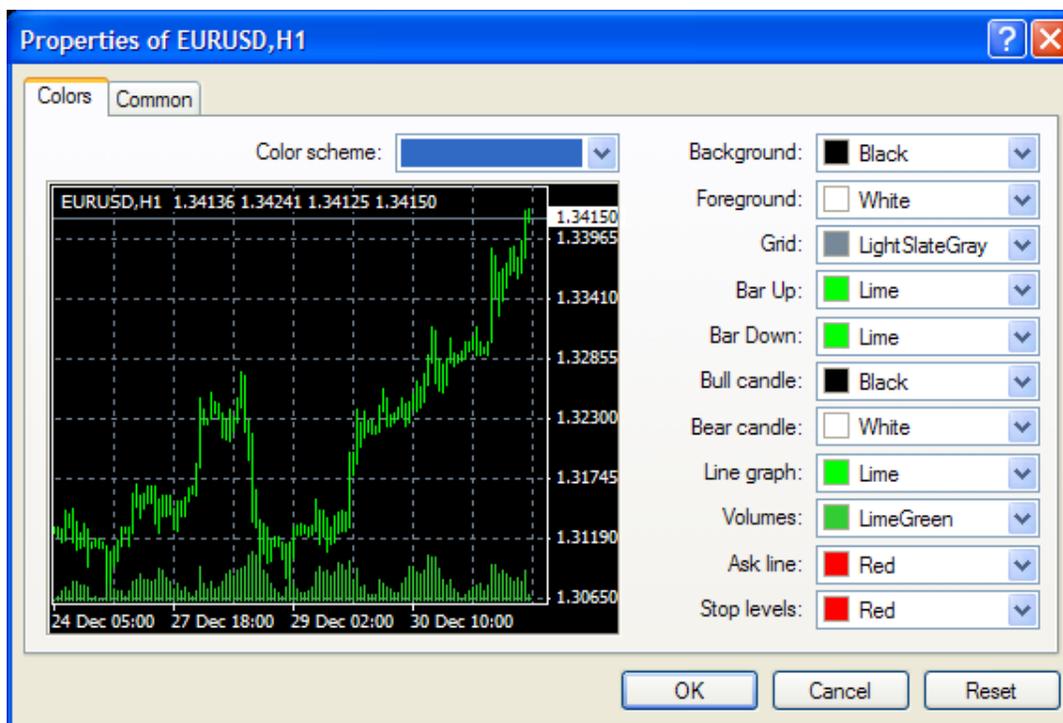
Line graph: line chart and doji;

Volumes: volumes and levels of open positions;

Ask line: color of the Ask line;

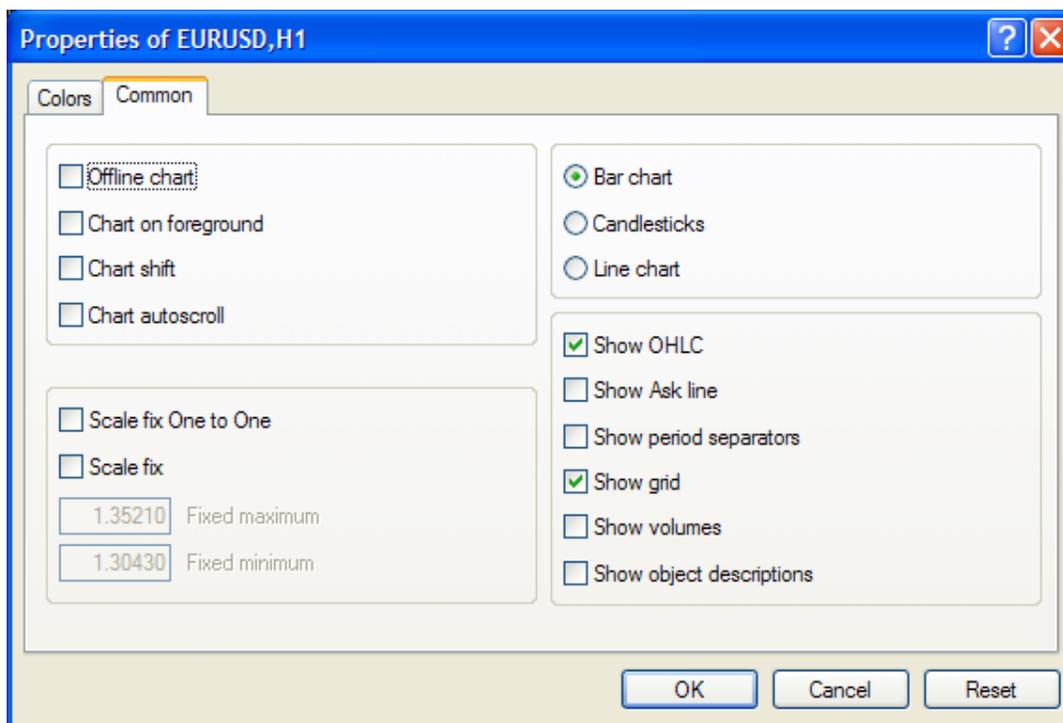
Stop levels: levels of stop orders (Stop Loss and Take Profit).

The changes made are automatically shown in the left part of the window in the preview chart. There are three color diagrams available in the terminal: "Yellow on Black", "Green on Black", and "Black on White". After a color diagram has been chosen, the chart elements described above will change in the chart in the left part of the window. Custom color diagrams can be stored in templates.



MT4 User Guide

Other chart settings can be defined in this window, as well. To do so, the user has to switch to the "Common" tab and select the desired options:



Offline chart: This option stops receiving and drawing of price data for the given chart. In future, after this option is disabled, price data will be drawn in the chart again. After the chart has been opened offline, (the "File — Open offline" menu command), this option will be enabled it automatically.

Chart on foreground: If this function is enabled, all analytical objects will be placed "under" the price chart. This command is the same as that of "Charts — Foreground chart".

Chart shift: The chart shift mark (a gray triangle in the upper part of the window) can be moved with the mouse horizontally within 10 to 50% of the window size. This option can also be enabled with the  button in the "Charts" toolbar or by the "Charts — Chart Shift" menu command.

Chart auto-scroll: If this option is enabled, the latest bar will always be shown in the chart. This option can also be enabled by the  button in the "Charts" toolbar and by the "Charts — Auto Scroll" menu command.

Scale fix One to One: Fix the chart scale as "one to one" (the size of one pip of the vertical axis in pixels is equal to the distance between the bars axes in pixels). The "Scale fix" option will be enabled automatically, and a scroll bar will appear at the right side of the window that allows moving the chart vertically. This mode is necessary for precise constructions.

Scale fix: If the scale has not been fixed, the chart will be automatically scaled vertically. This option disables automatic scaling and fixes the current scale. When this option is selected, the fields of additional scaling parameters "Fixed maximum" and "Fixed minimum" are activated.

Bar chart: This option will display the chart as a sequence of bars. This action can also be performed with the  button in the "Charts" toolbar, by the "Charts — Bar Chart" menu command or by selecting Alt+1.

MT4 User Guide

Candlesticks: This option displays the chart as a sequence of candlesticks. This action can also be performed with the  button in the "Charts" toolbar, by the "Charts — Candlesticks" menu command, or by selecting Alt+2.

Line chart: This option displays the chart as a broken line that connects the points of bar close prices. This action can also be performed by selecting the  button in the "Charts" toolbar, by the "Charts — Line Chart" menu command, or by pressing of acceleration keys Alt+3.

Show OHLC: The user can Show/hide OHLC lines with this option. If this action performed, an additional data line will appear in the upper left part of the window. Except for symbol name and chart period, the latest bar prices are listed in it. Price are recorded in the following format: OPEN, HIGH, LOW and CLOSE (OHLC) — bar open price, the highest bar price, the lowest bar price, and bar close price, respectively. Thus, precise value of the latest bar can always be seen. This option influences the data line of sub-windows of indicators.

Show Ask line: Shows/hides Ask price level of the latest quote. Bars are drawn and shown only on Bid prices in the terminal. However, at opening of long positions and closing of the short ones, the Ask price is always used. It is not shown in the chart in any way, so it cannot be seen. To control one's trading activities more precisely; one can enable the "Show Ask line" parameter. After this command has been executed, an additional horizontal line will appear in the chart that corresponds with the Ask line of the latest bar.

Show period separators: Shows/hides period separators. Date and time of each bar are displayed on the horizontal axis of the chart. And this horizontal scale interval is the selected timeframe. The "Show period separators" option draws additional vertical lines in the chart that correspond with the larger period (timeframe) borders. So, daily separators will be drawn for charts with periods of M1 to H1, weekly ones — for H4, monthly ones — for D1, and yearly ones — for W1 and MN1.

Show grid: Shows/hides grid in the chart window. The same actions can be performed by the chart context menu and "Charts" menu command of the same name, as well as by pressing of acceleration keys Ctrl+G.

Show volumes: Shows/hides the volume chart in the lower part of the window. This option does not function when the scale is fixed. The same actions can be performed by the chart context menu and "Charts" menu command of the same name, as well as by pressing of acceleration keys Ctrl+L.

Show object descriptions: Shows/hides object descriptions in the chart. If this option is enabled and there are description.

MT4 User Guide

Charts Management

Charts allow the user to analyze price changes in the market and are used for graphical analysis, building of various indicators and line studies. Charts are a very valuable instrument for analyzing of financial markets. The terminal holds a number of chart options, for example:

Chart Type

A symbol chart can be of three types:

- **Bar Chart:** The sequence of bars. To make a chart of this type, the user has to select the  button in the "Charts" toolbar, acceleration keys Alt + 1, the corresponding option of the Charts Setup window, or execute the "Charts — Bar Chart" menu command.
- **Candlesticks:** The sequence of candlesticks. To make a chart of this type, the user has to select the  button in the "Charts" toolbar, acceleration keys Alt + 2, or execute the "Charts — Candlesticks" menu command.
- **Line Chart:** A broken line connecting the bar close prices. To make a chart of this type, the user has to select the  button of the "Charts" toolbar, acceleration keys Alt + 3, the corresponding option of the Charts Setup window, or execute the "Charts — Line Chart" menu command

Saving

The client terminal allows the user to save historical data of active charts as a text file in formats of "CSV", "PRN", and "HTM". To save them in one of these ways, the user has to execute the "File— Save As" menu command or press acceleration keys Ctrl + S. The chart can be saved as a picture in BMP or GIF format. To do so, the user has to execute the "File—Save As Picture..." menu command. The same actions can be performed by the chart context menu command of the same name.

Print

To print the active chart in color, the user has to flag "Color print" in the chart settings and then execute the "File — Print..." menu command; alternatively the user can press the  button of the "Standard" toolbar or acceleration keys Ctrl+P. If the "Color Print" is disabled the chart will be printed as black-and-white.

Full Screen

User cans choose to view charts in full screen mode by following the "View — Full Screen" menu command or alternatively pressing F11 will switch the chart to the full screen mode. Only chart windows, main menu and chart switching bar will remain in the display. The user can return to the initial mode using the same command.

MT4 User Guide

Attaching of MQL4 Programs

Before MQL4 starts to execute, it must be attached to the chart. To do so, the user has to select the desired MQL4 program in the "Navigator" window and double-click on it or execute the "Attach to a chart" command of the context menu. The "Drag and Drop" technique can be also used.

Working with Indicators

Indicators are a mathematical manipulation with price and/or volumes of a symbol in order to forecast future price changes. Decisions about how and when to open or close a position are made on basis of signals from technical indicators. Indicators can be imposed into a chart by the "Insert — Indicators"

menu commands or those of indicators managing sub-menu that can be opened by selecting the  button in the "Charts" toolbar. The "Drag and Drop" technique allows the user to impose indicators from the "Navigator" window into any open window. The list of indicators imposed into the chart can be viewed in the "Data Window" by executing of the "Charts — Indicators List" menu command, the chart context menu command of the same name, or by pressing acceleration keys Ctrl+I.

Working with Objects

To analyze the market, the user can impose various graphical objects into the chart. To do this, the user has to select the "Insert" menu commands or buttons in the "Line Studies" toolbar. Line Studies, geometrical shapes, signs, and texts, are grouped in the menu.

Period Change

The client terminal allows the use of nine different data periods, from a minute to a month. This variety of periods is necessary for analyzing the market with technical indicators and line studies. The desired period of the chart can be chosen with help of the "Period" toolbar, the  button in the "Charts" toolbar, the "Charts — Period" menu.

Zooming

Charts can be zoomed in and out of horizontally, increasing or decreasing the amount of bars shown on the screen simultaneously. To do this, the user can use the  /  buttons in the "Charts" toolbar, or alternatively the "Zoom In"/"Zoom Out" options in the chart context menu and in the "Charts" menu. To zoom out of a chart vertically, the user can hold any point of vertical axis with the left mouse button and move it down. Double click on vertical axis or selecting "5" in the keypad restores the scale. The chart can be zoomed precisely by the defining of upper and lower borders in the Charts Setup window with the "Scale fix" option. The "Scale fix One to One" option in the same window allows setting "one-to-one", i.e., one pip of the vertical axis will correspond with one bar of the horizontal axis.

Scrolling, Auto Scrolling, and Shifting of the Chart

Scrolling is moving of price data to the right/left in the chart, this can be performed by the cursor keys. The chart can be scrolled with F12 (the "Step by Step" mode — scrolling the chart by one bar to the left) or Shift+F12 (scrolling the chart by one bar to the right), or with the mouse. Using the fast navigation box, the user can show the necessary area of the chart by specifying the specific date and time. If the chart has been scrolled to the area where there is no price data, the missing bars will be downloaded automatically.

MT4 User Guide

If the chart scale has been fixed, it can be scrolled vertically. To do so, the user has to move the mouse up/down while holding the slider on the vertical scale. To get the chart back into the visibility range, the user can press "5" on the keypad or double-click in the area of the chart price scale.

Auto scroll is intended for users to have the latest bars. If this option is enabled, the chart will be automatically scrolled to the end of the chart. This function can be enabled by pressing the  button in the "Charts" toolbar or by the "Charts — Auto Scroll" menu command. The "Chart Shift" option shifts the latest bar from the right screen border to the chart shift mark. The chart shift mark (a gray triangle in the upper part of the window) can be moved horizontally with the mouse within 10 to 50% of the window size. The chart shift can be enabled by the  button in the "Charts" toolbar or by the "Charts — Chart Shift" menu command.

Chart Positioning

Normally, the chart datum point is located in the left part of the window. When a timeframe is changed, there will be an attempt to calculate the new anchoring bar corresponding with that of the previously used timeframe. I.e., the timeframe that is the nearest to this given point will be shown at the left side of the window. The datum point (a gray triangle at the lower border of the chart) can be moved within the chart window using the mouse. It appears only if the "Auto Scroll" is disabled. The datum is useful for users particularly when analyzing a specific period of time for different timeframes.

Working with Templates

Templates represent chart window parameters stored in memory. The following is saved in a template: chart type, period, scale, all settings of line studies, technical and custom indicators, and experts.

Templates allow users to unify the appearance of charts quickly. The menu that manages templates can be called by selecting the "Charts — Template" menu command, alternatively, the user can select "template" via the charts context menu. The "Save Template..." menu command allows storing a new template and the "Remove Template" option deletes an existing one.

Working with Profiles

Profiles represent a convenient way of working with chart groups. At opening of a profile, each chart with all its settings will be found in the same place where it was when the profile was being stored. The menu that manages profiles can be opened by the "File — Profiles" menu command, by selecting the  button in the "Standard" toolbar, or by clicking with the mouse in the status bar containing the name of the current profile.

Data Updating

Data must be updated if any errors or "holes" occur in the price chart. In order to update the price data, the user should select "Charts — Refresh" menu command or "refresh within the chart context menu. Once refreshed, the missing bars will be downloaded from the server automatically and drawn in the chart.

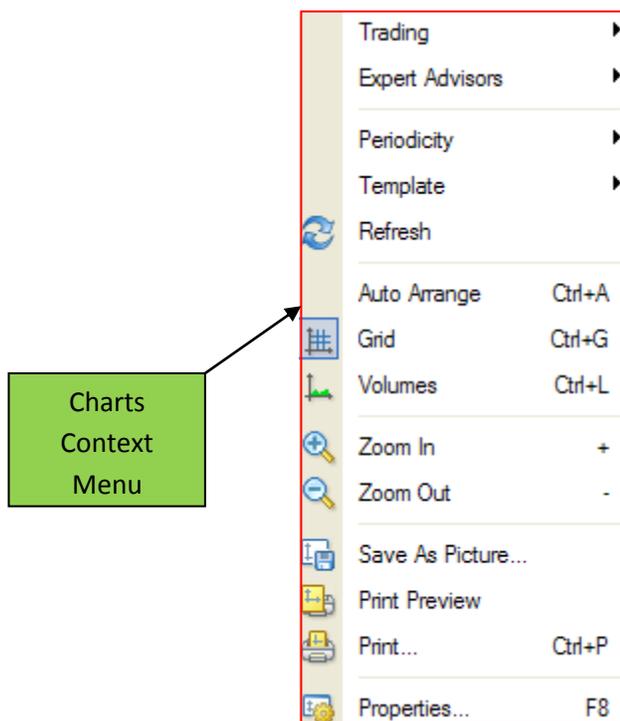
MT4 User Guide

Use of Mouse

The chart can be directly managed with the mouse as follows:

- Clicking with the left mouse button on any point in the chart window and holding of it with the subsequent horizontal moving of the cursor results in the chart scrolling;
- Clicking with the left mouse button on the chart vertical scale and holding of it with the subsequent vertical moving of the cursor result in vertical chart scaling, and the double click with the mouse on the chart vertical scale will rescale the chart;
- Clicking with the left mouse button on the chart horizontal scale (but not the fast navigation box) and holding of it with the subsequent horizontal moving of the cursor will result in the chart rescaling;
- Clicking with the right mouse button on any point in the chart window results in calling of the chart context menu (described below);
- Double-clicking with the left mouse button on elements of technical indicators (lines, signs, histogram bars, etc.) calls the setup window of the corresponding indicator;
- Clicking with the right mouse button on elements of a technical indicator calls the context menu of the indicator;
- Single or double, depending on the terminal settings, clicking with the left mouse button on an object (line studies, texts or arrows) will select the object;
- Clicking with the left mouse button on the selected object and holding of it with the subsequent moving allows to move the selected object;
- Ctrl + clicking with the left mouse button on a selected trend line with the subsequent moving allows to draw a parallel trend line (create a channel);
- Clicking with the middle mouse button in the chart window switches cursor to the "crosshair" mode;
- Clicking with the right mouse button on a selected object will open its context menu;
- Placing of the cursor on the bar close price or on an element of an object or indicator will call the prompt.

Chart Management with Context Menu Commands



Expert Advisors : Sub-menu that manages expert advisors. Expert advisor is an MQL4 program that follows the market and allows automating analytical and trading activities. Commands that manage the expert imposed into the chart are grouped in this menu. Using this sub-menu, the user can change the expert properties, remove the expert or start testing it.

Remove Script: Removes an executable script. Script is a program written in MetaQuotes Language 4 (MQL 4) and intended for performing actions.

Indicators List: Window that manages technical indicators attached to the chart window. Technical indicator is a mathematical manipulation of the symbol price and/or volumes in order to forecast future price changes. On signals received from technical indicators, decisions are made about how and when to open or close a position.

Objects List: Window that manages graphical objects. Graphical objects are those objects in the terminal that are imposed manually. They are intended for analytical purposes.

Periodicity: Sub-menu that manages chart periods. Periods of charts can also be managed by the "Charts" menu and the periodicity toolbar.

Template: Sub-menu that manages templates. Templates are a set of chart window parameters that can be used for other charts. This sub-menu can also be called by the "Charts" menu command of the same name.

Refresh: Refresh history data. At that, all data missing within the available history and new ones will be downloaded. The same action can be performed by the "Charts" menu command of the same name.

Auto Arrange: Set the height of all indicators windows as default. The same action can be performed by pressing of acceleration keys Ctrl+A.

MT4 User Guide

Grid: Show/hide grid. The same action can be performed via "Charts" menu command or by selecting acceleration keys Ctrl+G.

Volumes: Show/hide volumes chart. The actions can also performed by selecting keys Ctrl+L.

Zoom In: Zoom in the chart horizontally by one step. The chart can also be zoomed in via the "Charts" menu, by pressing of "+" or the  button in the "Charts" toolbar.

Zoom Out: Zoom out the chart by one step. The chart can also be zoomed out via the "Charts" menu command, by pressing of "-" or the  button in the "Charts" toolbar.

Delete Indicator Window: Delete indicator window from the chart. Some indicators are drawn in special sub-windows and have their own scaling. This command allows deleting such a sub-window.

Save As Picture: Save the chart as a picture (GIF or BMP). The same action can be performed by the "File — Save As Picture..." menu command.

Print Preview: Preview the chart image before printing. The same action can be performed by the "File — Print Preview" menu command or by pressing of the  button of the "Standard" toolbar.

Print...: Print the chart. If the "Color print" option is checked in the program settings, chart can be printed in color. The same action can be performed by the "File — Print..." menu command, acceleration keys Ctrl+P, or the  button in the "Standard" toolbar.

Properties...: Call the Charts Setup window. The same action can be performed by selecting F8.

MT4 User Guide

Chart Printing

A chart can be printed in black-and-white or in color. To print it in color, the user has to enable the "Color print" option in the client terminal settings window. Once enabled, the chart will be printed out in color.

The present printing device sometimes needs to be set up. To do so, the user has to select "File — Print Setup..." in the menu command. To make sure that all desired elements are included into the printing area, the user can select the "Print Preview" command in the file menu or the chart context menu, or press the  button in the "Standard" toolbar. The printing itself will be performed by the "File — Print..." menu command or by selecting the  button in the standard toolbar.

Deleted Charts

Users may want to delete specific charts that are no longer in use. This can be done by the "File — Close" menu command or by selecting Ctrl+F4

MT4 User Guide

Templates

A template is a set of chart window parameters that can be applied to other charts. The following can be stored in a template:

- chart type and color;
- Color diagram;
- chart scale;
- OHLC line shown or hidden;
- The attached expert advisor and its parameters;
- The imposed custom and technical indicators with their settings;
- Line studies;
- Separators of days.

When a template is imposed into a chart, the stored settings will be attached to the symbol and period. For example, the user can create a template that includes indicators of MACD, RSI, and Moving Average, and then use it for other charts. In this case, charts windows will have the same view for different symbols and periods.

Templates are stored in the /TEMPLATES directory as TPL files. A template created once can be used unlimited amount of times. A basic template (DEFAULT.TPL) is created during installation of the terminal. It will be applied automatically for creation a new chart window. In future, it can be changed by using of the active chart window properties.

To create a new template, the user has to execute the "Charts — Template — Save Template..." menu command . As a result, a new template will be created on basis of the data of active chart window. The same actions must be performed to modify a template, but an existing template should be selected instead of entering of a new filename. To impose a template into a chart window, the user must select the desired file in the templates managing menu or in any available folder in the "Open" window that can be called by the "Charts — Template — Load Template..." menu command. The "Charts — Template — Remove Template" menu command and the chart context menu command allow users to delete templates.

Please note: The "DEFAULT.TPL" cannot be deleted.

MT4 User Guide

Profiles

Profiles offer a convenient way of working with groups of charts. When a profile opens, each chart with its settings is placed in the same location when the terminal was last used, at the profile saving. All changes in all chart windows of the given list are automatically saved in the current profile. The list of all chart windows of the current profile can be found in the "Window" menu. The name of the current profile is displayed in the status bar window and checked in the profile managing menu. When the terminal is installed, the profile by default (DEFAULT) is created. Initially, four basic currency pairs are stored in it: "EUR/USD", "USD/CHF", "GBP/USD", and "USD/JPY".

Profiles are managed from a single menu that can be called by the "File — Profiles" menu commands, by selecting the  button in the "Standard" toolbar, or by clicking with the mouse button on the current profile name in the status bar window. To use another profile, the user has to select the desired name from the list in this menu. The new profile will be opened and become the current. The "Save Profile" command saves the current profile in its state by the moment of the beginning of the command execution under a new name. The new profile is a copy of the previous one and becomes the current. Profiles can be deleted using the "Remove Profile" command.

The "Next Profile" command and Ctrl + F5 open all available profiles one by one, and the "Previous Profile" and acceleration keys Shift + F5 allow searching profiles in the reverse direction.

Please note: The current profile and that by default (DEFAULT) cannot be deleted.

A pre-defined profile can be assigned to a trade account in the client terminal. This profile must have a name that coincides with the number of the trade account. If there is a corresponding profile when switching to the given trade account, it will be opened automatically. If there is no pre-defined profile, the current profile will remain active.

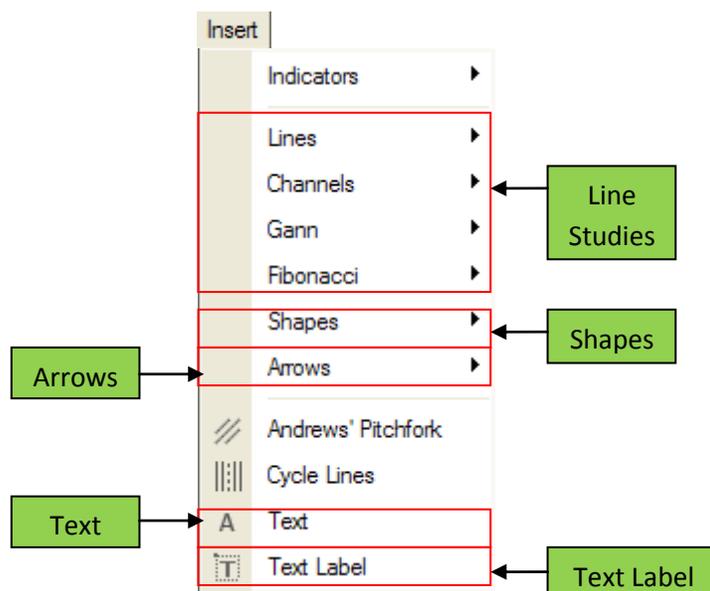
Analytics

Technical indicators and line studies are built into the terminal for analytical purposes. These objects are imposed directly into the chart and allow forecasting further price changes. Indicators are imposed automatically, and line studies are attached manually. Parameters of indicators can also be set up manually, as well. Technical indicators can have different settings for different symbols or periods.

Graphical Objects

Graphical objects are objects in the terminal that are imposed manually into the chart. These objects are used for analytical purposes. They include:

- **Line Studies:** Lines and various geometrical shapes to be imposed into the price or indicators charts. They include support/resistance lines, trend lines, as well as Fibonacci, Gann, Andrews' tools;
- **Shapes:** Geometrical shapes (rectangle, triangle, and ellipse) that allow to mark various areas in the price chart;
- **Arrows:** Arrows and signs that allow to mark the most significant points in the chart;
- **Text:** Text intended for adding of comments to the chart;
- **Text Label:** Text intended for adding of comments and anchored to the chart window coordinates. Text label does not move when the chart is scrolled.



All objects are grouped in the "Insert" menu and in the "Line Studies" toolbar. Having selected an object in the list and set a point in the chart (or in an indicator window), one can impose the tool.

Please note: To impose several objects, the user has to set more than one point. The object will not appear in the chart until all necessary points are set.

