1ExAlgo

Ver. 2.0.2.15

A universal complex for working with all types of robots, testing and managing them

User's Guide

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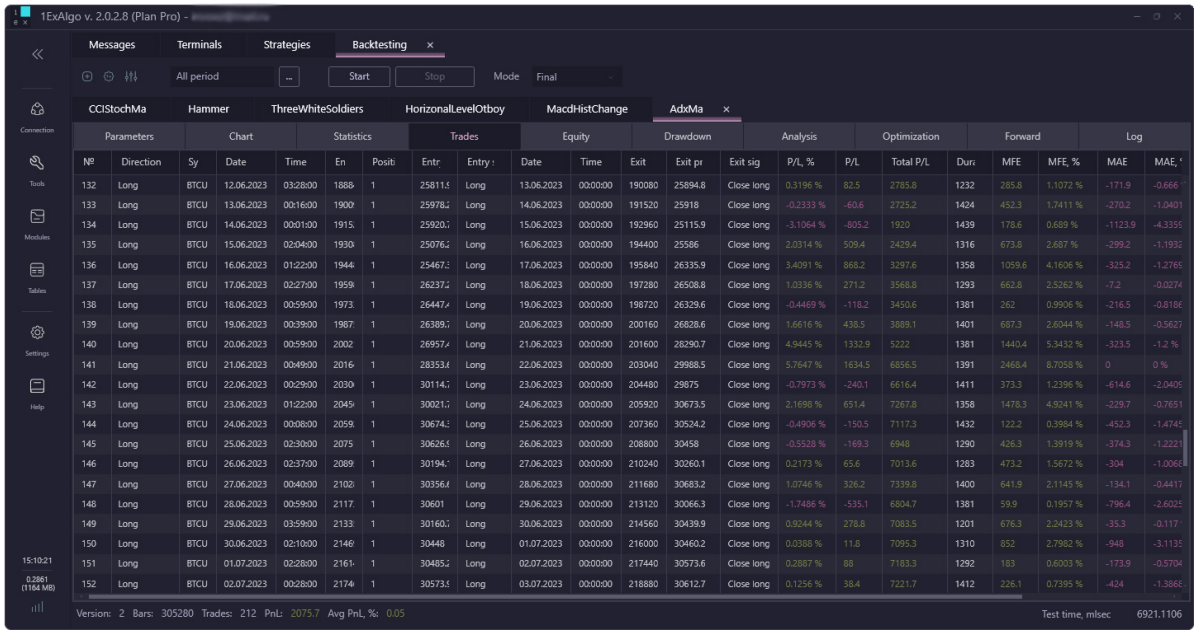
1ExAlgo

1ExAlgo - is a universal complex for automating the work and development of any types of robots, testing and managing them.



The main advantages of the program:

Free use of the program (restrictions on free use can be found in the Licenses and cost section);

Simultaneous trading on multiple accounts;

Simultaneous operation of several tens or hundreds of robots (depending on the power of the computer), each robot can set its own individual parameters of operation;

The processing average speed of the algorithm of one robot is from 0.2 msec, depending on the power of the computer, the complexity of the algorithm and the number of analyzed open positions;

Launching several robots for one instrument on one account with different trading parameters, each robot will only keep its own positions, which position is not interested in it now in the trading terminal;

The possibility of "Hot" replacement of robot parameters, i.e. the robot algorithm will not be recalculated according to historical data, but will continue to work with new parameters and the opening or closing of a position will be made already on the basis of new parameters;

It works with Quik trading terminals (up to 10 units can be connected), Interactive Brokers (IB TWS), Transaq Connector and popular crypto exchanges;

When working with Quik, all data is received via the DDE server, i.e. the program does not download any additional information via the Internet and does not send;

The ability to place pending orders for all terminals is limit orders, for Quik - a linked order, stop limit, take profit and take profit and stop limit;

Order execution control:

In case of withdrawal of orders by the exchange, the robot will automatically re-issue them

when trading is allowed again;

In case of partial execution of the request, the robot will issue a closing request for exactly the volume that was executed;

In case of non-execution of the stop order request, it is possible to achieve 100% execution of it using the robot block "Requests";

Portfolio management of robots (the ability to combine several robots into one portfolio according to one strategy and specify common risks and working hours);

At any time, you can reset the information on the current positions of the robot and that it continues to work only when a new signal is received;

Mass robot management (the ability to stop or start all robots at once, only one strategy or only one robot);

Notifying the user about events via SMS, email, sound notification or message on the screen.

Opportunities:

The trading mode is "Real" – orders are sent to the exchange and "Virtual" – emulation of trading, without placing orders on the exchange, transactions are recorded inside the robot;;

Choosing the direction of trade: Long, Short or Long/Short;

Robot Trading Statistics

Test the operation of the algorithm on historical data and select the optimal parameters for each tool;

Work on any timeframe, starting from the tick;

Work according to the current parameters and do not use the timeframe;

Set the working time of the robot on what days and at what time. Closing a position before the end of the session and before clearing;

Set loss limits, robot block "Risks";

Built-in block of stop orders in each robot;

Additionally:

Additional extensions added to the program in the form of modules allows you to create full-fledged programs on 1ExAlgo that help the trader in trading.

Available modules:

- Risk Manager;
- Statistics.

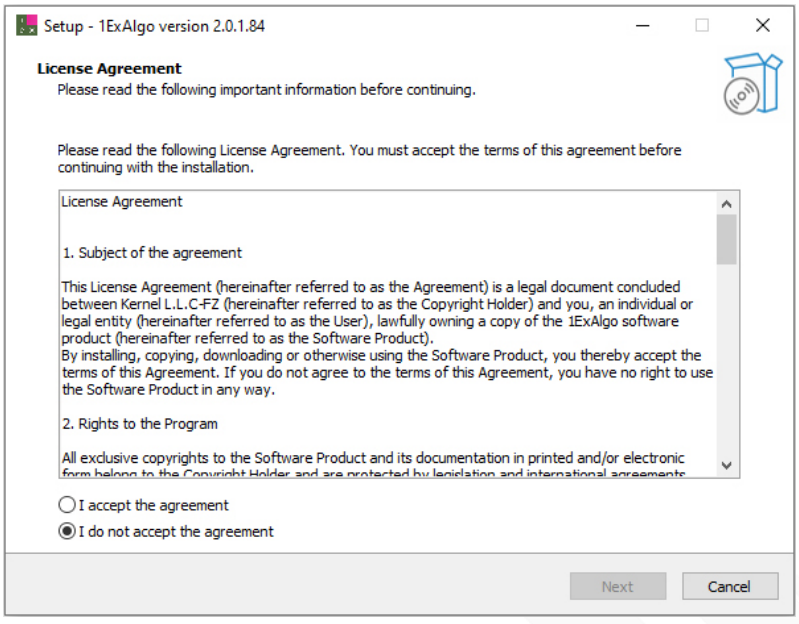
Installation and Configuration

Before installing, you need to make sure that your meets the minimum system requirements:

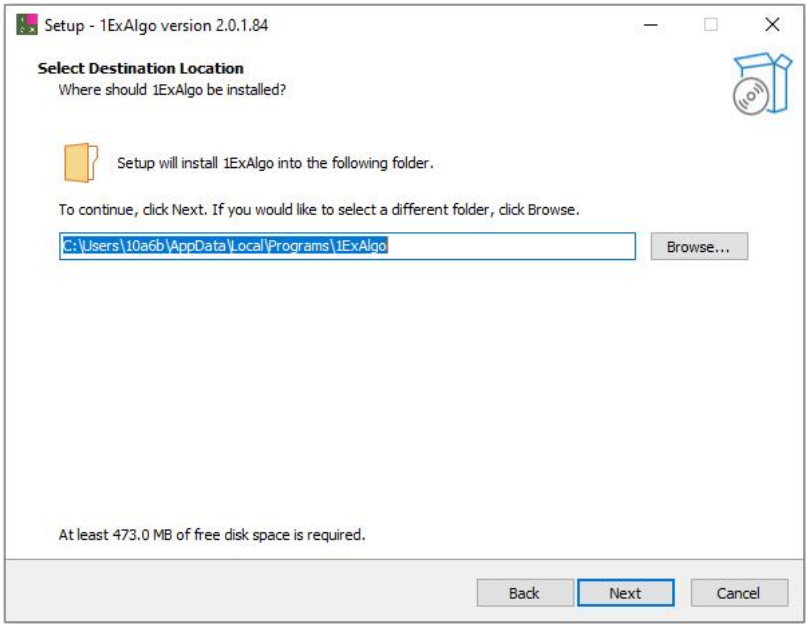
1. Processor is no worse than Pentium 4 (2.0 GHz),
2. RAM at least 4 GB (8 GB recommended),
3. 15 GB of free hard disk space,
4. Operating system Windows 10 and higher, Windows Server 2016, 2019 and above,
5. 64 bit system
6. Under Windows 7, the system works, except for the ability to connect to crypto exchanges
7. The Microsoft NET 6 component (you can download it for free from the official Microsoft website).

After registering on the website, click download. A window will appear in the lower left corner

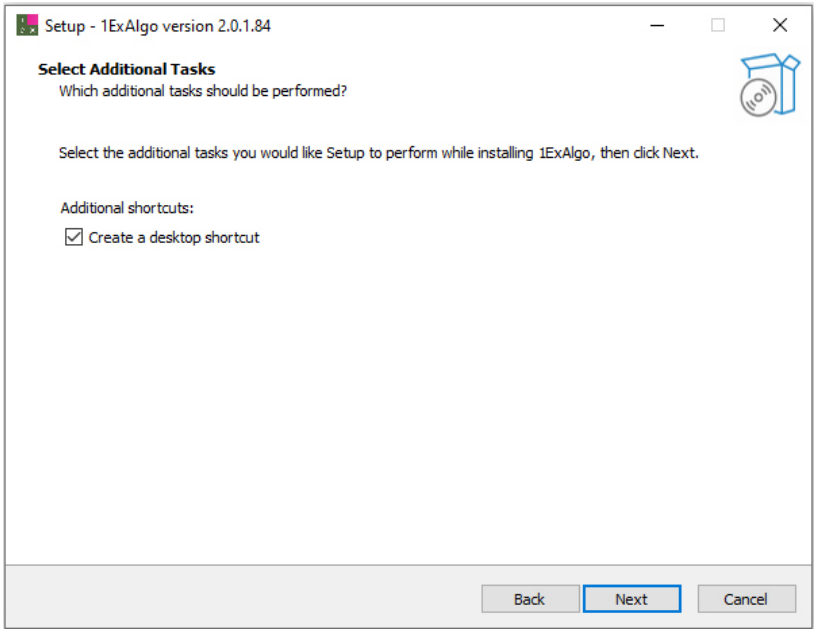
Click on the netsetup icon. In the window that appears, click run.
Download and run the file 1ExAlgosetup.exe
Click the "Next" button



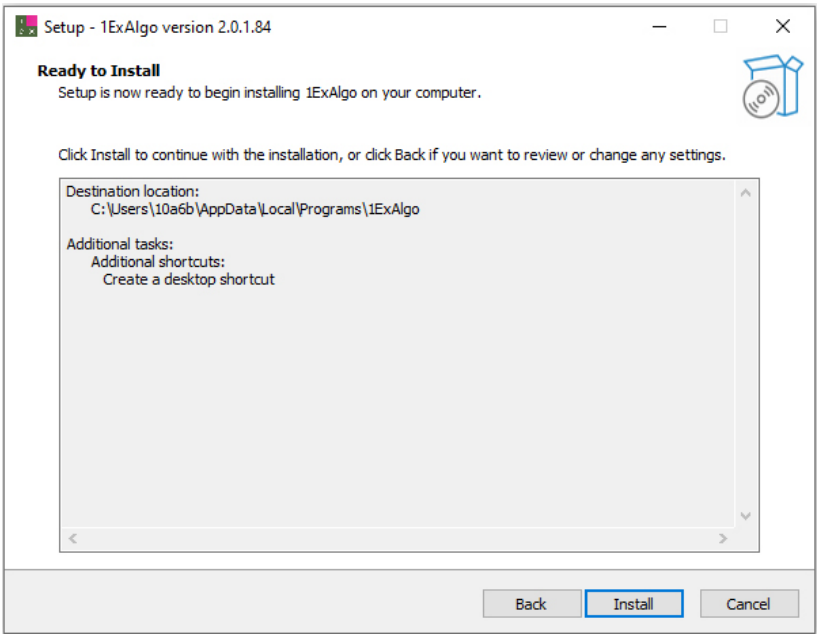
Note (Select) "I accept the terms of the agreement", click "Next"



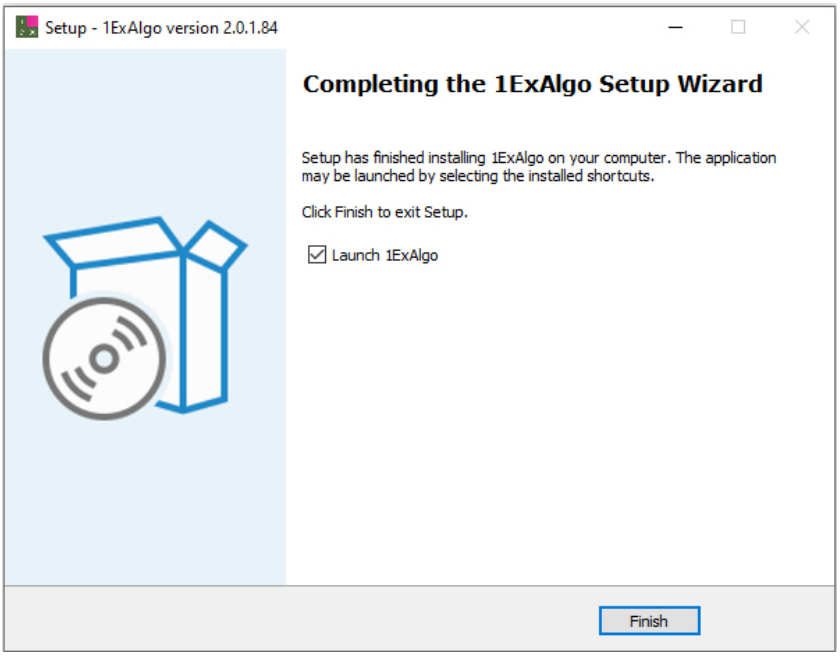
Click the "Next" button



(If necessary, create an icon on the Desktop) Click the "Next" button



Click the "Install" button

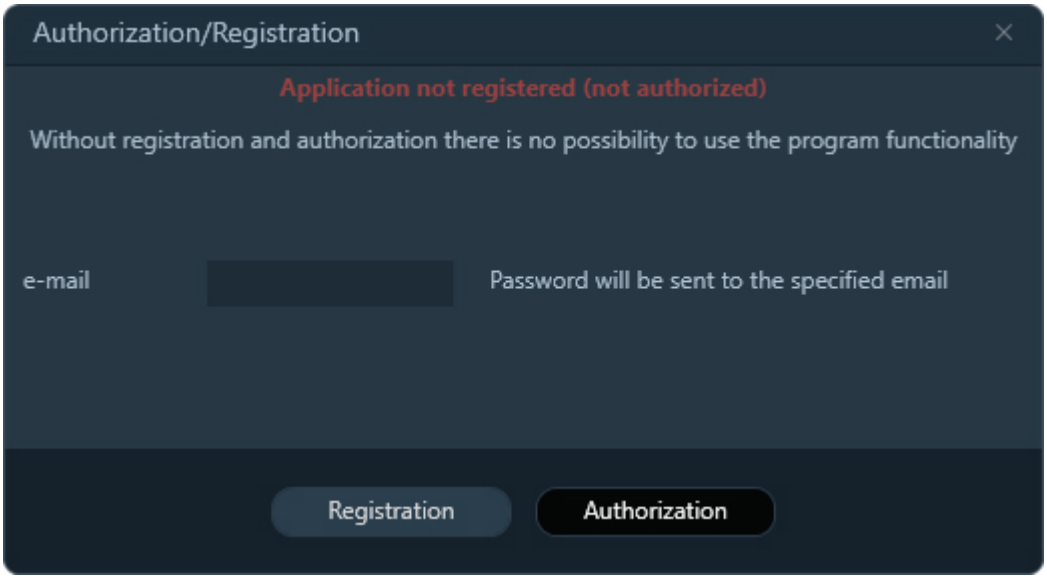


Click the "Finish" button. The program is installed on your computer.

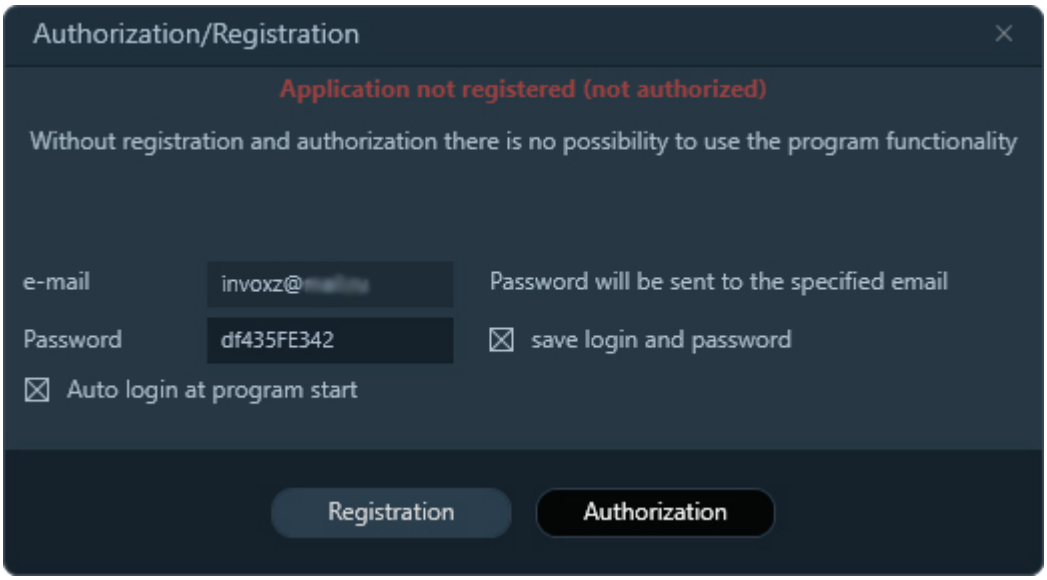
Registration and authorization

If 1ExAlgo is not registered, then a window will appear at startup with an offer to register. Registration is not required, but if it is not done, there will be a number of restrictions: **"Without registration and authorization, there is no possibility of connecting to trading terminals and servers, as well as connecting, using and testing modules."**

To register, you need to fill in the email that has not yet been used to register the program and click the "Register" button. If the registration window is closed, click "Connection" in the top menu./Registration/Authorization".



After that, the password required for authorization will be sent to the mail. This login and password pair will be used for authorization every time 1ExAlgo is launched. After entering the password, you need to click the "Log in" button. After authorization, the previously mentioned restrictions will be lifted, and if the launch is for the first time, then demo access is activated for 14 days.

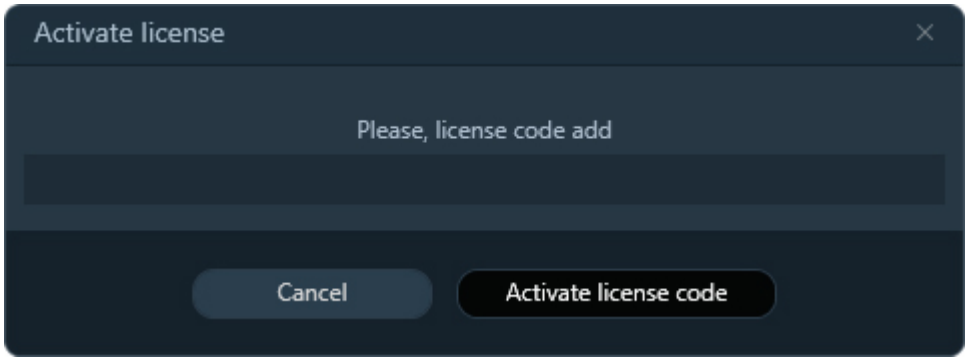


Your E-mail and the current tariff will be displayed in the header of the 1ExAlgo program.

License activation

After purchasing a license, an activation code is sent to the mail. To activate it, you need to open the "Settings" menu/License Management",

click the "Next" button



enter the activation code and click "Activate license code".

After the end of the demo version, if it is necessary to continue using modules or programs with features above the "Free" tariff plan, you need to go to the website and make a payment.

License verification

To check the validity of your license, the "Check License" function is used. It is also necessary when the connection is lost and it is necessary to tighten the license without restarting the program.

In order to make a check, you need to open the "Settings" menu/Check the license."
After clicking, the current license will be shown.

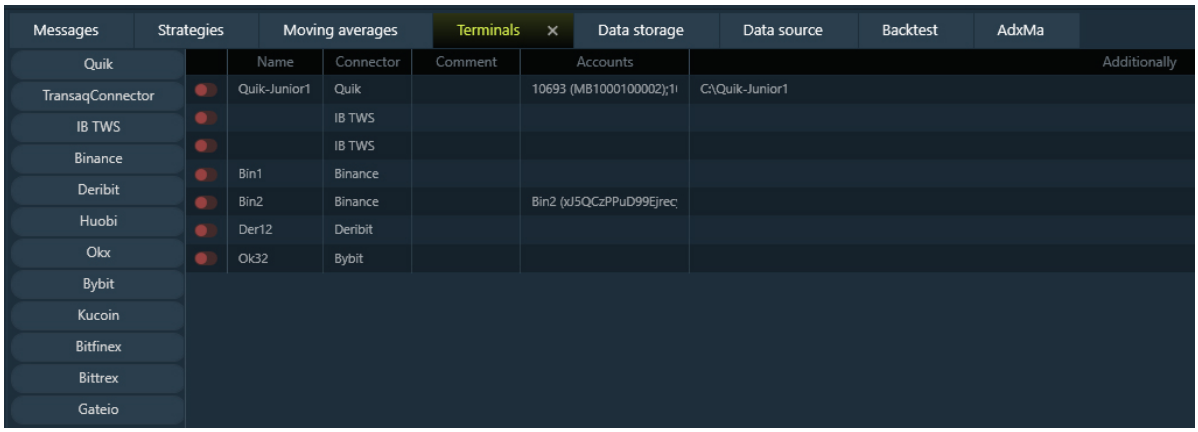
Connection

The program can simultaneously work with different types of terminals: Quik, Transaq Connector, IbTws, and other custom connectors to exchanges and terminals. The API for writing the connector is open.

At the same time, the program can work with 10 Quik and an unlimited number of accounts in these trading terminals (it is possible to expand due to user connectors).

If the number of Quik's connected at the same time is more than 1, then to optimize the information received, it is recommended to leave the "Table of current parameters" and "Table of all transactions" in only one Quik, in the rest Quik, close it.

To connect 1ExAlgo with trading terminals, go through the menu and click Connection/Establish a connection



On the bottom part of the program window there are icons "Connection status" - 1ExAlgo connection to trading terminals, and the currently used connectors, i.e. terminals, exchanges or trading servers with which connections will be established. The messages tab (under the keys icon) displays information about the process of connecting to terminals. If everything is configured correctly, then messages should appear and some icons will change, as in the picture below.

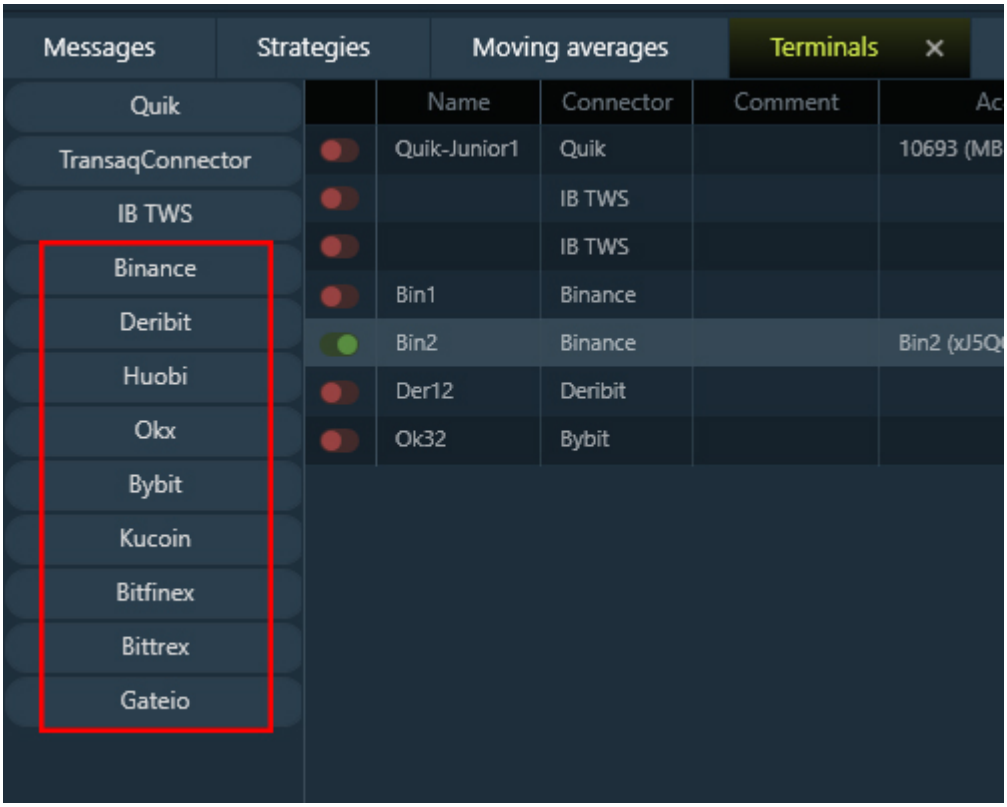
The number of configured connections can be unlimited. The identifier that shows whether it is used or not is changed by clicking on it - - connection is not used, - connection is in use.

1. Gray diagram - when you turn on the program, the connection is not established and was not turned on, to change - you need to establish a connection.
2. Yellow chart - if there is a problem with connecting to the terminal or the exchange, then this information will be displayed in the comments column, and the chart will be highlighted in yellow. Also, this color of the diagram may indicate that one of several running connections is not working.
3. Green diagram - in case of successful connection.

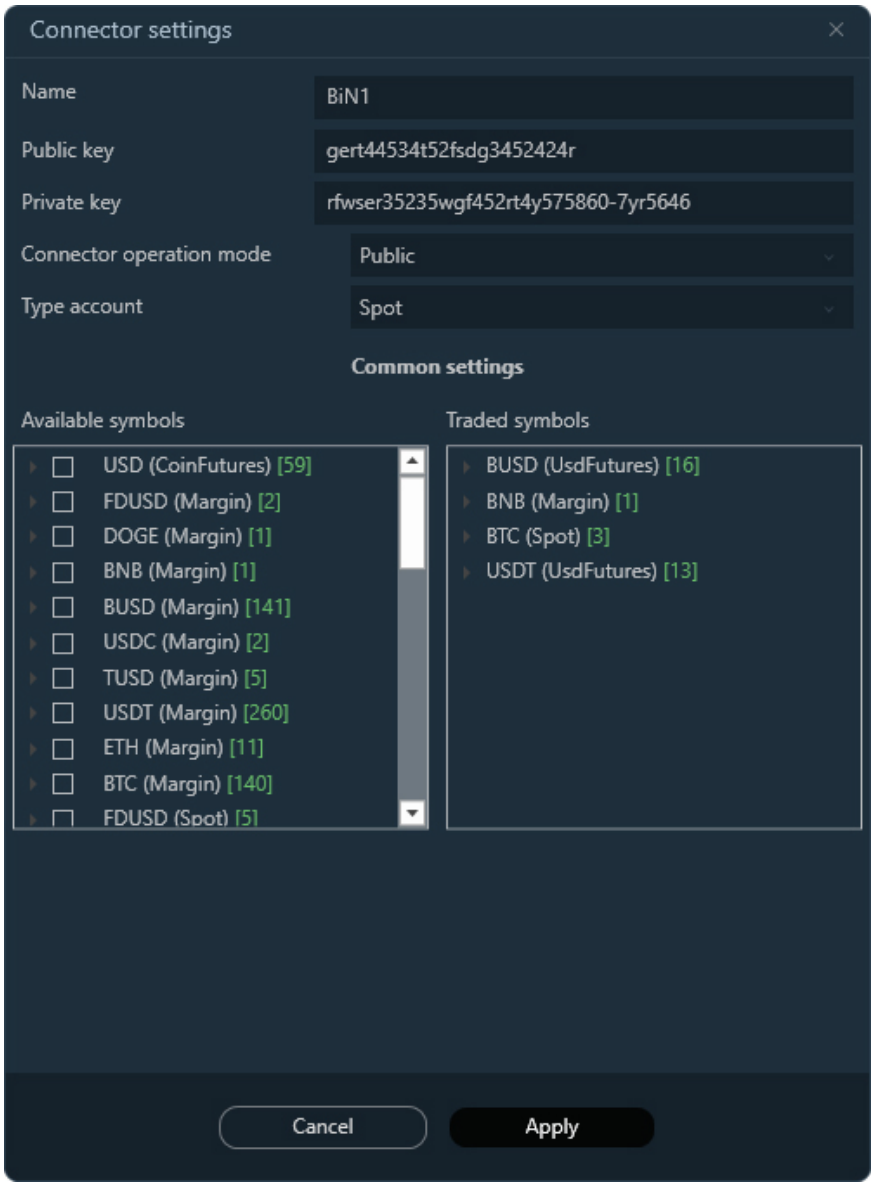
Connecting a crypto exchange

The process of connecting to any crypto exchange is the same.
Connection

In 1ExAlgo: In 1ExAlgo: "Connections/Establish a connection", a crypto exchange is selected and available.



Setting up connection parameters.



Title	Description
Title	The name can be anything.
Public key	Public key.
Private key	The secret key.
Type account	Spot, margin, futures, CoinM.
Connector operation mode	Connector operation mode, receiving public information - quotes, i.e. data that does not require keys, public and private - information about position, orders, deals is requested and allow you to send transactions to the exchange. The “Public” mode does not require keys, you can write any data, i.e. the data provided by the exchange (DOM, Tape of transactions, Quotes on

	pairs, historical data) will be received. If necessary, perform the operation, you will need to select the "Private" mode and enter the valid keys.
Post only	An order of the "Placement Only" type will be added to the DOM and will not be executed instantly if there is an existing order or its validity has expired.
Available symbols	All instruments available for trading.
Traded symbols	Tools selected from those available for work.

After clicking, the connection status is green at the bottom.

After the connection is established, through the editing of the connector, we select the tools: DOM, ticks, historically, the data is adjusted if necessary.

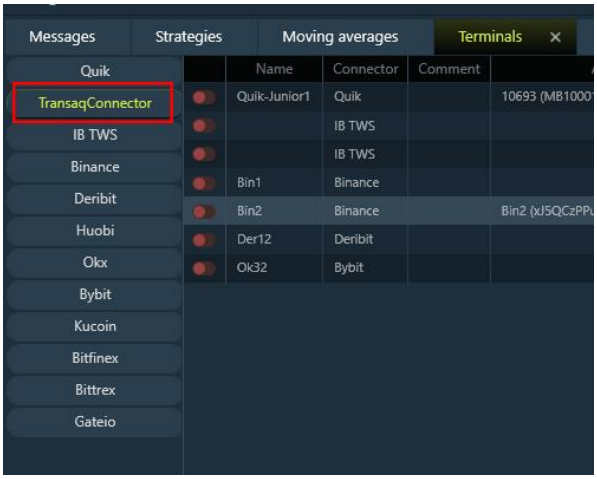
You can start editing by double-clicking on the terminal with the left mouse button or using the context menu with the right mouse button on the terminal.

The selected tools are displayed in the table of current parameters and then you can use them to work in robots.

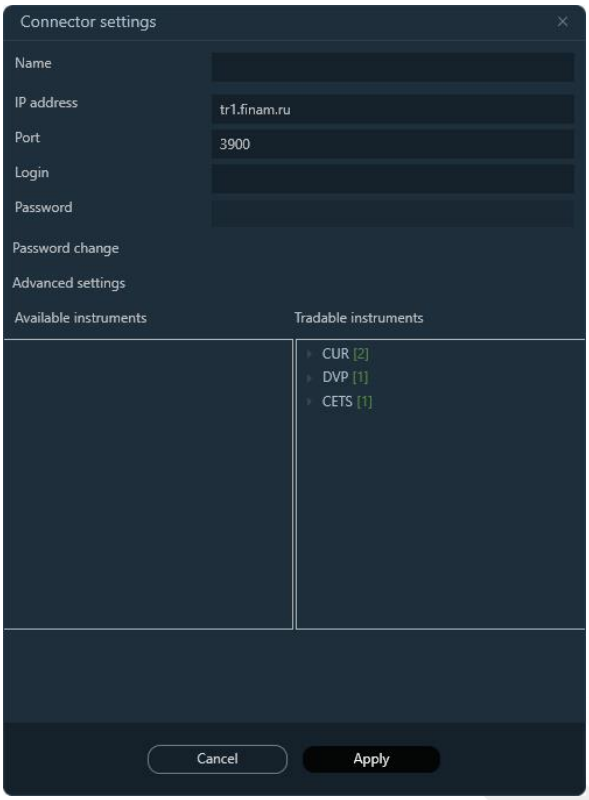
Customization TransaqConnector

Access to the Transaq Connector is provided by the broker. You can connect it through your personal account.

In 1ExAlgo, the menu item "Connections/Terminals". Next, select the terminal type Transaq Connector.



Add a new terminal.



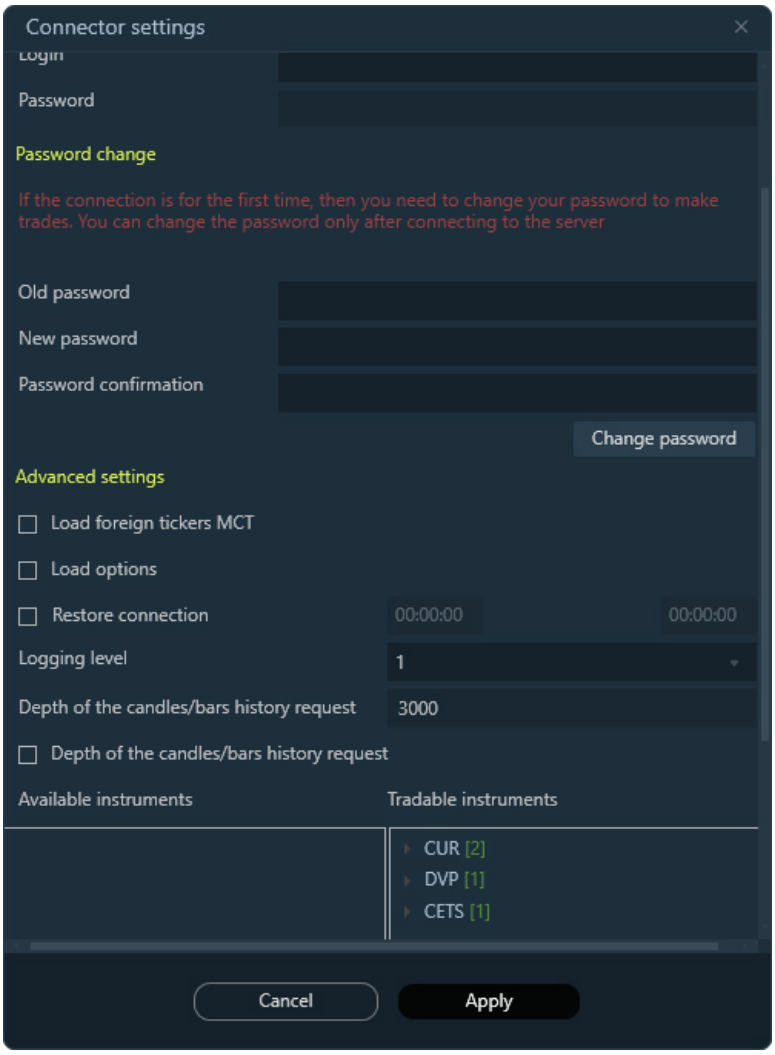
Name	Description
Name	Optional field. You can get information from where to get the IP and other useful information about the IP for the user.
IP address	By default.
Port	By default.
Login	It is not necessary to fill them in, you can fill them in when you connect.
Password	It is not necessary to fill them in, you can fill them in when you connect.

Parameters of Finam trading servers
Main address: tr1.finam.ru , port: 3900;
Backup address: tr2.finam.ru , port: 3900.

Parameters of trading servers of Bank Finam
Main address: tr1.finambank.ru , port: 3324.
Backup address: tr2.finambank.ru , port: 3324

Important! If the connection to Transaq Connector is made for the first time, and you have not traded through it before, then you will need to change your username and password through the program after establishing a connection to perform operations.

Password change form: Old password - New password - Change.

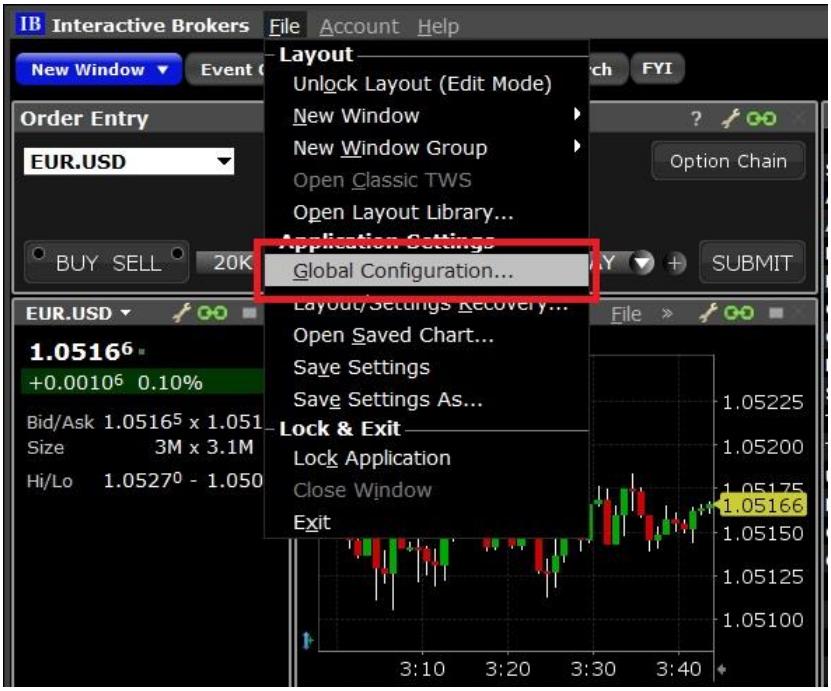


Name	Описание
Load foreign tickers MCT	Foreign MST tickers are being loaded
Load options	Options are loaded
Restore connection	The local computer time is specified. To restore the connection, check the "Restore connection" box and the recovery time.
Logging level	There are three levels of logging provided, based on the level of detail and log file size: 1 - minimal; 2 - standard (recommended); 3 - maximum. You can leave it unchanged.
Depth of the candle/bar history request	It should be changed when analyzing a large number of tools over 5000 in order to optimize the amount of memory consumed by the computer.
Don't load history by ticks	The loading will start from the last tick on the exchange for the current day. It should be changed when analyzing a large number of tools over 5000 in order to optimize the amount of memory consumed by the computer.
Available instruments	Selection of available tools.
Tradable instruments	Selected instruments to be used in trading.

Clients of FINAM need to connect the TRANSAQ Connector service in their personal account edox.finam.ru . Go to the menu "Trade" -"Information and trading systems (ITS)"- "Getting a new ITS". Select Transaq Connector as a trading system and specify the phone number to which a message with the password of the generated login will be sent.Make sure that the checkbox "Connect SMS confirmation of connection to the Terminal" is NOT put down. Specify the accounts that you would like to connect to your login and click the "Connect" button, then sign the generated documents.

Setting IbTws

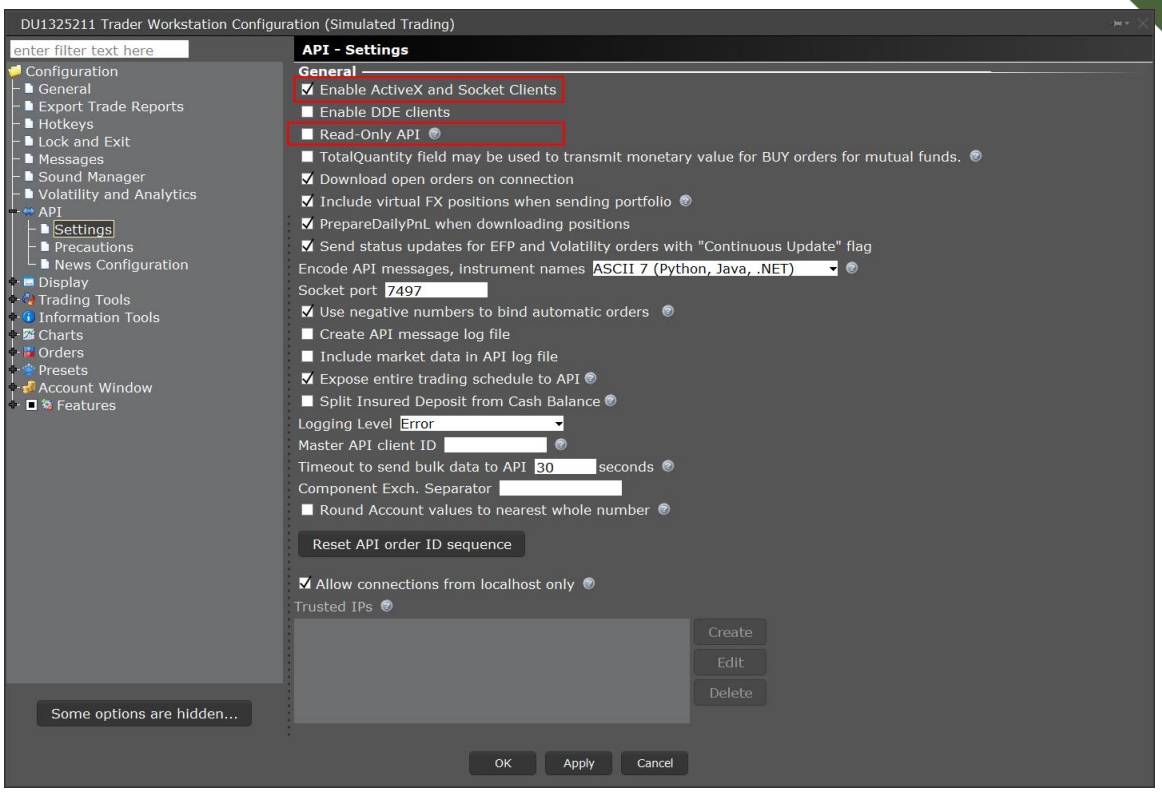
In the Ib Tws terminal, go to the File / Global Configuration menu.



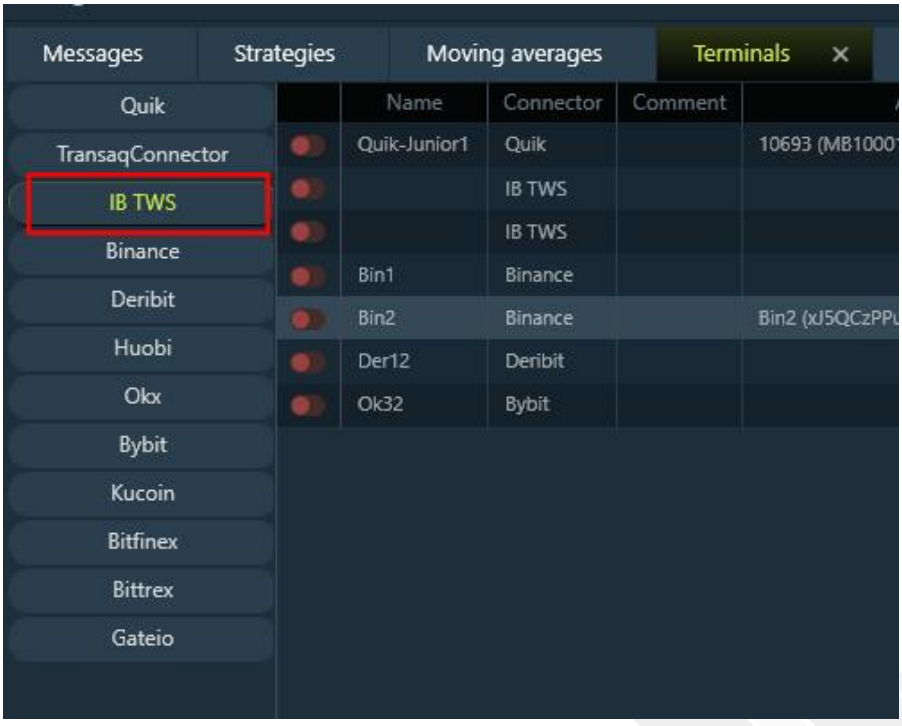
In the window that opens:

1. API / Settings section.
2. Activate ActiveX and socket clients - the check mark must be set;
3. Api, read-only - the check mark should be unchecked;
4. Socket-port 7497 - must match the settings in 1ExAlgo.

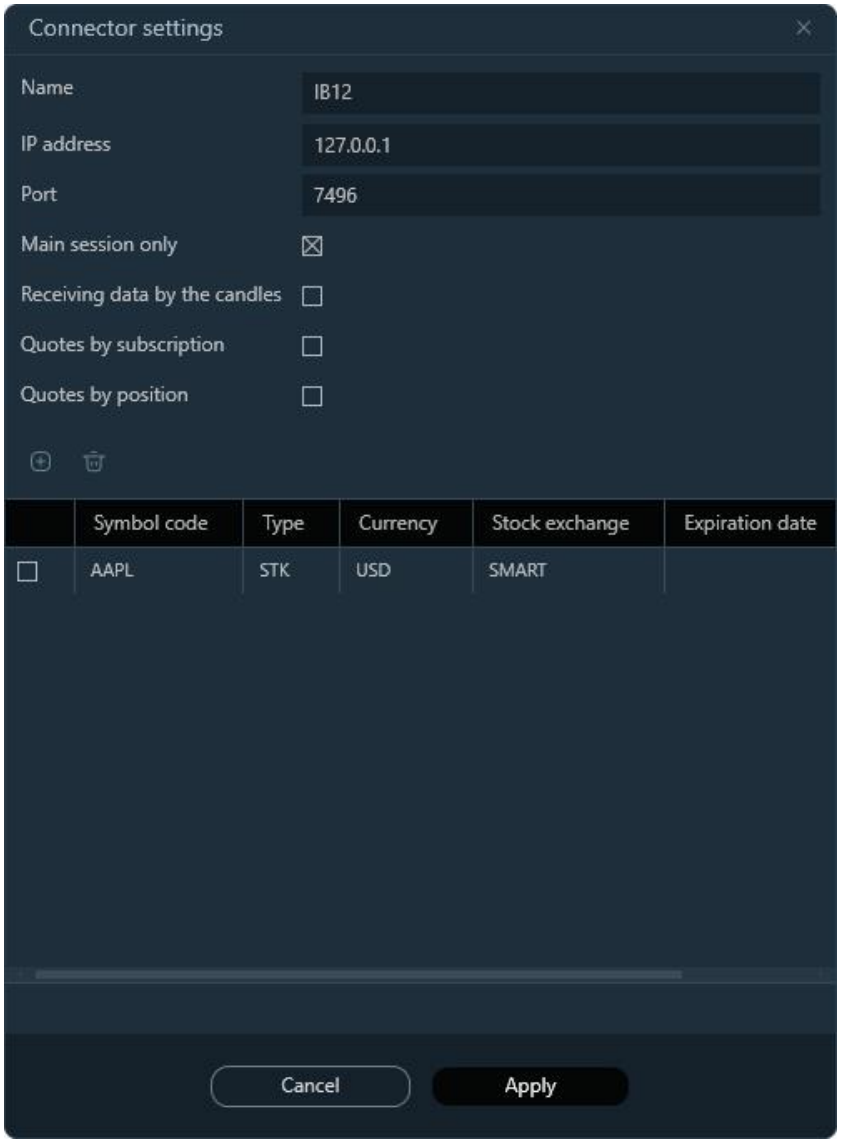
The rest of the settings remain by default.



Settings in 1ExAlgo: Connection section/Terminals and in the window that opens, IbTws is selected.



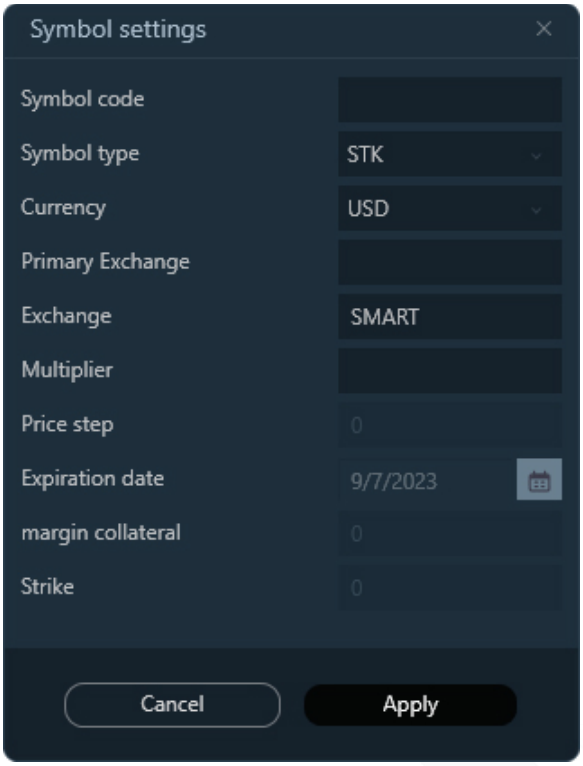
The "Add a new terminal" window.