MT4 User Guide

After the object has been created, it can be moved or modified. To do so, the user has to select the object first. If the "Select object by single mouse click" parameter is set in terminal settings, the user has to click once with the left mouse button on any element of the object. The object can be considered as selected if square markers or frames appear. The markers are intended for moving of objects and changing their drawing parameters. For example, to change the Fibonacci Fan location, the user has to hold its central marker with the left mouse button and move the cursor. Moving of any of the extreme markers will result in changing of the object drawing parameters. The Terminal allows creating copies of various objects. To do this the user has to select the object and, holding Ctrl, move it with the central marker.

Objects can be removed by commands of the context menu. The Backspace key also allows to removal of objects in series. All removed objects can be restored. To do so, it is necessary to execute the "Undo Delete" command of the object context menu, the "Charts — Objects — Undo Delete" menu command, or use acceleration keys Ctrl+Z.

MT4 User Guide

Object Properties

Objects have specific properties. Properties can differ depending on the object. To manage the properties of an object, the user has to select the object and execute the "Properties...", the "Charts — Objects — Objects List" menu_command. General object settings are placed in the "Common" tab. The following is available here:

Name: The object unique name within a chart that is set for the object automatically. It can be changed if another name is entered in this field. Such names make it easy to mark the object out among many others of the same type;

Description: Description/text contents of the object that help differentiate the object from others of the same type. Descriptions can be shown in the chart if the "Show object descriptions" option is enabled in the chart settings;

Style: Object lines style. Color, forms and thickness of lines can be chosen from this option;

Draw object as background: Draw object in the background, behind the chart. Being enabled, this option provides filling of the objects like shapes or channels (excluding Fibonacci Channel) with color.

Coordinates of the object control points in the chart can be changed in the "Parameters" tab. Time coordinates of the object control points should be entered in the "Time" fields, and coordinates of anchoring to vertical axis of a chart of indicator should be given in the "Value" fields. An object can have from one to three coordinates. For some objects, additional options are used in the "Parameters" tab:

Angle in degrees: Angle of the object slope anticlockwise in degrees;

Scale: Ratio between units of vertical (pips) and horizontal (bars) axes of the object. Normally, the number of pixels in a unit of the horizontal axis (time) differs from that of the vertical axis (prices) when chart are drawn. One-to-one scale brings them to the same value. For certain objects, changing of this parameter changes the ratio;

Arrow code: Object code;

Ray: Shows the object trend lines as rays;

Anchor: One of the chart corners at which the text label is anchored;

X-distance: Horizontal distance between the anchor corner of the window and the text label in pixels;

Y-distance: Vertical distance between the anchor corner of the window and the text label in pixels.

The object visualization mode for different timeframes can be changed in the "Visualization" tab. The object will then be shown only for the selected timeframes. This can be useful when the tool has different settings for different timeframes. The "Fibo Levels" tab is specifically used only for Fibonacci tools. The list of the tool levels is given here in form of a table. The values of the levels can be changed or deleted (the "Delete" button). A new level can be added by pressing of the "Add" button. At that, if "(%\$)" is entered in the "Description" field, the price value corresponding with this level will be shown in the chart. The "Defaults" button resets the initial values. The "Style" field that allows users to set up the color, appearance and thickness of levels of the object is located in the lower part of the tab.

Graphical Objects – Line Studies (detailed)

Line studies are lines and various geometrical shapes that can be imposed into a price or indicator chart. They include support/resistance lines, trend lines, as well as Fibonacci's, Gann's, and Andrews' tools, etc. Line studies are collected in the "Insert" menu and in the "Line Studies" toolbar in terminal. To impose an object, one has to press the corresponding toolbar button (the buttons are given in the leftmost column of the table) or execute a menu command.

	Horizontal Line	Horizontal line can be used to mark various levels, particularly, those of support/resistance. One point must be set for this object to be imposed.
	Vertical Line	Vertical line can be used to mark various borders in the time axis and to compare signals of indicators to price changes. One point must be set for this object to be imposed.
	Trendline	Trend line helps to explore trends in price changes. Two points must be set through which a trend line will be drawn.
	Trendline by Angle	Trend line by angle helps to explore trends in price changes. Unlike for a simple trend line, an angle must be set for this line to be drawn. Two points must be set through which a trend line will be drawn.
	Linear Regression Channel	Linear regression is a statistical analysis tool used for forecasting of future values on basis of available data. If the trend is ascending, one can logically suppose that the next bar will be a bit higher than the preceding one. The linear regression method allows having a statistical demonstration of such logical conclusions. Two points must be set for this tool to be drawn.

	<p>Equidistant Channel</p>	<p>Lines of the equidistant channel are always parallel. Two points must be set for this tool to be drawn.</p>
	<p>Standard Deviation Channel</p>	<p>Standard deviation is the way of volatility measuring based on statistical methods. Standard deviation influences the width of this channel. Two points must be set for this tool to be drawn.</p>
	<p>Gann Line</p>	<p>Gann Line represents a trend line drawn at an angle of 45 degrees. Two points must be set for this tool to be drawn.</p>
	<p>Gann Fan</p>	<p>Gann Fan represents a set of trend lines drawn from one point at different angles. Gann considered the trend line of 1x1 (45 degrees) for a very important one. If the price curve is above this line, the market should be considered as bull market, if it is below, it is bear market. Gann proposed the ray of 1x1 to be a powerful supporting line at an ascending trend, and breaking of this line — to be an important turn signal. One point must be set for Gann Fan to be drawn.</p>
	<p>Fibonacci Retracement</p>	<p>Leonardo Fibonacci is considered to have discovered a number sequence where each successive number represents a sum of two preceding ones: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, etc. Each number is approximately 1.618 times more than the preceding one, and each number makes approximately 0.618 of the successive one. The tool can be drawn on two points that determine the trend line. At that, horizontal lines that meet the trend line at Fibonacci levels (retracement) as 0.0%, 23.6%, 38.2%, 50%, 61.8%, 100%, 161.8%, 261.8%, and 423.6% are drawn automatically.</p>

	<p>Gann Grid</p>	<p>Lines of the Gann Grid are drawn at an angle of 45 degrees. Two points must be set for this tool to be drawn.</p>
	<p>Fibonacci Channel</p>	<p>To draw this tool, a channel is used the width of which is taken as one. Then, at the distances defined by the Fibonacci sequence, parallels are drawn starting with the distance of 0.618 of the channel width, then 1.000, 1.618, 2.618, 4.236, etc. Two points and the basic channel width must be set for this tool to be drawn.</p>
	<p>Fibonacci Time Zones</p>	<p>Fibonacci Time Zones represent a row of vertical lines placed at Fibonacci intervals from each other: 1, 2, 3, 5, 8, 13, 21, 34, etc. It is considered that significant price changes should be expected near these lines. The tool can be drawn on two points that define the unit interval.</p>
	<p>Fibonacci Fan</p>	<p>Fibonacci Fan is drawn on two points that define the trend line. Then an «invisible» vertical line is drawn through the second point. Then three trend lines are drawn from the first point, these trend lines meeting the invisible vertical line at Fibonacci levels of 38.2%, 50%, and 61.8%. It is considered that significant price changes should be expected near these lines.</p>
	<p>Fibonacci Arcs</p>	<p>The tool named Fibonacci Arcs is drawn on two points that define the trend line. Then three arcs having the centres in the second point are drawn, these arcs meeting the trend line at Fibonacci levels of 38.2%, 50%, and 61.8%. It is considered that significant price changes should be expected near these arcs.</p>

	<p>Fibonacci Expansion</p>	<p>Fibonacci Expansion is drawn on three points that circumscribe two waves. Then three lines meeting the third, "presumptive", wave at Fibonacci levels of 61.8%, 100%, and 161.8%, are drawn. It is considered that significant price changes should be expected near these lines.</p>
	<p>Andrews' Pitchfork</p>	<p>This tool is drawn on three points and represents the parallel trend lines. The first trend line starts at the selected leftmost point (it is an important peak or trough) and is drawn precisely between two rightmost points. This line is the pitchfork «helve». Then, the second and the third trend lines outgoing from the above-mentioned rightmost points (significant peak and trough) are drawn in parallel to the first trend line. These lines are the pitchfork «teeth». Andrews' Pitchfork is interpreted as support/resistance lines are normally interpreted.</p>
	<p>Cycle Lines</p>	<p>This tool represents a row of vertical lines placed at equal intervals. Normally, a unit interval corresponds with one cycle. At that, completed lines are considered to describe future cycles. The tool is drawn on two points that define the unit interval.</p>

Technical Indicators

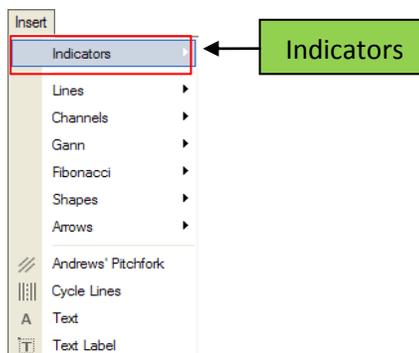
A Technical indicator is a mathematical manipulation of a symbol price and/or volumes aimed at forecasting of future price changes. Decisions about how and when to open or close positions are often made on the basis of signals from technical indicators. According to their functionalities, indicators can be divided into two groups: trend indicators and oscillators. Trend indicators help to assess the price direction and detect the turn moments synchronously or with a delay. Oscillators allow finding the turning moments ahead or synchronously.

Indicators are imposed into the chart from the "Navigator" window by means of Drag `and` Drop technique, by execution of the "Insert — Indicators" menu command, or by selecting the  button in the "Charts" toolbar. A technical indicator can be drawn in a separate indicator window that has a specific vertical scale (for example, MACD) or it can be imposed directly into the price chart (for example, Moving Average). Indicators can be drawn not only for price data and derivatives (Median Price, Typical Price, Weighted Close), but also for other indicators. For example, a Moving Average for the Awesome Oscillator can be drawn, and a signal line can be obtained additionally to AO in this way. To do so, the user has to draw the AO indicator first, and then, using Drag `and` Drop technique, impose MA into AO and select "Previous Indicator Data" option in its settings in the "Apply to" option. If the "First Indicator Data" option is selected, the MA will be drawn on basis of data of the very first imposed indicator that can be other than AO.

Besides analytical parameters, the user can set colors for various elements, thickness of lines, and sizes of signs used, at setting up of the indicator. The visualization mode of the object for different timeframes can be changed in the "Visualization" tab. The indicator will be shown on at timeframes that has been selected. This function can be useful if the tool has different settings for different time frames. Using the "Show in the Data Window" option in the same tab, the user can control over visualization of information about indicators in the "Data Window".

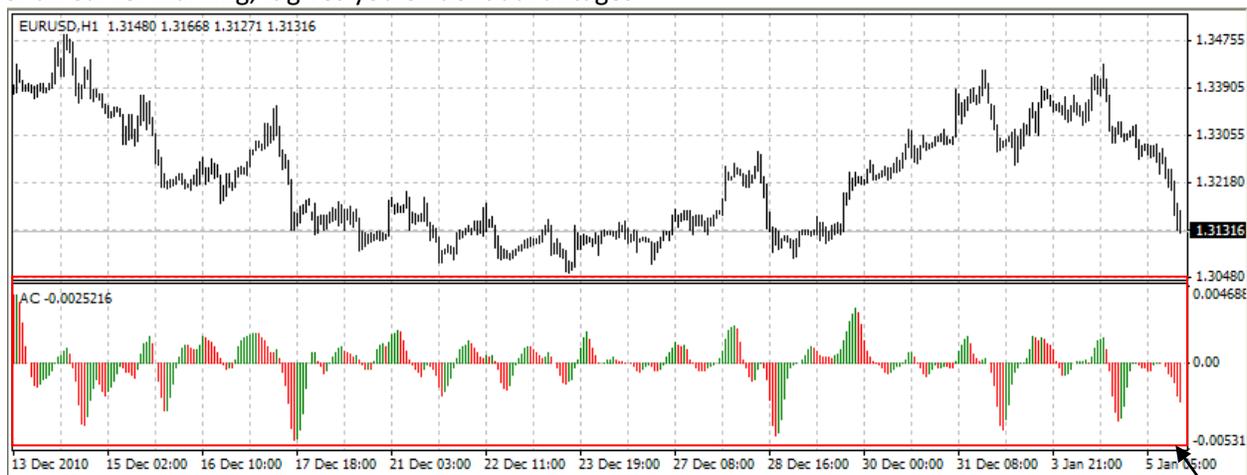
All settings can be changed. To do so, the user has to select the desired indicator in the "Indicators List" window and press the "Edit" button or execute the "Properties..." command in the indicator context menu. The Indicator context menu can be called by clicking with the right mouse button on a line, sign, or diagram of the desired indicator. To remove an indicator, the user has to execute the "Delete Indicator" indicator context menu command or the "Delete Indicator Window" command in the chart or indicator context menus. The "Delete Indicator Window" command closes the indicator window.

Please note: Having placed cursor near a line, a sign, or a column border of an indicator histogram, the user can determine precise value of this given indicator in this point.



Acceleration/Deceleration — AC

Acceleration/Deceleration Technical Indicator (AC) measures acceleration and deceleration of the current driving force. This indicator will change direction before any changes in the driving force, which, in turn, will change its direction before the price. If you realize that Acceleration/Deceleration is a signal of an earlier warning, it gives you evident advantages.



The zero line is basically the spot where the driving force is at balance with the acceleration. If Acceleration/Deceleration is higher than zero, then it is usually easier for the acceleration to continue the upward movement (and vice versa in cases when it is below zero). Unlike in case with Awesome Oscillator, it is not regarded as a signal when the zero line is crossed. Red and green bar usually indicate a buying or selling opportunity.

Calculation:

$$AO = SMA(\text{median price}, 5) - SMA(\text{median price}, 34)$$

$$AC = AO - SMA(AO, 5)$$

Where:

SMA — Simple Moving Average; AO — Awesome Oscillator.

Accumulation/Distribution (A/D)

Accumulation/Distribution Technical Indicator is determined by the changes in price and volume. The volume acts as a weighting coefficient at the change of price — the higher the coefficient (the volume) is, the greater the contribution of the price change (for this period of time) will be in the value of the indicator. This indicator is a variant of the more commonly used indicator On Balance Volume. They are both used to confirm price changes by means of measuring the respective volume of sales.



When the Accumulation/Distribution indicator grows, it means accumulation (buying) of a particular security, as the overwhelming share of the sales volume is related to an upward trend of prices. When the indicator drops, it means distribution (selling) of the security, as most of sales take place during the downward price movement.

Divergences between the Accumulation/Distribution indicator and the price of the symbol indicate the upcoming change of prices. As a rule, in case of such divergences, the price tendency moves in the direction in which the indicator moves. Thus, if the indicator is growing, and the price of the symbol is dropping, a turnaround of price should be expected.

Calculation:

A certain share of the daily volume is added to or subtracted from the current accumulated value of the indicator. The nearer the closing price to the maximum price of the day is, the higher the added share will be. The nearer the closing price to the minimum price of the day is, the greater the subtracted share will be. If the closing price is exactly in between the maximum and minimum of the day, the indicator value remains unchanged.

$$A/D = \text{SUM}[(\text{CLOSE} - \text{MINIMUM}) - (\text{MAXIMUM} - \text{CLOSE}) * \text{VOLUME} / (\text{MAXIMUM} - \text{MINIMUM}), N]$$

Where: N — the quantity of periods used in the calculation.

AD

Alligator

The Alligator Technical Indicator is a combination of Balance Lines (Moving Averages) that use fractal geometry and nonlinear dynamics.

- The blue line (Alligator's Jaw) is the Balance Line for the timeframe that was used to build the chart (13-period Smoothed Moving Average, moved into the future by 8 bars);
- The red line (Alligator's Teeth) is the Balance Line for the value timeframe of one level lower (8-period Smoothed Moving Average, moved by 5 bars into the future);
- The green line (Alligator's Lips) is the Balance Line for the value timeframe, one more level lower (5-period Smoothed Moving Average, moved by 3 bars into the future).



Lips, Teeth and Jaw of the Alligator show the interaction of different time periods. As clear trends can be seen only 15 to 30 per cent of the time, it is essential to follow them and refrain from working on markets that fluctuate only within certain price periods. Traders often see the lines being far apart from one another as a signal to buy or sell.

Calculation:

MEDIAN PRICE = (HIGH + LOW) / 2

ALLIGATORS JAW = SMMA (MEDEAN PRICE, 13, 8)

ALLIGATORS TEETH = SMMA (MEDEAN PRICE, 8, 5)

ALLIGATORS LIPS = SMMA (MEDEAN PRICE, 5, 3)

Where:

MEDIAN PRICE — median price;

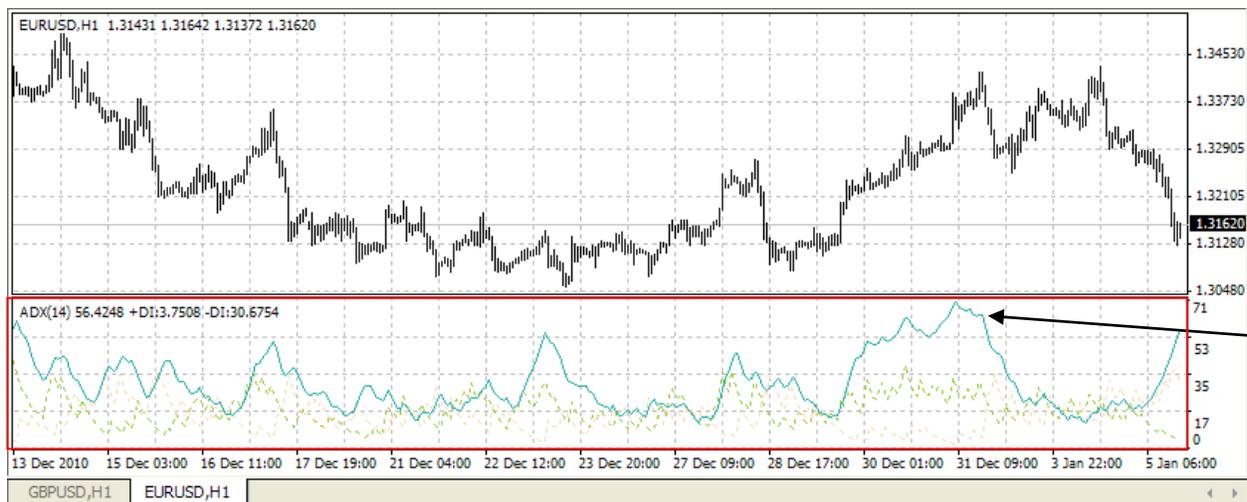
HIGH — the highest price of the bar;

LOW — the lowest price of the bar;

SMMA (A, B, C) — Smoothed Moving Average. A parameter is for data to be smoothed, B is the smoothing period, C is shift to future. For example, SMMA (MEDIAN PRICE, 5, 3) means that the smoothed moving average will be calculated on the median price, smoothing period being equal to 5 bars and shift being 3;

Average Directional Movement Index

Average Directional Movement Index Technical Indicator (ADX) helps to determine if there is a price trend. It was developed and described in detail by Welles Wilder in his book "New concepts in technical trading systems".



The simplest trading method based on the system of directional movement implies comparison of two direction indicators: the 14-period +DI one and the 14-period -DI. To do this, one either puts the charts of indicators one on top of the other, or +DI is subtracted from -DI. W. Wilder recommends buying when +DI is higher than -DI, and selling when +DI sinks lower than -DI.

To these simple commercial rules Wells Wilder added "a rule of points of extreme". It is used to eliminate false signals and decrease the number of deals. According to the principle of points of extreme, the "point of extreme" is the point when +DI and -DI cross each other. If +DI raises higher than -DI, this point will be the maximum price of the day when they cross. If +DI is lower than -DI, this point will be the minimum price of the day they cross.

The point of extreme is used then as the market entry level. Thus, after the signal to buy (+DI is higher than -DI) one must wait till the price has exceeded the point of extreme, and only then buy. However, if the price fails to exceed the level of the point of extreme, one should retain the short position.

Calculation:

$$ADX = \frac{\text{SUM}[(+DI - (-DI)) / (+DI + (-DI)), N]}{N}$$

Where: N — the number of periods used in the calculation.

Average True Range

Average True Range Technical Indicator (ATR) is an indicator that shows volatility of the market. It was introduced by Welles Wilder in his book "New concepts in technical trading systems". This indicator has been used as a component of numerous other indicators and trading systems ever since.



Average True Range can often reach a high value at the bottom of the market after a sheer fall in prices occasioned by panic selling. Low values of the indicator are typical for the periods of sideways movement of long duration which happen at the top of the market and during consolidation. Average True Range can be interpreted according to the same principles as other volatility indicators. The principle of forecasting based on this indicator can be worded the following way: the higher the value of the indicator, the higher the probability of a trend change; the lower the indicator's value, the weaker the trend's movement is.

Calculation:

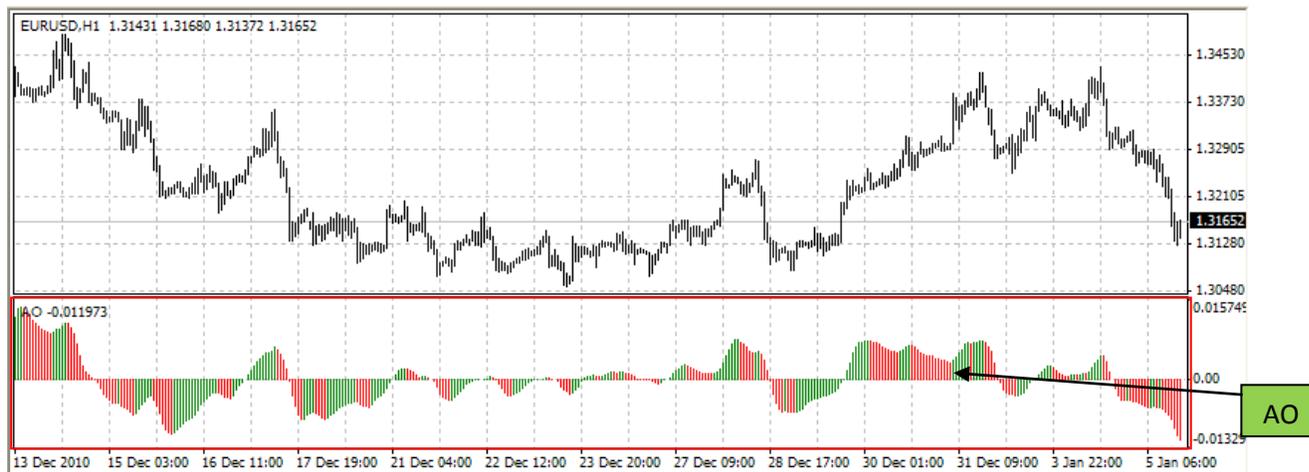
True Range is the greatest of the following three values:

- Difference between the current maximum and minimum (high and low);
- Difference between the previous closing price and the current maximum;
- Difference between the previous closing price and the current minimum.

The indicator of Average True Range is a moving average of values of the true range.

Awesome Oscillator

Awesome Oscillator Technical Indicator (AO) is a 34-period simple moving average, plotted through the middle points of the bars $(H+L)/2$, which is subtracted from the 5-period simple moving average, built across the central points of the bars $(H+L)/2$. It shows us quite clearly what's happening to the market driving force at the present moment.



Signals to buy

Saucer

This is the only signal to buy that comes when the bar chart is higher than the zero line. One must bear in mind:

- The saucer signal is generated when the bar chart reversed its direction from the downward to upward. The second column is lower than the first one and is colored red. The third column is higher than the second and is colored green.
- For the saucer signal to be generated the bar chart should have at least three columns. The user must consider that all Awesome Oscillator columns should be over the zero line for the saucer signal to be used.

Zero line crossing

The signal to buy is generated when the bar chart passes from the area of negative values to that of positive. It comes when the bar chart crosses the zero line. As regards this signal:

- For this signal to be generated, only two columns are necessary;
- The first column is to be below the zero line, the second one is to cross it (transition from a negative value to a positive one);
- Simultaneous generation of signals to buy and to sell is impossible.

MT4 User Guide

Two Peaks

This is the only signal to buy that can be generated when the bar chart values are below the zero line. As regards to this signal, the user should consider the following:

- The signal is generated, when you have a pike pointing down (the lowest minimum) which is below the zero line and is followed by another down-pointing pike which is somewhat higher (a negative figure with a lesser absolute value, which is therefore closer to the zero line), than the previous down-looking spike.
- The bar chart is to be below the zero line between the two pikes. If the bar chart crosses the zero line in the section between the pikes, the signal to buy doesn't function. However, a different signal to buy will be generated — zero line crossing.
 - Each new pike of the bar chart is to be higher (a negative number of a lesser absolute value that is closer to the zero line) than the previous pike.
- If an additional higher pike is formed (that is closer to the zero line) and the bar chart has not crossed the zero line, an additional signal to buy will be generated.

Signals to sell

Awesome Oscillator signals to sell are identical to the signals to buy. The saucer signal is reversed and is below zero. The zero line crossing is on the decrease — the first column of it is over the zero, the second one is under it. The two pikes signal is higher than the zero line and is reversed too.

Calculation:

AO is a 34-period simple moving average, plotted through the central points of the bars $(H+L)/2$, and subtracted from the 5-period simple moving average, graphed across the central points of the bars $(H+L)/2$.

$$\text{MEDIAN PRICE} = (\text{HIGH} + \text{LOW}) / 2$$

$$\text{AO} = \text{SMA}(\text{MEDIAN PRICE}, 5) - \text{SMA}(\text{MEDIAN PRICE}, 34)$$

Where: SMA — Simple Moving Average.

Bear Powers

The Bear powers oscillator was developed by Alexander Elder and is describe in his book titled “Trading For a Living”. The oscillator is based on the following:

- Moving average is a price agreement between sellers and buyers for a certain period of time,
- The lowest price displays the maximum sellers' power within the day.



On these premises, Elder developed Bears Power as the difference between the lowest price and 13-period exponential moving average (LOW - EMA).

Application

This indicator is better to use together with a trend indicator (most frequent Moving Average):

- if trend indicator is up-directed and the Bears Power index is below zero, but growing, it is a signal to buy;
- it is desirable that, in this case, the divergence of bases were being formed in the indicator chart.

Calculation:

The first stage of this indicator calculation is calculation of the exponential moving average (as a rule, it is recommended to use the 13-period EMA).

$$\text{BEARS} = \text{LOW} - \text{EMA}$$

Where:

BEARS — Bears Power;

LOW — the lowest price of the current bar;

EMA — exponential moving average.

In the down-trend, LOW is lower than EMA, so the Bears Power is below zero and histogram is located below zero line. If LOW rises above EMA when prices grow, the Bears Power becomes above zero and its histogram rises above zero line.

Bollinger Bands

Bollinger Bands Technical Indicator (BB) is similar to Envelopes. The main difference being that the bands of Envelopes are plotted a fixed distance (%) away from the moving average, while the Bollinger Bands are plotted a certain number of standard deviations away from it. Standard deviation is a measure of volatility; therefore Bollinger Bands adjust themselves to the market conditions. When the markets become more volatile, the bands widen and they contract during less volatile periods.