Name	Description
Name	Optional field.
IP address	We leave it the same.
Port	Must match the port in IbTw.
Main session only	Get candle data only for the main session.
Getting Candle data	Connector mode of operation, ticks - data from IBTWS come in the form of 5 second candles, once every five seconds (maximum 60 instruments, candles - by candles, data is updated once a minute (500 instruments per second), maximum 1000 instruments if a subscription is purchased. The keyboard shortcut ctrl+alt+"=" allows you to see the

	number of occupied channels (1 instrument or DOM or tape) = 1 occupied channel. Channels can be occupied by both IBTWS and 1ExAlgo.
Getting quotes	From IBTWS by subscription - market data on instruments will be received for all instruments that will be listed.
	From IBTWS without subscription - market data on instruments will arrive with a delay of 15-20 minutes.
	From IBTWS by positions - market data on instruments will be extracted from open positions and orders, subscription is required for this mode.
	Through the provider - the data is received via another channel, for example IQFeed.

⊕ - add the tool you are interested in..



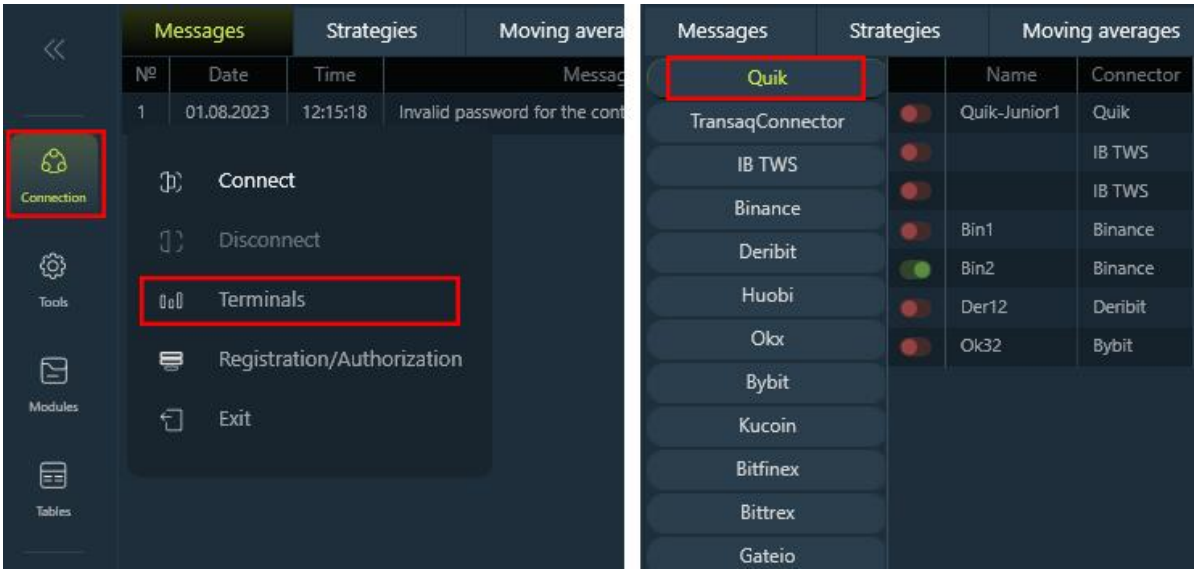
Name	Description
Symbol code	The code in IbTws. For futures, need to specify only two letters.
Symbol type	STK - stocks, FUT - futures.
Currency	The monetary unit in which the symbol is calculated.
Primary Exchange	The main platform from which quotes for the symbol are received.
Exchange	By default, you can leave SMART or use the same platform as Primary exchange.
Multiplier	Not a required field, but for some symbols, if they have the same ticker, you need to specify a multiplier "Multiplier".
Price step	For correct calculation, it is necessary to specify the minimum step of the tool.
Expiration date	The date of execution of the futures or options.
Margin collateral	Margin for futures or option.
Strike	The exercise price of the option.

After setting up the tools and the trading terminal, click Connections/Establish a connection.

Connecting to QUIK

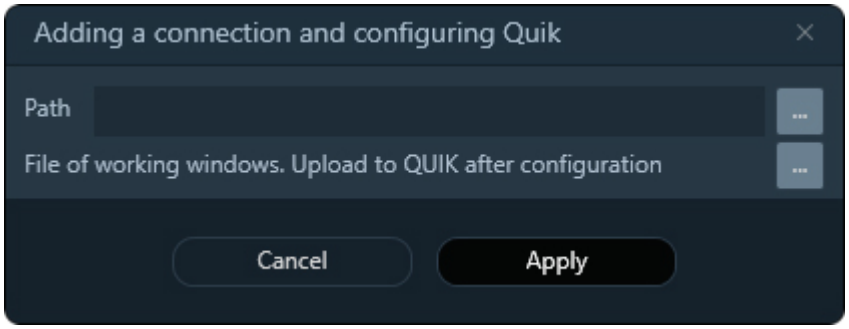
Creating a connection in 1ExAlgo:

The Quik trading terminal to which you plan to connect must be turned off. After starting 1ExAlgo, you need to go to the menu item "Connection"/ "Terminals"



A list of all possible connections that can be created is visible on the right. The type of Quik terminal is selected, the window "Adding connections and configuring Quik" will appear. At the same time, the program can work with 10 Quik and an unlimited number of accounts in these trading terminals.

If the number of Quik's connected at the same time is more than 1, then in order to optimize the information received, it is recommended to leave the "Table of current parameters" and "Table of all transactions" in only one Quik, in the rest Quik, close it.

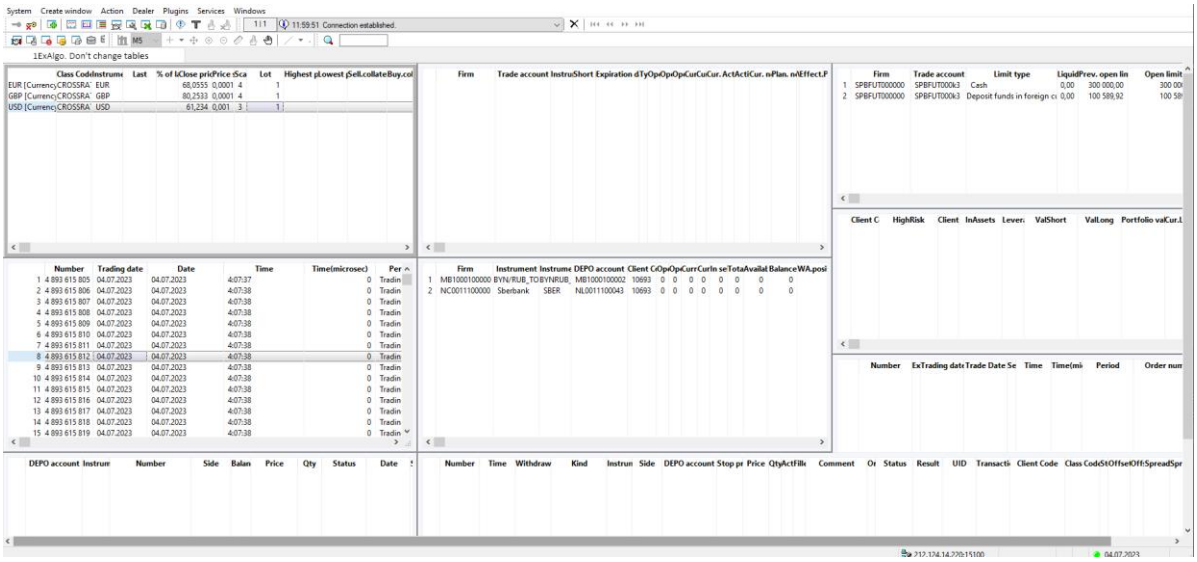


The folder with the working windows file can be opened immediately, it will need to be uploaded to Quik after the connection is established. To connect Quik, you need to specify the path to the folder where the file is located info.exe . If the path is specified correctly, then after specifying the path to the terminal, the "Set Settings" button will become active.

Setting up settings in Quik

After that, run Quick. Go to the menu "System" / "Download settings from file", select the settings template (located in the folder where 1ExAlgo is installed (..\1ExAlgo\Setting for terminals or this folder was opened from the menu earlier) and click Upload, and additional tables will be added to the settings on a separate tab.

If everything is done correctly, a new tab will appear in Quik called "1ExAlgo. Don't change tables" Do not change the tables in this tab otherwise, 1ExAlgo may not work correctly. **The only thing allowed to do on this tab is to add the necessary tools to the table of current parameters and to the table of all transactions.**



Important!!! The program receives only the information that is transmitted from the terminal. Therefore, it is necessary to add the instruments that will be traded to the table of current parameters. It is also necessary to add information to the "Table of all transactions" for the same instruments. **If a tick chart is not being built, then data will not be received in the table of all transactions. In this case, you need to contact your broker and ask him to connect tick charts.**

Important!!! If Quik has a dark theme, then it needs to be changed to a light one via the System menu/Settings/Main/Program/Design theme

Adding accounts to 1ExAlgo

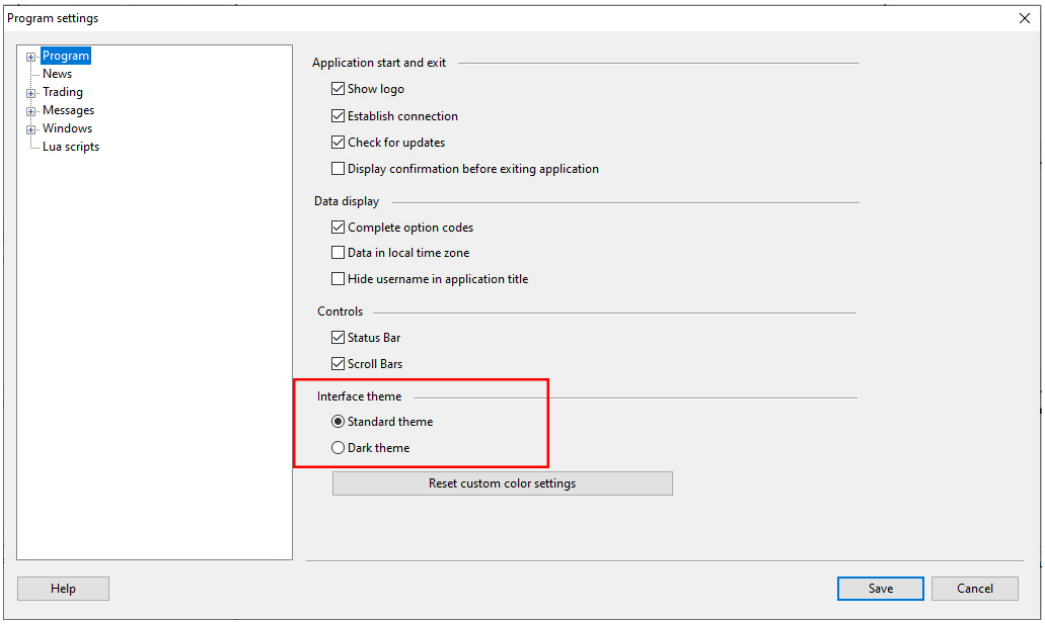
After the settings are loaded into Quik and in 1ExAlgo, click establish connection. We proceed

to editing the connection. Double-click with the left mouse button on the connection line or through the context menu "Edit" and add the available accounts from the left side to the right, if they themselves have not been transferred. If there is a problem with connecting to the terminal or the exchange, then this information will be displayed in the comments column and will be highlighted in yellow. If the connection is successful, the connection name and terminal type will be green.

Setting up Quik

- Creating a connection and uploading basic settings to Quik
- Loading tables in Quik
- Configuring tools and parameters
- Adding accounts to 1ExAlgo
- Editing the connection
- Setting up automatic connection of Quik with the server
- Connecting multiple Quicks

Important!!! If the quick has a dark theme, then it must be changed to a light one through the System menu/Settings/Basic Settings/Program



Important!!! To configure the 1ExAlgo-QUIK connection, it is necessary to run programs under the same rights, either as an Administrator or as a User

Loading tables in Quik

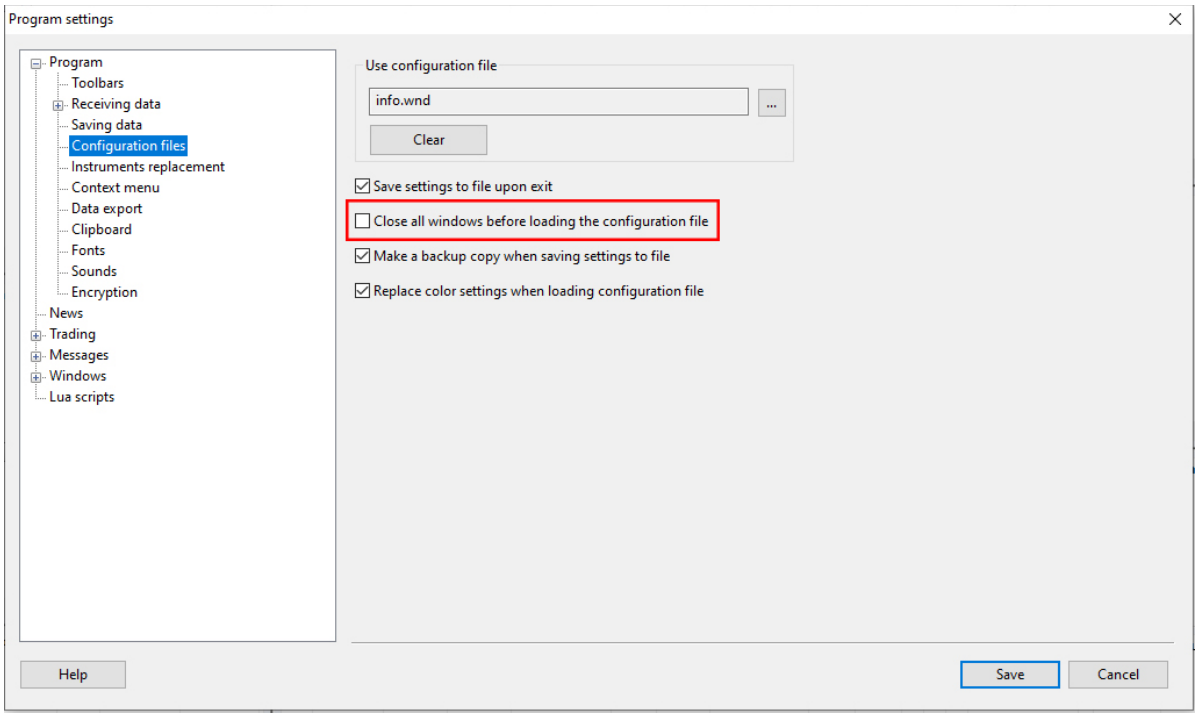
Launch the Quik trading terminal.

Enter the login and password to connect to the server.

For the Quik - 1ExAlgo programs to work correctly, you need to download the Quik desktop settings. The settings files are located in the root of the installed program 1ExAlgo, settings for Quik versions 8 and higher, if the Quik version is lower, then it is necessary to update it (files with the

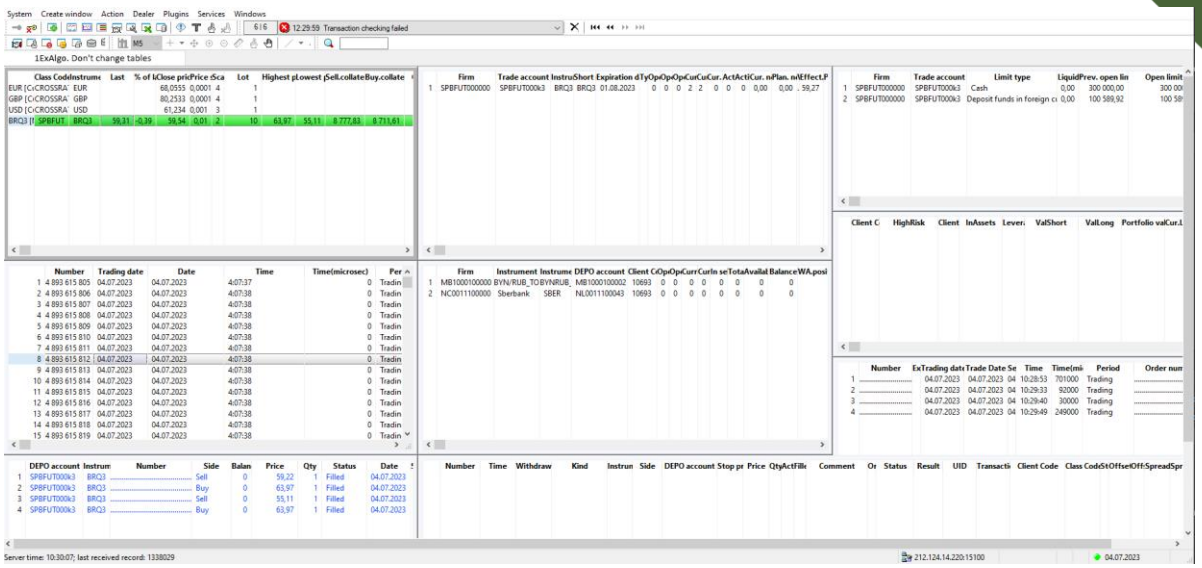
extension .wnd).

To avoid losing your desktop settings, make sure that the window closing setting is disabled before downloading a new settings file. Go to the "System" menu/Settings/Basic Settings/Program / Settings File" and uncheck the box next to the item "Close all windows before loading the configuration file" and click "OK".



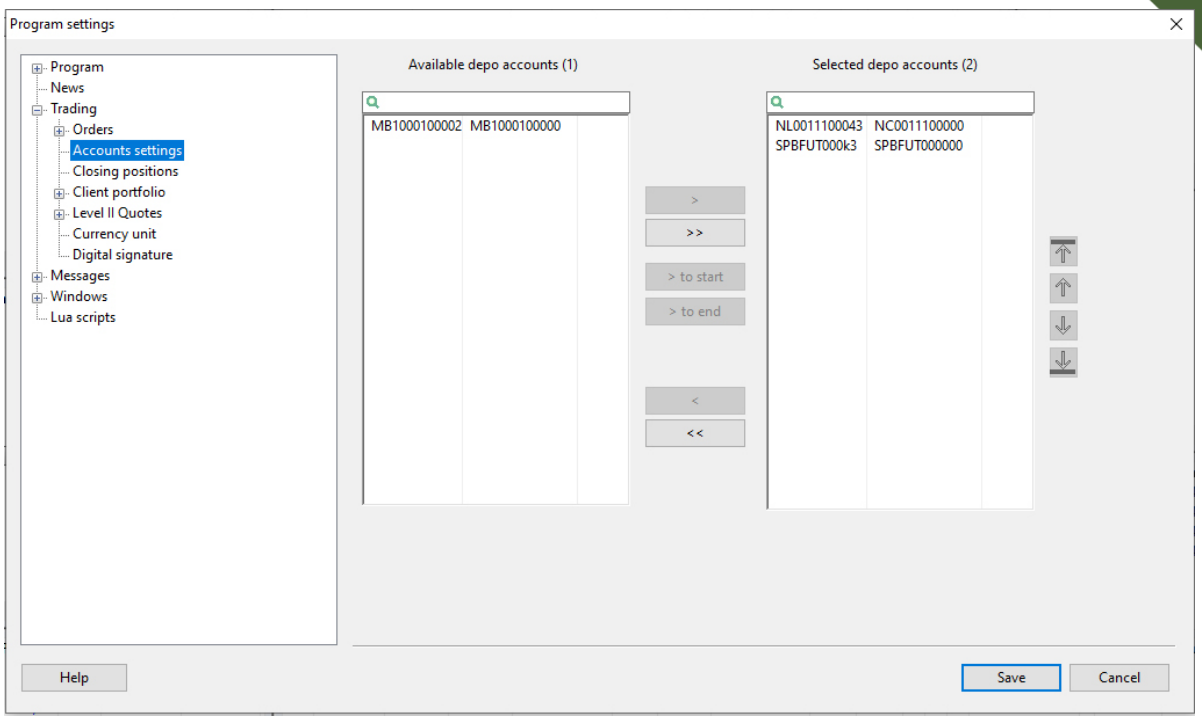
For Quik "System" / "Download settings from file", select the downloaded settings template and click Upload, and additional tables will be added to your settings on a separate tab.

If everything is done correctly, a new tab will appear in Quik called "1ExAlgo. Don't change tables" **Do not change the tables** in this tab, otherwise, 1ExAlgo may not work correctly. **The only thing you can do in this tab is to add the necessary tools to the table of current parameters and to the table of all transactions.**

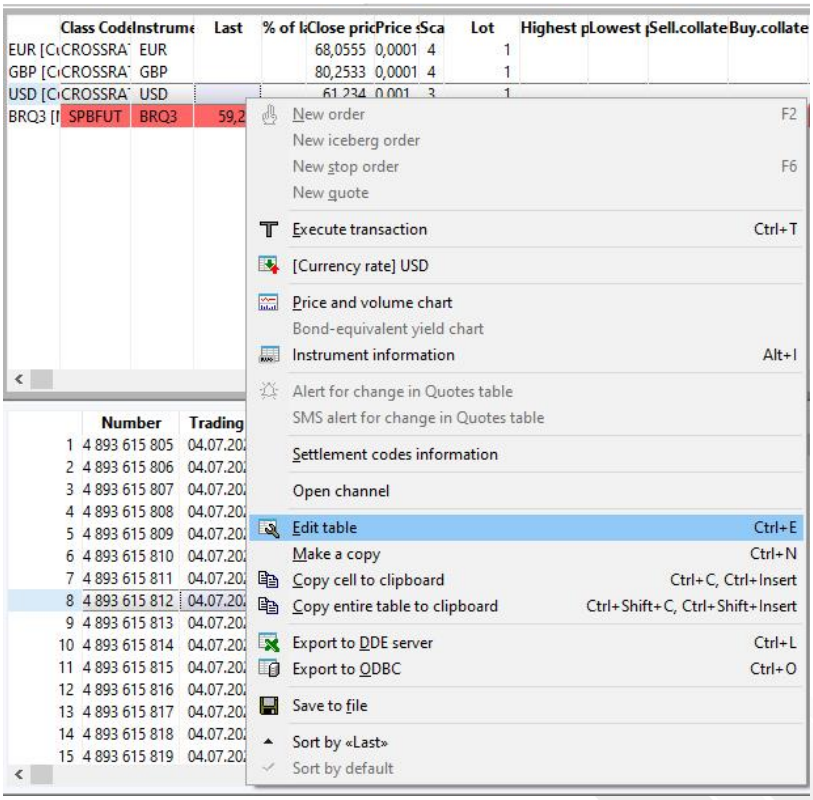


Important!!! The program receives only the information that is transmitted from the terminal. Therefore, it is necessary to add the instruments that will be traded to the table of current parameters. **It is also necessary to add information to the "Table of all transactions" for the same instruments.** If the "Table of all transactions" is not connected, data will not be received in this table. In this case, you need to contact your broker and connect the "Table of all transactions".

When loading additional settings, the automatic substitution of accounts in applications when trading through the Quik terminal may be removed. To restore the automatic substitution of accounts, it is necessary to add accounts in the Quik trading terminal yourself via "System" / "Settings" / "Basic Settings" and in the menu that opens, go to "Trading" / "**Account Settings**", add accounts to the right side.



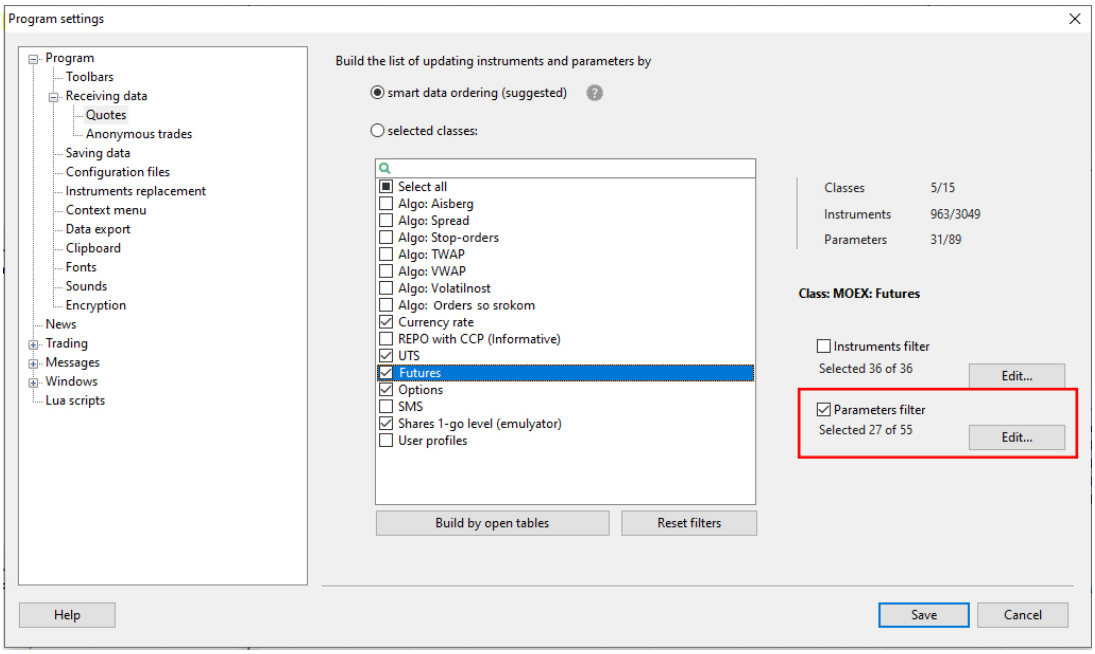
Adding new instruments to the "Table of current parameters" and "Table of all transactions" tables. Right-click anywhere in the table and select the menu item "Edit table".