Bollinger Bands are usually plotted on the price chart, but they can be also added to the indicator chart (Custom Indicators). Just like in case of the Envelopes, the interpretation of the Bollinger Bands is based on the fact that the prices tend to remain in between the top and the bottom line of the bands. A distinctive feature of the Bollinger Band indicator is its variable width due to the volatility of prices. In periods of considerable price changes (i.e. of high volatility) the bands widen leaving a lot of room to the prices to move in. During standstill periods, or the periods of low volatility the band contracts keeping the prices within their limits.

The following traits are particular to the Bollinger Band:

- Abrupt changes in prices tend to happen after the band has contracted due to decrease of volatility.
- If prices break through the upper band, a continuation of the current trend is to be expected.
- If the pikes and hollows outside the band are followed by pikes and hollows inside the band, a reverse of trend may occur.
- The price movement that has started from one of the band's lines usually reaches the opposite one. The last observation is useful for forecasting price guideposts.

Calculation:

Bollinger bands are formed by three lines. The middle line (ML) is a usual Moving Average.

$$ML = \text{SUM} [\text{CLOSE}, N]/N$$

The top line, TL, is the same as the middle line a certain number of standard deviations (D) higher than the ML.

$$TL = ML + (D * \text{StdDev})$$

MT4 User Guide

The bottom line (BL) is the middle line shifted down by the same number of standard deviations.

$$BL = ML - (D * StdDev)$$

Where: N — is the number of periods used in calculation; SMA — Simple Moving Average;

StdDev = Standard Deviation.

$$StdDev = \text{SQRT}(\text{SUM}[(CLOSE - \text{SMA}(CLOSE, N))^2, N]/N)$$

It is recommended to use 20-period Simple Moving Average as the middle line, and plot top and bottom lines two standard deviations away from it.

MT4 User Guide

Bulls Power

The Bulls powers oscillator was developed by Alexander Elder and is describe in his book titled “Trading For a Living”. The oscillator is based on the following:

- Moving average is a price agreement between sellers and buyers for a certain period of time,
- The highest price displays the maximum buyers' power within the day.



On these premises, Elder developed Bulls Power as the difference between the highest price and 13-period exponential moving average (HIGH - EMA).

Application

This indicator is better to use together with a trend indicator (most frequently Moving Average):

- If trend indicator is down-directed and the Bulls Power index is above zero, but falling, it is a signal to sell;
- It is desirable that, in this case, the divergence of peaks were being formed in the indicator chart.

Calculation:

The first stage of this indicator calculation is calculation of the exponential moving average (as a rule, it is recommended to use the 13-period EMA).

$$\text{BULLS} = \text{HIGH} - \text{EMA}$$

Where:

BULLS — Bulls Power;

HIGH — the highest price of the current bar;

EMA — exponential moving average..

In the up-trend, the HIGH is higher than EMA, so the Bulls Power is above zero and histogram is located above zero line. If the HIGH falls under EMA when prices fall, the Bulls Power becomes below zero and its histogram falls under zero line.

Commodity Channel Index

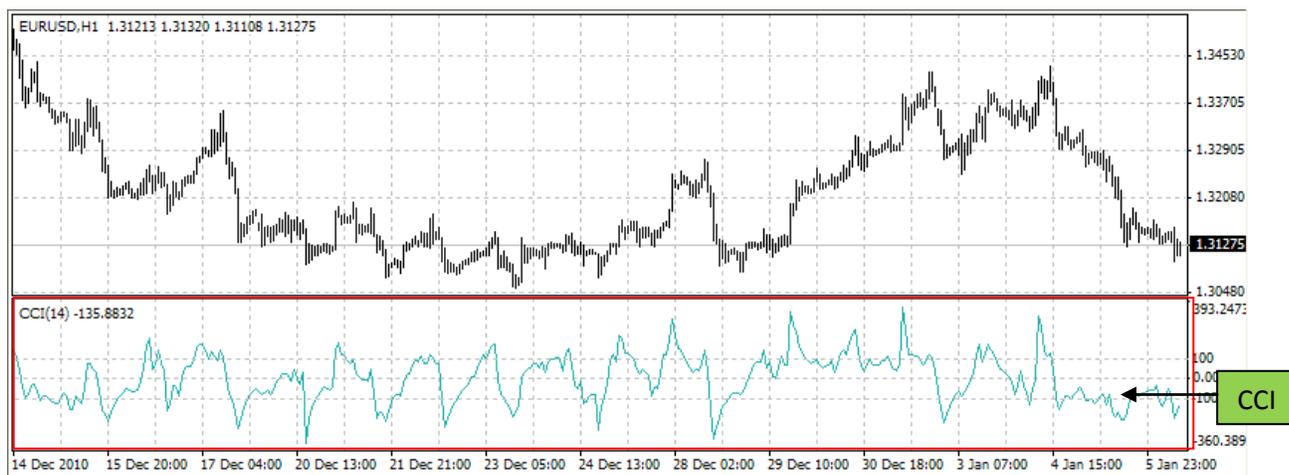
Commodity Channel Index Technical Indicator (CCI) measures the deviation of the commodity price from its average statistical price. High values of the index point out that the price is unusually high being compared with the average one, and low values show that the price is too low. In spite of its name, the Commodity Channel Index can be applied for any financial instrument, and not only for the wares. There are two basic techniques of using Commodity Channel Index:

Finding the divergence:

A divergence appears when a price reaches a new maximum. The Commodity Channel Index cannot grow above the previous maximums. This classical divergence is normally followed by the price correction.

As an indicator of overbuying/overselling

Commodity Channel Index usually varies in the range of ± 100 . Values above +100 inform about overbuying state (and about a probability of correcting decay), and the values below 100 inform about the overselling state (and about a probability of correcting increase).



Calculation:

1. To find a Typical Price. You need to add the HIGH, the LOW, and the CLOSE prices of each bar and then divide the result by 3. $TP = (HIGH + LOW + CLOSE)/3$
2. To calculate the n-period Simple Moving Average of typical prices. $SMA(TP, N) = \text{SUM}[TP, N]/N$
3. To subtract the received SMA(TP, N) from Typical Prices. $D = TP - SMA(TP, N)$
4. To calculate the n-period Simple Moving Average of absolute D values. $SMA(D, N) = \text{SUM}[D, N]/N$
5. To multiply the received SMA(D, N) by 0,015. $M = SMA(D, N) * 0,015$
6. To divide M by D $CCI = M/D$

Where:

SMA — Simple Moving Average;

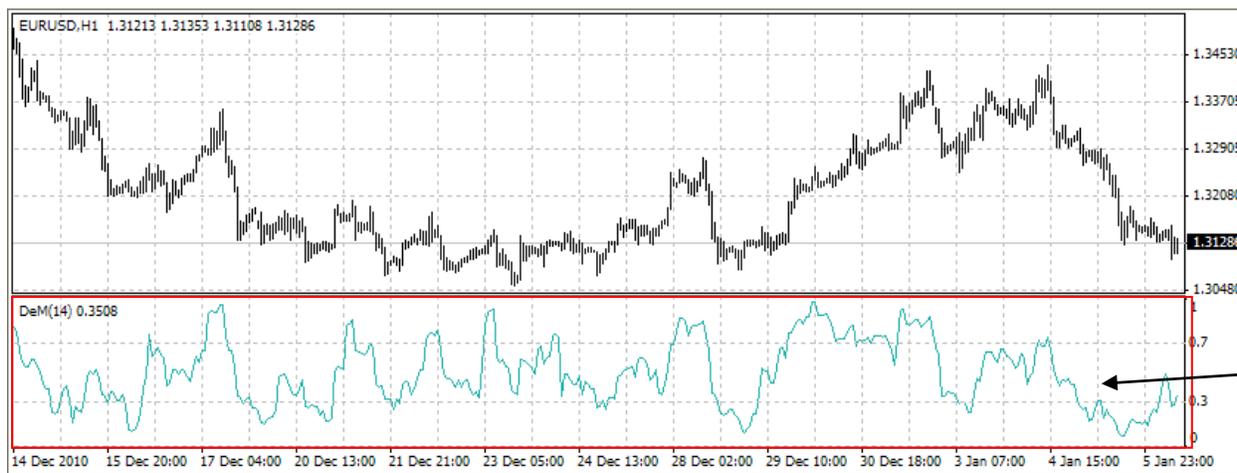
N — number of periods, used for calculation.

DeMarker

The Demarker Technical Indicator is based on the comparison of the period maximum with the previous period maximum. If the current period (bar) maximum is higher, the respective difference between the two will be registered. If the current maximum is lower or equalling the maximum of the previous period, the zero value will be registered.

The differences received for N periods are then summarized. The received value is used as the numerator of the DeMarker and will be divided by the same value plus the sum of differences between the price minima of the previous and the current periods (bars). If the current price minimum is greater than that of the previous bar, the naught value will be registered.

When the indicator falls below 30, the bullish price reversal should be expected. When the indicator rises above 70, the bearish price reversal should be expected.



If you use periods of longer duration, when calculating the indicator, you'll be able to catch the long term market tendency. Indicators based on short periods let you enter the market at the point of the least risk and plan the time of transaction so that it falls in with the major trend.

Calculation:

The value of the DeMarker for the "i" interval is calculated as follows:

The DeMax(i) is calculated:

If $high(i) > high(i-1)$, then $DeMax(i) = high(i) - high(i-1)$, otherwise $DeMax(i) = 0$

The DeMin(i) is calculated:

If $low(i) < low(i-1)$, then $DeMin(i) = low(i-1) - low(i)$, otherwise $DeMin(i) = 0$

The value of the DeMarker is calculated as:

$DMark(i) = SMA(DeMax, N) / (SMA(DeMax, N) + SMA(DeMin, N))$

Where:

SMA — Simple Moving Average;

N — the number of periods used in the calculation.

Envelopes

The Envelopes Technical Indicator is formed with two Moving Averages, one of which is shifted upward and another one is shifted downward. The selection of optimum relative number of band margins shifting is determined with the market volatility: the higher the latter is, the stronger the shift is.

Envelopes define the upper and the lower margins of the price range. Signal to sell appears when the price reaches the upper margin of the band; signal to buy appears when the price reaches the lower margin.

The logic behind envelopes is that overzealous buyers and sellers push the price to the extremes (i.e., the upper and lower bands), at which point the prices often stabilize by moving to more realistic levels. This is similar to the interpretation of Bollinger Bands.



Calculation:

Upper Band = $SMA(CLOSE, N) * [1 + K/1000]$

Lower Band = $SMA(CLOSE, N) * [1 - K/1000]$

Where: SMA — Simple Moving Average;

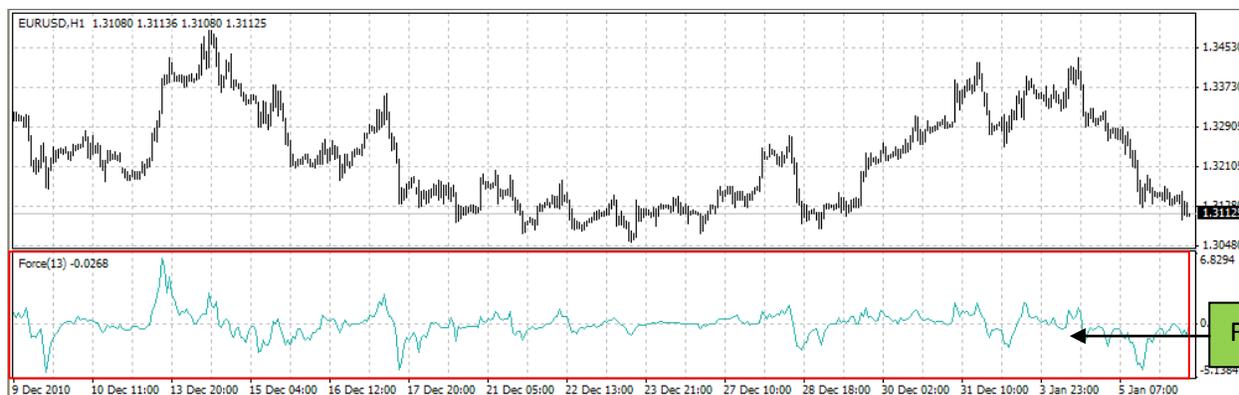
N — averaging period;

K/1000 — the value of shifting from the average (measured in basis points).

Force Index

Force Index Technical Indicator was developed by Alexander Elder. This index measures the Bulls Power at each increase, and the Bulls Power at each decrease. It connects the basic elements of market information: price trend, its drops, and volumes of transactions. This index can be used as it is, but it is often used with the help of Moving Average. Approximation with the help a short moving average (the author proposes to use 2 intervals) contributes to finding the best opportunity to open and close positions. If the approximations is made with long moving average (period 13), the index shows the trends and their changes.

- Opportunities to buy arise when the forces become minus (fall below zero) in the period of indicator increasing tendency;
- The force index signalizes the continuation of the increasing tendency when it increases to the new peak;
- The signal to sell arises when the index becomes positive during the decreasing tendency;
- The force index signalizes the Bears Power and continuation of the decreasing tendency when the index falls to the new trough;
- If price changes do not correlate to the corresponding changes in volume, the force indicator stays on one level, which signifies that the trend may change.



Calculation:

The force of every market movement is characterized by its direction, scale and volume. If the closing price of the current bar is higher than the preceding bar, the force is positive. If the current closing price is lower than the preceding one, the force is negative. The greater the difference in prices is, the greater the force is. The greater the transaction volume is, the greater the force is.

$$\text{FORCE INDEX (i)} = \text{VOLUME (i)} * ((\text{MA (ApPRICE, N, i)} - \text{MA (ApPRICE, N, i-1)}))$$

Where:

FORCE INDEX (i) — Force Index of the current bar;

VOLUME (i) — volume of the current bar;

MA (ApPRICE, N, i) — any Moving Average of the current bar for N period: Simple, Exponential, Weighted or Smoothed;

ApPRICE — applied price;

N — period of the smoothing;

MA (ApPRICE, N, i-1) — any Moving Average of the previous bar.

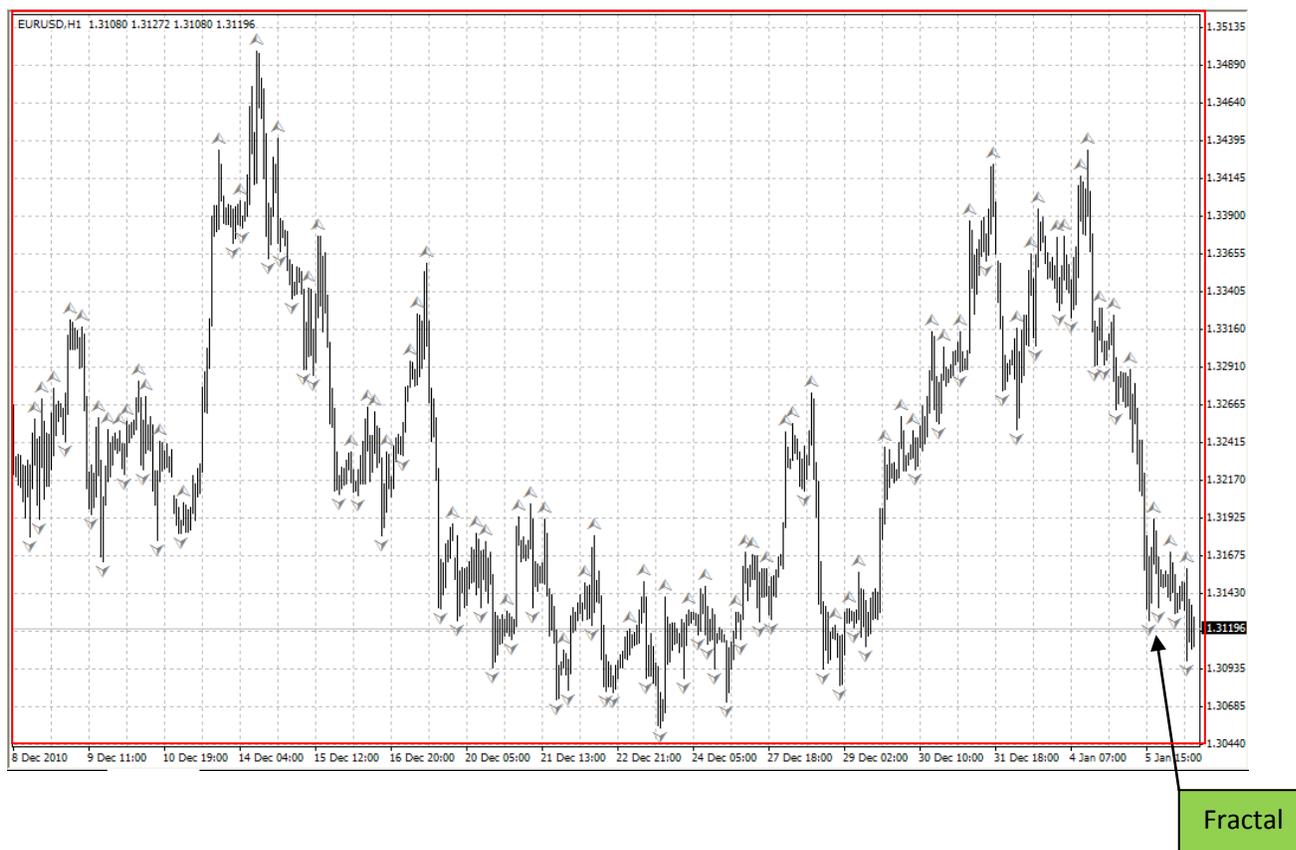
Fractals

All markets are characterized by the fact that on the most part the prices do not change too much, and only short periods of time (15–30 percent) account for trend changes. Most lucrative periods are usually the case when market prices change according to a certain trend.

A Fractal is one of five indicators of Bill Williams' trading system, which allows detecting the bottom or the top.

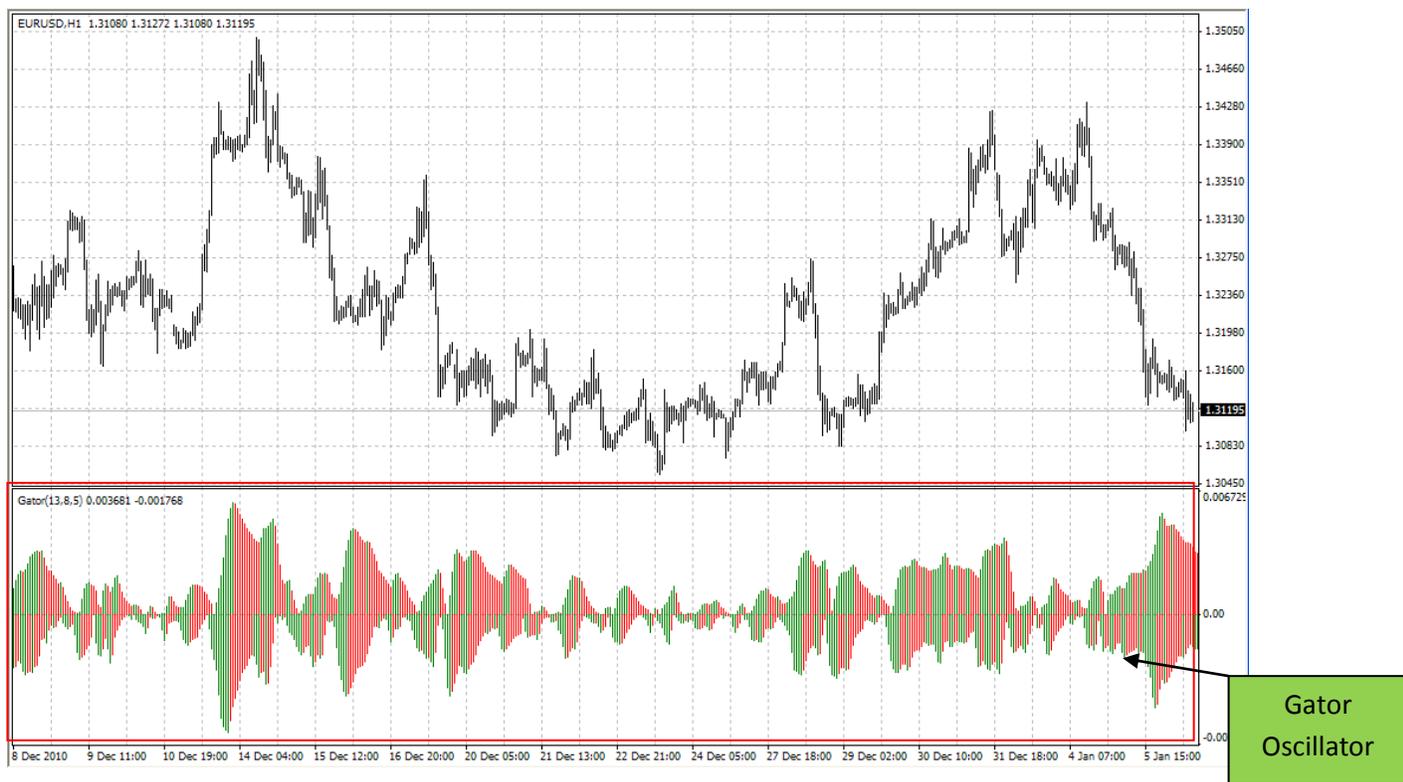
Fractal Technical Indicator it is a series of at least five successive bars, with the highest HIGH in the middle, and two lower HIGHS on both sides. The reversing set is a series of at least five successive bars, with the lowest LOW in the middle, and two higher LOWs on both sides, which correlates to the sell fractal. The fractals are have High and Low values and are indicated with the up and down arrows.

The fractal needs to be filtrated with the use of Alligator. In other words, you should not close a buy transaction, if the fractal is lower than the Alligator's Teeth, and you should not close a sell transaction, if the fractal is higher than the Alligator's Teeth. After the fractal signal has been created and is in force, which is determined by its position beyond the Alligator's Mouth, it remains a signal until it gets attacked, or until a more recent fractal signal emerges.



Gator Oscillator

Gator Oscillator is based on the Alligator Indicator and shows the degree of convergence/divergence of the Balance Lines (Smoothed Moving Averages). The top bar chart is the absolute difference between the values of the blue and the red lines. The bottom bar chart is the absolute difference between the values of the red line and the green line, but with the minus sign, as the bar chart is drawn top-down.

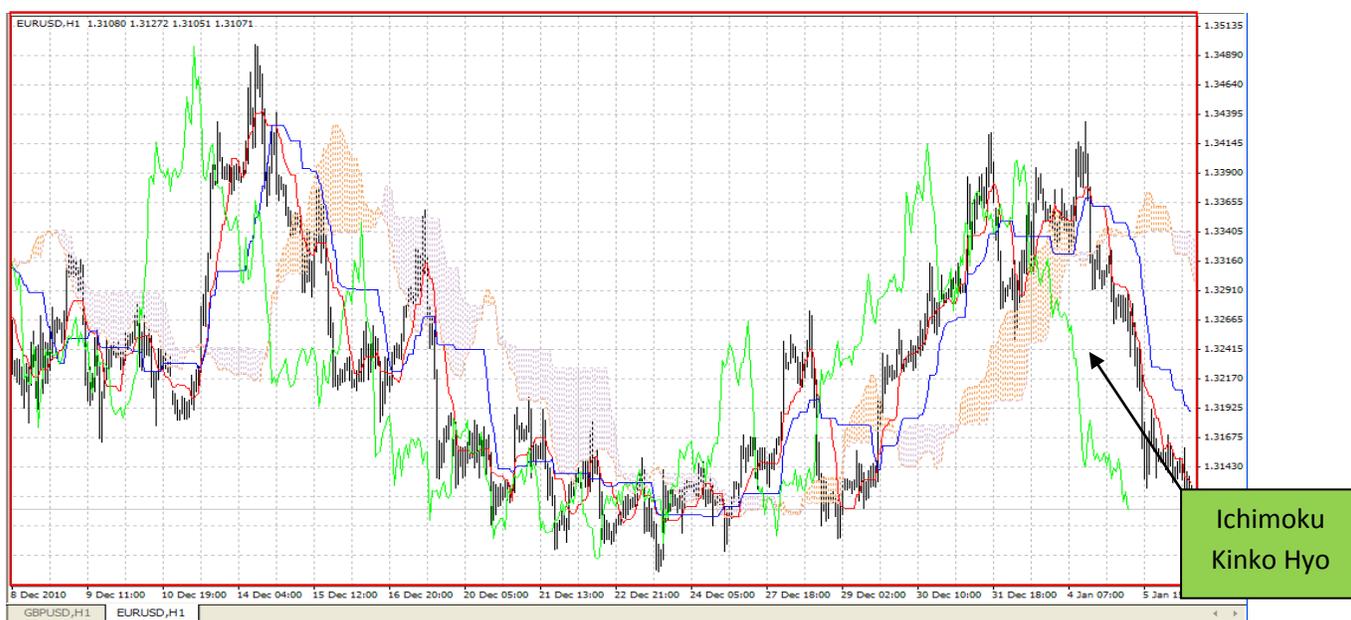


Ichimoku Kinko Hyo

Ichimoku Kinko Hyo Technical Indicator is predefined to characterize the market Trend, Support and Resistance Levels, and to generate signals of buying and selling. This indicator works best at weekly and daily charts.

When defining the dimension of parameters, four time intervals of different length are used. The values of individual lines composing this indicator are based on these intervals:

- Tenkan-sen shows the average price value during the first time interval defined as the sum of maximum and minimum within this time, divided by two;
- Kijun-sen shows the average price value during the second time interval;
- Senkou Span A shows the middle of the distance between two previous lines shifted forwards by the value of the second time interval;
- Senkou Span B shows the average price value during the third time interval shifted forwards by the value of the second time interval.



Chinkou Span shows the closing price of the current candle shifted backwards by the value of the second time interval. The distance between the Senkou lines is hatched with another color and called "cloud". If the price is between these lines, the market should be considered as non-trend, and then the cloud margins form the support and resistance levels.

- If the price is above the cloud, its upper line forms the first support level, and the second line forms the second support level;
- If the price is below cloud, the lower line forms the first resistance level, and the upper one forms the second level; •
- If the Chinkou Span line traverses the price chart in the bottom-up direction it is signal to buy. If the Chinkou Span line traverses the price chart in the top-down direction it is signal to sell.

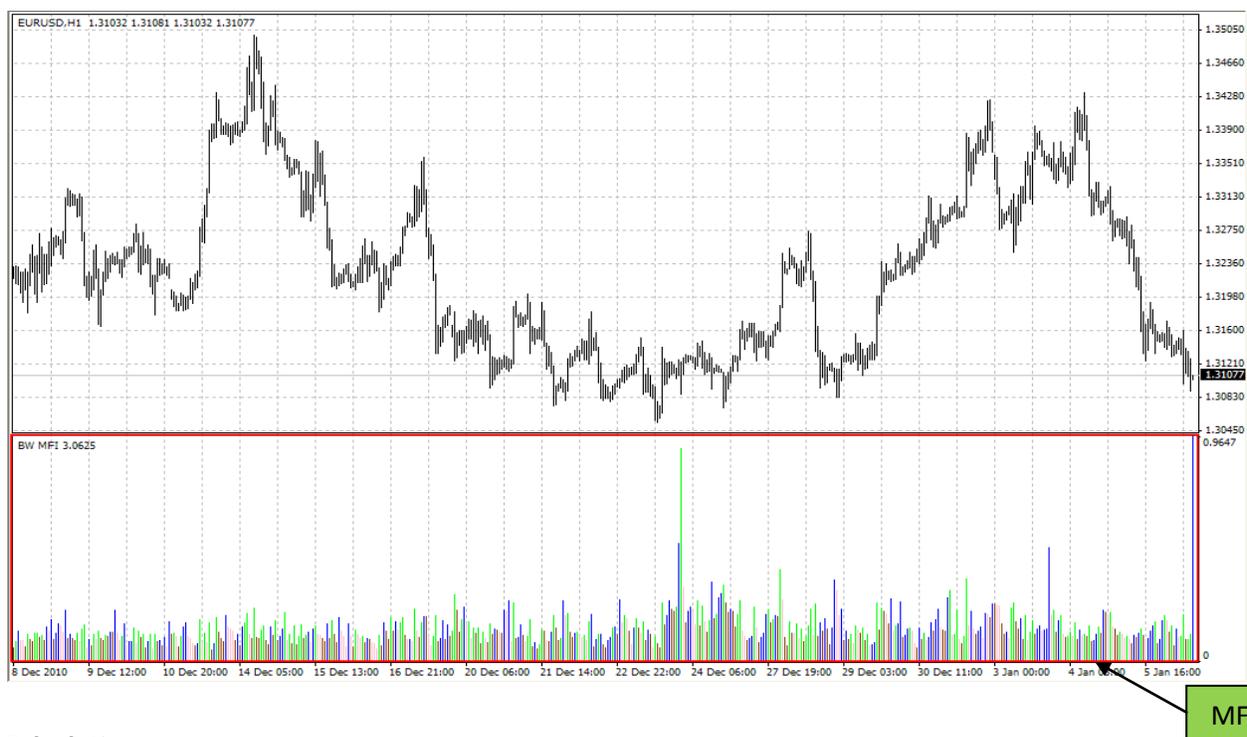
MT4 User Guide

Kijun-sen is used as an indicator of the market movement. If the price is higher than this indicator, the prices will probably continue to increase. When the price traverses this line the further trend changing is possible. Another kind of using the Kijun-sen is giving signals. Signal to buy is generated when the Tenkan-sen line traverses the Kijun-sen in the bottom-up direction. Top-down direction is the signal to sell. Tenkan-sen is used as an indicator of the market trend. If this line increases or decreases, the trend exists. When it goes horizontally, it means that the market has come into the channel.

Market Facilitation Index

Market Facilitation Index Technical Indicator (BW MFI) is the indicator which shows the change of price for one tick. Absolute values of the indicator do not mean anything as they are, only indicator changes have sense. Bill Williams emphasizes the interchanging of MFI and volume:

- Market Facilitation Index increases and volume increases — this points out that: a) the number of players coming into the market increases (volume increases) b) the new coming players open positions in the direction of bar development, i.e., the movement has begun and picks up speed;
- Market Facilitation Index falls and volume falls. It means the market participants are not interested anymore;
- Market Facilitation Index increases, but the volume falls. It is most likely, that the market is not supported with the volume from clients, and the price is changing due to traders' (brokers and dealers) "on the floor" speculations;
- Market Facilitation Index falls, but the volume increases. There is a battle between bulls and bears, characterized by a large sell and buy volume, but the price is not changing significantly since the forces are equal. One of the contending parties (buyers vs. sellers) will eventually win the battle. Usually, the break of such a bar lets you know if this bar determines the continuation of the trend or annuls the trend. Bill Williams calls such bar "curtsying".



Calculation:

To calculate Market Facilitation Index you need to subtract the lowest bar price from the highest bar price and divide it by the volume.

$$\text{BW MFI} = \text{RANGE} * (\text{HIGH} - \text{LOW}) / \text{VOLUME}$$

Where:

RANGE — is the multiplication factor, which brings the difference in points down to whole numbers.

Momentum

The Momentum Technical Indicator measures the amount that a security's price has changed over a given time span.

There are basically two ways to use the Momentum indicator:

- The Momentum indicator can be used as a trend-following oscillator similar to the Moving Average Convergence/Divergence (MACD). Buy when the indicator bottoms and turns up and sell when the indicator peaks and turns down. You may want to plot a short-term moving average of the indicator to determine when it is bottoming or peaking. If the Momentum indicator reaches extremely high or low values (relative to its historical values), you should assume a continuation of the current trend. For example, if the Momentum indicator reaches extremely high values and then turns down, you should assume prices will probably go still higher. In either case, only trade after prices confirm the signal generated by the indicator (for example, if prices peak and turn down, wait for prices to begin to fall before selling).
- You can also use the Momentum indicator as a leading indicator. This method assumes that market tops are typically identified by a rapid price increase (when everyone expects prices to go higher) and that market bottoms typically end with rapid price declines (when everyone wants to get out). This is often the case, but it is also a broad generalization.



As a market peaks, the Momentum indicator will climb sharply and then fall off — diverging from the continued upward or sideways movement of the price. Similarly, at a market bottom, Momentum will drop sharply and then begin to climb well ahead of prices. Both of these situations result in divergences between the indicator and prices.

Calculation:

Momentum is calculated as a ratio of today's price to the price several (N) periods ago.

$$\text{MOMENTUM} = \text{CLOSE}(i) / \text{CLOSE}(i-N) * 100$$

Where:

CLOSE(i) — is the closing price of the current bar;

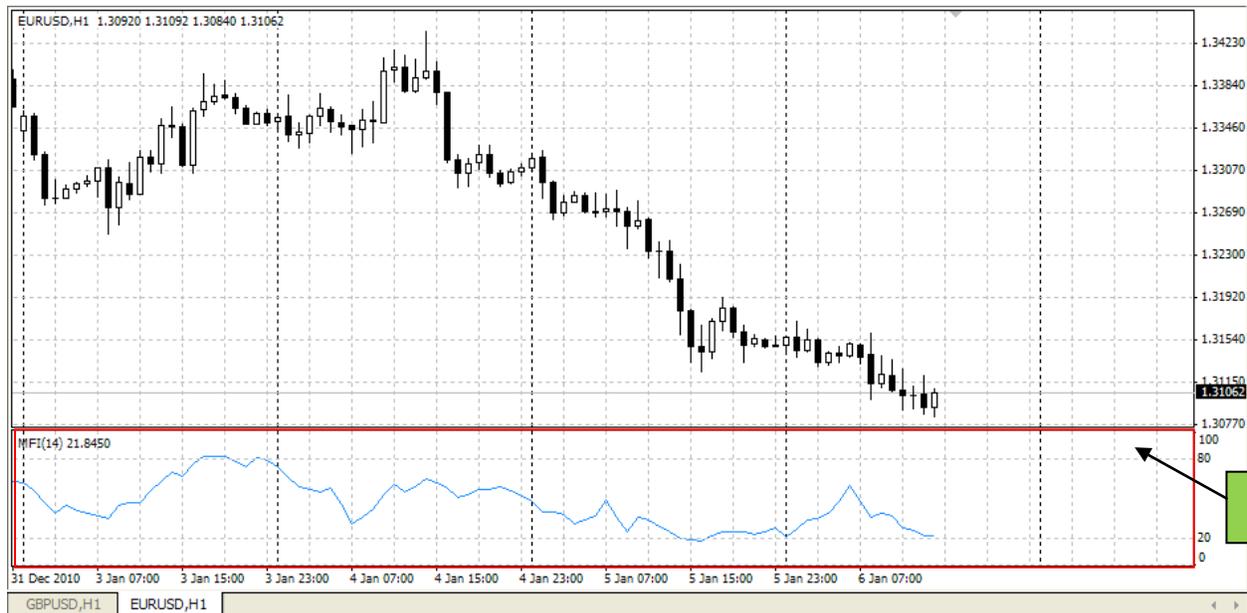
CLOSE(i-N) — is the closing bar price N periods ago.

Money Flow Index

Money Flow Index (MFI) is the technical indicator, which indicates the rate at which money is invested into a symbol and then withdrawn from it. Construction and interpretation of the indicator is similar to Relative Strength Index with the only difference that volume is important to MFI.

When analyzing the money flow index one needs to take into consideration the following points:

- Divergences between the indicator and price movement. If prices grow while MFI falls (or vice versa), there is a great probability of a price turn;
- Money Flow Index value, which is over 80 or under 20, signals correspondingly of a potential peak or bottom of the market.



Calculation:

The calculation of Money Flow Index includes several stages. At first one defines the typical price (TP) of the period in question.

$$TP = (HIGH + LOW + CLOSE) / 3$$

Then one calculates the amount of the Money Flow (MF):

$$MF = TP * VOLUME$$

If today's typical price is larger than yesterday's TP, then the money flow is considered positive. If today's typical price is lower than that of yesterday, the money flow is considered negative.

A positive money flow is a sum of positive money flows for a selected period of time. A negative money flow is the sum of negative money flows for a selected period of time.

Then one calculates the money ratio (MR) by dividing the positive money flow by the negative money flow:

$$MR = \text{Positive Money Flow (PMF)} / \text{Negative Money Flow (NMF)}$$

And finally, one calculates the money flow index using the money ratio:

$$MFI = 100 - (100 / (1 + MR))$$

Moving Average

The Moving Average Technical Indicator shows the mean instrument price value for a certain period of time. When one calculates the moving average, one averages out the instrument price for this time period. As the price changes, its moving average either increases, or decreases.

There are four different types of moving averages: Simple (also referred to as Arithmetic), Exponential, Smoothed and Linear Weighted.

Moving averages may be calculated for any sequential data set, including opening and closing prices, highest and lowest prices, trading volume or any other indicators. It is often the case when double moving averages are used.

The only time where moving averages of different types diverge considerably from each other is when weight coefficients, which are assigned to the latest data, are different. In Simple moving averages, all prices of the time period in question are equal in value. Exponential and Linear Weighted Moving Averages attach more value to the latest prices.

The most common way to interpreting the price moving average is to compare its dynamics to the price action. When the instrument price rises above its moving average, a buy signal appears, if the price falls below its moving average, what we have is a sell signal.

This trading system, which is based on the moving average, is not designed to provide entrance into the market right in its lowest point, and its exit right on the peak. It allows acting according to the following trend: to buy soon after the prices reach the bottom, and to sell soon after the prices have reached their peak.



MT4 User Guide

Moving averages may also be applied to indicators. That is where the interpretation of indicator moving averages is similar to the interpretation of price moving averages: if the indicator rises above its moving average, that means that the ascending indicator movement is likely to continue: if the indicator falls below its moving average, this means that it is likely to continue going downward.

Calculation:

Simple Moving Average (SMA)

Simple, in other words, arithmetical moving average is calculated by summing up the prices of instrument closure over a certain number of single periods (for instance, 12 hours). This value is then divided by the number of such periods.

$$SMA = \text{SUM}(\text{CLOSE}, N) / N$$

Where: N — is the number of calculation periods.

Exponential Moving Average (EMA)

Exponentially smoothed moving average is calculated by adding the moving average of a certain share of the current closing price to the previous value. With exponentially smoothed moving averages, the latest prices are of more value. P-percent exponential moving average will look like:

$$EMA = (\text{CLOSE}(i) * P) + (\text{EMA}(i - 1) * (100 - P))$$

Where:

CLOSE(i) — the price of the current period closure;

EMA(i-1) — Exponentially Moving Average of the previous period closure;

P — the percentage of using the price value.

Smoothed Moving Average (SMMA)

The first value of this smoothed moving average is calculated as the simple moving average (SMA):

$$\text{SUM1} = \text{SUM}(\text{CLOSE}, N)$$

$$\text{SMMA1} = \text{SUM1}/N$$

The second and succeeding moving averages are calculated according to this formula:

$$\text{PREVSUM} = \text{SMMA}(i - 1) * N$$

$$\text{SMMA}(i) = (\text{PREVSUM} - \text{SMMA}(i - 1) + \text{CLOSE}(i)) / N$$

Where: SUM1 — is the total sum of closing prices for N periods;

PREVSUM — smoothed sum of previous bar;

SMMA1 — is the smoothed moving average of the first bar;

SMMA(i) — is the smoothed moving average of the current bar (except for the first one);

CLOSE(i) — is the current closing price;

N — is the smoothing period.

The formula can be simplified as a result of arithmetic manipulations:

$$\text{SMMA}(i) = (\text{SMMA}(i - 1) * (N - 1) + \text{CLOSE}(i)) / N$$

MT4 User Guide

Linear Weighted Moving Average (LWMA)

In the case of weighted moving average, the latest data is of more value than more early data. Weighted moving average is calculated by multiplying each one of the closing prices within the considered series, by a certain weight coefficient.

$$LWMA = \text{SUM}(\text{Close}(i) * i, N) / \text{SUM}(i, N)$$

Where:

SUM(i, N) — is the total sum of weight coefficients.

Moving Average Convergence/Divergence

Moving Average Convergence/Divergence is the next trend-following dynamic indicator. It indicates the correlation between two price Moving Averages.

The Moving Average Convergence/Divergence Technical Indicator is the difference between a 26-period and 12-period Exponential Moving Average (EMA). In order to clearly show buy/sell opportunities, a signal line (9-period indicators' moving average) is plotted on the MACD chart.

The MACD proves most effective in wide-swinging trading markets. There are three popular ways to use the Moving Average Convergence/Divergence: crossovers, overbought/oversold conditions, and divergences.



Crossovers

The basic MACD trading rule is to sell when the MACD falls below its signal line. Similarly, a buy signal occurs when the Moving Average Convergence/Divergence rises above its signal line. It is also popular to buy/sell when the MACD goes above/below zero.

Overbought/oversold conditions

The MACD is also useful as an overbought/oversold indicator. When the shorter moving average pulls away dramatically from the longer moving average (i.e., the MACD rises), it is likely that the symbol price is overextending and will soon return to more realistic levels.

Divergence

An indication that an end to the current trend may be near occurs when the MACD diverges from the security. A bullish divergence occurs when the Moving Average Convergence/Divergence indicator is making new highs while prices fail to reach new highs. A bearish divergence occurs when the MACD is making new lows while prices fail to reach new lows. Both of these divergences are most significant when they occur at relatively overbought/oversold levels.

Calculation:

MT4 User Guide

The MACD is calculated by subtracting the value of a 26-period exponential moving average from a 12-period exponential moving average. A 9-period dotted simple moving average of the MACD (the signal line) is then plotted on top of the MACD.

$MACD = EMA(CLOSE, 12) - EMA(CLOSE, 26)$

$SIGNAL = SMA(MACD, 9)$

Where:

EMA — the Exponential Moving Average;

SMA — the Simple Moving Average;

SIGNAL — the signal line of the indicator.

Moving Average of Oscillator

Moving Average of Oscillator is the difference between the oscillator and oscillator smoothing. In this case, Moving Average Convergence/Divergence base-line is used as the oscillator, and the signal line is used as the smoothing.

Calculation:

$OSMA = MACD - SIGNAL$

On Balance Volume

The On Balance Volume Technical Indicator (OBV) is a momentum technical indicator that relates volume to price change. The indicator was created by Joseph Granville. When the symbol closes higher than the previous close, all of the day's volume is considered up-volume. When the symbol closes lower than the previous close, all of the day's volume is considered down-volume.

The basic assumption, regarding On Balance Volume analysis, is that OBV changes precede price changes. The theory is that smart money can be seen flowing into the symbol by a rising OBV. When the public moves into the security, both the symbol and the "On Balance Volume" will surge ahead.

If the security's price movement precedes OBV movement, a "non-confirmation" has occurred. Non-confirmations can occur at bull market tops (when the symbol rises without, or before, the OBV) or at bear market bottoms (when the symbol falls without, or before, the On Balance Volume Technical Indicator).



The OBV is in a rising trend when each new peak is higher than the previous peak and each new channel is higher than the previous trough. Likewise, the On Balance Volume is in a falling trend when each successive peak is lower than the previous peak and each successive trough is lower than the previous trough. When the OBV is moving sideways and is not making successive highs and lows, this is called a "doubtful" trend. Once a trend is established, it remains in force until it is broken. There are two ways in which the On Balance Volume trend can be broken. The first occurs when the trend changes from a rising trend to a falling trend or from a falling trend to a rising trend.

The second way the OBV trend can be broken is if the trend changes to a doubtful trend and remains doubtful for more than three days. Thus, if the symbol changes from a rising trend to a doubtful trend and remains doubtful for only two days before changing back to a rising trend, the On Balance Volume is considered to have always been in a rising trend.

When the OBV changes to a rising or falling trend, a "breakout" has occurred.

MT4 User Guide

Calculation:

If today's close is greater than yesterday's close then: $OBV(i) = OBV(i-1) + VOLUME(i)$

If today's close is less than yesterday's close then: $OBV(i) = OBV(i-1) - VOLUME(i)$

If today's close is equal to yesterday's close then: $OBV(i) = OBV(i-1)$

Where:

OBV(i) — is the indicator value of the current period;

OBV(i-1) — is the indicator value of the previous period;

VOLUME(i) — is the volume of the current bar.

Parabolic SAR

Parabolic SAR Technical Indicator was developed for analyzing the trending markets. The indicator is constructed on the price chart. This indicator is similar to the Moving Average Technical Indicator with the only difference that Parabolic SAR moves with higher acceleration and may change its position in terms of the price. The indicator is below the prices on the bull market (Up Trend), when it's bearish (Down Trend), it is above the prices.

If the price crosses Parabolic SAR lines, the indicator turns, and its further values are situated on the other side of the price. When such an indicator turn does take place, the maximum or the minimum price for the previous period would serve as the starting point. When the indicator makes a turn, it gives a signal of the trend end (correction stage or flat), or of its turn.

The Parabolic SAR is a useful indicator for providing exit points. Long positions should be closed when the price sinks below the SAR line, short positions should be closed when the price rises above the SAR line. It is often the case that the indicator serves as a trailing stop line.

If the long position is open (i.e., the price is above the SAR line), the Parabolic SAR line will go up, regardless of what direction the prices take. The length of the SAR line movement depends on the scale of the price movement.



Calculation:

$$SAR(i) = SAR(i-1) + ACCELERATION * (EPRICE(i-1) - SAR(i-1))$$

Where:

SAR(i-1) — is the value of the indicator on the previous bar;

ACCELERATION — is the acceleration factor;

EPRICE(i-1) — is the highest (lowest) price for the previous period (EPRICE=HIGH for long positions and EPRICE=LOW for short positions).

The indicator value increases if the price of the current bar is higher than previous bullish and vice versa. The acceleration factor (ACCELERATION) will double at the same time, which would cause Parabolic SAR and the price to come together. In other words, the faster the price grows or sinks, the faster the indicator approaches the price.

Relative Strength Index

The Relative Strength Index Technical Indicator (RSI) is a price-following oscillator that ranges between 0 and 100. It was developed by J. Welles Wilder and was describe in this 1978 book, "New Concepts in Technical Trading Systems". When Wilder introduced the Relative Strength Index, he recommended using a 14-day RSI. Since then, the 9-day and 25-day Relative Strength Index indicators have also gained popularity.

A popular method of analyzing the RSI is to look for a divergence in which the symbol is making a new high, but the RSI is failing to surpass its previous high. This divergence is an indication of an impending reversal. When the Relative Strength Index then turns down and falls below its most recent trough, it is said to have completed a "failure swing". The failure swing is considered a confirmation of the impending reversal.



Ways to use Relative Strength Index for chart analysis:

- **Tops and bottoms** The Relative Strength Index usually tops above 70 and bottoms below 30. It usually forms these tops and bottoms before the underlying price chart;
- **Chart Formations** The RSI often forms chart patterns such as head and shoulders or triangles that may or may not be visible on the price chart;
- **Failure swing (Support or Resistance penetrations or breakouts)** This is where the Relative Strength Index surpasses a previous high (peak) or falls below a recent low (trough);
- **Support and Resistance levels,** The Relative Strength Index shows, sometimes more clearly than price themselves, levels of support and resistance.
- **Divergences** as discussed above, divergences occur when the price makes a new high (or low) that is not confirmed by a new high (or low) in the Relative Strength Index. Prices usually correct and move in the direction of the RSI.

Calculation:

$$RSI = 100 - (100 / (1 + U/D))$$

Where: U — is the average number of positive price changes;

D — is the average number of negative price changes.

MT4 User Guide

Relative Vigor Index

The main point of Relative Vigor Index Technical Indicator (RVI) is that on the bull market the closing price is, as a rule, higher, than the opening price. It is the other way round on the bear market. So the idea behind Relative Vigor Index is that the vigor, or energy, of the move is thus established by where the prices end up at the close. To normalize the index to the daily trading range, divide the change of price by the maximum range of prices for the day. To make a more smooth calculation, one uses Simple Moving Average. 10 is the best period. To avoid probable ambiguity one needs to construct a signal line, which is a 4-period symmetrically weighted moving average of Relative Vigor Index values. The concurrence of lines serves as a signal to buy or to sell.

Calculation:

$$RVI = (CLOSE-OPEN)/(HIGH-LOW)$$

Where:

- OPEN — is the opening price;
- HIGH — is the maximum price;
- LOW — is the minimum price;
- CLOSE — is the closing price.

Standard Deviation

Standard Deviation — value of the market volatility measurement. This indicator describes the range of price fluctuations relative to Simple Moving Average. So, if the value of this indicator is high, the market is volatile, and prices of bars are rather spread relative to the moving average. If the indicator value is low, the market can be described as having a low volatility, and prices of bars are rather close to the moving average.

Normally, this indicator is used as a constituent of other indicators. Thus, when calculating Bollinger Bands, the user will have to add the symbol standard deviation value to its Moving Average.

Calculation:

$$StdDev = \sqrt{\text{SUM} (CLOSE - \text{SMA} (CLOSE, N), N)^2} / N$$

Where:

- SQRT — square root;
- SUM (... , N) — sum within N periods;
- SMA (... , N) — Simple Moving Average having the period of N;
- N — calculation period.

Stochastic Oscillator

The Stochastic Oscillator Technical Indicator compares where a security's price closed relative to its price range over a given time period. The Stochastic Oscillator is displayed as two lines. The main line is called %K. The second line, called %D, is a Moving Average of %K. The %K line is usually displayed as a solid line and the %D line is usually displayed as a dotted line.

There are several ways to interpret a Stochastic Oscillator. Three popular methods include:

- Buy when the Oscillator (either %K or %D) falls below a specific level (for example, 20) and then rises above that level. Sell when the Oscillator rises above a specific level (for example, 80) and then falls below that level;
- Buy when the %K line rises above the %D line and sell when the %K line falls below the %D line;
- Look for divergences. For instance: where prices are making a series of new highs and the Stochastic Oscillator is failing to surpass its previous highs.



Calculation:

The Stochastic Oscillator has four variables:

- %K periods. This is the number of time periods used in the stochastic calculation;
- %K Slowing Periods. This value controls the internal smoothing of %K. A value of 1 is considered a fast stochastic; a value of 3 is considered a slow stochastic;
- %D periods. This is the number of time periods used when calculating a moving average of %K;
- %D method. The method (i.e., Exponential, Simple, Smoothed, or Weighted) that is used to calculate %D.

The formula for %K is: $\%K = (\text{CLOSE} - \text{LOW}(\%K)) / (\text{HIGH}(\%K) - \text{LOW}(\%K)) * 100$

Where:

CLOSE — is today's closing price;

LOW(%K) — is the lowest low in %K periods;

HIGH(%K) — is the highest high in %K periods.

The %D moving average is calculated according to the formula: $\%D = \text{SMA}(\%K, N)$

Where:

N — is the smoothing period;

SMA — is the Simple Moving Average.

Williams' Percent Range

Williams' Percent Range Technical Indicator (%R) is a dynamic technical indicator, which determines whether the market is overbought/ oversold. Williams' %R is very similar to the Stochastic Oscillator. The only difference is that %R has an upside down scale and the Stochastic Oscillator has internal smoothing.

To show the indicator in this upside down fashion, the user places a minus symbol before the Williams Percent Range values (for example -30%). The user should ignore the minus symbol when conducting the analysis.

Indicator values ranging between 80 and 100% indicate that the market is oversold. Indicator values ranging between 0 and 20% indicate that the market is overbought.



As with all overbought/oversold indicators, it is best to wait for the security's price to change direction before placing your trades. For example, if an overbought/oversold indicator is showing an overbought condition, it is wise to wait for the security's price to turn down before selling the security.

An interesting phenomenon of the Williams Percent Range indicator is its uncanny ability to anticipate a reversal in the underlying security's price. The indicator almost always forms a peak and turns down a few days before the security's price peaks and turns down. Likewise, Williams Percent Range usually creates a trough and turns up a few days before the security's price turns up.

Calculation:

Below is the formula of the %R indicator calculation, which is very similar to the Stochastic Oscillator formula: $\%R = \frac{\text{HIGH}(i-n) - \text{CLOSE}}{\text{HIGH}(i-n) - \text{LOW}(i-n)} * 100$

Where: CLOSE — is today's closing price;

HIGH (i-n) — is the highest high over a number (n) of previous periods;

LOW (i-n) — is the lowest low over a number (n) of previous periods.

Trading

Order types

Users can control and manage open/close orders/positions through several types of orders. The following orders can be used in MT4: Market order, Pending order, Stop Loss and Take Profit.

Market Order

A market order is an order to buy or sell a symbol at the current price. Execution of this order results in opening a trade position. Symbols are bought at ASK price and sold at BID price. Stop Loss and Take Profit orders can be attached to a market order. Execution mode of market orders depends on the symbol traded.

Pending Order

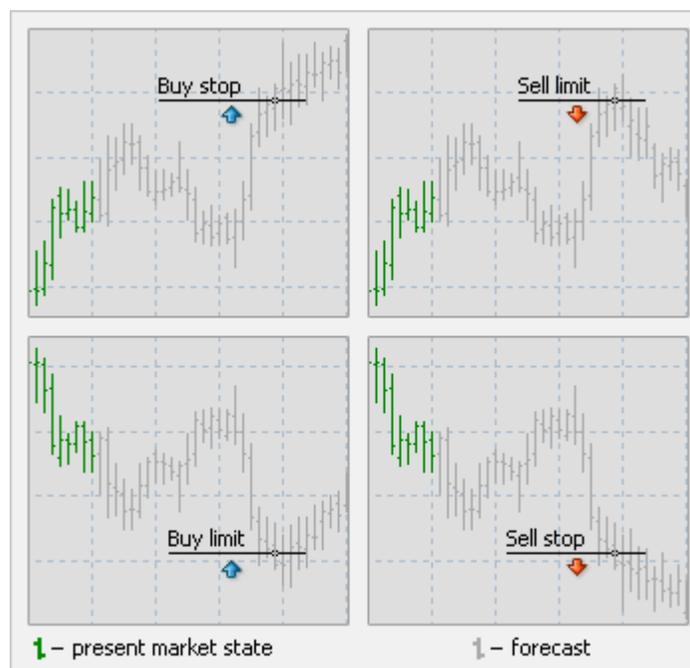
A Pending order is an order that allows the user to buy or sell a symbol at a pre-defined price in the future. This type of orders is used for opening a trade position provided the future quotes reach the pre-defined level. There are four types of pending orders available in the terminal:

Buy Limit: Buy provided the future "ASK" price is equal to the pre-defined value. The current price level is higher than the value of the placed order. Orders of this type are usually placed in anticipation of that the symbol price, having fallen to a certain level, will increase;

Buy Stop: Buy provided the future "ASK" price is equal to the pre-defined value. The current price level is lower than the value of the placed order. Orders of this type are usually placed in anticipation of that the symbol price, having reached a certain level, will keep on increasing;

Sell Limit: Sell provided the future "BID" price is equal to the pre-defined value. The current price level is lower than the value of the placed order. Orders of this type are usually placed in anticipation of that the symbol price, having increased to a certain level, will fall;

Sell Stop: Sell provided the future "BID" price is equal to the pre-defined value. The current price level is higher than the value of the placed order. Orders of this type are usually placed in anticipation of that the symbol price, having reached a certain level, will keep on falling.