The same actions must be performed with the table of all transactions.

Configuring tools and parameters
In the Quik System/Settings/Basic Settings/Program/Receiving/Quotes

Important!!! For each class that is selected for trading, uncheck the boxes next to the parameter filter.



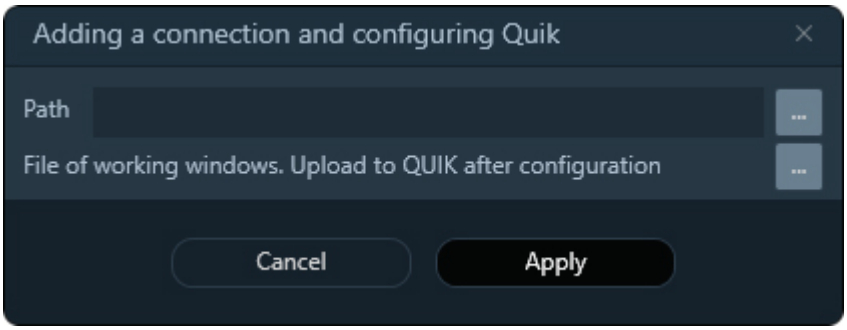
After performing all of the above operations, click "Yes". If you have received data from open tables in your settings, then QUIK will ask for confirmation, we answer "Yes".

Creating a connection to 1ExAlgo

The Quik trading terminal, to which 1ExAlgo is planned to be connected, must be turned off. In 1ExAlgo menu: "Connection"/ "Terminals".

In the left side menu, select the Quik terminal. The window "Adding connections and configuring Quik" will appear. **At the same time, the program can work with 10 Quik terminals and an unlimited number of accounts in these trading terminals.** If the number of Quik terminals connected at the same time is more than 1, then to optimize the information received, it is recommended to leave the "Table of current parameters" and "Table of all transactions" in only one Quik, and close it in the other terminals.

Important!!! If the real Quik and Quik Junior are running, then the robots may not trade as planned, due to different information about quotes, because the data from the "Table of all transactions" and the "Table of current parameters" are different. Therefore, either Quik or Quik Junior should be connected to the computer. To test the robot how it will behave in real trading and testing the correctness of the algorithm execution, we recommend using Quik Junior.



If the desired Quik terminal is not in the list, then you need to specify the path to the folder where the file is located info.exe . Select the location using the dialog box that appears after clicking on the button. After specifying the path to the terminal, the "Set Settings" button will become active.

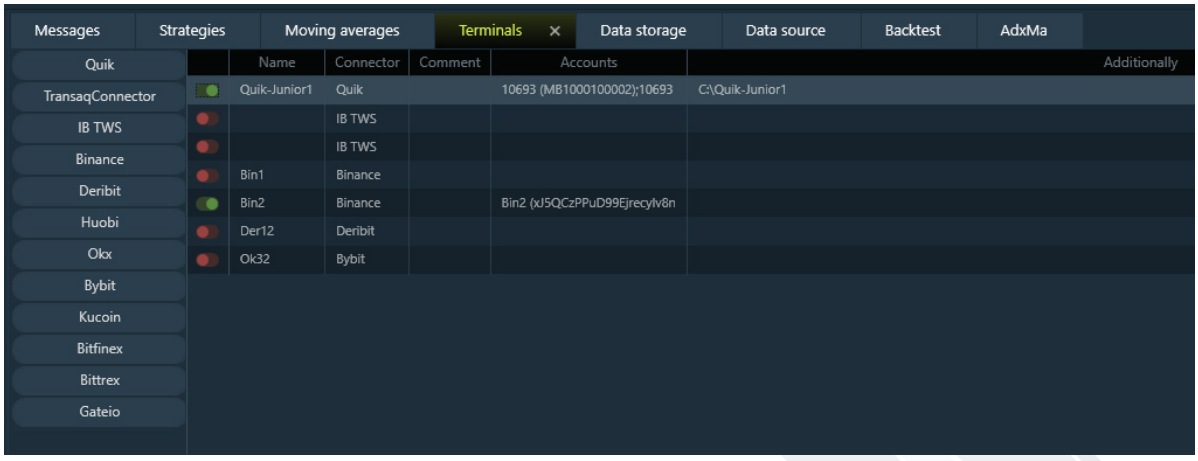
Adding accounts to 1ExAlgo

After the settings are loaded, run Quik. After that, click the Connection/Establish a connection.

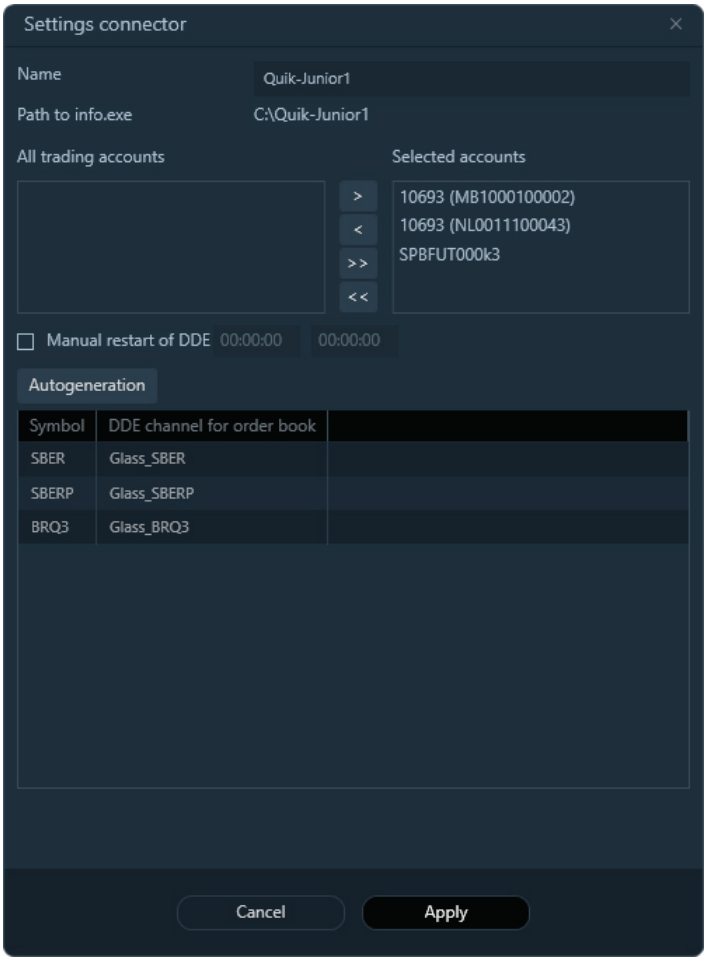
We proceed to editing the connection. By clicking the left mouse button on the connection line. If there is a problem with connecting to the terminal or the exchange, then this information will be displayed in the comments column and will be highlighted in yellow. If the connection is successful, the connection name and terminal type will be green.

Table of configured connections

- connection is not used
- connection is in use.



By double-clicking or using the context menu on the connection line, the terminal settings dialog box opens. If 1ExAlgo is connected to Quik, and the terminal is turned on and connected to the server (optional, if accounts are already displayed in the tables that transmit information from Quik to 1ExAlgo) and all settings are made, then the available trading accounts should be displayed on the left side. The accounts have a "double structure" in the left part of the account, the customer account "10124" is displayed, and in the right part the depot account "NL0011100043".



The necessary invoices must be moved from the left side to the right and "Applied". This completes all the settings for connecting to Quik.

Manual restart of DDE - The local time of the computer is specified. It is recommended not earlier than Quik connects to the server and from 15 to and 5 minutes before the start of the session.

Auto-generation - see below (Adding DOM).

Control of sending transactions per second – limits the broker to no more than 20 transactions per second, if the value is set to greater than zero, then this option is enabled.

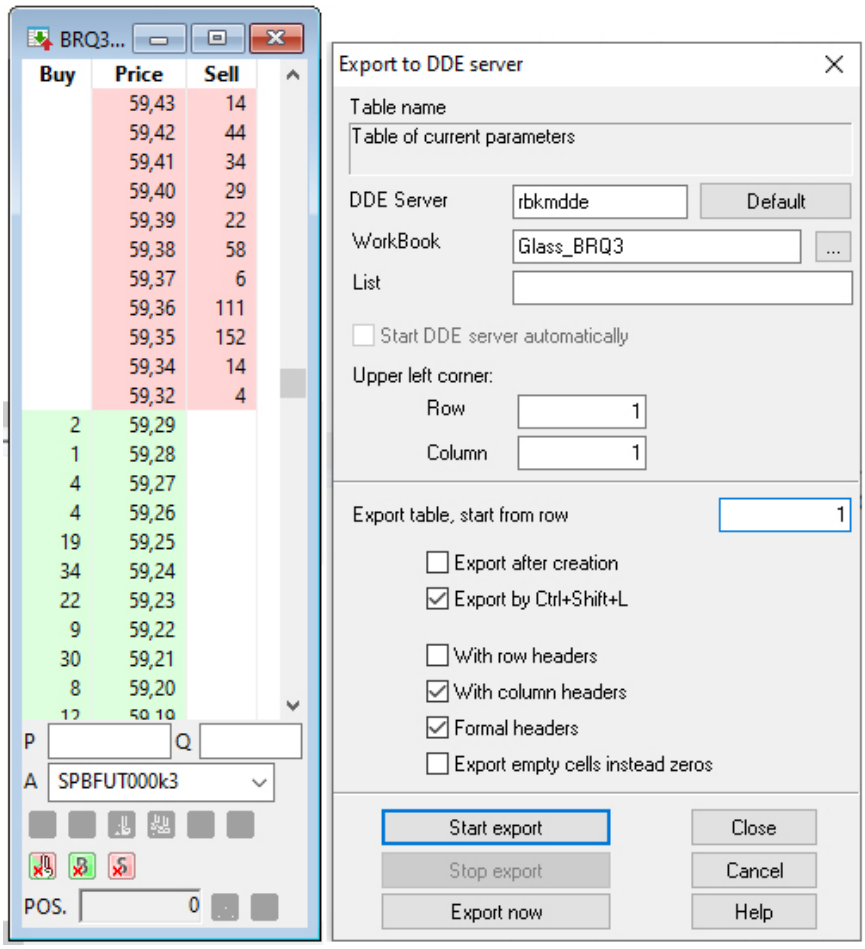
Establishing a connection is described in the "Connection" section.

Adding DOM

If it is necessary to work with DOM, it is necessary to automatically create DDE channels by

means of the "Auto-generation" button. Auto-generation - automatically generate DDE channels for instruments broadcast from quick.

Next, in Quik, you need to open the DOM of the desired tool and right-click on the menu, where you can select "Output via DDE server". DDE server: rbkmdde. Workbook - prescribe the necessary tool (DOM_"tool"). Checkboxes must be set as shown in the figure below.



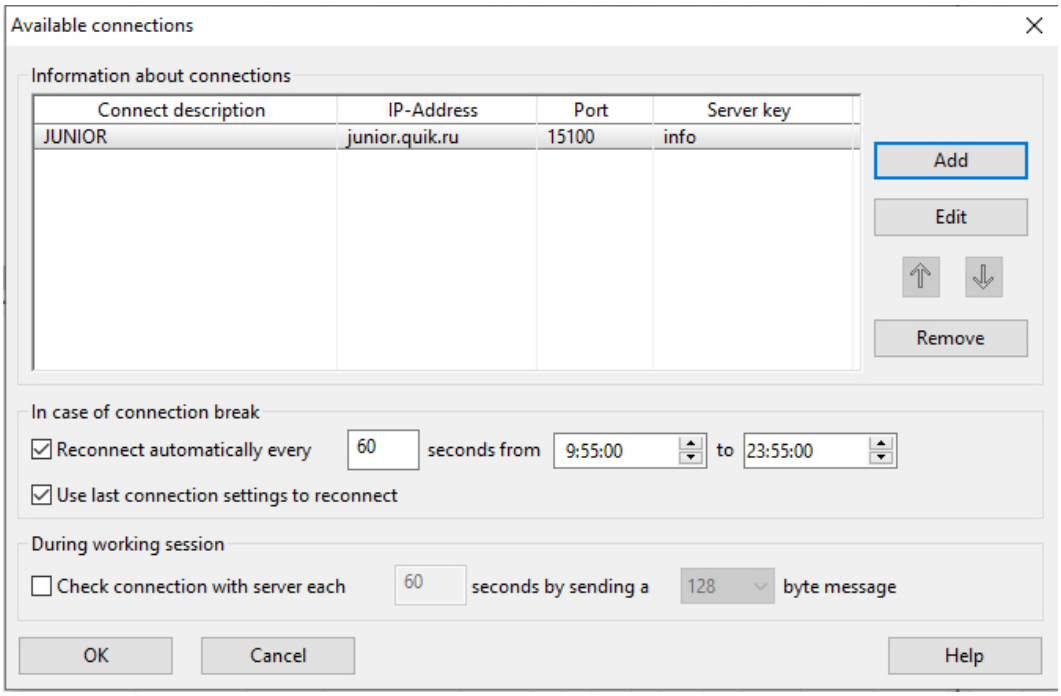
Setting up automatic connection of Quik with the server

To automatically connect the QUIK terminal to the server when the connection is broken, the following settings must be made in it. Select the menu item "System/Connections"

In the window that opens, make the following settings:

- Select the server (different brokers, different servers)
- Check the box "Restore communication automatically after", the recommended time period after which you should try to restore communication is 5 seconds, and the time from 9:55 to 23:55.
- If you are working with pending orders, then you need to tick the box next to the item "when restoring, use only the parameters of the last connection" - if it is not set, another server can be used when reconnecting, then programmatically it will not be possible to interact with the order or stop order placed on another server. In order for the robot (1ExAlgo) to interact with it, you need to

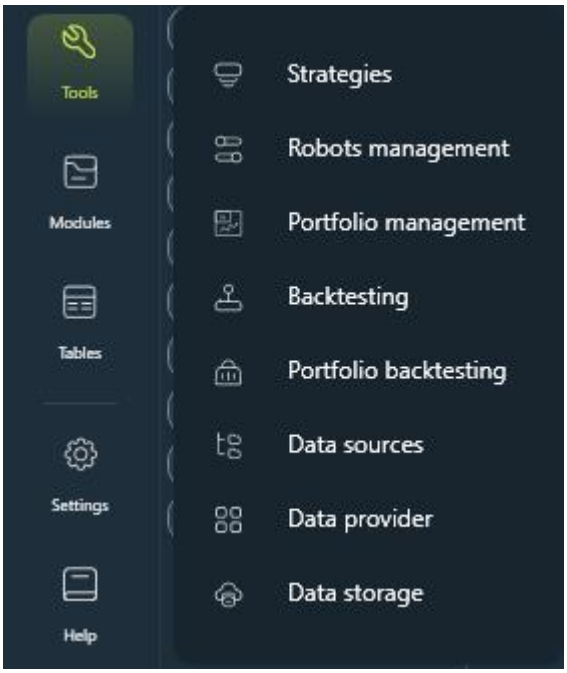
manually make this application your own in QUIK (the menu item when you right-click on the application "Make the application your own"). It is recommended to check the box in this paragraph, even if we do not use deferred applications.



Connecting Multiple Quik terminals

If there are more than one Quik terminals connected at the same time, then to optimize the information received, it is recommended to leave the "Table of current parameters" and "Table of all transactions" in only one Quik terminal, and close it in the other terminals.

Tools



Strategies - download and store all available strategy scripts, scanners, user statistics and portfolio management;

Robot management - management and monitoring of all created robots according to different strategies;

Portfolio management - combining robots according to one strategy into a portfolio to control overall risks, operating time and/or other parameters;

Backtesting - verification, analysis, selection and optimization of strategy parameters;

Portfolio backtesting - combining different strategies, tools, timeframes into a single test and obtaining a common yield curve;

Data sources - a list of downloaded historical data on instruments;

Data providers - download or automatic download of historical data for testing;

Data storage - storing the history of candles/bars received from servers or terminals during operation.

Robot management

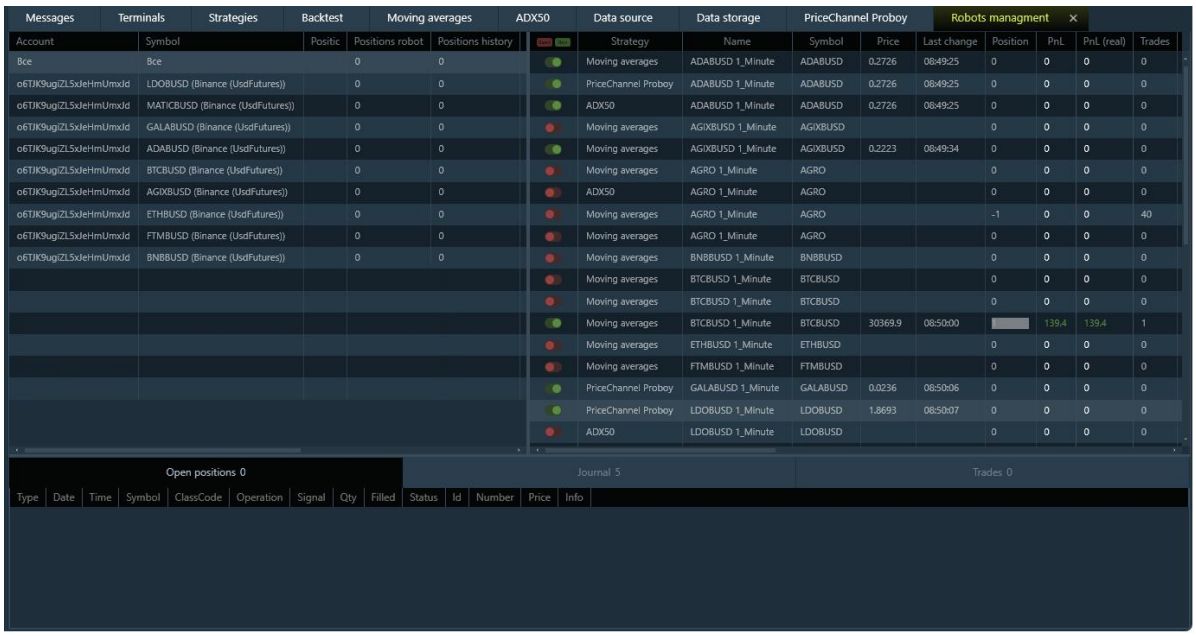
The section "Robot Management" is designed to control all created robots for all strategies. To open the "Robot Management" section, you need to go through the Tools/Robot control.

In the left part of the window - where all available accounts for all terminals are located. In the right part of the work. When you select a specific account on the left side, all the work on this account will be displayed on the right. When selecting "all" on the left side. the right one will display all the works available on the platform.

On the right side there are buttons for turning robots on and off.

Portfolio management windows are convenient for monitoring the situation as a whole, and also makes it possible to see all the robots running according to different strategies, because some robots might have forgotten to turn off and they can start trading without your knowledge.

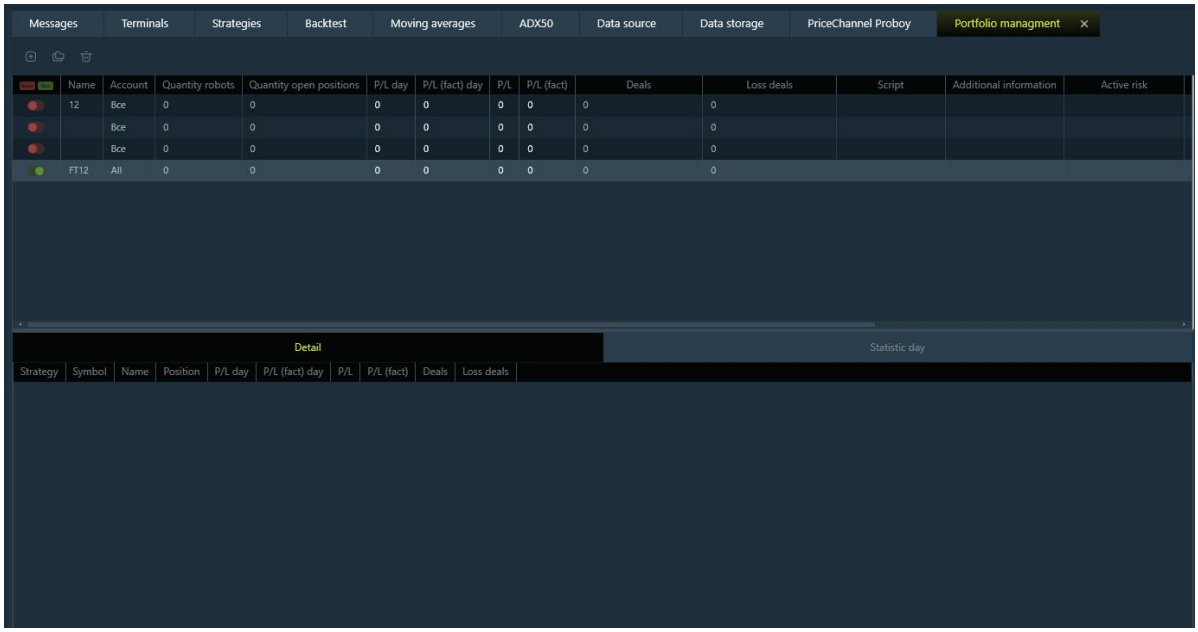
The bottom panel "Open positions", "Journal" and "Trades" - perform the same functions as in the strategy.



Portfolio Management

Robot portfolios - combining several robots to assign them common risks, managing funds and parameters calculated by a user script. To open the "Robot Portfolio" section, you need to go through the Tools/A portfolio of robots.

The detail section displays the robots included in the portfolio. Statistics for the day - the total trading results for the day for all robots. The right part is designed to output user data from the script to a table or graph.



- adding a new portfolio;
- portfolio deletion;
- copying the portfolio (first you need to tick the box next to the portfolio that you want to copy);
- portfolio launched;
- the briefcase is stopped;

The robot is edited via the context menu or by double-clicking on the portfolio.

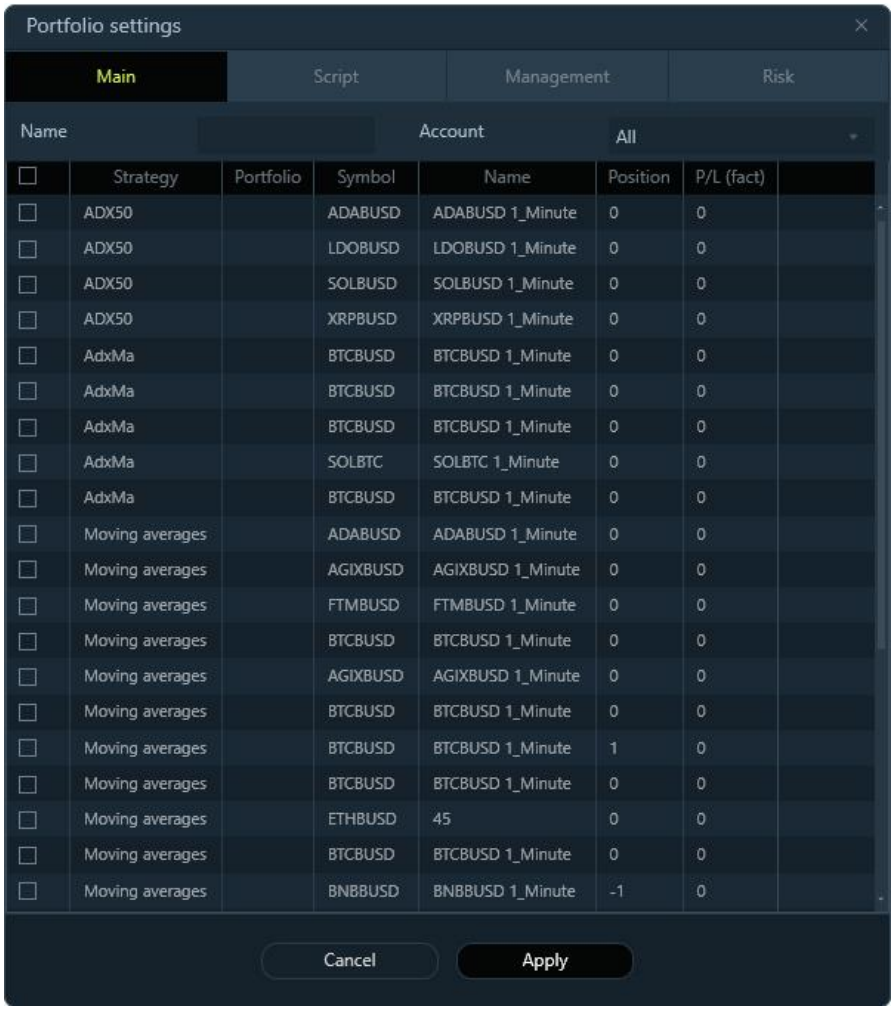
When you click and add a new portfolio, as well as when you open an existing portfolio, the portfolio settings window appears.