Stop Losses and Take Profits can be attached to a pending order. After a pending order has triggered, its Stop Loss and Take Profit levels will be attached to the open position automatically.

Stop Loss

This order is used for minimizing losses if the symbol price has started to move in an unprofitable direction. If the symbol price reaches this level, the position will be closed automatically. MT4 checks long positions with the BID price for the meeting of this order provisions, and it does with ASK price for short positions.

Take Profit

Take Profit order is intended for gaining profit when the symbol price has reached a certain level. Execution of this order results in closing a position. MT4 checks long positions with BID price for meeting of this order provisions, and it does with ASK price for short positions.

Trailing stop

A trailing stop is similar to a stop loss where it can help limit losses. A Trailing stop is automated and is activated once a position becomes profitable at a market price away from entry level predefined by the user. The order is set at a specified distance from the current market price, if the price changes in a profitable direction the trailing stop will follow automatically, if market turns and the profitability of a position falls the order will not be modified, meaning the profit of the position will be fixed.

Trailing stops can be disabled by setting “none” in the managing menu.

Please note: trailing stops will only be active while the user is logged on to MT4 as trailing stops only register on the client terminal whereas stop losses remain as they are saved on the server.

MT4 User Guide

Types of Execution

There are three order execution modes in MT4:

Instant Execution

In this mode the order is executed at the price offered on screen, if the price is valid it will be executed, if not the user will be re-quoted.

Request Execution

In this mode high volume orders will be request executed.

Execution by Market

In this order execution mode, there are no re quotes, when the user either opens or closes a position the order will be executed at the best price available. Please note, the price may sometimes differ from the price seen on the platform as the price may have moved from the last market snapshot or the key desired volume maybe larger than the best tradable Bid/Offer.

MT4 User Guide

Trade Positions

The user can open, modify, and close trade positions. Managing positions/orders consist of:

Opening of a position: Buying or selling of a symbol as a result of a market or a pending order execution;

Modifying of a position: Changing of the Stop Loss and Take Profit levels attached to the open position;

Placing of pending orders: Placing of pending orders such as Buy Limits, Buy Stops, Sell Limits, or Sell Stops;

Modifying and deletion of pending orders: Modifying or deletion of pending orders that did not trigger;

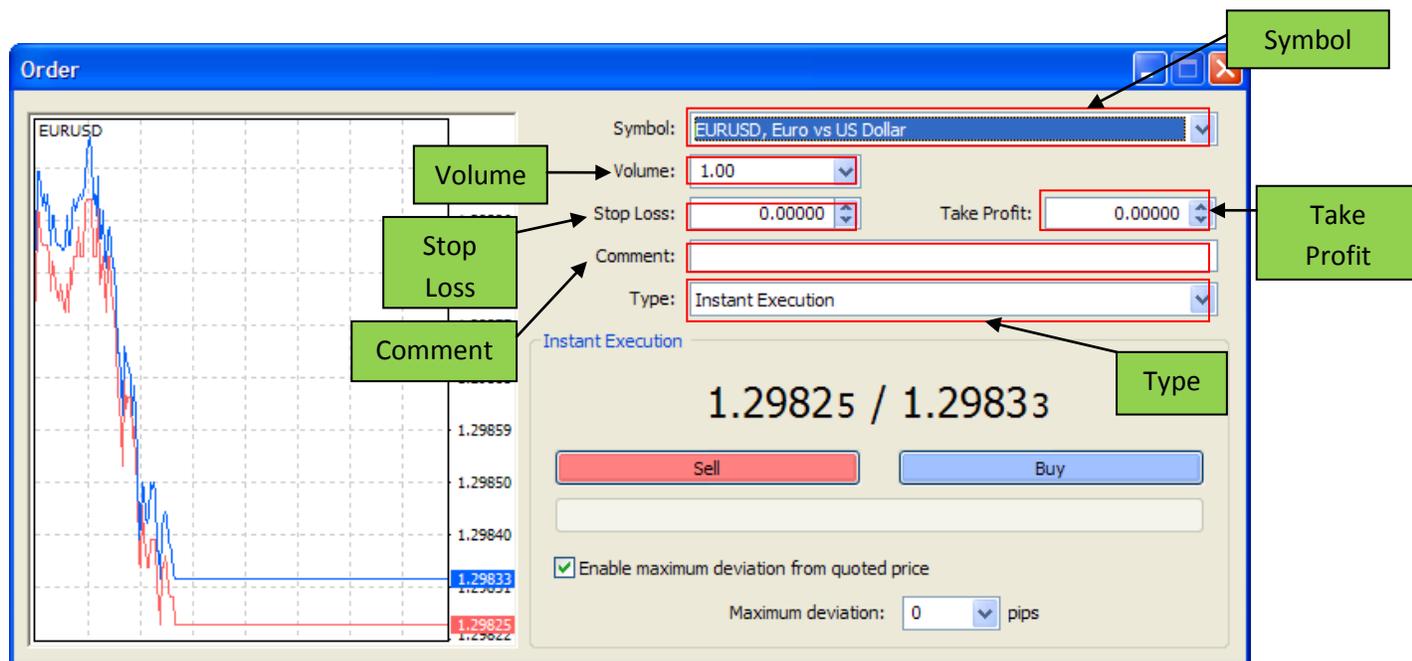
Closing of a position: Buying or selling a symbol in order to close an existing open position.

Open Positions

Opening of a position, or entering the market, is the first buying or selling of a certain amount of the symbol traded. Position can be opened either by execution of a market order or by automatic triggering of a pending order.

Market Order

To open a position using a market order, the user has to select the "Tools — New Order" menu command, or alternatively the user can select the  button in the "Standard" toolbar, press F9, or double-click on the symbol name within the "Market Watch" window. Users can also execute the "New Order" option in the context menu in the "Market Watch" window or select "Terminal — Trade". Once selected, the user will be presented with the "Order" window with the following fields:



Symbol: Symbol for which the position is to be opened;

Volume: Specify the trade volume (amount of lots);

Stop Loss: Set the Stop Loss level (optionally);

Take Profit: Set the Take Profit level (optionally);

Please note: If zero values are submitted within the stop loss and take profit fields no stop loss or profit take levels will be set.

Comment: Write a comment (optionally). The comment length may not exceed 25 characters.

Enable maximum deviation from quoted price: Enable/disable the use of deviation. If a broker re-quotes the price of order execution, the deviation of the new price from the quoted before will be calculated. If the deviation is below or equal to the specified parameter, the order will be executed at the new price without any additional notifying.

MT4 User Guide

Maximum deviation: The value of maximum permissible deviation in pips. Price deviation can only be set during instant execution mode.

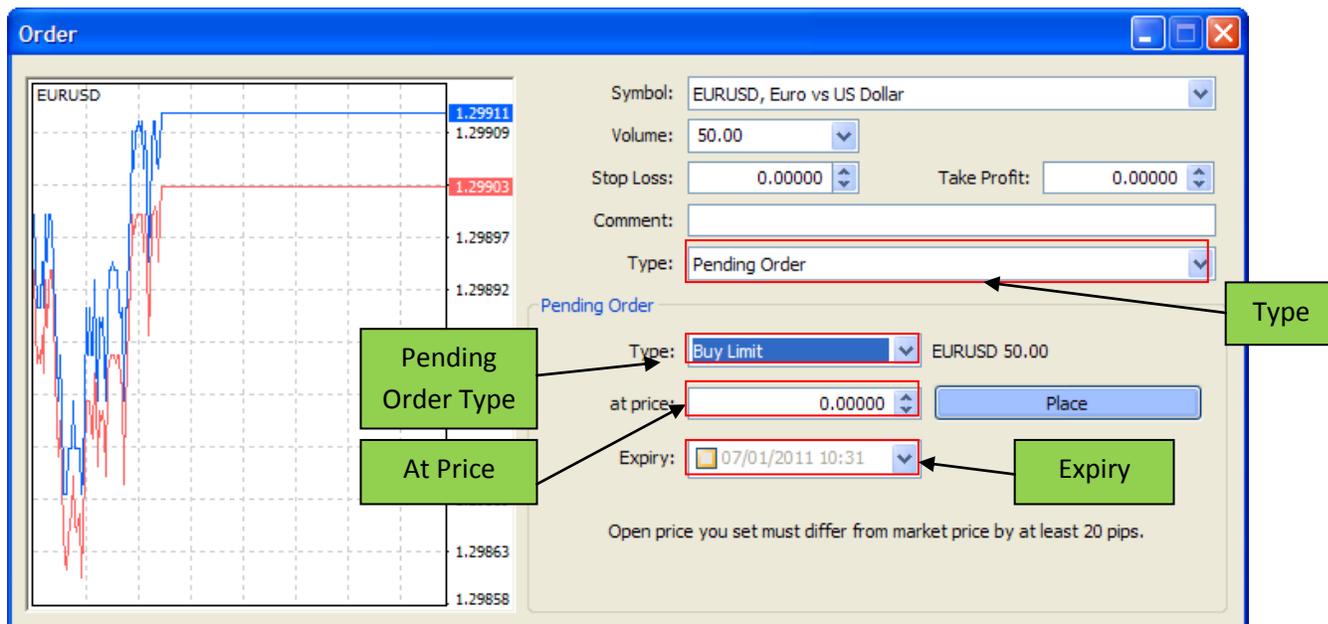
Please note: if an order is executed at request, the user must select the request button and wait to be quoted.

After all necessary fields have been filled, the user has to specify whether he/she wants to buy or sell. This can be done by selecting either the buy button or the sell button.



Pending orders

Pending orders can be set in the same method as a market order, when users are presented with the order window, they must specify in the “Type” field they desire to place a pending order.



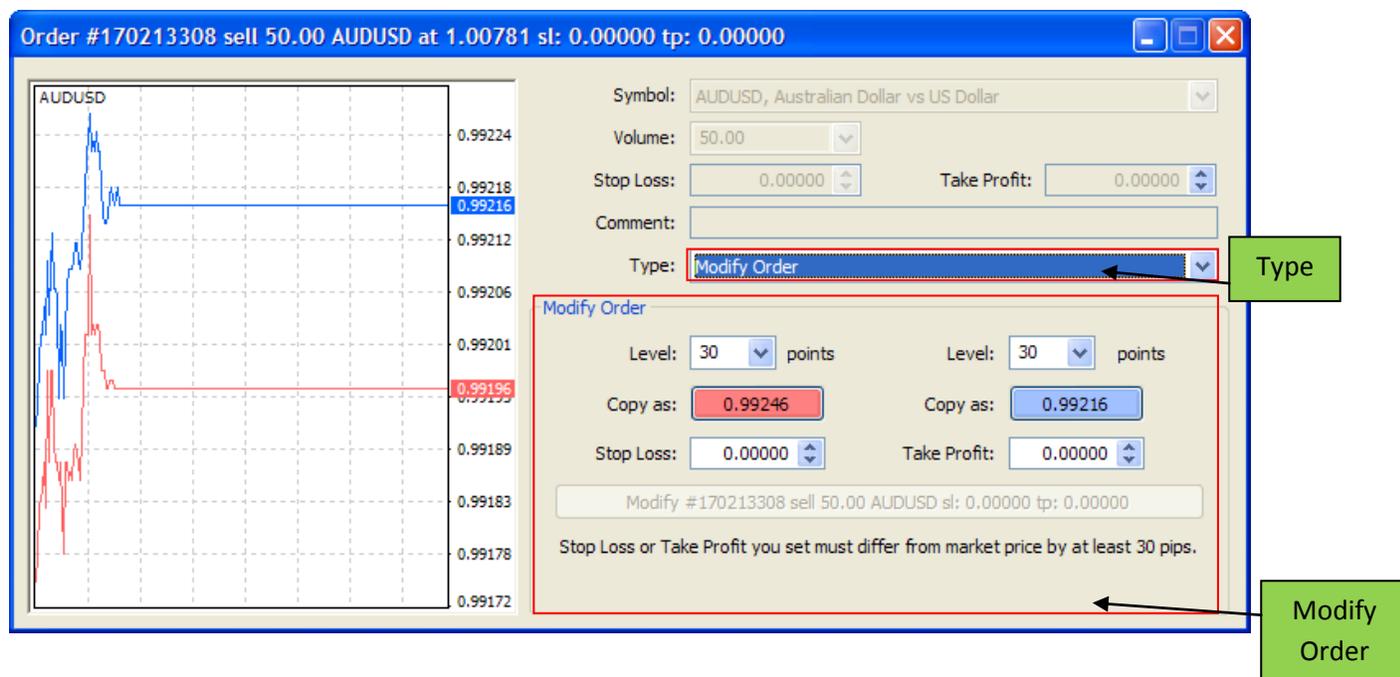
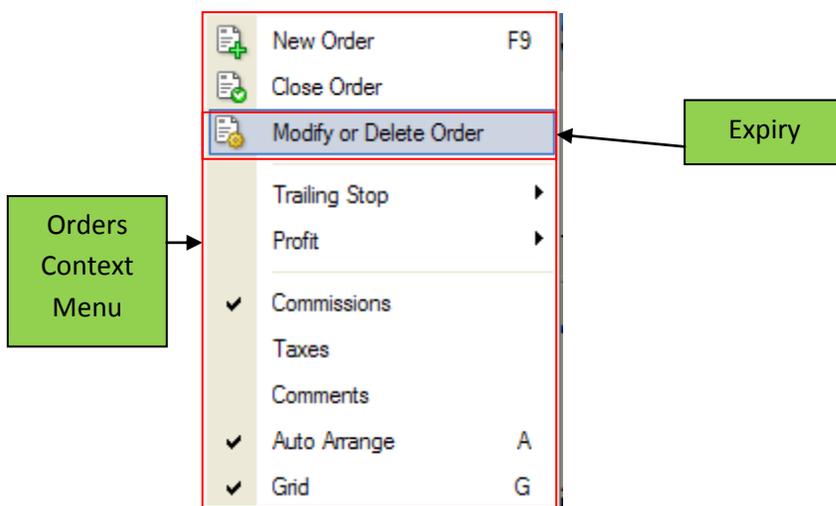
Users will then be able to specify whether they would like to set buy/sell limits or buy/sell stops along with their desired entry price in the “at price” field and the expiry of the order in the “expiry” field.

Please note: If zero values are submitted within the stop loss and take profit fields no stop loss or profit take levels will be set.

Modifying of Positions

Modifying a current position consists of setting new levels for Stop Losses or Take Profits attached to the position. The user can modify a position by selecting the "Modify or Delete Order" command in the opened position context menu or by double-click with the left mouse button in the "Stop Loss" or "Take Profit" fields in the opened position line in the "Terminal" window.

If the Stop Loss or Take Profit level is too close to the current price, the "Modify" button will be locked. It is necessary to shift levels from the current price and re-request for position modifying.

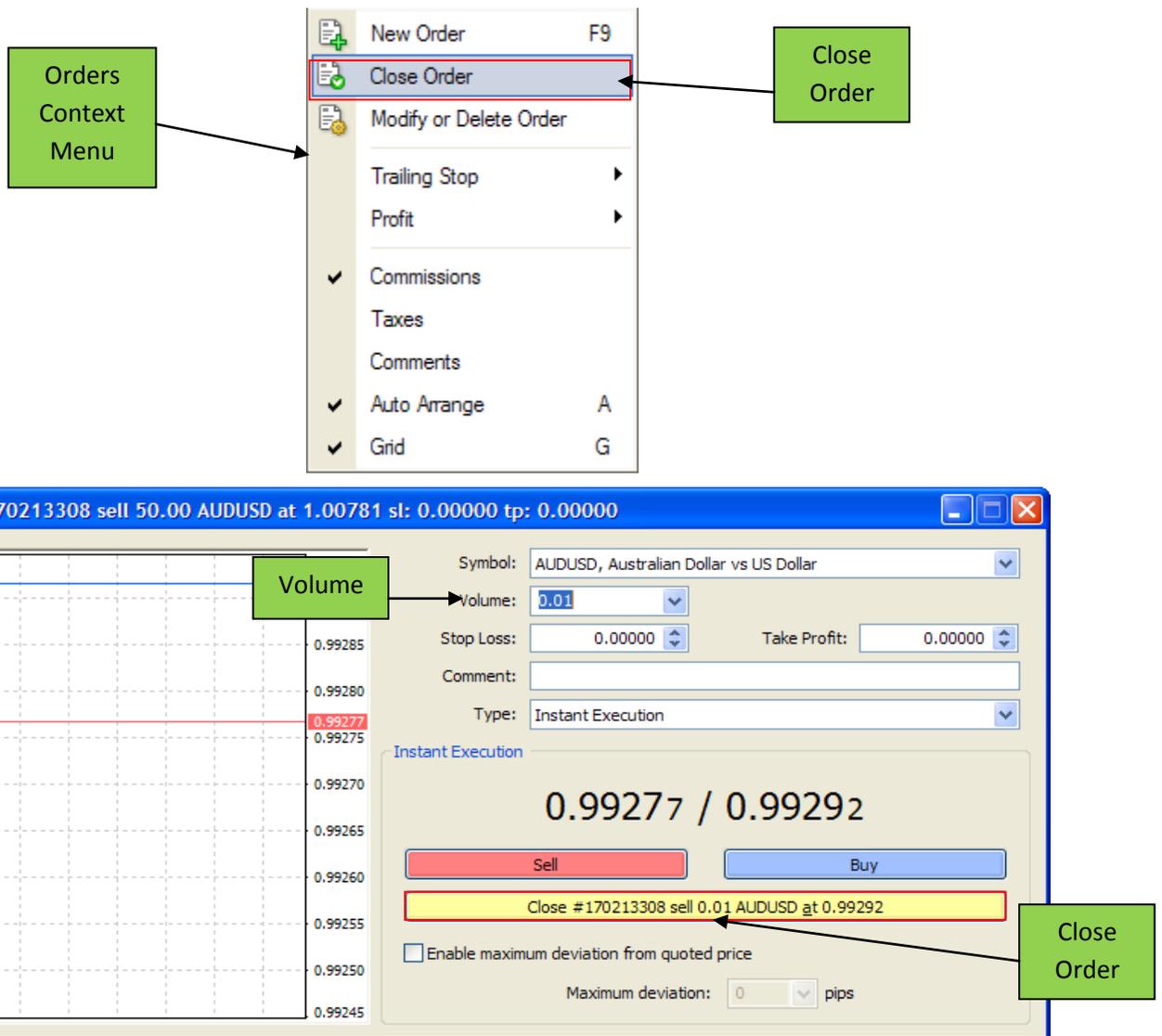


Position Closing

Open positions can be closed in a number of ways depending on the number of open positions, closing of a single position, closing of a position by an opposite position and multiple close by several positions are the methods available on MT4. Please note: if stop loss or Profit take limits attached to open position(s) are reached then positions will be automatically closed.

Single Position Closing

Users who desire to close an open position can do so by selecting "close order" in context menu of the "Terminal — Trade" window or by double-clicking on position they wish to close. The order window will appear with a button giving the user the option to close the position or parts of it (volume). If the position is executed on request the user will have to wait to be quoted before they can close the position.



MT4 User Guide

Close by Opposite Positions

An opposite position on the same financial instrument is considered as a counter position to the given one.

Counter positions can be closed using the "Close By" option within the "type" field within the order field. To start the process the user must call up the order window by selecting "close order" in context menu of the "Terminal — Trade" window or by double-clicking on position they wish to close the order window. The user then needs to check a counter position in the list of opposite positions and select "Close".

If counter positions have different amounts of volume, the two positions will net and any outstanding volume will remain open. The volume (the amount of lots) of this position will be the difference between volumes of positions just closed. The direction (short or long) and the open price of this new position will be equal to the greater (in volume) of positions closed.

Order #170213308 sell 50.00 AUDUSD at 1.00781 sl: 0.00000 tp: 0.00000

Symbol: AUDUSD, Australian Dollar vs US Dollar
Volume: 50.00
Stop Loss: 0.00000 Take Profit: 0.00000
Comment:
Type: Close by

Close by

Close #170213308 by #170227137

Order	Size	Price	S / L	T / P	Price
170225992	1.00	0.99324	0.00000	0.00000	0.99324
170227137	2.00	0.99341	0.00000	0.00000	0.99324

Type: Close by

Close Order

Counter Positions

MT4 User Guide

Multiple Close by Opposite Positions

Multiple Counter positions can be closed using the "Multiple Close By" option within the "type" field within the order field. To start the process the user must call up the order window by selecting "close order" in context menu of the "Terminal — Trade" window or by double-clicking on position they wish to close the order window. The user does not need to check a counter position in the list of opposite positions, as the "Multiple close by" function will close all counter positions once Multiple Close By is selected.

If counter positions have different amounts of volume, the positions will net and any outstanding volume will remain open. The volume (the amount of lots) of this position will be the difference between volumes of positions just closed. The direction (short or long) and the open price of this new position will be equal to the greater (in volume) of positions closed.

Order #170228432 sell 41.00 AUDUSD at 1.00781 sl: 0.00000 tp: 0.00000

Symbol: AUDUSD, Australian Dollar vs US Dollar
Volume: 41.00
Stop Loss: 0.00000 Take Profit: 0.00000
Comment:
Type: Multiple Close By

Multiple Close By

Multiple Close By for AUDUSD						
Order	Type	Size	Price	S / L	T / P	Price
170228024	sell	2.00	0.99338	0.00000	0.00000	0.99358
170228432	sell	41.00	1.00781	0.00000	0.00000	0.99358
170231885	buy	4.00	0.99358	0.00000	0.00000	0.99342
170231902	buy	4.00	0.99357	0.00000	0.00000	0.99342

Counter Positions

Type: Multiple Close by

Close Order

Placing of Pending Orders

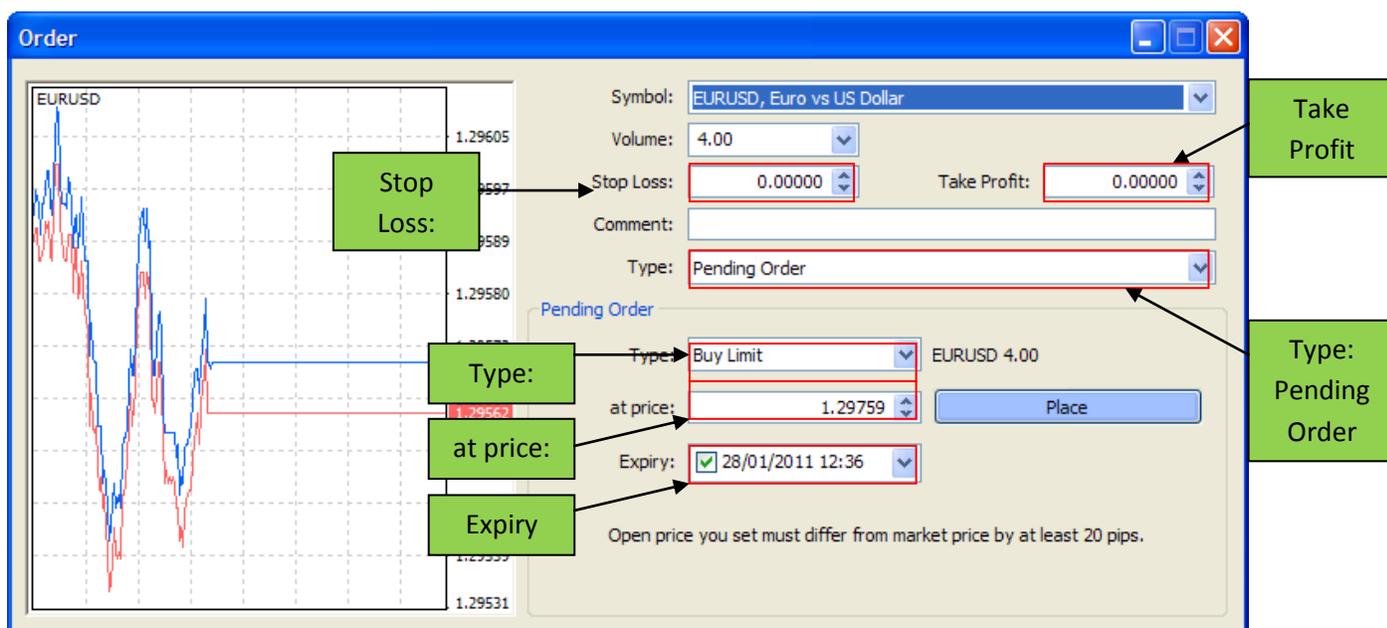
To place a pending order, the user has to open the "Order" window. This can be done by via the "Tools — New Order" menu command, the  button of the "Standard" toolbar, or by pressing of F9, by the "New Order" command in the "Market Watch" and within the "Terminal — Trade" window context menus, as well as by double-clicking on the symbol name in the "Market Watch" window. "Pending Order" must be selected in the "Type" field of this window.

The user must select the symbol, volume and the values of stop loss and take profit. The user also has to specify the following parameters:

Type: Select a type of pending order: Buy Limit, Buy Stop, Sell Limit, or Sell Stop;

At price: Set the price level at which the order must trigger;

Expiry: Set the expiry time of the order. If the order has not triggered by this time, it will be deleted automatically.

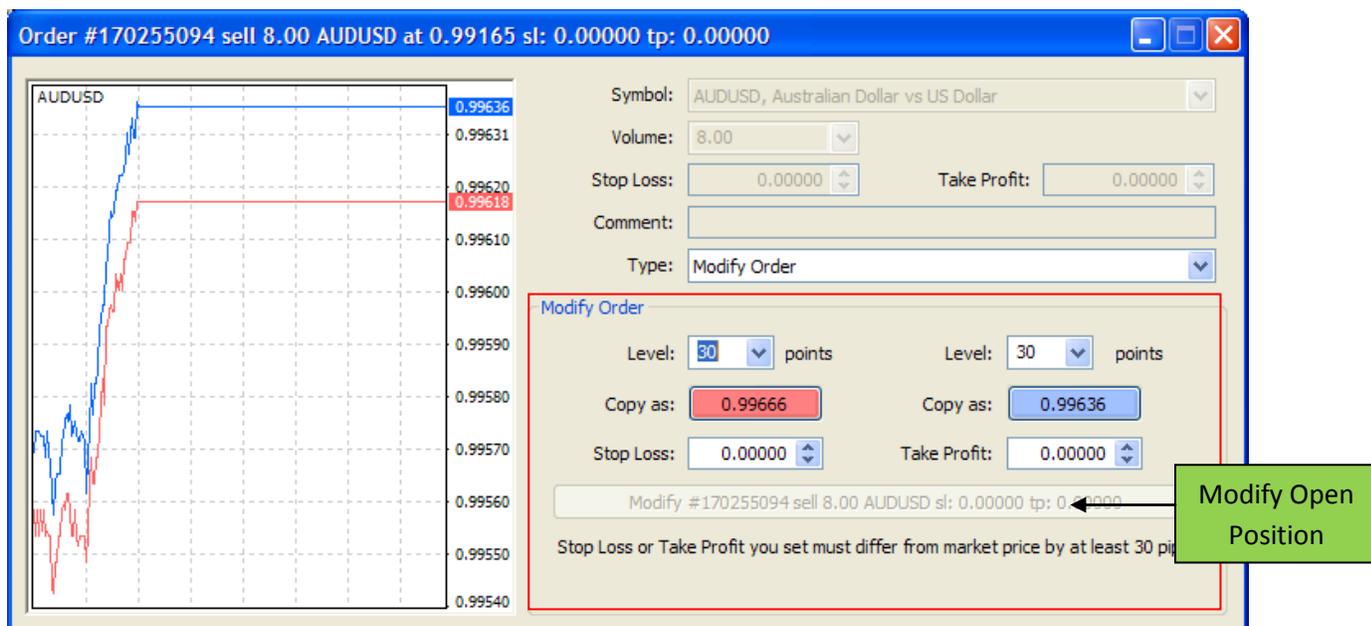
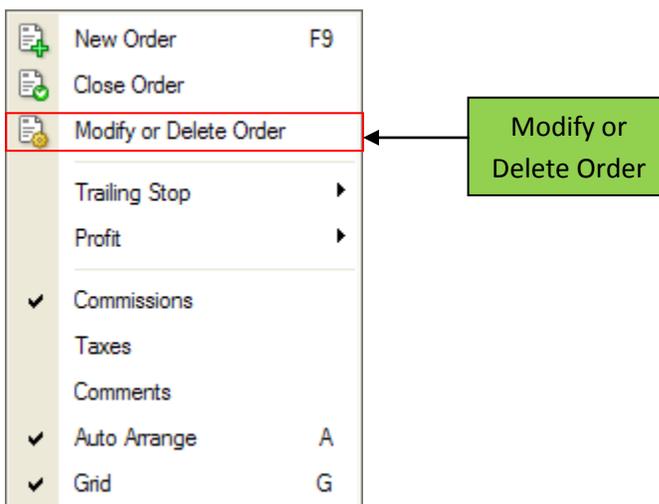


The user must select the "Place" button to submit the order.