Tab "Main"

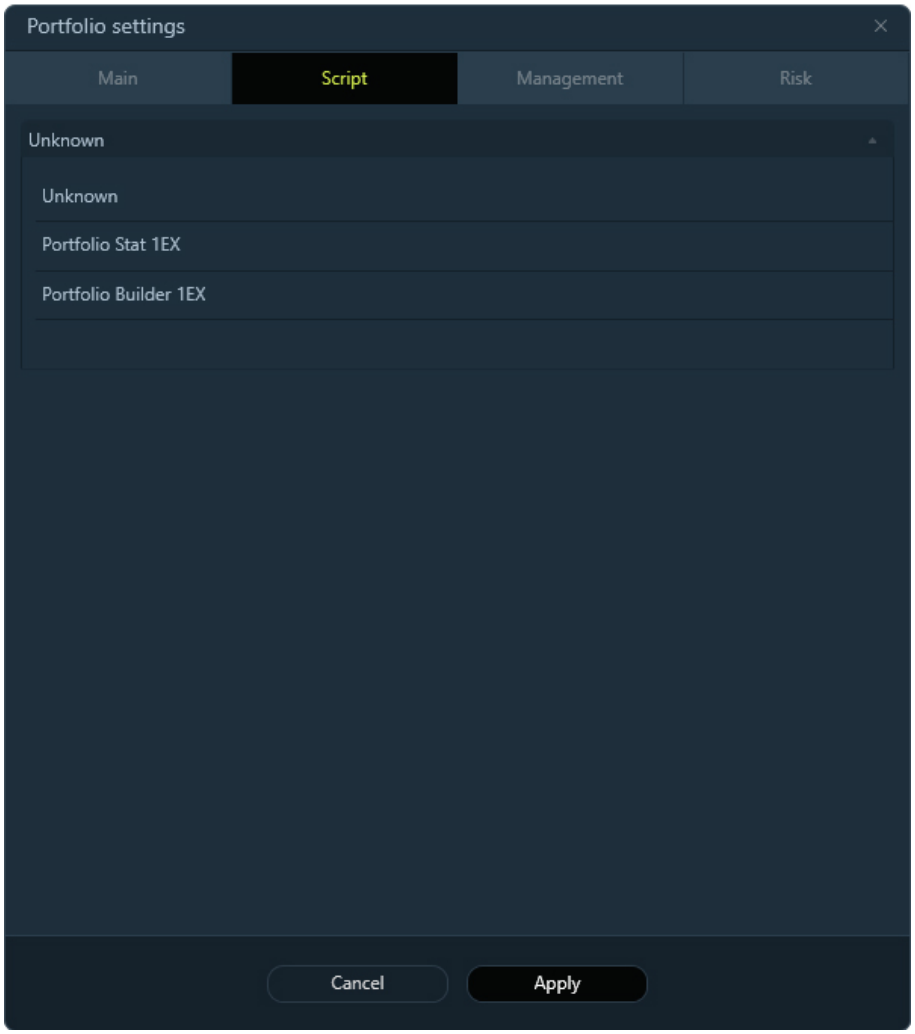
Name - it is necessary to enter the name of the portfolio, a mandatory item.

Account - select the account that will use the portfolio. All - any accounts.

List of robots - here you can tick the robots that will be included in the portfolio.



The "Script" tab
of the portfolio's working conditions can be taken from the script.



Tab "Management"

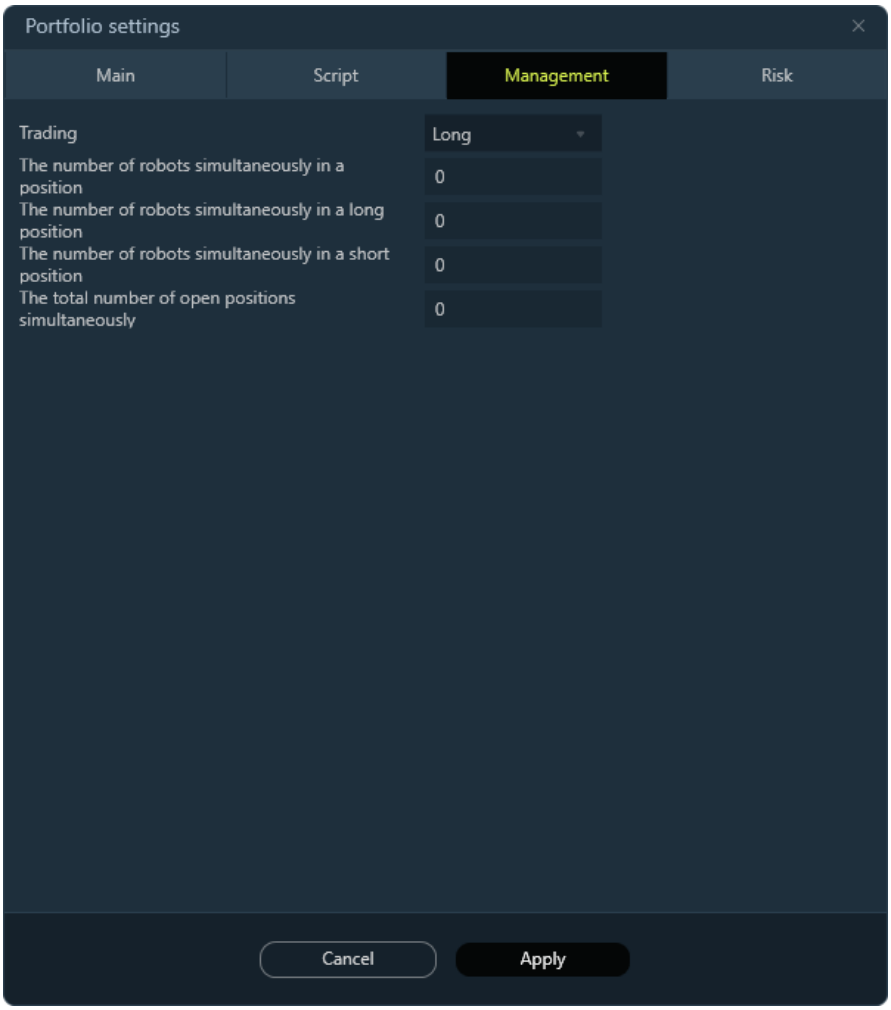
Trading - (long, short, long and short) Set a possible type of trading for the portfolio. Priority is given to the portfolio if the trading conditions in the strategy contradict the portfolio.

The number of robots simultaneously in a position - The total number of robots for which positions can be opened.

The number of robots simultaneously in a long position - The maximum number of robots in the portfolio that are simultaneously in the long position.

The number of robots simultaneously in a short position - The maximum number of robots in the portfolio that are in the short position at the same time.

The total number of open positions simultaneously - the maximum number of open deals on robots included in the portfolio. Several trades can be opened in one robot using different signals, depending on the strategy.



The "Risks" tab

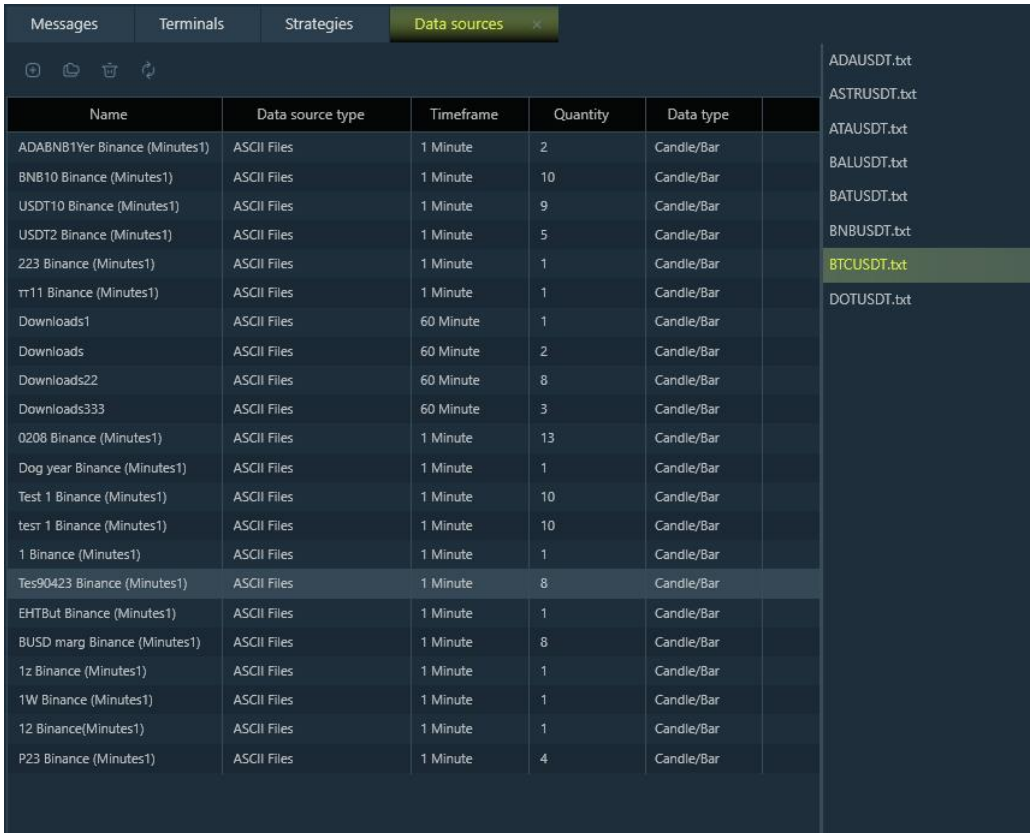
The functionality of the Risks of use in the portfolio is similar to the functionality of the Risks used in the work separately. The application of this section is described in the section "Risks".

Data sources

Data sources are used for testing on history and automatic history loading. Located in the upper menu "Tools/Data sources".

Sources

Tools\Data sources. In the left part there are created sources, it is recommended that the name should contain the timeframe and the source from where they were downloaded. In the right part there is information about the location of the files (in the context menu "open data folder" - the corresponding directory will be opened) and about the files uploaded to 1ExAlgo).



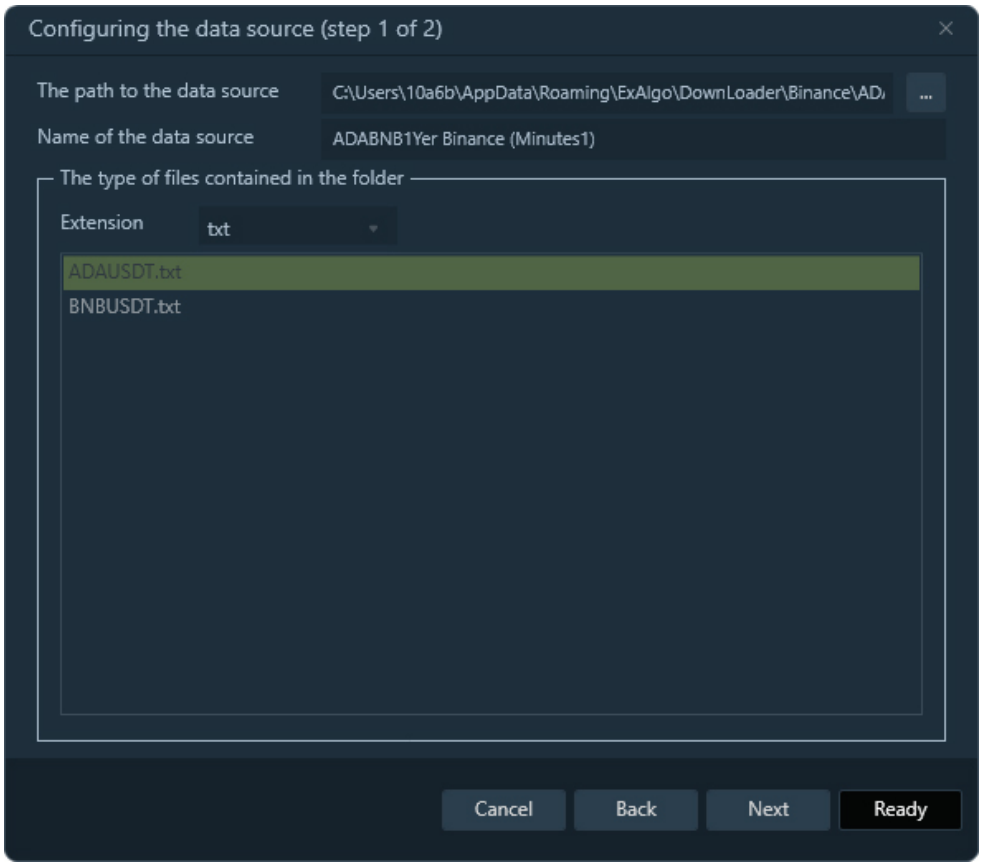
- add a new source;
- copy the source (first you need to tick the desired source);
- delete the selected source;
- updating data by source (when adding new data to the source folder, it is necessary to update the source);

All actions are duplicated via the context menu. Editing the source is possible via the context menu or by double-clicking with the left mouse button.

Also in the context menu there are items: Open a folder with data, Convert, Glue (For more information, see the section "Creating, deleting, updating data sources").

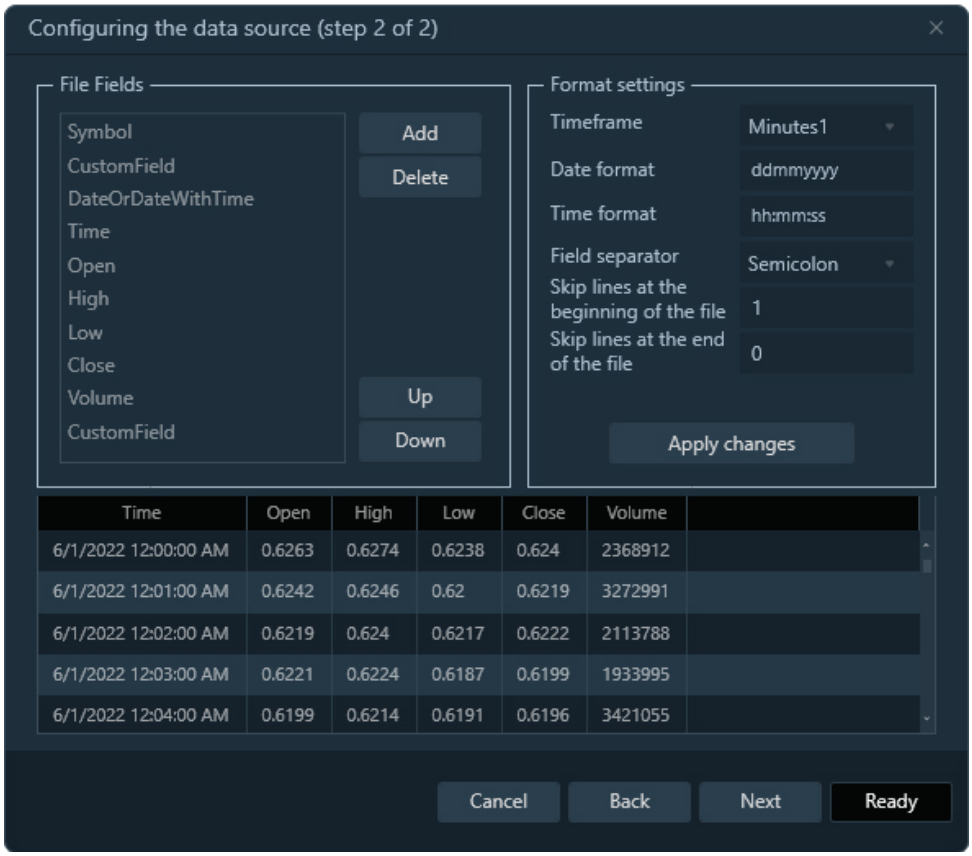
Creating, deleting, updating data sources

Addendum
Click to add historical data to the program ⊕ or click copy



Select the directory where the data is stored, select the data format (txt, csv, qsh, xml). If the correct choice is made, the files will appear in the list. It is recommended to specify the timeframe and source in the directory name, for example, 5 minutes quick or a convenient recording format. By default, the name of the data source is substituted by the name of the directory, if necessary, you can change it.

Click the "Next" button.



In most cases, the parameters are determined automatically. If the format is successfully determined, the file data will appear in the list of quotes at the bottom of the form. If the data does not appear, then the "Done" button will not be active and the data table will be empty. You must specify the file fields yourself and specify the date and time formats and other parameters.

The file fields are the names of the columns that are in the uploaded files. If the number or location of fields differs from the default ones, then you need to change the order of the fields using the Up or Down buttons, if the field is missing, then you need to add it using the Add button, or if the field is superfluous, remove it from the list using the Delete button.

Required fields in the file:

- The tool
- Date (or date and time)
- Time
- Open
- High
- Low
- Close
- Volume
- Open interest

If there are fields that are not in this list, then an additional field must be added to the list.

Which fields in the file can be seen by directly opening this file using notepad, you can find it through the context menu "open data folder".

Example:

```
Date;Time;Open;High;Low;Close;Volume
;;19.57000000;19.58000000;19.50000000;19.53000000;7695.27000000
;;19.52000000;19.55000000;19.52000000;19.55000000;1179.97000000
;;19.55000000;19.57000000;19.50000000;19.56000000;4406.28000000
;;19.56000000;19.60000000;19.53000000;19.57000000;2726.60000000
;;19.56000000;19.62000000;19.56000000;19.61000000;1498.60000000
;;19.61000000;19.65000000;19.61000000;19.65000000;1250.49000000
;;19.64000000;19.65000000;19.59000000;19.59000000;3333.12000000
;;19.60000000;19.60000000;19.51000000;19.51000000;2132.60000000
```

Setting up the data format.

To download the file correctly, you need to configure the data as in the file.

Date format. In the file, the date looks like 20140701, i.e. select the date format "yyyymmdd" (year month date).

Time format. In the file, the time looks like 100000, i.e. select the date format "hhmmss" (hour minute second).

Field separator. This is the symbol by which the fields are separated from each other, in this example a space is used (All fields in the file are separated by a space "<TICKER> <PER> <DATE> <TIME> <OPEN> <HIGH> <LOW> <CLOSE> <VOL>"), so we choose a separator the "space" fields.

The digit separator cannot be changed, we leave "no". Example: if a space " " is used as a digit separator, then 1000000 would look like 1,000,000, but for the file to load correctly, there should not be a digit separator in the file.

Skip the line at the beginning of the file. In the file that we are considering, the first line goes "Column Headers", so we skip one line "1", if the data would immediately start in the file, then it would be possible not to skip the lines.

Update

In order to add a new historical data with parameters that already exist among the created sources (timeframe and data structure), it is not necessary to create a new source. In order to add new historical data in text format, you need to add them to the folder with the saved historical data.

- After that, make the corresponding source active and click update

The data will be automatically updated and in the "source files list", all files available in this source will appear. If the format of the new historical data differs from the format created in this source, then in this case you will receive the following message, indicating the file that contains the error and the line in which this error was found.

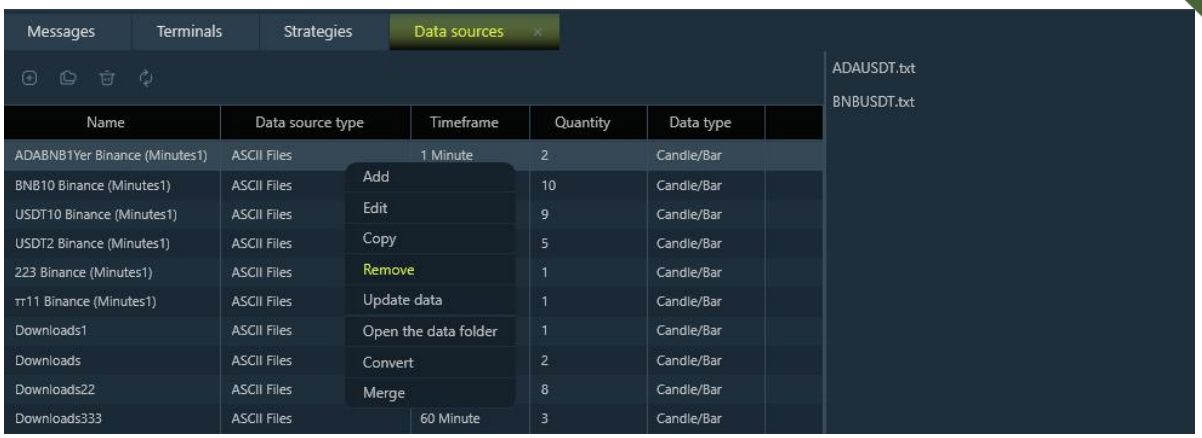
If another timeframe other than the source is added, there will be no error message. In this case, while testing the strategy on historical data, the data may not display correctly.

The Council. Create sources with the same timeframes and source.

Removal

If the source is no longer needed for any reason, you can delete it. Make the source from the list of sources active and click delete .

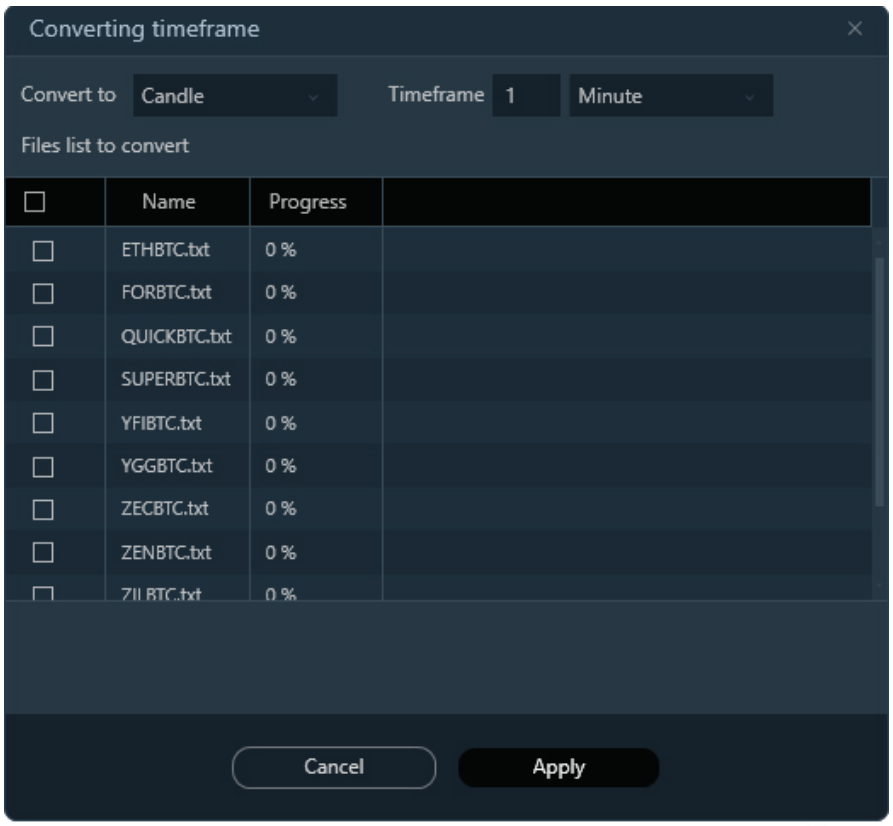
All these buttons are duplicated via the context menu.