Modifying Pending Orders

Modifying/Deleting an Order

Orders can be modified or deleted via the “Terminal — Trade” window context menu. The user must select the Modify or Delete Order option. Users will only be able to delete pending orders that have not been triggered. Users can modify spot losses and profit takes orders that have not been triggered for both open positions and pending orders.



Order #170240630 buy limit 4.00 EURUSD at 1.28000 sl: 1.27000 tp: 1.31000

EURUSD

Symbol: EURUSD, Euro vs US Dollar
Volume: 4.00
Stop Loss: 1.27000 Take Profit: 1.31000
Comment:
Type: Modify Order

Modify Order
Price: 1.28000
Stop Loss: 1.27000 Take Profit: 1.31000
Expiry: 28/01/2011 12:36

Modify Delete

Open price you set must differ from market price by at least 20 pips.

Modify/Delete Pending order

Users can check all changes made to order by referring to the Account history tab within the Terminal window.

Auto Trading

Through MT4, it is possible to develop and use mechanical trading systems (MTS, experts, advisors). The development environment allows creating, debugging, and testing expert advisors. Experts can not only recommend trading signals, but also undertake the complete control over online trading activities.

MetaQuotes Language 4, MetaEditor and strategy testing tools are built in the terminal. With these tools the user can create the following:

Expert Advisors: Mechanical trading systems that allow complete automation of analytical and trading activities;

Custom Indicators: Independently written technical indicators intended for analyzing of price changes;

Scripts: Programs to be executed only once, on request.

MetaQuotes Language 4

MetaQuotes Language 4 (MQL 4) is the language used for the programming of trade strategies built in the client terminal. It allows writing custom expert advisors that automate trade processes and ideally suit for implementation of traders' own strategies. Users own custom indicators, scripts and DLL's can be created in MQL 4.

The syntax of MQL 4 is quite similar the programming language C. A large amount of functions necessary to analyze quotes, manage positions, call technical indicators, and others, are included in MQL 4. The MetaEditor, an editor for expert advisors, is used for writing the source code of programs. The MetaQuotes Language Dictionary that contains descriptions of all language constructions and functions is built in the editor.

Programs written in MQL 4 are different in tasks and properties:

- Expert Advisors is a mechanical trading system (MTS) to be run tick by tick (in price terms). It can work in alert mode and also perform trade operations independently. MT4 allows to test trading strategies on historical data in order to detect the expert features under different market conditions;
- Custom Indicator is a technical indicator written individually. Custom indicators are used only for analyzing of price changes on charts;
- Script is a program that is intended for a single execution of some actions. Unlike experts, scripts are launched on command, not tick by tick.

MetaEditor

MetaEditor is a component of the client terminal. It is intended for creation, editing, and compilation of program source codes written in MetaQuotes Language 4 (MQL4). It can be used in developing of experts, custom indicators, scripts and DLL's.

Expert Advisors Wizard is built in the editor to assist in creation of new MQL4 programs. The new file will be saved in the corresponding folder of the client terminal automatically. Templates can be used in creation of an MQL4 program. The supplemental information can be found in MQL4 Dictionary. The full description of the language with examples of how to use it is given there. After the program has been written, the user has to compile it in MetaEditor. As a result of successful compiling, the executable program code will be created that can be launched or tested in the terminal.

A detailed description of MetaEditor can be found in its Help Files.

MT4 User Guide

Expert Advisors

Expert Advisors (experts) are programs in the terminal that have been developed in MetaQuotes Language 4 (MQL 4) and used for automation of analytical and trading processes. They perform prompt technical analysis of price data and manage trading activities on the basis of signals received. Systems can be created to manage all trading activities, an expert can perform analytical and trading operations for any symbols or periods independent on whether the corresponding chart was opened or not.

The stages of creation of an expert are as follows:

Creation of an Expert:

To create and compile an expert, one has to use the built-in "MetaEditor". It is a component of the client terminal and represents the development environment of MQL4 programs.

Expert Setup:

Before using of experts, the user has to set up them first. Working parameters common for all experts are set in the client terminal settings. Each expert can have its own settings.

Launch of an Expert

To launch an expert, the user has to impose it into the chart. As soon as a tick is registered, the expert will start executing.

Expert Shutdown

An expert advisor is shut down after it has been removed from the chart.

MT4 User Guide

Creation of an Expert

To create experts, the user has to use MetaQuotes Language 4 (MQL 4) along with MetaEditor. To launch the expert editing program, the user has to select the "Create" command in the "Navigator — Expert Advisors" window context menu, or the "Tools — MetaQuotes Language Editor" menu command, the user can also press F4 or the  button in the "Standard" toolbar. Once selected, the Expert Creation Wizard will be opened automatically and will allow the user to immediately start working on a MQL4 program. The user has to flag the "Expert Advisor" as a type of object to be created and fill out the following fields:

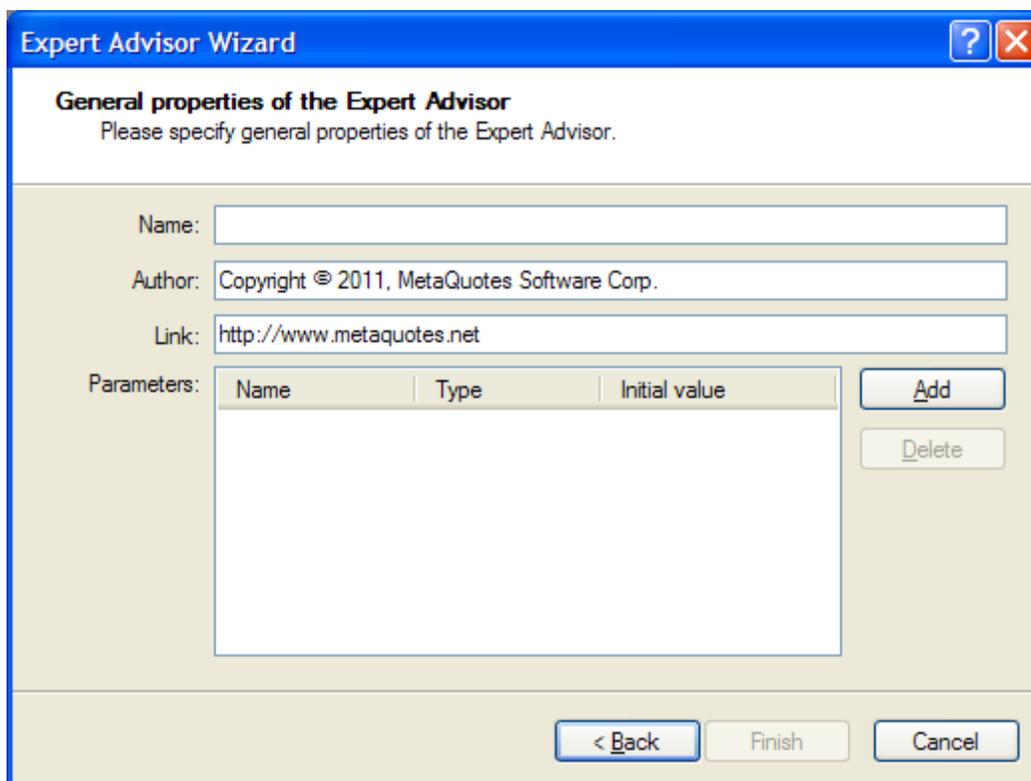
Name: expert name;

Developer: the developer's name;

Link: link to the developer's site;

Inputs: the list of expert inputs. To add a new parameter, one has to press the "Add" button or the "Delete" button to delete a parameter.





The new expert window with the defined inputs will open in editor. The source file (*.MQ4) of the expert will be saved in the /EXPERTS folder of the client terminal automatically. At this moment, the user can start to write the expert code.

After the expert development has been completed, it must be compiled. To do so, the user has to execute the "File — Compile" command in the expert editor, or press F5 or the button of the toolbar. As a result of successful compilation an executable program file with *.EX4 extension will be created and saved in the /EXPERTS folder automatically. The list of compiled experts can be viewed in the "Navigator — Expert Advisors" window in the client terminal. If the expert has not been compiled successfully, its icon will be gray. This means that this expert cannot be used.

Editing of Experts

To start editing an existing expert from the terminal, the user has to execute the "Modify" command in the "Navigator — Expert Advisors" window context menu. Here the expert editor will open and the source code of the expert will be listed. After the expert source code has been modified, the user has to recompile it to save any changes.

MT4 User Guide

Expert Setup

Working parameters common for all experts are defined in the client terminal settings window. This window can be opened by the "Tools — Options" menu command or by selecting Ctrl+O. To set up expert parameters, the user has to select the "Expert Advisors" tab. The following settings are available within:

Enable Expert Advisors: This option allows enabling or disabling the use of experts. If it is disabled, the expert will not respond to any new incoming ticks. The smiley faces next to the expert names in the upper right corners of charts will be replaced with daggers. To enable experts, the user has to flag this option and press "OK". The expert will be triggered and start to function once a new tick filters through to the terminal, and in doing so the daggers in the upper right corners will be replaced with smiley faces again.

- The expert will start functioning when a new tick filters through to the terminal, and it often completes its work before the next incoming tick. Disabling of experts does not interrupt working of those that are active already;
- This option covers only expert advisors and does not allow disabling custom indicators and scripts automatically.

Disable experts when the account has been changed: This option represents a safety tool that disables experts when the account has been changed. It can be useful, for example, when the user switches from a demo account to a live account. To enable it this function the user has to flag the box and select ok.

Disable experts when the profile has been changed: A large amount of information about the current settings of all charts of the workspace is saved in profiles. Particularly, information about the attached experts is saved in profiles. Experts included into a profile will start working when a new tick incomes. Having enabled this option, one can disable launching of experts when the profile has been changed.

Allow live trading: Experts can work automatically, without trader's participation. They can analyze price changes and trade. This option is intended for limiting of trading functions of experts. These limitations can be useful for testing of analytical capacities of an expert in the real-time mode (not to be mixed up with testing of an expert on historical data).

Ask manual confirmation: This option will only be enabled if experts are allowed to trade. If this option is enabled and the expert tries to trade, one will be able to confirm the trade or interrupt it manually. In other words, trading activities of experts can be managed through this manual confirmation option. This can be useful for testing of trading functions of an expert in the real-time mode (not to be mixed up with testing of an expert on history data).

Allow DLL imports: Experts can use DLLs to enlarge their functionalities. If this option is enabled, the libraries can be used without any limitations. It is recommended not to allow DLL imports when working with unknown experts.

Confirm DLL function calls: This option will only be enabled if DLL imports are allowed. It allows to control over execution of each called function manually. If it is disabled, the imports from external libraries will not be controlled. This option is recommended to be enabled when working with unknown experts.

MT4 User Guide

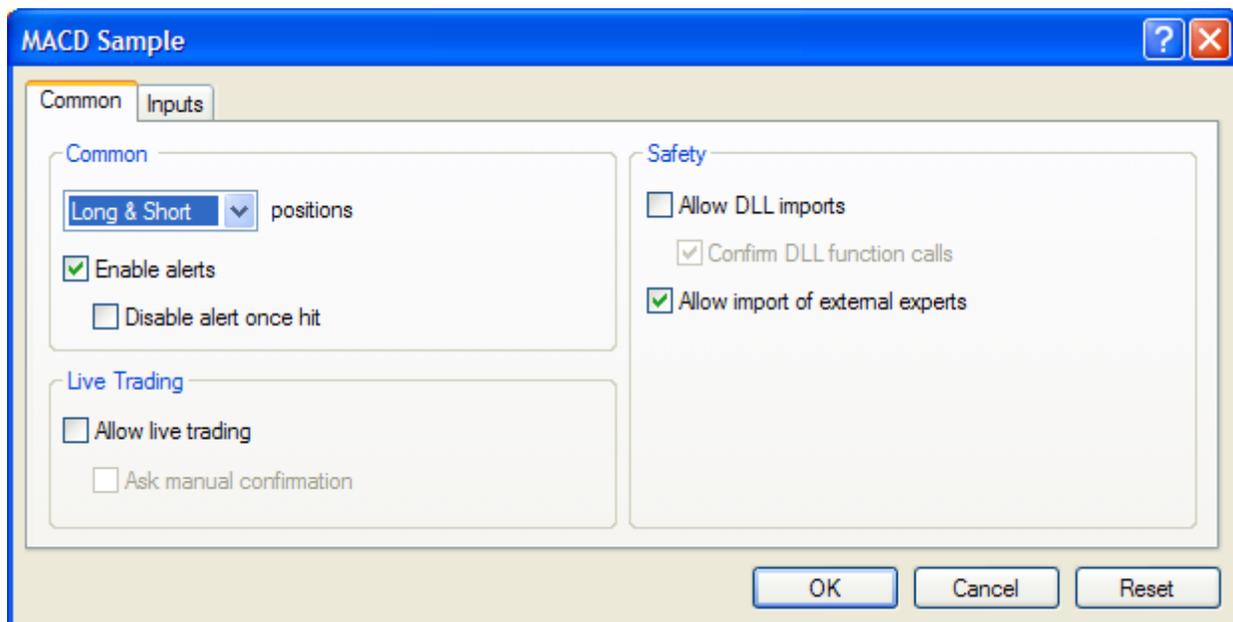
Allow external experts imports: If there is a need to export functions from other experts or MQL4 libraries during the expert functioning, the user has to enable this option. If it is disabled, no expert already launched will be able to call functions from other MQL4 programs. This option is recommended to be disabled when working with unknown experts.

Launch of an Expert Advisor

After general parameters have been set up, experts can be launched. The "Attach to a chart" command in the "Navigator — Expert Advisors" window context menu or double clicking with the left mouse button on the selected expert in the same window allows to impose it into the active chart. "Drag and Drop" technique allows imposing the expert into any chart. This will lead the window of the expert special settings will appear. In the following options are available within an expert advisor depending on how it is coded:

Positions: Select the direction of position opening:

- Long & Short — in both directions;
- Only Long — only for buying;
- Only Short — only for selling.



Enable alerts: Enable/disable the expert to alert;

Disable alert once hit: Disable alerts after the first alert has been given;

Allow live trading: Enable/disable live trading;

Ask manual confirmation: Request for manual confirmation of position opening when trading;

Allow DLL imports: Enable/disable imports of functions from DLL files;

Confirm DLL function calls: Request for confirmations at each function call from DLL files;

Allow import of external experts: Enable/disable calling of functions from external experts.

MT4 User Guide

External variables of the expert can be changed in the "Inputs" tab. These are variables of external class. To save an input, the user has to double-click with the left mouse button on its value and write the new value. The user can change the value of each variable or download the set of inputs already saved (the "Load" button). Users can save the current set of external variables using the button of the same name.

The "Reset" button returns all default settings. Parameters defined in the terminal settings are given in the "Common" tab. And parameters defined in the program source code are set as inputs. To attach the expert with the new parameters to a chart, one has to select the "OK" button.

Please note: Only attached experts can be set up individually. While executing experts, the properties window cannot be opened. This can be done only during intervals between calls of the start () function. The expert will not be launched until its properties window is closed. If the expert inputs were changed, the expert will be re-initialized with its new inputs by selecting "OK".

After an expert has been set up, it will be initialized, as soon as new tick data filters through to the terminal it will execute. Expert is attached if its name and a smiley can be seen in the upper right corner of the chart. If live trading is disabled in the expert settings, a dagger will appear instead of the smiley. A dagger (X) means that all experts are disabled.

Please note: Only One expert at a time can be added to a chart.

Expert Shutdown

To shut down an expert, the user has to remove it from the chart. Expert must have been de-initialized before it is shut down. To remove an expert from the chart, the user has to execute the chart context menu "Expert Advisors — Delete" command or attach another expert to the same chart.

Please note:

- At client terminal shutdown, all experts are shut down;
- At chart closing, the expert attached to this chart will be shut down;
- At imposing of another expert, the previous one will be removed after confirmation;
- Deletion of the expert from the "Navigator" window does not shut down the expert of the same name imposed in the chart;
- Disabling of experts in the client terminal settings does not provide complete disabling of experts. This option stops launching of the start () function of each expert.

Strategy Testing

The terminal allows testing of Experts before using them. The efficiency of the expert is tested using historical data. Testing allows starting automated trading with the full knowledge about expert conduct under different market conditions. The special "Tester" window was built into the terminal for this purpose. Using this window, users can also optimize the expert.

Setup of Testing Parameters

Before testing expert advisors, the user has to set up test parameters.

- Select an expert and set up its inputs
- Select a symbol and its period
- Select one of three modeling methods
- Set the testing time range (optional)

To test and optimize experts, a special "Tester" window is used in the terminal. All above parameters are set in the "Settings" tab of this window.

An Expert Advisor and Its Parameters

The user has to select an expert to be tested in the "Tester — Expert Advisor" field. The user cannot select any expert file in this field. Only those experts that are available in the client terminal can be selected here. To be selected, they must be compiled and located in the /EXPERTS folder.

After an expert has been selected, the user has to perform additional setting of testing parameters and inputs. This can be done by pressing of the "Expert properties" button. A new window with three tabs will appear then:

Testing: General testing parameters are set in this tab. These are volume and currency of the initial deposit to be given in the corresponding fields. It is this deposit that will be operated by the expert during testing. Types of positions to be opened at testing are defined here, as well as: Only Long — open only long positions; Only Short — open only short positions; Long and Short — open both long and short positions. Regardless of the expert algorithm, it will open positions only in the defined directions. The user can include an optimization genetic algorithm and select a parameter to be optimized (maximization by the balance value, the profit factor, expected payoff, or minimization by the maximal drawdown value or drawdown percent).

Inputs: The list of all inputs is given here as a table. Inputs are variables that influence the expert operation and can be changed directly from the client terminal. There is no need to change the expert code in order to change these parameters. The amount of input variables can change depending on the expert. At testing, the expert inputs are defined in the "Value" field. Data written in the fields of "Start", "Step", and "Stop" do not influence expert testing and are necessary just for optimization of its parameters. How to work with these parameters is described in the "Optimization Setup" section.

Optimization: Settings in this tab allow limiting testing passes at optimization. Changing of parameters in this tab does not influence single testing passes of the expert.

Symbol and Its Period

In order to start testing the user must select a symbol and period. These are the variables the expert algorithm will be tested on. Users can select historical data already stored in MT4 or external *.FXT files stored in the /TESTER directory. If data does not exist for the symbol or period requested it will be automatically downloaded to the terminal if available.

Methods of Modeling

Historical data is saved in the terminal only as bars and represents records appearing as TOHLCV (HST format). This data can be used for modeling of price changes at testing of experts. In some cases, such information is not enough for testing. For example, for the daily timeframe, price changes within a bar can result in triggering of the expert. At the same time, no triggering can occur at testing. In other words, testing of an expert based on only bars can be inaccurate and give a false idea about the expert efficiency.

The trading terminal allows testing experts by various methods of historical data modeling. Using historical data from smaller periods makes it possible to see price fluctuations within bars, i.e., price changes will be emulated more precisely. For example, when an expert is tested on one-hour data, price changes for a bar can be modeled on one-minute data. Thus, modeling brings historical data near the real price fluctuations and makes expert testing more authentic.

One of three methods of historical data modeling can be chosen for testing:

Open prices only (fastest method to analyze the bar just completed): Some automated trading systems do not depend on properties of modeling within a bar, they trade on completed bars. The bar is completed if the next one has appeared. These are such experts for that this modeling method was developed. In this mode, the bar opening is modeled first (Open = High = Low = Close, Volume=1) what allows the expert to identify the completion of the preceding bar precisely. It is this incipient bar that is used to start testing of the expert. At the next step, the fully completed current bar will be given, but no testing is performed on it.

Control points (the nearest less timeframe is used): The control points modeling method is intended for crude estimate of expert's efficiency that trade within the bar. The historical data of the nearest less timeframe must be available to apply this method. In some cases, the available data of the less timeframe do not completely cover the time range of the timeframe under test. If the data of the less timeframe is missing, the bar evolution is generated on the basis of predefined wave templates as it was in the preceding, third version of MT3 Client Terminal.

As soon as historical data of the less timeframe appear, these new data will be interpolated. However, the really existing OHLC prices appear as control points. In the most cases, the results of testing experts by method of control points can also be considered as estimation

MT4 User Guide

Every tick (based on all available least timeframes): This is the most accurate method of modeling prices within a bar. Unlike the "control points" methods, this method generates not only data of the nearest less timeframe, but also those of all available nearest timeframes. If there is data for more than one period for the same timeframe at the same time, data with the smallest timeframe will be used for modeling. Similar to the previous method, control points are generated on the basis of OHLC data of the least available timeframe. To generate price movements between control points, interpolation based on predefined templates will also be used, so one-minute data is highly desirable to be available that would cover the entire testing range. It is possible that several similar ticks are modeled one after another. In this case, the doubled quotes will be filtered out, and the volume of the last of them will be fixed. The user has to consider the possible large amount of tick data modeled. This can influence the consumed resources of the operation system and testing speed.

Please note:

- It is not recommended to launch testing on every tick if there are no available timeframes that completely cover the period under test, if the user proceeds, the testing is likely to be inaccurate;
- Modeling on control points is used at optimization of experts, and all ticks modeling is for a close testing.

The modeling quality can be checked in the "Report" window. The "Modeling quality" field and a colored band are intended for this. The band is a scheme of the modeling process. It can be of three colors:

Gray: This part of available data did not participate in testing. This appears if the date range was specified for testing;

Red: Modeling was not performed in this space because of missing data of a less timeframe. Only data of the timeframe selected for testing were used;

Green: Modeling was performed in this space. And the brighter is the color, the higher the modeling quality was.

After modeling parameters and date range have been changed, the data file must be created. To do so, the user has to flag the "Recalculate" option. If the above setting were not changed, it is not necessary to recalculate. In this case, it is recommended to disable the above option in order to reduce the testing time.

Time Range

The range of dates allows testing within specific time ranges. This can be useful if there is a need to test a certain part of historic data. Date range can be used not only for expert testing, but also for modeling of the testing succession of bars (file of data modeled to be used for testing). There is often no need to model data on the entire history of a security, especially for every-tick modeling where the amount of unused data can be very large. That is why, if the data range was allowed to be set at the initial modeling of testing succession, bars that are beyond this range will not be modeled, but just transcribed into the output succession. The data will not be excluded from the succession in order the correct calculation of indicators on the entire received history to be possible. It must be noted that the first 100 bars will not be modeled either. This limitation does not depend on the date range defined.

MT4 User Guide

To enable date range limitation, the user has to flag "Use date" and specify the necessary values in the fields of "From" and "To". After all settings have been made, the user can select the "Start" button and start testing. After testing has started, the approximate time of completing of this process can be viewed in the lower part of the window.

Testing Visualization

If the "Visualization" option is flagged, after the "Start" button has been clicked, the chart will be opened automatically on which the modeled tick sequence will be played. The playback speed can be regulated. The playback can be suspended by clicking the "||" button. The repeated click on this button resumes the income of the modeled ticks. Pressing of F12 causes immediate appearance of the next tick even in suspension mode. Visualization can be skipped up to a certain date. After the desired date is set and the "Skip to" button is clicked, visualizing will stop and then resumed after the tester reaches the defined date.

Testing Results

After testing has been completed, one can see the results within the tabs "Results", "Graph", "Report", and "Journal".

#	Time	Type	Order	Size	Price	S/L	T/P	Profit	Balance
1	2008.06.02 16:00	sell	1	1.00	1.55150	2.00000	1.00000		
2	2008.06.02 20:00	close	1	1.00	1.55490	2.00000	1.00000	-340.00	49660.00
3	2008.06.03 04:00	sell	2	1.00	1.55210	2.00000	1.00000		
4	2008.06.03 08:00	close	2	1.00	1.55550	2.00000	1.00000	-340.00	49320.00
5	2008.06.03 16:00	sell	3	0.30	1.54500	2.00000	1.00000		
6	2008.06.05 16:00	close	3	0.30	1.55470	2.00000	1.00000	-293.04	49026.96
7	2008.06.10 04:00	sell	4	1.00	1.56030	2.00000	1.00000		
8	2008.06.16 16:00	close	4	1.00	1.54940	2.00000	1.00000	107.98	49134.94
9	2008.06.19 12:00	sell	5	1.00	1.54850	2.00000	1.00000		
10	2008.06.19 20:00	close	5	1.00	1.55090	2.00000	1.00000	-240.00	48894.94
11	2008.06.23 12:00	sell	6	1.00	1.55230	2.00000	1.00000		
12	2008.06.24 16:00	close	6	1.00	1.55840	2.00000	1.00000	-611.70	48283.24

Results

Information about all trade operations performed is given in this tab as a table:

#: The trade operation sequence number;

Time: Time at which the operation was performed;

Type: Type of the operation (sell, buy, s/l, t/p, modify, close at stop, etc.);

Order: Ticket number of trade position or pending order (not to be mixed up with the trade operation Sequence number described above);

Lots: Amount of lots traded;

Price: Symbol price during operation;

S/L: The Stop Loss order value. No entries in this field mean that the order was not placed;

T/P: The Take Profit order value. No entries in this field mean that the order was not placed;

Profit: Profit/loss. The profit/loss value is entered only at closing of positions;

Balance: Balance value. The balance value is recorded only at closing of positions.

Results data can be saved via the Context menu.

Graph

The graph representing the account balance (the blue line is "Balance") and general account status considering open positions (the green line is "Lots") is drawn in the "Graph" tab automatically. If only balance line is displayed in the graph, it means that the lines of "Balance" and "Lots" coincide during the entire testing period. Graph allows changes in trading results during testing do be visualized. If lot sizes were changed during testing, the chart of lot size changes will be shown in the bottom of the graph. A double click with the left mouse button on any point in the graph will switch to the "Results" button, the corresponding line being selected. Using the "Copy" context menu command or keys Ctrl+C, the user can copy the graph to the clipboard to be used in other applications. A graph can also be saved in the hard disk as a GIF file. To do so, one has to execute the "Save as Picture" context menu command or press the acceleration keys Ctrl+S. The commands of "Set Date "From"" and "Set Date "To"" allow to set the time span for testing. At that, the selected operations dates will be written in the fields of "Use date

MT4 User Guide

from:" and "Use date to:" in the testing settings. This can be useful if there is a need to test an expert closely or to optimize its parameters within this range of dates.

Report

The summarized results of experts testing and some key indices are represented in the "Report" tab. Such reports allow comparing different experts to each other in a quick mode. The following data are published in reports:

Bars in test: The amount of the modeled history data in bars;

Ticks modeled: The amount of the modeled ticks;

Modeling quality: (See modeling quality above)

Initial deposit: The volume of the initial deposit;

Total net profit: Financial result of all trades. This index represents a difference between the "Gross profit" and "Gross loss";

Gross profit: The sum of all profitable trades;

Gross loss: The sum of all unprofitable trades;

Profit factor: the ratio between gross profit and gross loss in percent.

Expected payoff: This statistically calculated index represents the average profit/loss factor of a trade. It can also be considered for representing the expected profit/loss factor of the next trade;

Absolute drawdown: The lowest amount away from the initial deposit value during the testing period;

Maximal drawdown (%): Maximum difference in percent terms between highest point above initial deposit and lowest point below initial deposit;

Total trades: The total amount of trades;

Short positions (won %): The amount of short positions;

Long positions (won %): The amount of long positions;

Profit trades (% of total): The amount of profitable trade positions and their percentage in the total trades;

Loss trades (% of total): The amount of profitable trade positions and their percentage in the total trades;

Largest profit trade: The largest profit among all profitable positions;

Largest loss trade: The largest loss among all unprofitable positions;

Average profit trade: Average profit value for a trade (the sum of profits divided by the amount of profitable trades);

Average loss trade: Average loss value for a trade (the sum of losses divided by the amount of unprofitable trades);

Maximum consecutive wins (profit in money): The longest series of profitable trade positions and the sum of their wins;

Maximum consecutive losses (loss in money): The longest series of unprofitable trade positions and the sum of their losses;

MT4 User Guide

Maximal consecutive profit (count of wins): The maximum profit of a series of profitable trades and the amount of profitable trades corresponding with it;

Maximal consecutive loss (count of losses): The maximum loss of a series of unprofitable trades and the amount of unprofitable trades corresponding with it;

Average consecutive wins: The average amount of profitable positions in consecutive profitable series;

Average consecutive losses: The average amount of unprofitable positions in consecutive unprofitable series.

Bars in test	32772	Ticks modelled	633173	Modelling quality	n/a
Mismatched charts errors	72				
Initial deposit	50000.00				
Total net profit	-1100.18	Gross profit	4107.11	Gross loss	-5207.29
Profit factor	0.79	Expected payoff	-0.97		
Absolute drawdown	1514.59	Maximal drawdown	1612.74 (3.22%)	Relative drawdown	3.22% (1612.74)
Total trades	1140	Short positions (won %)	553 (91.68%)	Long positions (won %)	587 (95.06%)
		Profit trades (% of total)	1065 (93.42%)	Loss trades (% of total)	75 (6.58%)
		Largest profit trade	5.00	loss trade	-196.02
		Average profit trade	3.86	loss trade	-69.43
		Maximum consecutive wins (profit in money)	63 (230.81)	consecutive losses (loss in money)	2 (-225.12)
		Maximal consecutive profit (count of wins)	230.81 (63)	consecutive loss (count of losses)	-225.12 (2)
		Average consecutive wins	15	consecutive losses	1

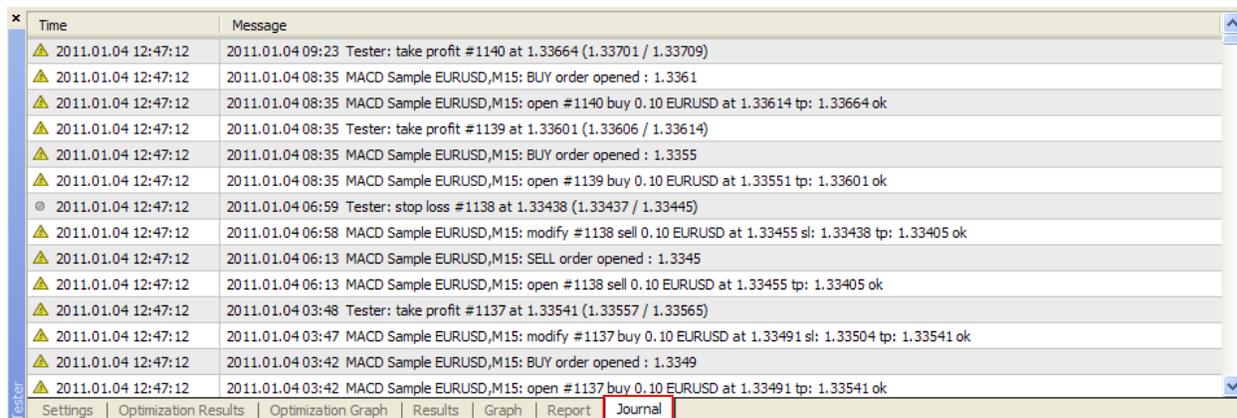
Report

Users can save the the report through the context menu. The file is saved as a HTM file that can be opened in a browser.

MT4 User Guide

Journal

All messages in regards to expert testing are listed in the “Journal tab” set in the tester window. Users can copy the logs using the context menu; alternatively logs can be accessed by navigating to the following folder: **MetaTrader - Alpari UK\tester\logs**



Time	Message
2011.01.04 12:47:12	2011.01.04 09:23 Tester: take profit #1140 at 1.33664 (1.33701 / 1.33709)
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: BUY order opened : 1.3361
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: open #1140 buy 0.10 EURUSD at 1.33614 tp: 1.33664 ok
2011.01.04 12:47:12	2011.01.04 08:35 Tester: take profit #1139 at 1.33601 (1.33606 / 1.33614)
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: BUY order opened : 1.3355
2011.01.04 12:47:12	2011.01.04 08:35 MACD Sample EURUSD,M15: open #1139 buy 0.10 EURUSD at 1.33551 tp: 1.33601 ok
2011.01.04 12:47:12	2011.01.04 06:59 Tester: stop loss #1138 at 1.33438 (1.33437 / 1.33445)
2011.01.04 12:47:12	2011.01.04 06:58 MACD Sample EURUSD,M15: modify #1138 sell 0.10 EURUSD at 1.33455 sl: 1.33438 tp: 1.33405 ok
2011.01.04 12:47:12	2011.01.04 06:13 MACD Sample EURUSD,M15: SELL order opened : 1.3345
2011.01.04 12:47:12	2011.01.04 06:13 MACD Sample EURUSD,M15: open #1138 sell 0.10 EURUSD at 1.33455 tp: 1.33405 ok
2011.01.04 12:47:12	2011.01.04 03:48 Tester: take profit #1137 at 1.33541 (1.33557 / 1.33565)
2011.01.04 12:47:12	2011.01.04 03:47 MACD Sample EURUSD,M15: modify #1137 buy 0.10 EURUSD at 1.33491 sl: 1.33504 tp: 1.33541 ok
2011.01.04 12:47:12	2011.01.04 03:42 MACD Sample EURUSD,M15: BUY order opened : 1.3349
2011.01.04 12:47:12	2011.01.04 03:42 MACD Sample EURUSD,M15: open #1137 buy 0.10 EURUSD at 1.33491 tp: 1.33541 ok

Settings | Optimization Results | Optimization Graph | Results | Graph | Report | **Journal**

Journal

SQL

Below is an example of Test MQL code

```
//+-----+
//| |
//+-----+
struct TestHistoryHeader
{
int version; // 404
char copyright[64]; // copyright
char symbol[12];
int period;
int model; // for what modeling type was the ticks sequence generated
int bars; // amount of bars in history
time_t fromdate; // ticks generated from this date
time_t todate; // ticks generating stopped at this date
double modelquality; // modeling quality
//---- general parameters
char currency[12]; // currency base
int spread;
int digits;
double point;
int lot_min; // minimum lot size
int lot_max; // maximum lot size
int lot_step;
int stops_level; // stops level value
int gtc_pendings; // instruction to close pending orders at the end of day
//---- profit calculation parameters
double contract_size; // contract size
double tick_value; // value of one tick
double tick_size; // size of one tick
int profit_mode; // profit calculation mode { PROFIT_CALC_FOREX, PROFIT_CALC_CFD,
PROFIT_CALC_FUTURES }
//---- swap calculation
int swap_enable; // enable swap
int swap_type; // type of swap { SWAP_BY_POINTS, SWAP_BY_DOLLARS, SWAP_BY_INTEREST
}
double swap_long;
double swap_short; // swap overnight value
int swap_rollover3days; // three-days swap rollover
//---- margin calculation
int leverage; // leverage
int free_margin_mode; // free margin calculation mode { MARGIN_DONT_USE,
MARGIN_USE_ALL, MARGIN_USE_PROFIT, MARGIN_USE_LOSS }
int margin_mode; // margin calculation mode {
MARGIN_CALC_FOREX, MARGIN_CALC_CFD, MARGIN_CALC_FUTURES, MARGIN_CALC_CFDINDEX };
int margin_stopout; // margin stopout level
int margin_stopout_mode; // stop out check mode { MARGIN_TYPE_PERCENT,
MARGIN_TYPE_CURRENCY }
double margin_initial; // margin requirements
double margin_maintenance; // margin maintenance requirements
double margin_hedged; // margin requirements for hedged positions
```

MT4 User Guide

```
double margin_divider; // margin divider
char margin_currency[12]; // margin currency
//---- commission calculation
double comm_base; // basic commission
int comm_type; // basic commission type { COMM_TYPE_MONEY, COMM_TYPE_PIPS,
COMM_TYPE_PERCENT }
int comm_lots; // commission per lot or per deal { COMMISSION_PER_LOT,
COMMISSION_PER_DEAL }
//---- for internal use
int from_bar; // fromdate bar number
int to_bar; // todate bar number
int start_period[6]; // number of bar at which the smaller period modeling started
int set_from; // begin date from tester settings
int set_to; // end date from tester settings
//----
int freeze_level; // order's freeze level in points
//----
int reserved[61];
};
```

Array of modelled bars follow:

```
#pragma pack(push,1)
struct TestHistory
{
time_t otm; // bar time
double open; // OHLCV values
double low;
double high;
double close;
double volume;
time_t ctm; // the current time within a bar
int flag; // flag to launch an expert (0 - bar will be modified, but the expert
will not be launched)
};
#pragma pack(pop)
```

Optimization of Experts

Optimization represents successive passes of the same expert advisor with different inputs on the same data. Such parameters can be sorted at which the expert efficiency will be maximized. The Terminal possesses some built-in means that allow automating this process. To optimize an expert, the user must flag “optimize” option in the "Tester" window and press the "Start" button.

Optimization Setup

Optimization represents consecutive passes of the same expert with different inputs on the same data. Such parameters can be taken that make the expert efficiency maximal. The terminal possesses in-built means that allow automating this process. The user has to establish the following in order for optimization:

- Select an expert and its inputs
- Select a symbol and its timeframe
- Select one of three bar modeling methods
- Set up the time span for optimization (optional)

MT4 User Guide

Custom Indicators

Custom indicators are programs independently developed in MetaQuotes Language 4 by the user and functions as a technical indicator. A technical indicator is a mathematical transformation of the symbol price and/or volume in order to forecast future price changes. The use of indicators is to estimate/predict market questions about whether the current trend will remain the same and where it will turn. Indicators are intended for relative simplifying of the complicated process of trading decision making. Algorithms of indicators are also used for development of trading tactics and expert advisors.

Please note: Custom indicators are intended only for analyzing of symbol price changes, but not for trading itself.

Working with custom indicators consists of:

Creation of an Indicator

To create and compile custom indicators, the user has to use the built-in "MetaEditor". It is an element of the client terminal and represents a convenient development environment for MQL4 programs.

Indicator Setup

Before using of custom indicators, one has to set them up first. Working parameters common for all indicators are defined in the window of client terminal settings. Besides, every indicator can have its own settings.

Imposing of an Indicator

Parameters of the indicator are calculated and the indicator itself is drawn when imposed into the chart.

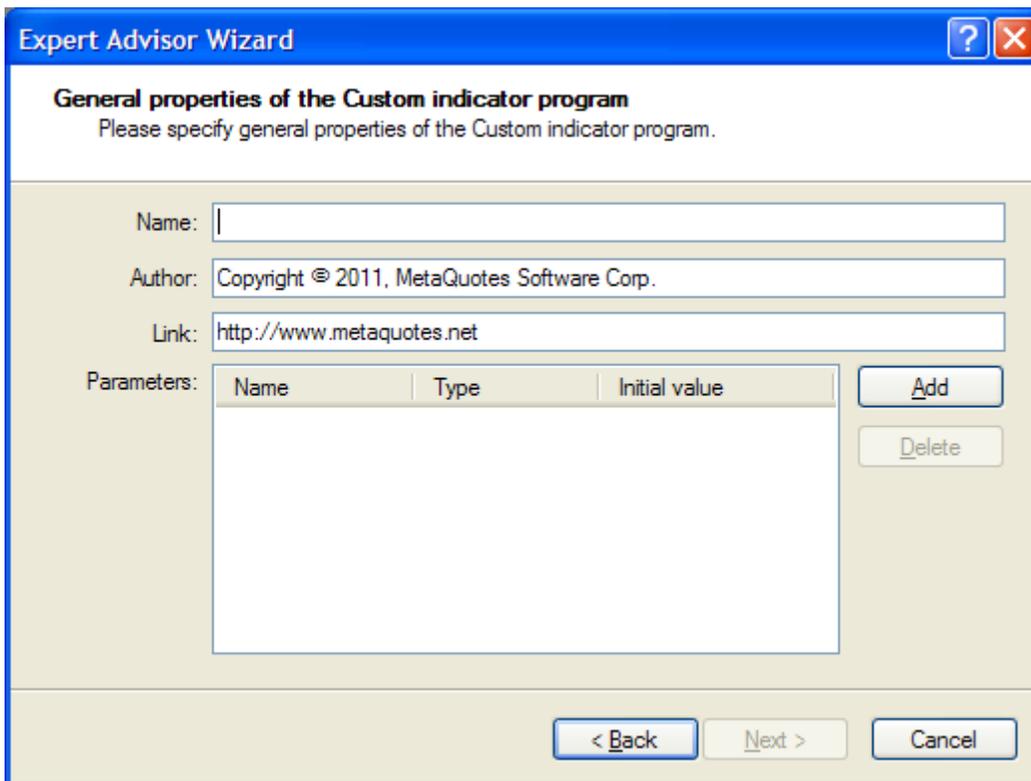
Deletion of an Indicator

If there is no need of an indicator anymore, the indicator can be deleted from the chart.

Creation

To create custom indicators, the user has to use MetaQuotes Language 4 (MQL 4) and MetaEditor. To launch the editor, one has to execute the "Create" command of the "Navigator — Custom Indicators" window context menu, or the "Tools — MetaQuotes Language Editor" menu command, or press F4 or

the  button of the "Standard" toolbar. During creation of a MQL4 program, the Experts Wizard that allows creating new MQL4 programs will open automatically. "Custom Indicator" must be selected in it as the object to be created, and the necessary fields must be filled out:



MT4 User Guide

Name: Indicator name;

Developer: Developer's name;

Link: Link to Developer's web site;

Inputs: the list of indicator inputs. To add a new parameter, the user has to select the "Add" button, and for deletion, one has to press the "Delete".

It is necessary to decide whether the new indicator will be created in a separate sub-window and what range it will have. It is necessary to define the amount and parameters of the indicator arrays. Values of their elements are used to draw lines in the chart. When indicator arrays are defined, the lines of the future indicator are also defined. Once defined, the window of the new indicator with the defined settings will open. A file with the source code (*.MQ4) of the indicator will be placed into the /EXPERTS/INDICATORS folder of the client terminal automatically. From this point onwards, the user can start to write the text of the custom indicator.

After the indicator has been developed, it must be compiled. To do so, the user has to execute the "File — Compile" editor menu command, press F9 or the  button in the toolbar. After the indicator has been successfully compiled, an executable program files with *.EX4 extension will be created to be automatically placed into the /EXPERTS/INDICATORS folder. The list of custom indicators can be viewed in the "Navigator — Custom Indicators" window of the client terminal.

Modifying of Custom Indicators

To start modifying an indicator from the terminal, the user has to execute the "Modify" command in the "Navigator — Custom Indicator" window context menu. The MetaEditor will open where the selected indicator source code has already been downloaded. After this code has been changed, the user will have to recompile it and create a new executable EX4 file.

Custom Indicators Setup

Working parameters common for all custom indicators (and experts) are set up in the client terminal settings. The corresponding window can be opened by the "Tools — Options" menu command or by selecting Ctrl+O. To set up working parameters in indicators, the user has to select the "Expert Advisors" tab. Only two options influence working of custom indicators:

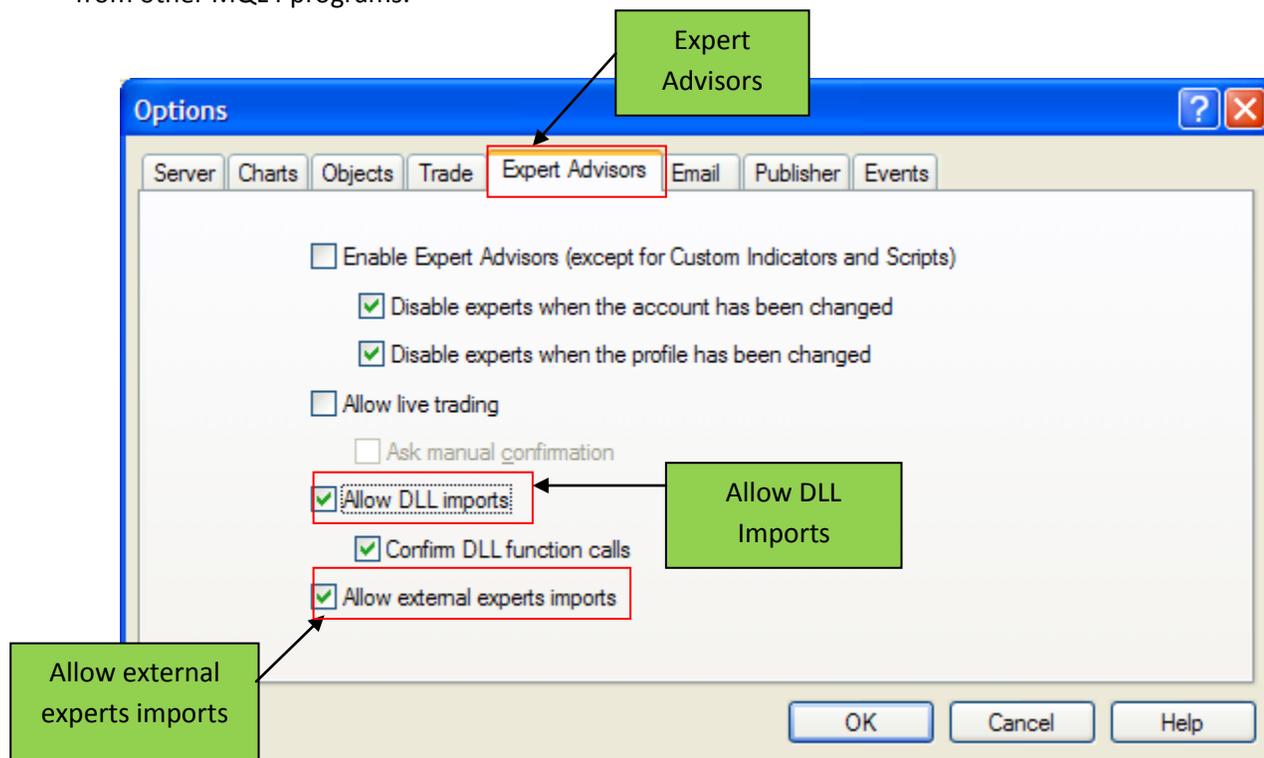
Allow DLL imports

Custom indicators can use DLLs to enlarge their functionalities. If this option is enabled, the libraries can be used without any limitations. Disabling of the option results will mean MT4 will not execute any external DLLs.

MT4 User Guide

Allow external experts imports

If there is a need to export functions from other experts or MQL4 libraries during the indicators work, this option must be enabled. If it is disabled, no launched indicator will be able to request for functions from other MQL4 programs.



How to Attach Custom Indicators to a Chart

After general setup, the user can attach custom indicators to the chart. A custom indicator can be imposed into the active chart by a double click with the left mouse button on it in the "Navigator — Custom Indicators" window or by execution of the context menu command "Attach to a chart". The "Drag and Drop" technique allows imposing the analytical tool into any chart. Once this is done the setup window will appear automatically with the following tabs:

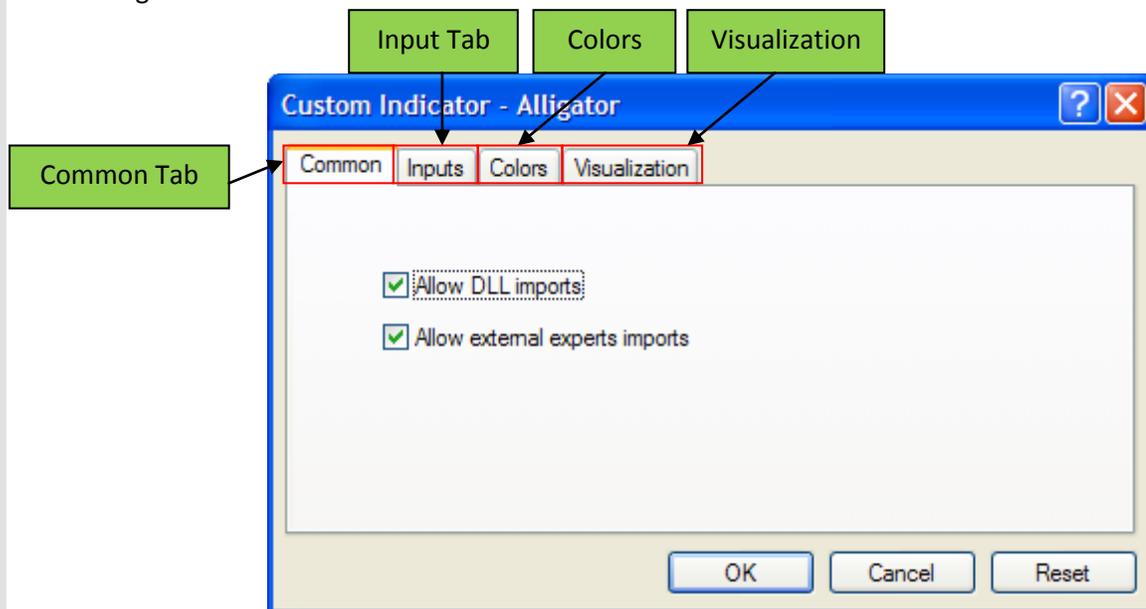
Common: Import from DLLs and MQL4 can be managed in the "Common" tab. If indicator is drawn in a separate window, the user can set up its range from here. To do so, the user has to flag the corresponding options and set the desired values in the fields.

Inputs: External variables that can be managed directly from the terminal are grouped in the "Inputs" tab. To modify the desired variable, the user has to double-click on its value in the table and write a new one.

Colors: The "Colors" tab is intended for managing of the indicator elements to be shown in the screen. Besides colors, one can also modify thickness and style of lines.

Levels: Horizontal lines at any level can be set from the "Levels" tab in the indicator window. To create a new level, one has to press the "Add" button, and to delete it, the user has to press the "Delete" button. Colors, thickness and style of levels can also be changed from this tab.

Visualization: The user can limit the use of an indicator by timeframes in the "Visualization" tab. This can be useful if the same indicator must have different settings for different timeframes. The user can, for example, impose two copies of the same indicator with different settings into the same chart and limit their use by timeframes: the first indicator will work only for smaller timeframes, and the second one will do for larger timeframes. The "Show in the Data Window" option allows hide/show data about the given indicator in the Data Window.



MT4 User Guide

Removing of a Custom Indicator from the Chart

To remove an indicator from the chart, the user has to open the chart context menu and select "Delete Indicator" or "Delete Indicator Window", or the chart context menu command of "Indicators List — Delete".

Scripts

Scripts are programs written in MetaQuotes Language 4 (MQL 4) and are intended for single actions. A script can fulfill both analytical and trading functions. Unlike experts, scripts are executed on request, not by ticks. In other words, where an expert works almost continuously, a script, having completed the function once, the script will stop functioning.

Working with scripts consists of:

Creation of a Script:

The built-in "MetaEditor" is used to create and compile a script. It is a constituent of the client terminal and represents a convenient development environment of MQL4 programs.

Script Setup

Working parameters common for all scripts are defined in the client terminal setup window. Every script has its own settings.

Launching of a Script

To launch a script, the user has to attach it to the chart. The script algorithm will be launched immediately after that.

Deletion of a Script

The script completes its working after it has been deleted from the chart.

MT4 User Guide

Creation of a Script

To create a script, the user has to use MetaQuotes Language 4 (MQL 4) and MetaEditor. To launch the experts editing program, the user has to execute the "Create" command in the "Navigator — Scripts" window context menu, or the "Tools — MetaQuotes Language" menu command, or press F4 or the button of the "Standard" toolbar. During MQL4 program creation, Expert Creation Wizard will open automatically, allowing to create new MQL4 programs promptly. "Script" must be selected in it as the object to be created, and all necessary fields must be filled out:

Name: Script name;

Developer: Developer's name;

Link: The developer's web-site.

Once the fields have been filled, the new script window will open in the editor. File containing the script source code (*.MQ4) will be placed into the /EXPERTS/SCRIPTS folder of the client terminal automatically. The user can start to write the source code for script.

After the script has been created, it must be compiled. To do so, the user has to execute the "File — Compile" menu command in the expert editor or alternatively press F5. After the script has been successfully compiled, the executable files with *.EX4 extension will be created and placed into the /EXPERTS/SCRIPTS folder automatically. The list of all scripts can be viewed in the "Navigator — Scripts" window in client terminal.



MT4 User Guide

Editing of Scripts

To start editing of the existing script from the terminal, the user has to execute the "Modify" command of the "Navigator — Scripts" window context menu. The expert editor with the selected script source code already downloaded will open. After the source code has been modified, it must be recompiled to create a new EX4 file.

Scripts Setup

Working parameters common for all scripts are stated in the terminal settings window. This window can be opened by the "Tools — Options" menu command or by pressing of acceleration keys Ctrl+O. To set up script parameters, the user has to open the "Expert Advisors" tab. Only five options influence the operation of scripts:

Allow live trading: Like experts, scripts can work in automated mode. They can both analyze price changes and trade. This option is intended for limiting of trading functions of scripts and expert advisors.