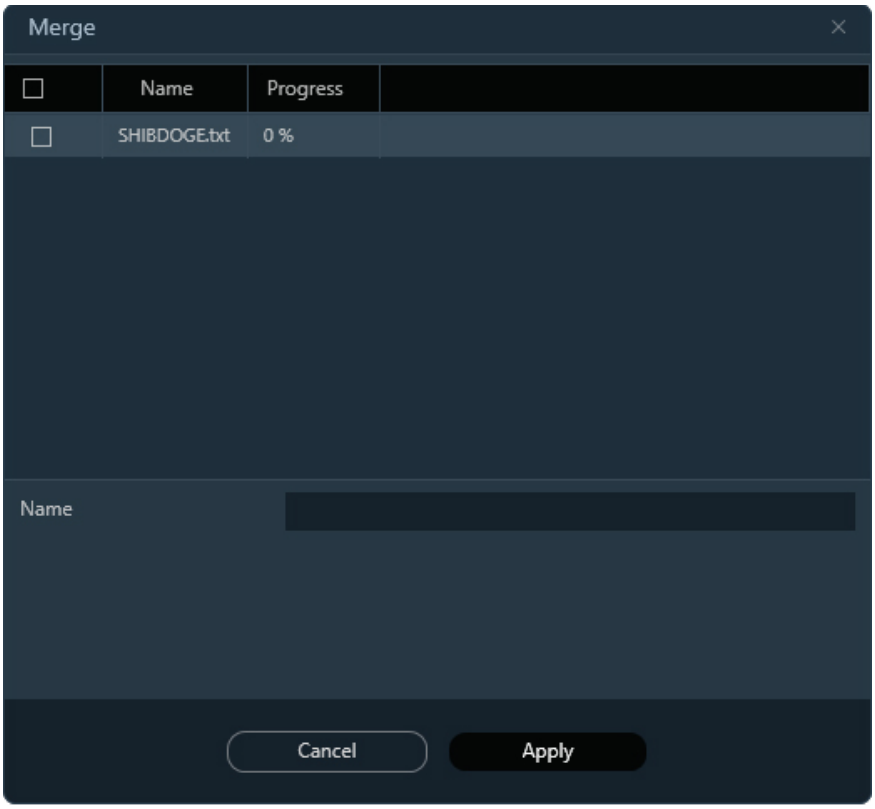
there is also functionality here:

Open the data folder - clicking opens the folder on the PC where the downloaded data is stored.

Converting timeframe (Convert) - this function is necessary to change the timeframe (for example, minutes to days).

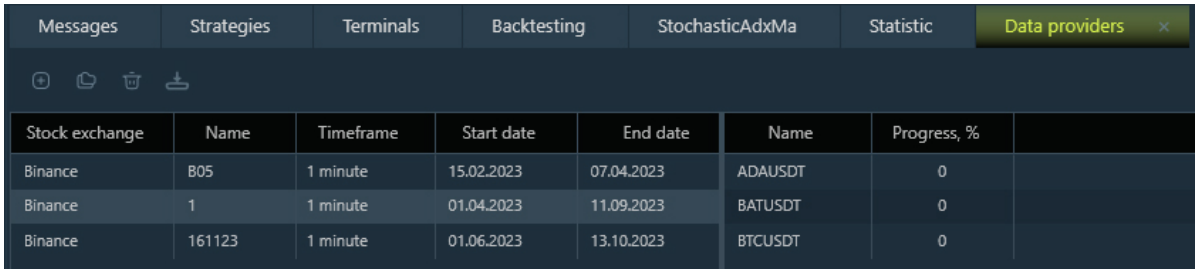


Merge - this function is necessary to combine files with data from several into one.


Merge
Name
Progress
SHIBDOGE.txt
0 %
Name
Cancel
Apply

Data Providers

This section is intended for one-time download or automatic download of historical data for testing. On the left side there are Exchanges and sources from which you can download historical data.



- add a new data provider;
- copy the data provider (first you need to tick the desired supplier);
- delete the data provider;
- upload data.

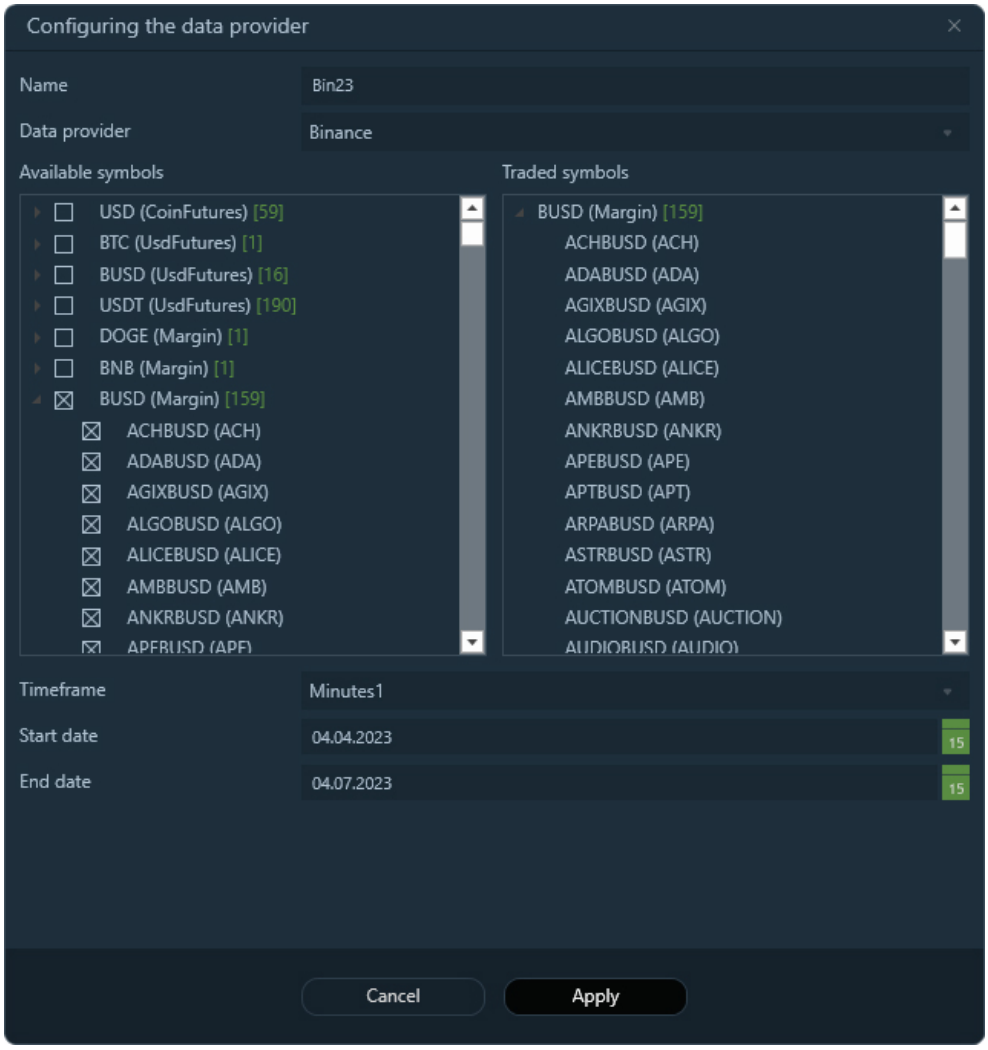
All actions are duplicated via the context menu. The supplier can be edited via the context menu or by double-clicking with the left mouse button, but only part of the fields can be edited.

To upload data, you need to click the "Upload Data" button or through the context menu.

Downloading Data from a Crypto exchange

First of all, a connection is established with the crypto exchange (Connection/Establish a connection), then go to "Tools / Data Providers".

Either through the menu or through the context menu – the "Add" menu item

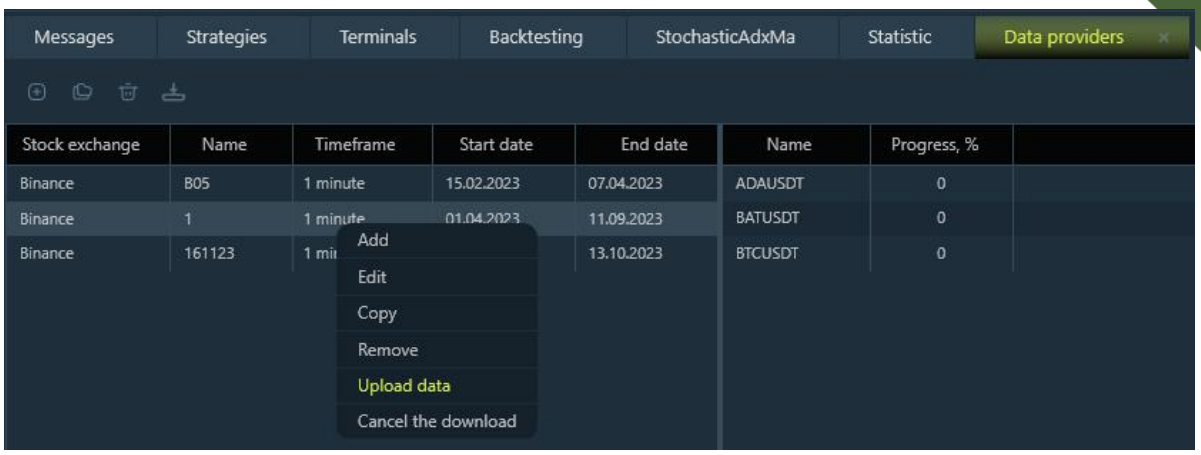


We select the instruments of interest for which we need to get historical data and transfer them to the column of traded instruments.

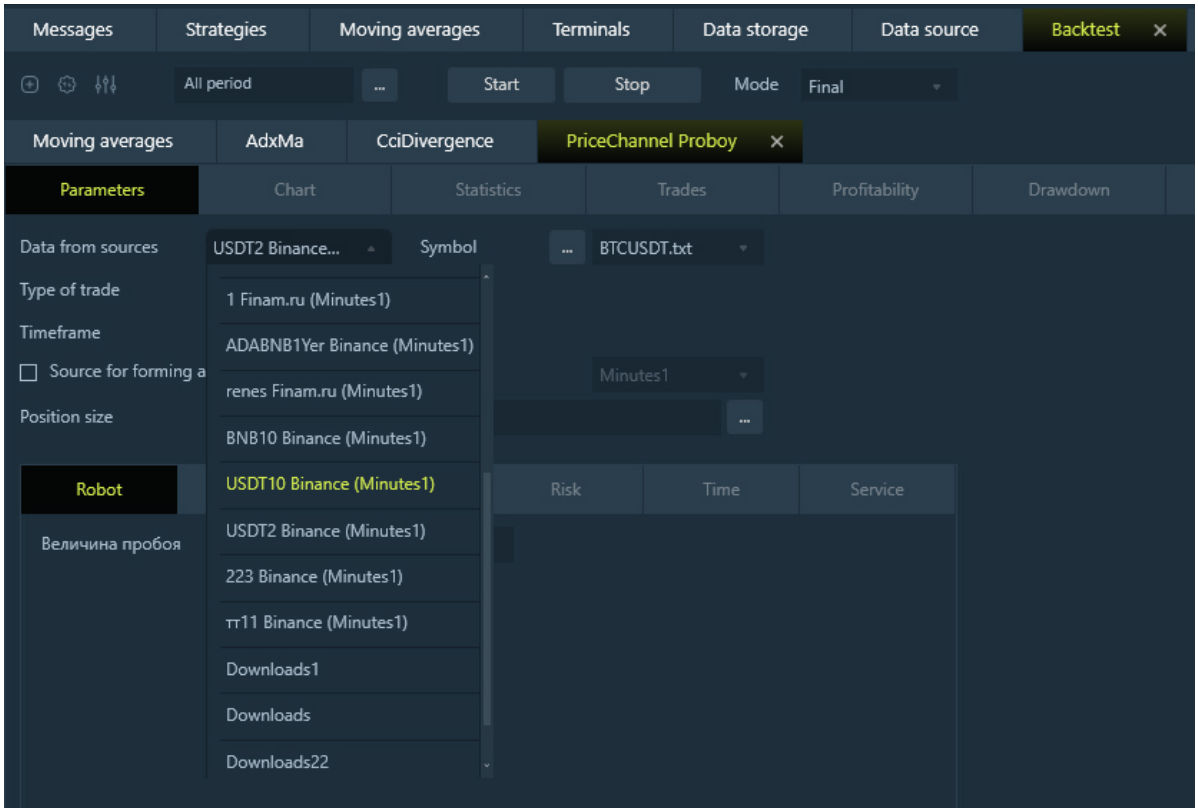
Enter the name of this source (the name can be any, the main thing is that it is clear to you)

Select: Timeframe, period – for which we will upload historical data and tools for trading.

The rest can be changed at your request.



Use the button or the context menu to select "Upload data".
In the "Sources" tab in the right table, the resulting files and the path to them are visible.
New information is automatically added to the "Data Sources" and displayed in the testing section.

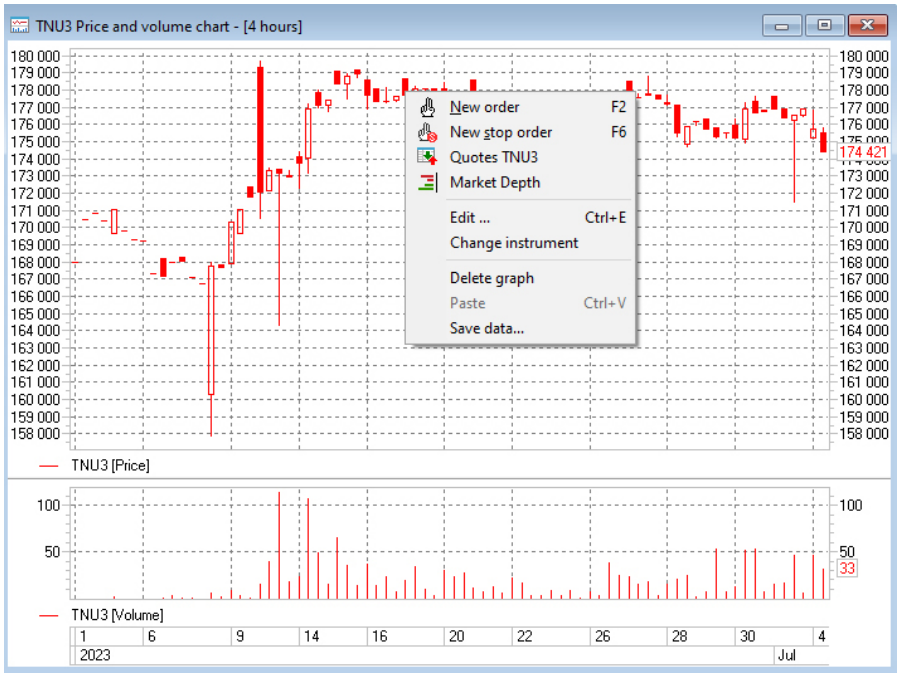


Downloading historical data

You can download it from various resources. As examples, two examples will be considered: saving data from the Quik trading terminal and from the website www.finam.ru.

Example 1. Saving data from the Quik trading terminal.

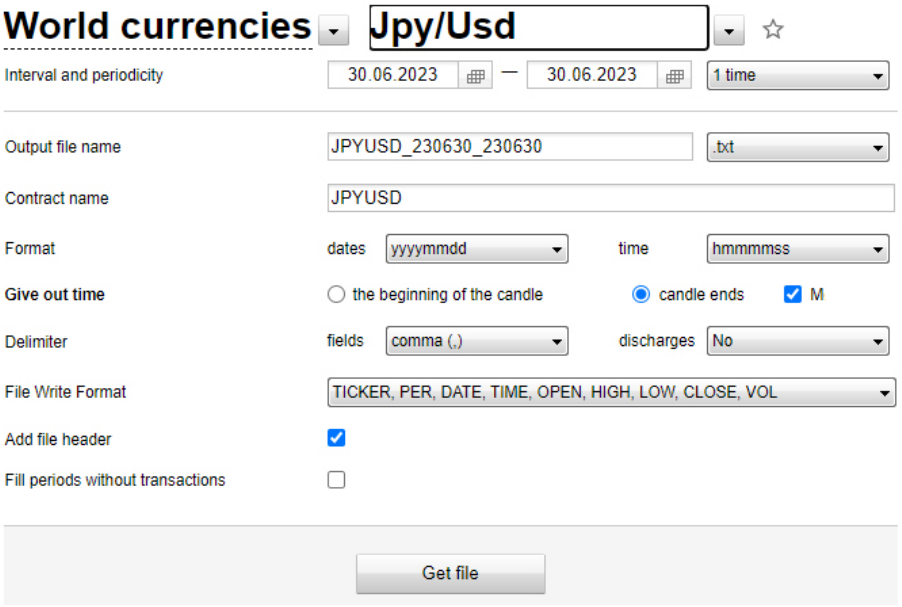
In the trading terminal, you need to open a chart for the instrument of interest, select a timeframe and right-click on any candle (bar)



and select the item "save schedule". The data is saved in text format, which can be loaded into data sources.

Example 2. Downloading from the site www.finam.ru

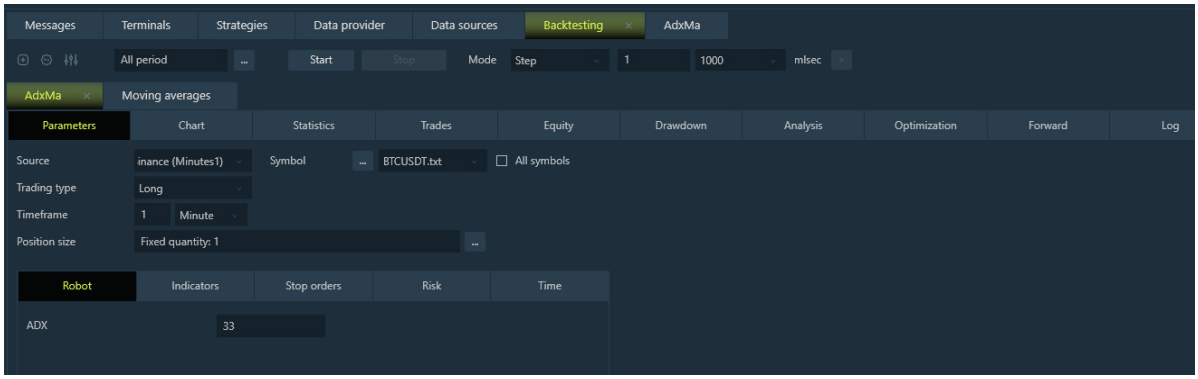
Click on the link http://www.finam.ru/profile/moex-akcii/gazprom/export/ select the desired tool. We configure the time period for which data and timeframe are needed. After that, we bring all the fields to a format convenient for you or as in the picture below, but in any case, the digit separator should be selected "no" and click the get file button.


World currencies
Jpy/Usd
Interval and periodicity
30.06.2023
30.06.2023
1 time
Output file name
JPYUSD_230630_230630
.txt
Contract name
JPYUSD
Format
dates
yyyymmdd
time
hmmmss
Give out time
the beginning of the candle
candle ends
M
Delimiter
fields
comma (,)
discharges
No
File Write Format
TICKER, PER, DATE, TIME, OPEN, HIGH, LOW, CLOSE, VOL
Add file header
Fill periods without transactions
Get file

Backtesting

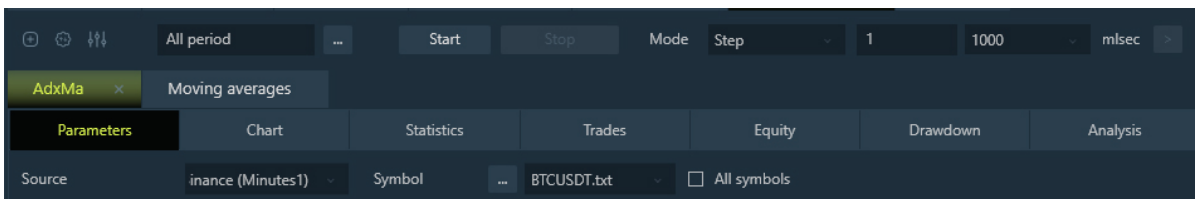
This section talks about the ability to create, test and optimize strategies based on historical data. If the strategy uses for analysis: the price of the last transaction, the amount of supply and demand, or data from the DOM, then such strategies can be tested only in real time, either in "real" mode with real bids on the exchange or in "virtual" mode - the mode of emulation of transactions, without sending them to the exchange.

Strategies whose algorithms are based on the analysis of candlesticks, indicators, various patterns and conditions can be analyzed (tested) on historical data, pre-loading them into "Data Sources", or on "Data from storage" - the history accumulated during real trading.



Settings

The strategy is analyzed for each tick or candle, depending on the conditions of candle formation (standard candle or compression into a larger timeframe). When compressed into a larger timeframe, it takes into account how the price behaved during the formation of the candle. For example, to convert data by ticks or one minute - to hours, in this case it will be taken into account how the candle was formed during a given hour. This mode is not always required and not for all strategies. It is used in some breakdown strategies in order to understand exactly which way the candle struck initially, if, for example, its shadows pierce both the lower channel and the upper one. Or strategies that use a higher timeframe for analysis and take into account the current candle that is still being formed. In this case, if you take a monthly chart and use the current candle to determine the direction of the uptrend, for example, by breaking through the high of the previous candle, then in this case a very rough analysis takes place, in reality this breakdown could occur at the beginning, middle or end of the formation of the candle.



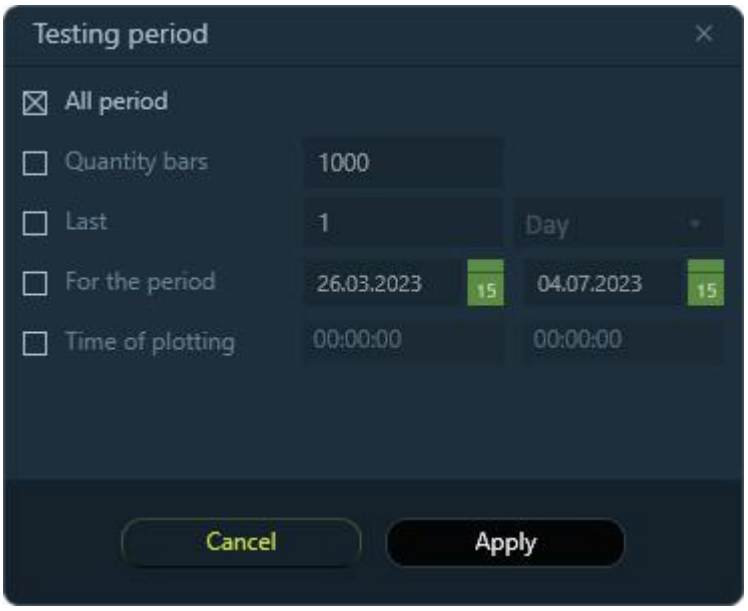
- add a strategy or scanner for testing;
- settings for testing
- calls the context menu:

- Exporting settings to the robot;
- Add a test to the portfolio;
- Copy for the test;
- Export settings;
- Import settings.

Name	Description
Testing period	selection of the amount of data to be tested on
Mode	Summary - displays a graph and statistics at the end of testing. Step by step - the output of the graph and the calculation of statistics and transactions is carried out as the data for testing is received
Speed of change, steps/per time	When testing "Step by step", you can set the data processing speed. It indicates how many candles are processed during the specified period of time. The speed can be edited in the process, increase or decrease it.
Data from storage	list of tools stored in the data warehouse
Data from sources	list of tools stored in data sources

Testing period

To speed up the testing process, or if necessary, you can select the data interval for which the analysis should be performed.

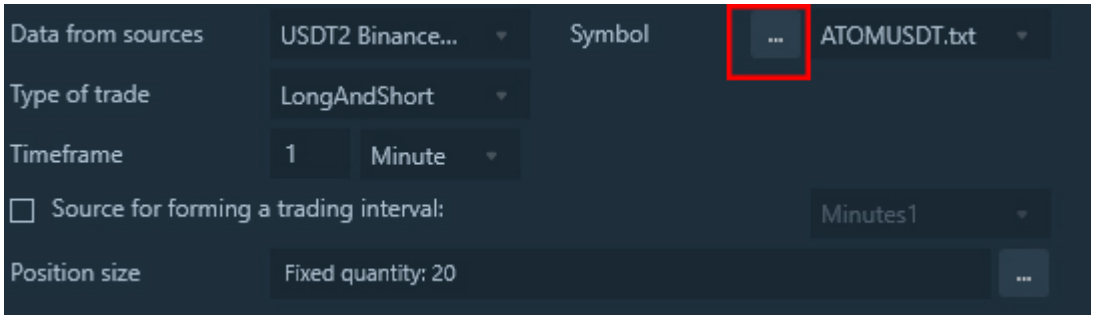


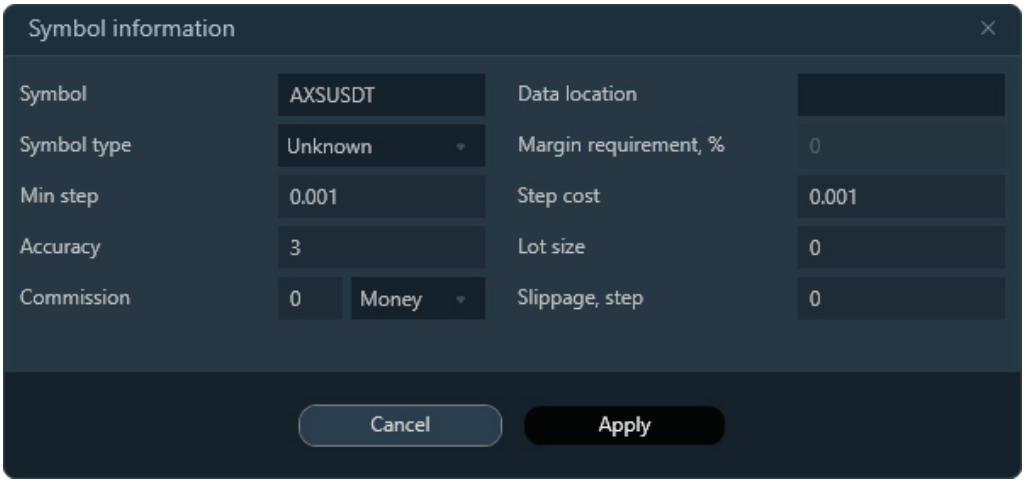
Name	Description
All period	Testing on all data.
Quantity bars	Testing on the specified number of bars from the beginning of data receipt.
Last	Testing for the last day/week/month/quarter/year.

For the period	Testing by dates with indication of time (time is useful for ticks to select a site for tests), or bars if the bar numbers are known.
Time of plotting	Allows you to configure data for the robot only for a specified period of time. For example, you want to exclude the evening session, you need to exclude the pre-trading candle at 9:59:59. The time is set from 10:00:00 to 18:45:00, then the chart and all indicators will be built only according to the specified time.

Symbol information settings

Data editing is available by double-clicking with the left mouse button on the tool in the testing section or through the context menu





The "Tool" and "Data location" fields are not editable.

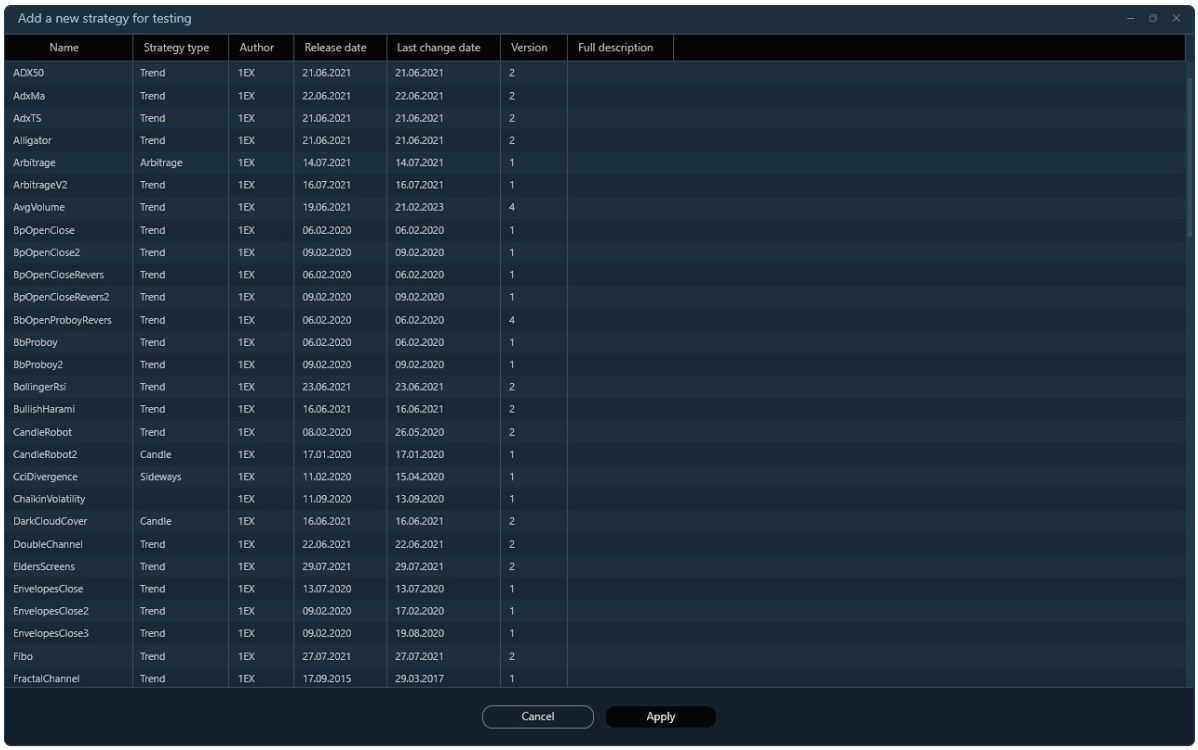
Name	**Description**
Symbol	The name of the tool.
Data Location	Shows the name of the data source or points to the data warehouse.
Symbol Type	Undefined - the following parameters are not taken into account in the calculations: lot, GC%, Share - the lot size is determined taking into account the lot. Futures - the parameters of the cost of the price step are used if it is different from the minimum step, and GC is also

	used to determine the position size.
Margin requirement, %	For futures, it is a guarantee obligation of the seller and the buyer. The guarantee is calculated in instrument points for each candle, as a percentage of the closing price of the previous candle.
Minimum step	Minimum change in the price of the instrument.
Step Cost	For futures, the cost of the price step may differ from the minimum step. On stocks, the cost of a step is equal to the minimum step.
Accuracy	The number of decimal places.
Lotness	For a stock - the number of shares in one lot.
Commission	Individual commission for the instrument, which can be taken into account when testing, if the settings specify "Individual commission accounting".
Slippage, step	Slippage indicates one side of the transaction in the steps of the instrument price.

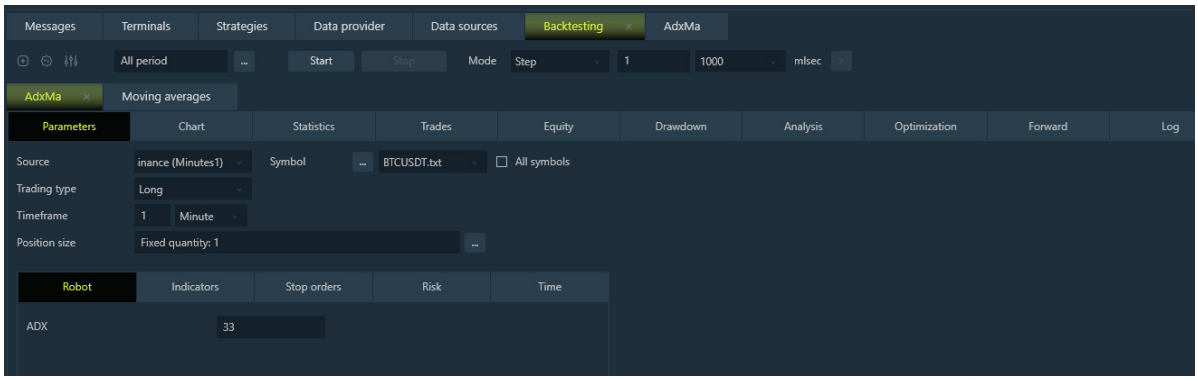
Starting and stopping testing

Choosing a strategy for testing

- Click on the button to select a strategy and in the list that appears, select a strategy for testing by double-clicking the mouse



A tab will be opened

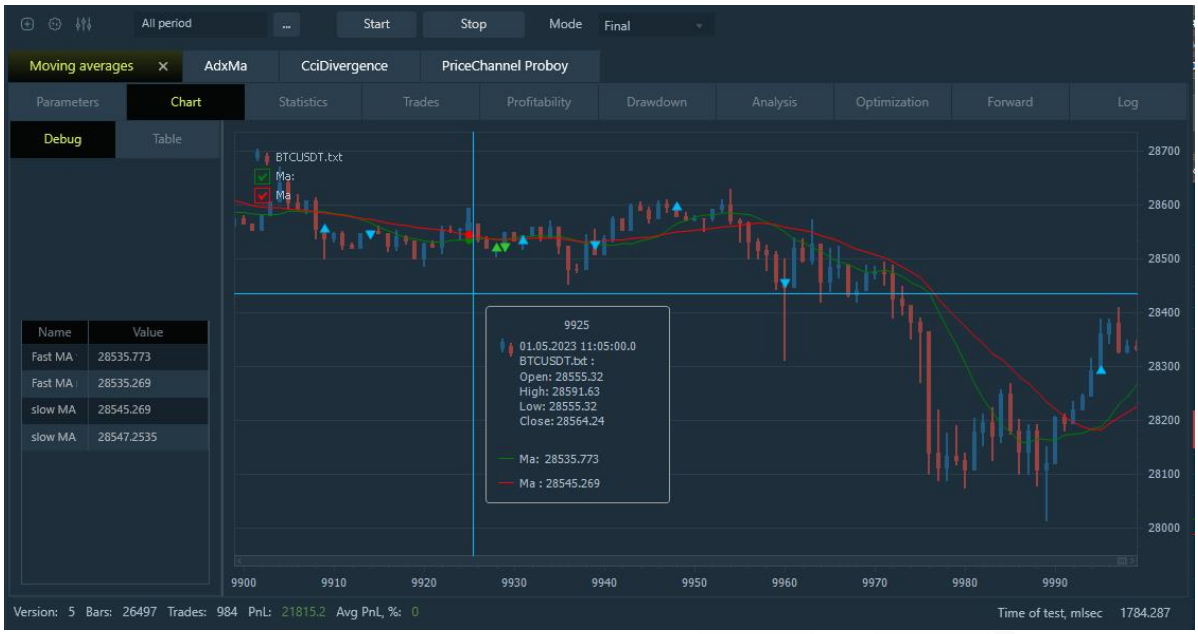


Name	Description
Parameters	Parameters set for the strategy.
Chart	The chart of the instrument, indicators and transactions.
Statistics	General analysis of the strategy in numbers.
Trades	Information on all completed transactions during the testing period.
Equity	The profitability/loss chart of the strategy.
Drawdown	Chart of losses at each moment of time (for each bar or candle).
Analysis	Graphical analysis of test results.
Optimization	Optimize the parameters and run the test.
Forward	Forward testing
Log	Additional information output by the user from the code, for themselves.

Bars – the number of candle bars on the chart;
Trades – the total number of transactions made;
PnL – profit/loss in the traded units of the instrument;
Avg PnL% – profit loss as a percentage of the transaction, i.e. how much is earned in one transaction as a percentage, relative to the amount of entry into the position.

Starting testing

In the left part of the testing section, select the tool that you plan to test, it is automatically inserted into the robot.



Start - this button is not active by default, if the active tab is a strategy, then this button becomes active. After setting all the parameters for the strategy, you will need to click it to start testing on historical data. During the period while the strategy is being tested, the button will be inactive again;

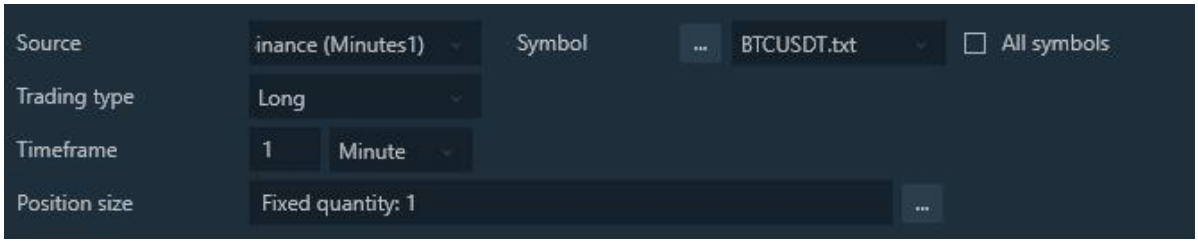
Stop - allows you to interrupt the strategy testing. In this case, only the part of the data that was analyzed will be displayed in statistics and transactions.

Parameters

This section sets the parameters by which the strategy will be tested.

The symbol is inserted automatically when you select it in the "Symbol", the left part of the "Testing".

In the case of selecting data from the "Data Source", the interval type and period are automatically filled in, the same as was specified in the source is substituted. You can also change the type of interval and period in a larger direction to get a graph of a larger period. When selecting the same type of interval, it must be a multiple of the automatically set period.



Name	Description
Source	A source with historical data on instruments.
Symbol	The code of the tool that will be used for testing. It is selected from those tools that are available in this source.
All symbols	When you check the box, all the tools in the selected source will be tested.
Trading type	"Long" - trading is conducted only in a long position, "Short" - trading is conducted only in a short position, "Long and Short" - the robot opens long and short positions. If the algorithm makes it possible to trade both Long and Short, then when choosing the "Long" trading mode, the robot will open only long positions, ignoring signals to open short positions.
Timeframe	The interval period. It is necessary to select the interval type for candles/bars. Possible options: ticks, seconds, minutes, days, weeks and months.
Position size	The size of the position opened by the robot. For more information, see the section "Position size".

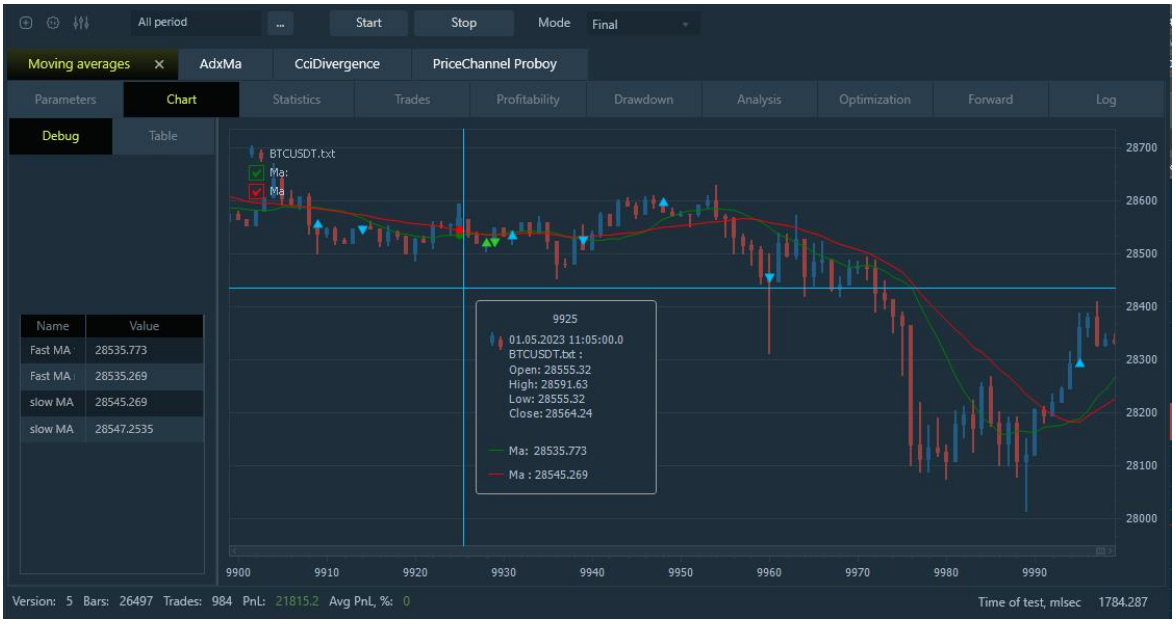
If a symbol is selected from the "Data Warehouse", then it has basic timeframes (you can read in the "Data Warehouse" section) – in this case, either data is taken from the repository if a standard timeframe is selected for testing, if not, then the system needs to specify from which timeframe of a smaller period the specified one will be formed timeframe, the largest standard timeframe is selected by default.

The trading mode is also selected during testing: Long (only purchases), Short (only sales) or Long and Short.

The sections position size, robot, indicators, stop orders, risks and time, the settings of these items are identical, as in the robot. You can find it in the "Strategies" section.

Chart

The chart of the instrument on which the test is being conducted is displayed, as well as indicators and all additional lines and graphs that the strategy developer provided for displaying on the chart. Instead of the time of the chart, the axis of the candle numbers is located at the bottom of it. The numbering goes from 0 to the current candle on the chart. The number of candles displayed is limited in the settings/testing "Number of candles displayed on the chart", a large number of candles loads the system and can lead to the forced closure of the program! The recommended number of candles is no more than 100,000.

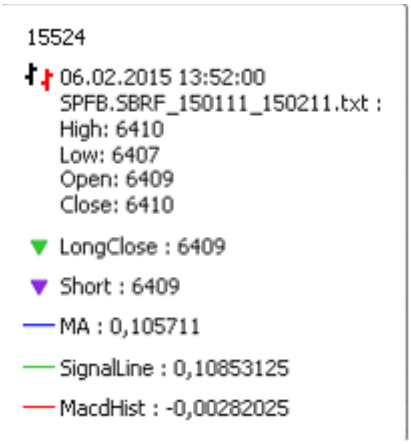


It is possible to increase the lower graph at the expense of the upper one. To do this, you need to hover the cursor between the charts and catch the arrow pointing up and down, and, accordingly, pull up or down until you pick up a visually convenient display.

In the settings, you can choose the type of display of candles or bars (right-click on the chart through the context menu or through the top menu). And also if there are additional panels with indicators or another graph, a panel will be displayed that will hide them, if necessary, a panel with an indicator or another graph. The main panel on which the graph is drawn is removed. The left side shows the icons of lines and graphs in the current window. If necessary, you can hide the line or graph by unchecking the corresponding check mark. Permanent data that will be on all charts is the name of the instrument on which the chart and transactions (opening and closing positions) are built. In this case, trading is conducted both in long and short, so the corresponding icons of transactions are displayed.

	Opening	Closure
Profitable trade on a long position	▲	▲
Losing trade on a long position	▲	▼
Profitable short position trade	▼	▲
Losing trade on a short position	▼	▲

When you hover over a chart element, all the information about all the elements on the current candle will be displayed in the pop-up window, and the blue vertical bar visually shows where the cursor is now.



Bar/candle number – 15524
Date and time of the bar/candle – 06.02.2015 13:52:00
Chart by instrument - SPFB.SBRF_150111_150211.txt
High bar/candle – 6410, Low – 6407 , Open – 6409, Close – 6410/
LongClose Closing a long position with a profit at the price of 6409
Short Opening a losing short position at the price of 6409
Next are the indicator lines

Settings

To configure the chart type, Bars/Candlesticks need to go to the settings/chart menu or call through the context menu on the chart.

Statistics

The resulting information on trading strategies based on historical data. In the "All" column, information on all transactions is displayed, in the "Purchases" column, only information on Long transactions is displayed, in the "Sales" column, only information on Short transactions is displayed, in the "Buy and Hold" column, information about what would have happened with one transaction at the beginning of the test period is displayed.

If the initial deposit is not specified (in this case), then some of the information is missing (Net PnL%, Max. Drawdown %), because these values are calculated from the initial capital, and in this particular case it is equal to 0, and also because of this, the drawdown graph will be drawn by the absolute value of the drawdown..

Name	Description
Testing period	Start and end of testing.
Start capital	Capital at the beginning of testing the strategy.
End capital	Capital at the end of strategy testing.
Net profit	Net profit/loss is calculated according to the formula (Final capital – Initial capital).
Net profit,%	Net profit/loss as a percentage, calculated by the formula (Final capital – Initial capital) / Initial capital * 100.
Annual return, %	Annual profitability.
Total commissions	Total commission costs for all transactions.
Slippage	The total cost of slippage on all transactions.
Total MFE	The total positive deviation of the price in points from the entry price.
Total MAE	The total negative deviation of the price in points from the entry price.
Number of trades	The total number of transactions.
Average PnL	The average profit/loss per transaction is calculated using the formula (Net P/Y) / (Number of transactions).
Average PnL, %	The average profit/loss per transaction is calculated using the formula ((Transactions won * Average profit, %)+(Loss-making transactions * Average loss, %)) / (Number of transactions). Calculation example: ((141*0,65)+(235*-0,28))/376 = 0,068% - rounded to the second digit, up to 0.07%.
Winning trades	The number of profitable trades.
Win rate, %	The percentage of profitable trades from the total number of trades.
Total profit	Profit on all profitable trades.
Average profit	The average profit per transaction is calculated using the Total Profit formula/Deals won.
Average profit, %	The average profit as a percentage per transaction is calculated: the profit is calculated as a percentage for each profitable transaction, and the amount is divided by the number of transactions won.
Max consecutive winners	The maximum number of consecutive profitable trades.
Lossing trades	The number of unprofitable transactions.
Loss rate, %	The percentage of unprofitable transactions from the total number of transactions.
Total loss	Loss on all unprofitable transactions.
Average loss	The average loss per transaction is calculated using the Total Loss formula/Unprofitable transactions.
Average loss, %	The average loss as a percentage per transaction is calculated: the loss is added as a percentage for each unprofitable transaction, and the amount is divided by the number of unprofitable transactions.

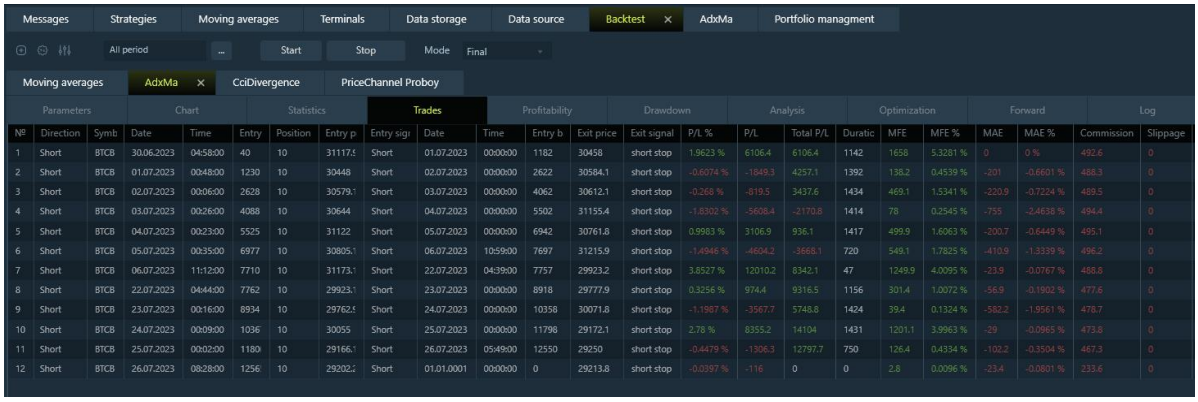
Max consecutive losses	The maximum number of consecutive losing trades.
Maximum drawdown date	The date of the maximum drawdown.
Maximum drawdown	The maximum decrease in cash, from the last maximum on the account, is calculated by the formula: (current value of capital **) - (The last maximum in profit).
Maximum drawdown, %	The maximum decrease in cash as a percentage of the last maximum on the account is calculated using the formula: (the current value of capital is the last maximum in profit) / the current value of capital * 100.
Absolute drawdown date	The date of the absolute drawdown.
Absolute drawdown	The amount by which our initial deposit decreased.
Absolute drawdown, %	The amount by which our initial deposit decreased as a percentage. It is displayed only when the deposit amount is set for testing, otherwise 0.
Profit factor	The ratio of the profit received from transactions for a certain time period to losses. The total profit for the required reporting period is divided by the total losses for the same period.
Recovery factor	It is calculated as the ratio of absolute profit to maximum drawdown. When comparing two systems, the one with a higher recovery factor will be better.
Winning ratio	The ratio of the average profitable transaction to the average loss - reflects how many times the average profit is greater than the average loss.
Sharp Ratio	The ratio of the average risk premium to the average portfolio deviation., where. — the profitability of the portfolio (asset). — the return on an alternative investment (as a rule, a risk-free interest rate is taken). — risk premium (the mathematical expectation of the excess of the return on assets over the return on an alternative investment). — standard deviation of portfolio (asset) profitability.

** - the value of capital, at the close of the corresponding candle.

Transactions

According to the test results, all transactions that have been made, as well as detailed information on them, will appear in this section.

Quick transition to the deal on the chart: when you double-click on the arrow with the left mouse button, a chart will open, where the leftmost deal will be the one on which you double-clicked.