Ask manual confirmation: The "Ask manual confirmation" option is only activated if scripts are allowed to trade. If this option is enabled and the script tries to perform a trade operation, one will be able to either confirm it or stop it manually. In other words, manual confirmation allows to control over trading activities of experts and scripts.

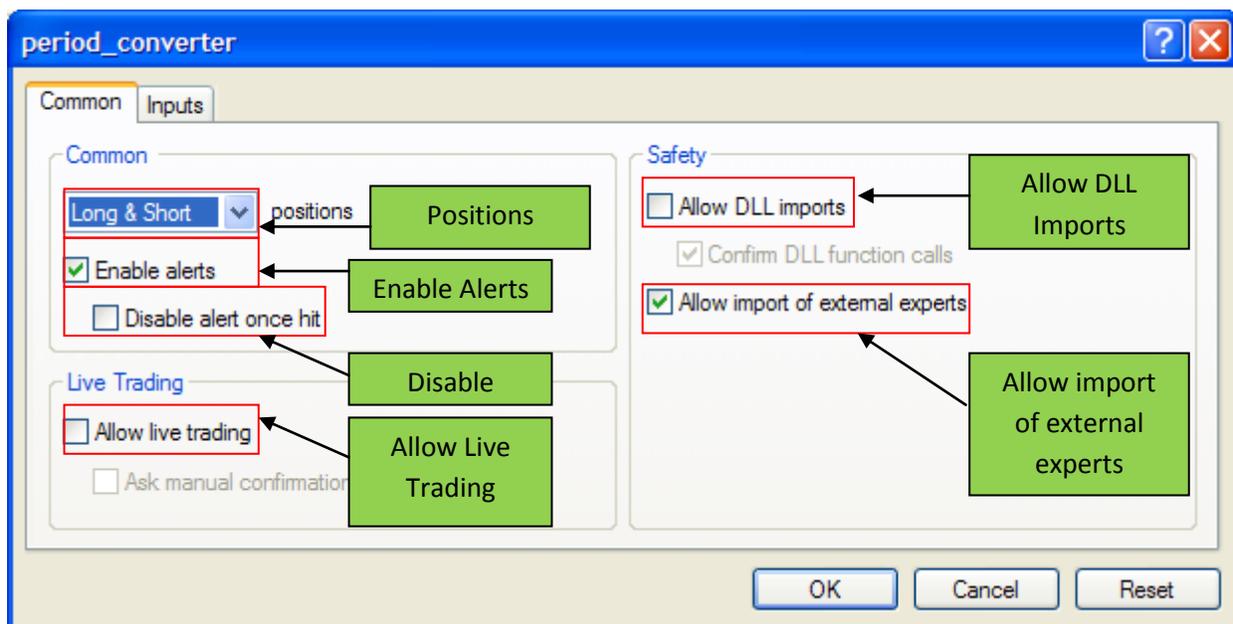
Allow DLL imports: To have their functionalities enlarged, scripts can use DLLs. If this option is enabled, the libraries can be used without any limitations. If this option is disabled, no script will be able to use any external DLLs.

Confirm DLL function calls: This option can only be enabled if DLLs are allowed to be imported. It assists control over each called function execution manually. If it is disabled, import from external libraries will not be controlled.

Allow external experts imports: If, at the script operation, there is a need to import functions from other expert or MQL4 libraries, this option must be enabled. If it is disabled, no script will be able to call functions from other MQL4 programs.

Launching Scripts

After parameters have been set up, the created script can be launched. If the script contains "#property show_inputs" instructions within the source code, the script setup window will automatically appear. The script setup window will appear automatically with the following options:



Positions: Select direction of position opening:

- Long & Short — both long and short;
- Only Long — only to buy;
- Only Short — only to sell.

Enable alerts: Enable/disable script alerts;

Disable alert once hit: Disable alerting after the first alert has been made;

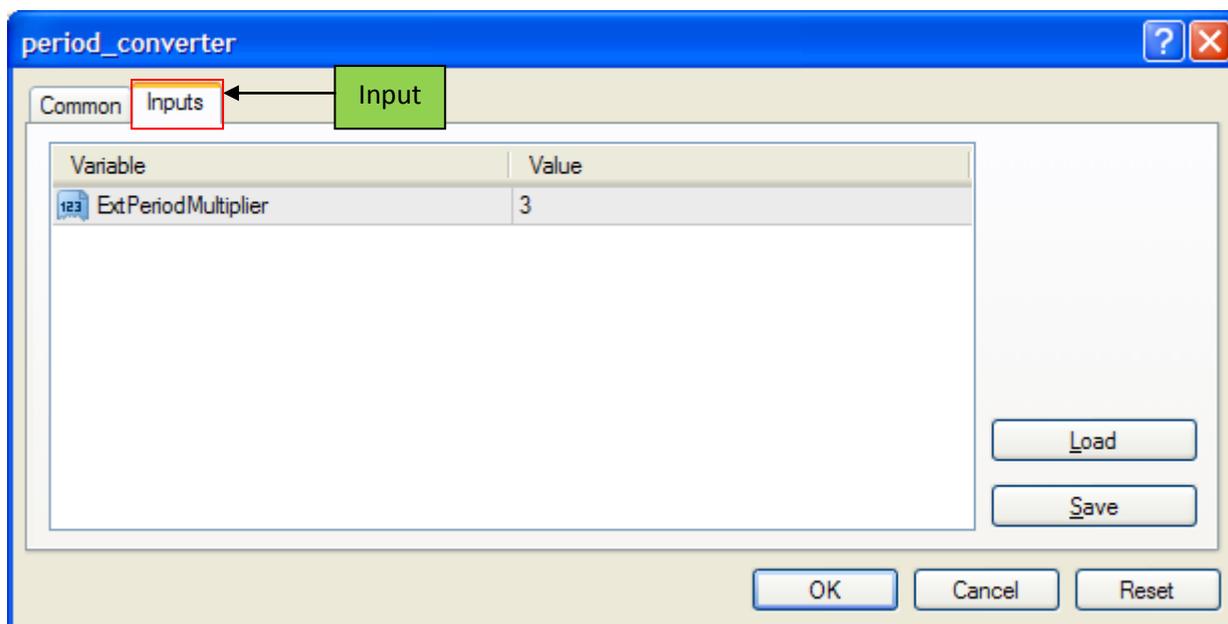
Allow live trading: Enable/disable live trading;

Ask manual confirmation: Request for manual confirmation of position opening when performing trade operations;

Allow DLL imports: Enable/disable importing of functions from DLL files;

Confirm DLL function calls: Request for confirmation at each call of functions from DLL files;

Allow import of external experts: Enable/disable calling of functions from external experts.



External variables of the script can be changed in the "Inputs" tab. They are variables of external class. To change a parameter, the user has to double-click with the left mouse button on its value and enter a new value. The user can change the value of each variable or download the set of inputs already saved before (the "Load" button).

The "Reset" button returns all default settings. Parameters defined in the terminal settings are set in the "Common" tab. And parameters set in the source code of the program are defined as inputs. The script with the defined parameters can be confirmed by selecting "OK".

Please note: Unlike experts or custom indicators, special properties of the script are set only at its launch.

The script will be launched immediately after selected. The "Drag and Drop" technique will allow attaching the script to any chart. If the "Remove Script" command appears in the chart context menu, it means that script is working. This command is active only while this MQL4 program is working.

Please note: Only one script can be attached to a chart.

Script Shutdown

Normally, a script shuts down by itself. But it can be removed manually. To remove a script from the chart, one has to execute the chart context menu "Remove Script" command or attach another script to the chart. A script will be removed from the chart after symbol or timeframe has been changed or when the terminal is shut down.

Terminal Configuration

The user can launch the terminal with predefined settings. For this purpose the file configuration name will be passed to the client terminal as a parameter.

Example:

```
terminal.exe config\start.ini  
terminal.exe test1.txt  
terminal.exe "C:\Program Files\MetaTrader 4\config\settings25.ini"
```

If the full path to the file (Drive:\SubDirectory\FileName) is not given, the file will be searched for in the client terminal directory. The configuration file contains lines of the following appearance:

[Parameter] = [Value]

Comments start with a semicolon (;) and are not processed.

The configuration file parameters can be divided into several groups: common settings, proxy server settings, FTP settings, EA settings, the expert or script single-launch settings, settings of the Strategy Tester launch.

Common Settings

Profile: The subdirectory name in the /profiles directory. The charts will be opened in the client terminal according to the given profile. If this parameter is not specified, the current profile will be opened.

MarketWatch: File name (the \symbolsets directory) that contains the symbol list to be shown in the Market Watch window. A file like this can be obtained using the window context menu command of the "Market Watch - Sets - Save As...".

Login: The number of the account to connect to at startup. If this parameter is not specified, the current login will be used.

Password: The password that allows entering the system. This parameter will be ignored if the client terminal stores personal data on the disk and the account to be connected is in the list.

Server: The name of the trade server to be connected to. The server name is the same as the name of the corresponding .srv file stored in the /config directory. This parameter will be ignored if the information about the account to be connected was stored on the disk.

AutoConfiguration: "true" or "false" depending on whether the auto configuration setting should be enabled or not. If this parameter is not specified, the value from the current server settings will be used.

DataServer: Address of the data center. This record can be ignored if the server auto configuration is enabled. If this parameter is not specified, the value from the current server settings will be used.

MT4 User Guide

EnableDDE: "true" or "false" depending on whether DDE server should be enabled or not. If this parameter is not specified, the value from the current server settings will be used.

EnableNews: "true" or "false" depending on whether receiving of news should be allowed or not. If this parameter is not specified, the value from the current server settings will be used.

Example:

```
; common settings
Profile=test 3
MarketWatch=set2.set
Login=12345
Password=xxxxxx
Server=MetaQuotes-demo
AutoConfiguration=false
DataServer=192.168.0.1:443
EnableDDE=true
EnableNews=false
```

FTP Settings

FTPEnable: Enable/disable publishing. The possible values are "true" or "false".

FTPPassiveMode: Enable/disable the passive mode of data transfer. The possible values are "true" or "false".

FTPAccount: The number of the account the state of which to be sent to the FTP.

FTPServer: FTP server address.

FTPLogin: The login for authorization on the FTP server.

FTPPassword: The password to access to the FTP server.

FTPPath: The name of the FTP server directory in which the report is placed.

FTPPeriod: The periodicity, in minutes, of the reporting to the FTP server.

If any of the above-listed parameters are not specified, the current client terminal settings are used (the "Publisher" tab in the server settings).

Example:

```
; ftp settings
FTPEnable=true
FTPPassiveMode=false
FTPAccount=12345
FTPServer=ftp.company.com
FTPLogin=admin
FTPPassword=pAssWOrd123
FTPPath=/inetpub
FTPPeriod=10
```

MT4 User Guide

EA Settings

ExpertsEnable: Enable/disable experts.

ExpertsDllImport: Enable/disable DLL imports.

ExpertsDllConfirm: Enable/disable manual confirmation of DLL-functions calling.

ExpertsExpImport: Enable/disable import of functions from external experts or MQL4 libraries.

ExpertsTrades: Enable/disable the experts trading.

ExpertsTradesConfirm: Enable/disable manual confirmation of the trade operation performed by the expert.

Please Note: All parameters of an experts group can take values of either "true" or "false".

If any of the above-listed parameters is not specified, the current client terminal settings will be used (the "Expert Advisors" in the server settings).

Example:

```
; experts settings
ExpertsEnable=true
ExpertsDllImport=true
ExpertsDllConfirm=true
ExpertsExpImport=true
ExpertsTrades=true
ExpertsTradesConfirm=false
```

MT4 User Guide

Expert and/or Script Single-Launch Settings

Symbol: The symbol of the chart of which should be opened immediately after the terminal startup. After the client terminal has been closed, the information about this extra chart is not saved. At the terminal restart, without the configuration file, this chart will not be opened. If this parameter is not specified, no extra chart will be opened.

Period: The chart timeframe (M1, M5, M15, M30, H1, H4, D1, W1, MN). If this parameter is not specified, H1 is used.

Template: The name of the template file (the \templates directory), which should be applied to the chart.

Expert: The name of the expert that should be launched after the client terminal has started. The expert is launched in the chart, which has been opened according to the data specified in Symbol and Period. If the Symbol parameter has not been specified, no extra charts will open, and the expert will be launched in the first chart of the current profile. If there are no charts in the current profile, the expert will not be launched. If this parameter has not been specified, no expert is launched.

ExpertParameters: The name of the file containing the expert parameters (the \experts\presets directory). This file can be created in the expert properties window by pressing of the "Inputs - Save" button. It is normally used to save the inputs other than the default ones. If this parameter has not been specified, the default inputs are used.

Script: The name of the script, which must be launched after the client terminal startup. The script is launched according to the same rules that are eligible for the expert (described above).

ScriptParameters: The name of the file containing the script parameters (the \experts\presets directory). This file is made in the same way as that for the expert.

Example:

```
; open chart and run expert and/or script
Symbol=EURUSD
Period=H4
Template=popular.tpl
Expert=MACD Sample
ExpertParameters=macd.set
Script=period_converter
ScriptParameters=
```

MT4 User Guide

Settings of the Strategy Tester Launch

TestExpert: The name of the expert to be launched for testing. If this parameter has not been specified, no testing is launched.

TestExpertParameters: The name of the file containing parameters (the \tester directory). The file can be created in the Properties window in the expert under test by clicking the "Inputs - Save" button. It is normally used to save parameters other than the default ones. Other parameters of the expert under test in the "Testing" and "Optimization" tabs (as well as in the "Inputs" tab if this parameter has not been specified) are filled up with the values automatically saved in the \tester\[the expert name].ini file after the latest test.

TestSymbol: The name of the symbol used for the expert testing. If this parameter has not been specified, the latest value used in the tester is used.

TestPeriod: The chart period (M1, M5, M15, M30, H1, H4, D1, W1, MN). If this parameter has not been specified, H1 is used.

TestModel: 0, 1, or 2, depending on the testing model (Every tick, Control points, Open prices only). If this parameter has not been specified, 0 is used (Every tick).

TestOptimization: Enable/disable optimization. The values that can be taken are "true" or "false". If this parameter had not been specified, the "false" value is used.

TestDateEnable: Enable/disable the "Use date" flag. The values that can be taken are "true" or "false". If this parameter had not been specified, the "false" value is used.

TestFromDate: The date, from which to start testing, appeared as YYYY.MM.DD. If this parameter has not been specified, this date is 1970.01.01.

TestToDate: The date, on which to finish testing, appeared as YYYY.MM.DD. If this parameter has not been specified, this date is 1970.01.01.

TestReport: The name of the test report file. The file will be created in the client terminal directory. A relative path can be specified, for example: tester\MovingAverageReport". If the extension has not been specified in the file name, the ".htm" will be set automatically. If this parameter has not been specified, the test report will not be formed.

TestReplaceReport: Enable/disable the repeated report file record. The values that can be taken are "true" or "false". If the "false" value is specified and a report file named in the same way exists already, the number in square brackets will be added to the file name. For example, "MovingAverageReport[1].htm". If this parameter had not been specified, the "false" value is used.

TestShutdownTerminal: Enable/disable shutdown of the terminal after the testing has been finished. The values that can be taken are "true" or "false". If this parameter had not been specified, the "false" value is used. If the user has pressed the "Stop" button, the value of this parameter will be flushed to "false" since the control has been given to the user.

MT4 User Guide

History Center

Technical analysis used in order to forecast future price movements. The market is often analyzed using charts. Historical data is needed to carry out technical analysis. Historical data are constantly formed and stored on the server. Connecting to it, the client terminal downloads all necessary data. This data will be then used for drawing of charts, testing and optimization of Expert Advisors. To control historical data, the terminal has a special window named "History Center". This window can be opened by executing the command "Tools — History Center" or by pressing F2.

After the terminal has been shut down, all accumulated historical data will be stored in the "History Center". Sizes of files containing historical quotes do not exceed values defined in settings. If the amount of historical data accumulated exceeds the value set in the field of " Max. bars in history:", the oldest bars will be deleted when storing. For each timeframe, a separate history file is formed named as SSSSSPP.hst (where SSSSSS - symbol name, PP - timeframe in minutes) and saved in the /HISTORY. Later on, the saved data will be used to draw charts, as well as for testing of trading strategies.

In the "History Center" window, the available data can be changed. For this, it is necessary to select the desired symbol and timeframe in the left part of the window. The corresponding data will be loaded in form of a table. To add a record about a new bar, it is necessary to press the button of the same name, fill out all necessary fields in the new window and press "OK". After that, the new bar will appear in the history. One can modify the bar by selecting the corresponding record and pressing the "Modify" button. To delete a bar, it is necessary to select it and press the button of the same name.

Load of Historical Data

It is possible to load quotes for basic currency pairs starting with year 1999 from the historical data server. To do it, it is necessary to select the desired symbol and press "Download".

Please note: The loaded data can differ from historical data stored on the broker's trade server.

Upon pressing the button, data of M1 timeframe will be loaded. Other timeframes will be automatically recalculated from M1. At that, the time of the downloaded data will be automatically recalculated according to the active account time zone.

When downloading historical data, it is recommended to control amount of bars in history and in charts.

Please note: The bigger the time frame is in terms of historical data the more system resources are going to be used.

Quotes are weekly updated on the server of historical data. Further, at restarts, only updated quotes will be downloaded.

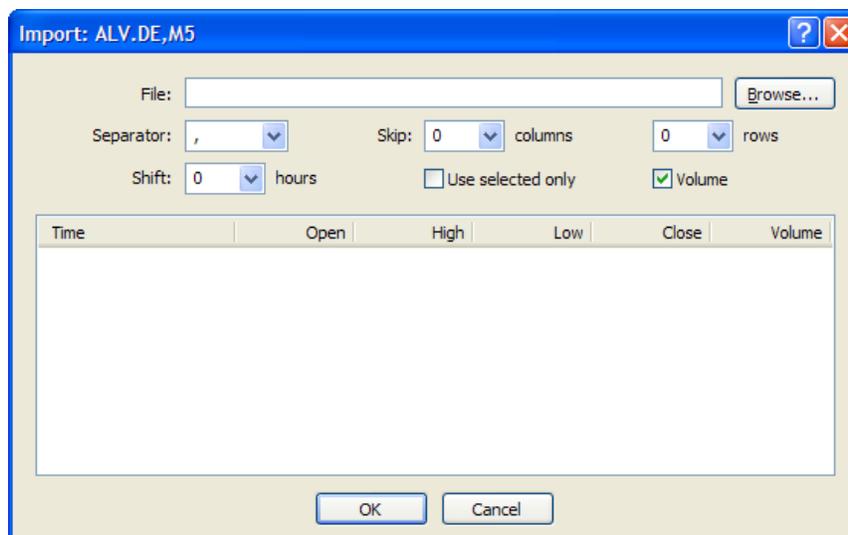
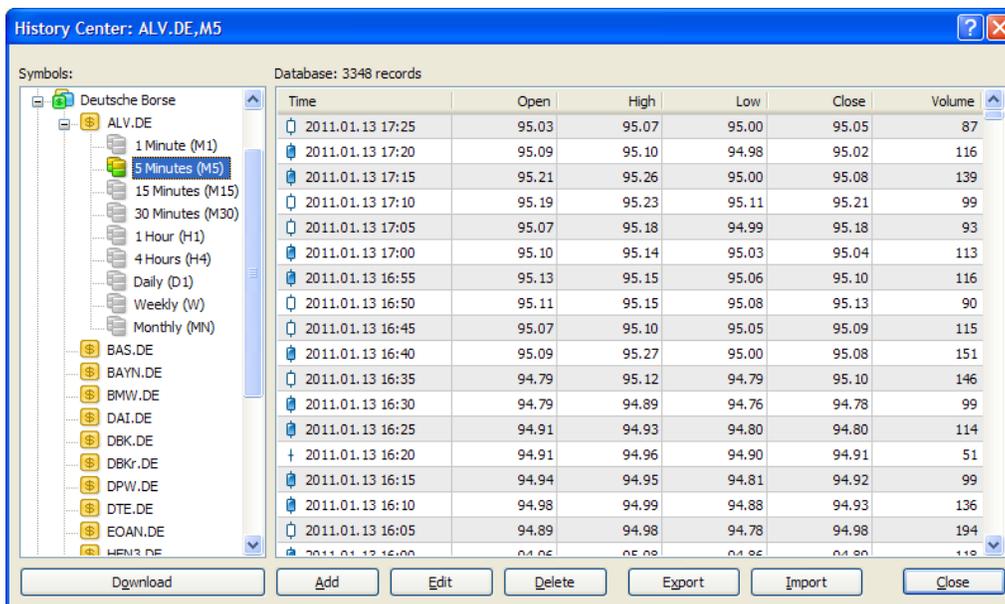
Exports and Imports of Historical Data

Historical data can be exported into files formatted as CSV, PRN and HTM. For this, it is necessary to select the desired symbol in the left part of the "History Center" window and press "Export". Historical data as CSV, PRN, TXT, HTM and HST can also be imported into terminal.

MT4 User Guide

Historical data in the file can be represented as follows (any other separator can be used instead of space):

- YYYY.MM.DD HH:MM O H L C V
- YYYY-MM-DD HH:MM O H L C V
- YYYY/MM/DD HH:MM O H L C V
- DD.MM.YYYY HH:MM O H L C V
- DD-MM-YYYY HH:MM O H L C V
- DD/MM/YYYY HH:MM O H L C V



It is necessary to select a symbol and a timeframe, for which the import will be performed, in the left part of the "History Center" window. Then it is necessary to set up import parameters by pressing "Import":

MT4 User Guide

Separator: Data separator in the file to be imported. Comma, semicolon, space or tabulation character can be used as separators;

Skip columns: Skip columns when importing. This can be helpful when the imported file contains more data types than necessary;

Skip lines: Skip rows (lines) when importing;

Time shift: Shift data by several hours in time;

Selected only: Import only selected data. Data are selected by lines using "Ctrl" and "Shift";

Volumes: Enable/disable importing of volumes.

After historical data has been imported, they can be used to show charts and test Expert Advisors.

Historical File Format (HST Files)

The database header is the first

```
struct HistoryHeader
{
int version; // database version
char copyright[64]; // copyright info
char symbol[12]; // symbol name
int period; // symbol timeframe
int digits; // the amount of digits after decimal point in the symbol
time_t timesign; // timesign of the database creation
time_t last_sync; // the last synchronization time
int unused[13]; // to be used in future
};
```

then goes the bars array (single-byte justification)

```
#pragma pack(push,1)
//---- standard representation of the quote in the database
struct RateInfo
{
time_t ctm; // current time in seconds
double open;
double low;
double high;
double close;
double vol;
};
#pragma pack(pop)
```

Export of Quotes

The terminal allows exporting the current quotes to other programs in the real-time mode through "DDE" (Dynamic Data Exchange) protocol. This is a protocol of operational systems of MS Windows used for dynamic data exchange among various applications. Quotes are given through DDE only at incoming of new ticks (ADVISE mode), but not immediately on request (REQUEST mode) where the latest price is shown. N/A is shown on the first REQUEST, and after the new price has been income, quotes will appear.

To activate the export of quotes from the terminal through DDE, one has to enable the "Enable DDE server" option in the terminal settings.

Please note: Historical data cannot be exported through the DDE protocol. The current quotes are exported only when the client terminal is online.

DDE request formats and their possible results by the example of "DDE-sample.xls" file:

```
BID request: = MT4|BID!USDCHF result: 1.5773
ASK request: = MT4|ASK!USDCHF result: 1.5778
HIGH request: = MT4|HIGH!USDCHF result: 1.5801
LOW request: = MT4|LOW!USDCHF result: 1.5741
TIME request: = MT4|TIME!USDCHF result: 21.05.02 9:52
QUOTE request: = MT4|QUOTE!USDCHF result: 21.05.02 9:52 1.5773 1.5778 1.5776
```

Global Variables

Several experts can be launched in the client terminal at the same time. Sometimes, there is a need them to interchange with information. To provide possibility of prompt transfer of moderate amounts of information among experts, as well as organize conflict-free simultaneous working of several experts, there are global variables in the terminal. Unlike variables claimed at a global level in the expert source code and available only within the corresponding module, global variables exist independently on experts. Their values are saved between terminal launches, unlike those of variables claimed at a global level (they are set at every expert launch and lost at expert remove). Global variables are available within four weeks since their last call from experts or manual modifying.

There is a special window in terminal that manages global variables. It can be opened by execution of the "Tools — Global Variables" menu command or by pressing of F3. All global variables, their values and times of their last calls are listed in a table in this window. Using buttons located in the right part of the window, one can add a new global variable or delete an existing one. To change the name or value of a global variable, one has to double-click with the left mouse button on the corresponding cell of the table. The last call time will be changed automatically for this variable.

Contract Specification

This message window allows viewing symbols contract specifications. The main parameters are grouped in table with following fields:

Spread: Difference between Bid and Ask prices in points;

Digits: The amount of digits after decimal point in the price representation;

Stops level: Minimum distance to the current price in points at which Stop Loss and Take Profit orders can be placed;

Pendings are good till cancel: Forced closing of pending orders at the end of a session. "Yes" means that pending orders will not be closed forcedly;

Contract size: One-lot price in deposit currency;

Tick price: The size of minimal price change in quote currency;

Tick size: Minimal symbol price change interval in points;

Profit calculation mode: Accepted profit calculation technique (Forex, CFD, Futures);

Swap type: Rollover calculation type (in points, in deposit currency, or in per cents);

Swap long: Rollover size for a long position;

Swap short: Rollover size for a short position;

Margin calculation mode: Accepted free margin calculation technique (Forex, CFD, Futures)

Margin hedge: Size of margin for hedged positions.

Parameter	Value
Spread	0
Digits	5
Stops level	30
Pendings are good till cancel	Yes
Contract size	100000
Profit calculation mode	Forex
Swap type	in points
Swap long	-0.7
Swap short	-2.4
Margin calculation mode	Forex
Margin hedge	50000

Languages Support

The Client Terminal interface is multilingual. It can be represented in any available language. This feature makes the program not only easy-to-use, but also allows reducing the amount of errors that occur during trading because of lack of understanding of foreign terms and notions. The list of all available languages can be found in the "View — Languages" menu. The User can switch one's terminal to a language by selecting of this language in the list. The language can be changed actually only after restart of the terminal.

Datacenter.ini

Administrators of dealing centers who would like to redirect the clients' traffic forcedly have a new opportunity now. The Data Center used by the client terminal can be strictly defined using the configuration file named datacenter.ini. This file must be placed in the /config directory of the client terminal.

If the "Data Center auto configuration" is flagged in the server settings, there will be an attempt to open and analyze the datacenter.ini file. If a data center for the server will be found in this file, the connection will be performed exactly to it. No more than one data center can be defined for one server.

The string format of the datacenter.ini: [server name][delimiter][data center address]

Where:

- server name is the name of the corresponding .srv file;
- delimiter is a comma or any quantity of spaces;
- Data center address is the IP address: port number.

Lines that start with a semicolon (;) are considered to be a comment and are not processed.

Exemplary datacenter.ini file:

```
;-----  
;comment  
;-----  
MetaQuotes-demo1 192.168.1.4:443  
MetaQuotes-demo2, 192.168.1.4:444  
;-----  
MetaQuotes-demo3 192.168.1.5:445  
MetaQuotes-demo4, 192.168.1.5:446  
-----
```