№	Direction	Symb	Date	Time	Entry	Position	Entry p	Entry sign	Date	Time	Entry b	Exit price	Exit signal	P/L %	P/L	Total P/L	Duratic	MFE	MFE %	MAE	MAE %	Commission	Slippage
1	Short	BTCB	30.06.2023	04:58:00	40	10	31117.5	Short	01.07.2023	00:00:00	1182	30458	short stop	1.9623 %	6106.4	6106.4	1142	1658	5.3281 %	0	0 %	492.6	0
2	Short	BTCB	01.07.2023	00:48:00	1230	10	30448	Short	02.07.2023	00:00:00	2622	30584.1	short stop	-0.6074 %	-1849.3	4257.1	1392	138.2	0.4539 %	-201	-0.6601 %	488.3	0
3	Short	BTCB	02.07.2023	00:06:00	2628	10	30579.1	Short	03.07.2023	00:00:00	4062	30612.1	short stop	-0.268 %	-819.5	3437.6	1434	469.1	1.5341 %	-220.9	-0.7224 %	489.5	0
4	Short	BTCB	03.07.2023	00:26:00	4088	10	30644	Short	04.07.2023	00:00:00	5502	31155.4	short stop	-1.8302 %	-5608.4	-2170.8	1414	78	0.2545 %	-755	-2.4638 %	494.4	0
5	Short	BTCB	04.07.2023	00:23:00	5525	10	31122	Short	05.07.2023	00:00:00	6942	30761.8	short stop	0.9983 %	3106.9	936.1	1417	499.9	1.6063 %	-200.7	-0.6449 %	495.1	0
6	Short	BTCB	05.07.2023	00:35:00	6977	10	30805.1	Short	06.07.2023	10:59:00	7697	31215.9	short stop	-1.4946 %	-4604.2	-3668.1	720	549.1	1.7825 %	-410.9	-1.3339 %	496.2	0
7	Short	BTCB	06.07.2023	11:12:00	7710	10	31173.1	Short	22.07.2023	04:39:00	7757	29923.2	short stop	3.8527 %	12010.2	8342.1	47	1249.9	4.0095 %	-23.9	-0.0767 %	468.8	0
8	Short	BTCB	22.07.2023	04:44:00	7762	10	29923.1	Short	23.07.2023	00:00:00	8918	29777.9	short stop	0.3256 %	974.4	9316.5	1156	301.4	1.0072 %	-56.9	-0.1902 %	477.6	0
9	Short	BTCB	23.07.2023	00:16:00	8934	10	29762.5	Short	24.07.2023	00:00:00	10358	30071.8	short stop	-1.1987 %	-3567.7	5748.8	1424	39.4	0.1324 %	-582.2	-1.9561 %	478.7	0
10	Short	BTCB	24.07.2023	00:09:00	1036	10	30055	Short	25.07.2023	00:00:00	11798	29172.1	short stop	2.78 %	8355.2	14104	1431	1201.1	3.9963 %	-29	-0.0965 %	473.8	0
11	Short	BTCB	25.07.2023	00:02:00	1180	10	29166.1	Short	26.07.2023	05:49:00	12550	29250	short stop	-0.4479 %	-1306.3	12797.7	750	126.4	0.4334 %	-102.2	-0.3504 %	467.3	0
12	Short	BTCB	26.07.2023	08:28:00	1256	10	29202.2	Short	01.01.0001	00:00:00	0	29213.8	short stop	-0.0397 %	-116	0	0	2.8	0.0096 %	-23.4	-0.0801 %	233.6	0

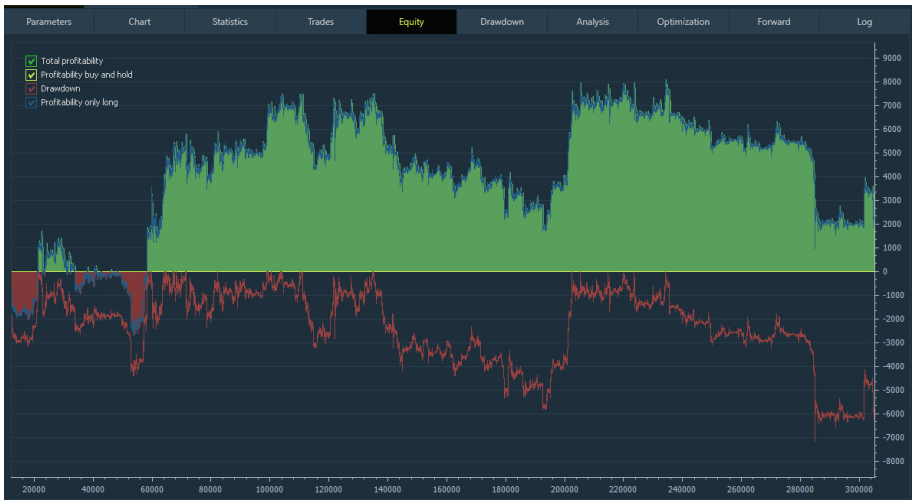
Name	Description
No.	Transaction number.
Direction	Opening a long (long, instrument purchase) or short (short, instrument sale) position.
Symbol	The instrument on which the transaction was made.
Date	The date of the transaction to open.
Time	The time of the transaction to open.
Entry Bar	The number of the bar where the transaction was opened.
Position	The number of contracts/lots that the robot will open a position with is determined depending on the "Position Size" settings.
Entry Price (sign)	The opening price of the transaction (signal price), excluding slippage and commission.
Entry signal	The signal by which the transaction was opened.
Date	The closing date of the transaction.
Time	The closing time of the transaction.
Exit bar	The deal closing bar.
Exit price (signal)	The closing price of the transaction (signal price), excluding slippage and commission.
Exit signal	The closing signal of the transaction.
PnL%	Profit/loss as a percentage of the entry amount.
PnL	Profit loss in absolute terms and taking into account the number of contracts/lots and their lot size (for example, Sberbank has 10 securities in one lot). For text data, information about the lot must be entered independently in the "Paper Parameters" section, but this is not mandatory.

Total PnL	Accumulated profit/loss taking into account previous transactions.
Duration	The number of bars in the position.
MFE	Maximum Favorable Excursion. The maximum favorable deviation (maximum profit) during the holding of the position in points.
MFE%	Maximum Favorable Excursion. The maximum favorable deviation (maximum profit) for the time of holding the position as a percentage.
MAE	Maximum Adverse Excursion. The maximum unfavorable deviation (maximum loss) during the holding of the position in points.
MAE%	Maximum Adverse Excursion. The maximum unfavorable deviation (maximum loss) during the holding of the position as a percentage.
Commission	Commission for opening and closing in the transaction.
Slippage	Slippage on opening and closing in the transaction.

Yield and drawdown

The yield graph shows the growth and fall of the capital curve.
The graph shows:
Total return – the growth and fall of the capital curve for Long and Short trades;
Yield only Long– the growth and fall of the capital curve on Long transactions;
Short–only yield- growth and fall of the capital curve on Short trades;
Buy and hold yield – the rise and fall of the curve according to the "Buy and Hold" strategy. The yield curve shows the market movement over the test period and shows the result of investing the initial amount for trading and its final result.

If necessary, you can hide any yield curve by unchecking the box in the upper left corner of the chart, opposite the corresponding name.



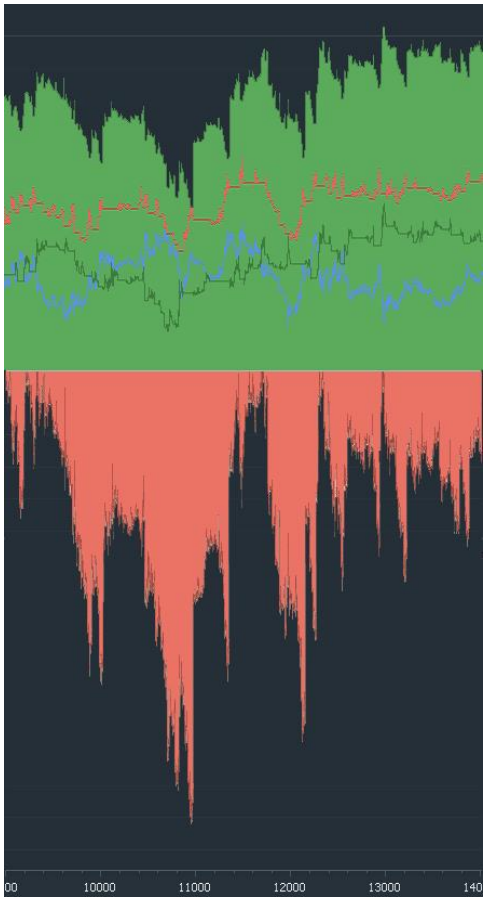
The drawdown chart shows the maximum decrease in funds on the account as a percentage. If the initial capital is 0, then the absolute value will be displayed, and if set, then as a percentage, relative to the initial capital.

What is drawdown?

Drawdown is a decrease in funds relative to the last maximum on the account.

The graph below shows an example. Data was taken from bar №9000 to №14000.

Approximately at bar No. 9500, a new maximum was formed along the yield curve. Further from this maximum, a drawdown will be considered, at this point the values of the drawdown graph were at zero. At bar №11000, the maximum drawdown was reached in this example, also on the chart of the yield curve, a significant decrease is visible. The value on the "Drawdown" chart is equal to the value of the yield curve at bar №9500 minus the value of the yield curve at bar №11000. A new maximum was formed on the yield curve at bar No. 11800, the value became 0 on the "Drawdown" chart, then the drawdown will be considered from the maximum of the yield curve at bar No. 11800, and so on will occur with each new update of the maximum on the yield curve.



Analysis

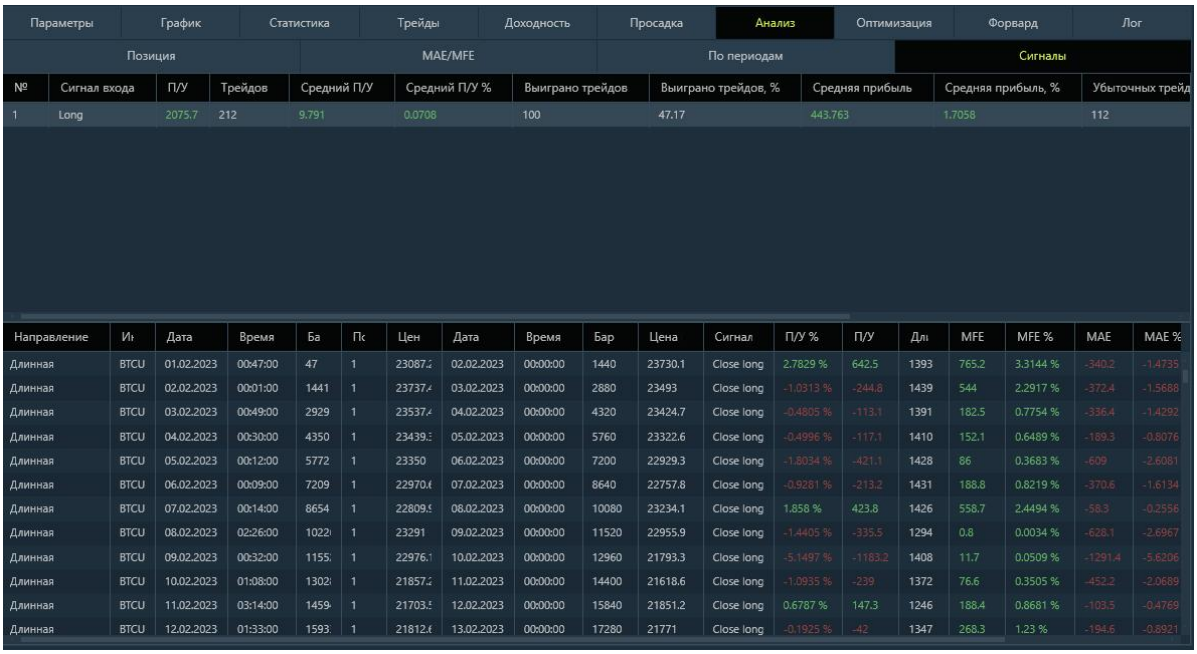
MFE is the maximum positive deviation of the price in points from the entry price (sign).
MAE is the maximum negative deviation of the price in points from the entry price (sign).

Graphical analysis **by period**:

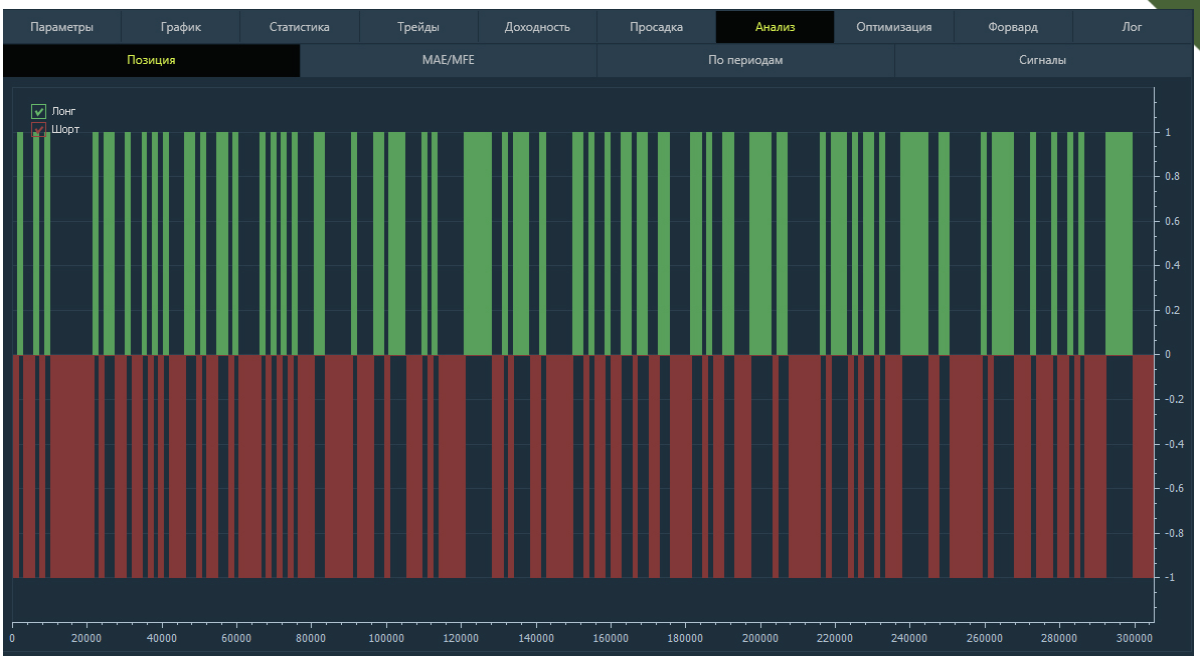
- PnL by the hour - total profit/ loss depending on what hour transactions were opened;
- PnL by days of the week - the total profit / loss, depending on which day of the week transactions were opened;
- PnL by months of the year - the total profit / loss, depending on which month the transactions were opened;
- PnL by week - profit/loss by week;
- PnL by month - profit/loss by month;
- PnL by quarter - profit/loss by quarter;
- PnL by year - profit/loss by year;
- Hourly volatility, % - the average volatility of the instrument depending on the hour;
- Volatility by day of the week, % - the average volatility of the instrument depending on the day of the week;
- Volatility by month of the year, % - the average volatility of the instrument depending on the month throughout the year;
- Volatility by week, % - the average volatility of the instrument by week;
- Volatility by month, % - the average volatility of the instrument by month;
- Volatility by quarter, % - the average volatility of the instrument by quarter;
- Volatility by year, % - the average volatility of the instrument by year;
- Volatility by week, points - the average volatility of the instrument by week;
- Volatility by month, points - the average volatility of the instrument by month;
- Volatility by quarter, points - the average volatility of the instrument by quarter;

•Volatility by year, points - the average volatility of the instrument by year.

Signals - sorting by a certain type of signal, for subsequent analysis.



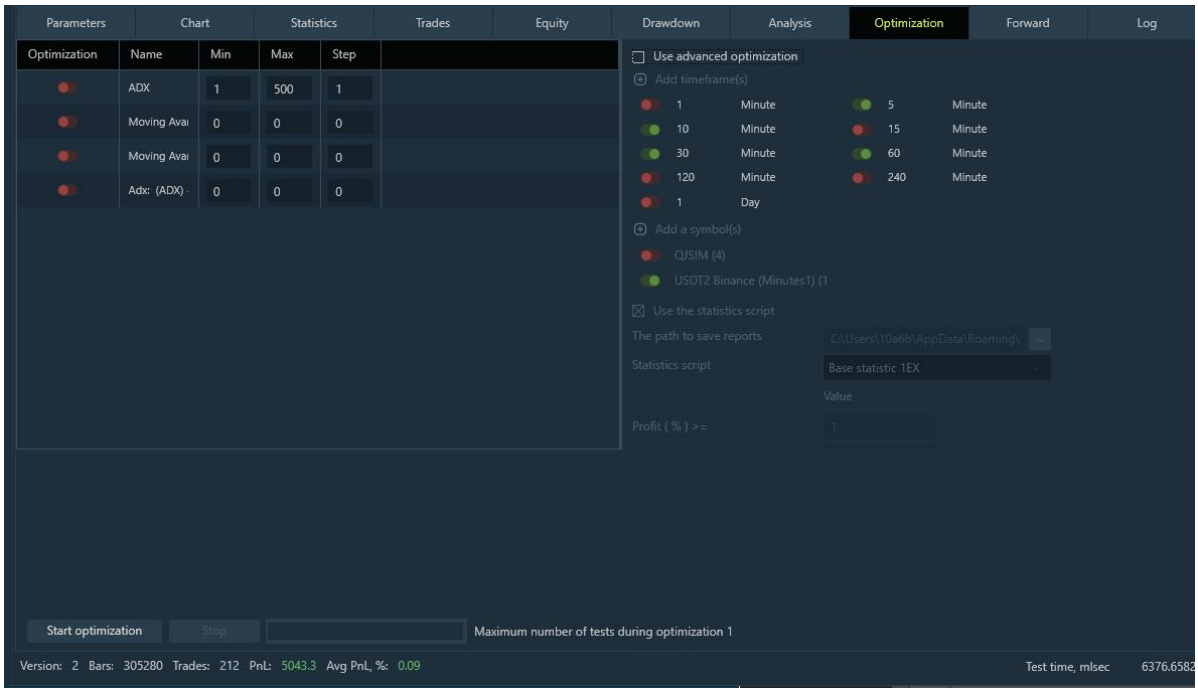
Position – distribution of long and short positions during the test period.


Параметры
График
Статистика
Трейды
Доходность
Просадка
Анализ
Оптимизация
Форвард
Лог
Позиция
MAE/MFE
По периодам
Сигналы
Лонг
Шорт
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
220000
240000
260000
280000
300000

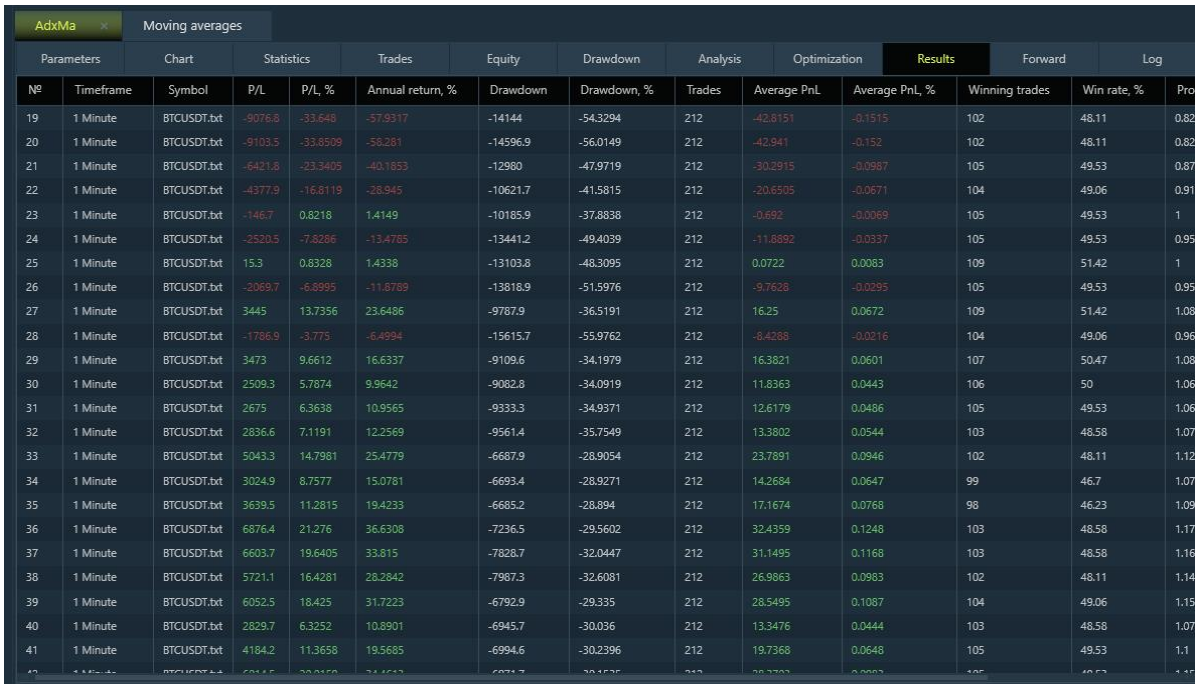
Optimization

Optimization is the process of selecting a set of parameters in order to increase the efficiency (profitability and stability) of the results of a trading system.

The optimization section displays the strategy parameters that can be optimized. In the case of moving averages with risks disabled and stop orders, two parameters are available. For a fast moving average, the smoothing period from 5 to 50 with a step of 5 will be checked, i.e. the effectiveness of the strategy with the parameters of the fast moving average 5,10,15 .... 50. a total of 10 different values will be checked. For a slow moving average, there will be 13 different values - 40,45,50 ... 100. The total will be 10 * 13 = 130 different combinations of systems. It is not necessary to set the parameter step too small - it will take more time to sort through all the parameters or there will not be enough resources at all to finish the tests.

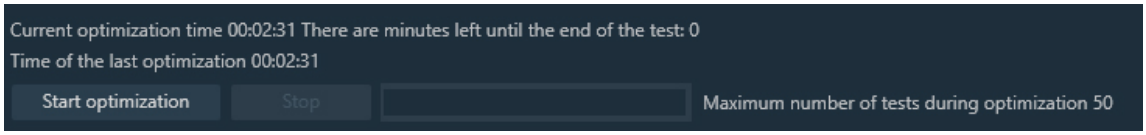


The "Start optimization" button starts the process of iterating through the parameters. You can stop it at any time by clicking on the corresponding button in the optimization section. As the optimization progresses, the Results window will appear next to the Optimization window. The results of the system testing are entered in the "Results". Double-clicking on the results of interest will give detailed statistics - it will automatically substitute the parameters into a regular test and run the test.



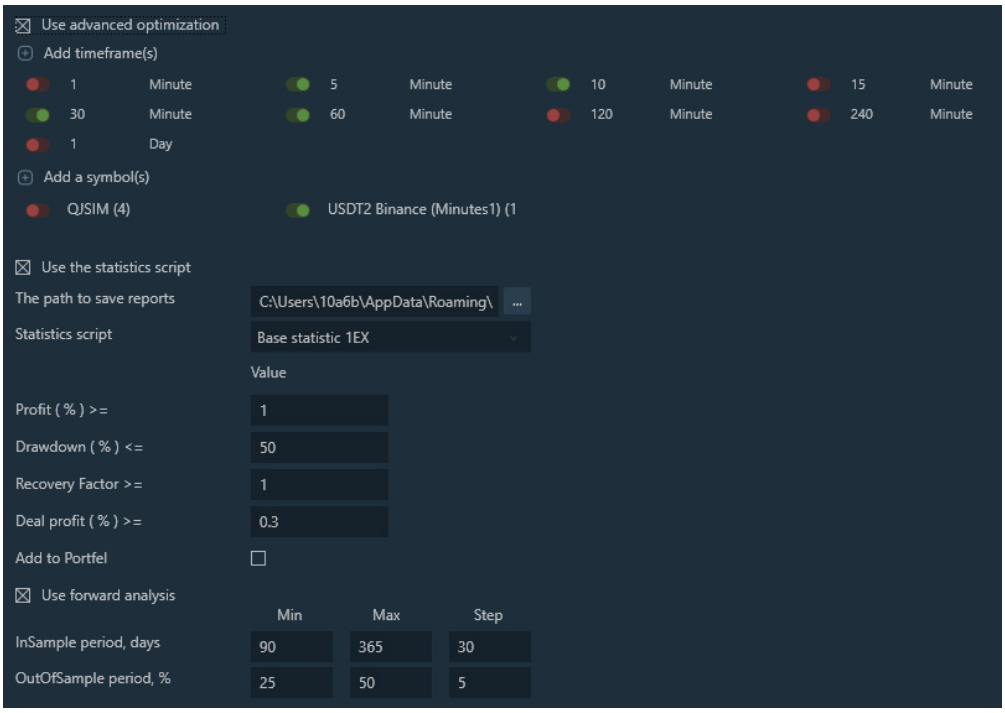
№	Timeframe	Symbol	P/L	P/L, %	Annual return, %	Drawdown	Drawdown, %	Trades	Average PnL	Average PnL, %	Winning trades	Win rate, %	Pro
19	1 Minute	BTCUSDT.txt	-9076.8	-33.648	-57.9317	-14144	-54.3294	212	-42.8151	-0.1515	102	48.11	0.82
20	1 Minute	BTCUSDT.txt	-9103.5	-33.8509	-58.281	-14596.9	-56.0149	212	-42.941	-0.152	102	48.11	0.82
21	1 Minute	BTCUSDT.txt	-6421.8	-23.3405	-40.1853	-12980	-47.9719	212	-30.2915	-0.0987	105	49.53	0.87
22	1 Minute	BTCUSDT.txt	-4377.9	-16.8119	-28.945	-10621.7	-41.5815	212	-20.6505	-0.0671	104	49.06	0.91
23	1 Minute	BTCUSDT.txt	-146.7	0.8218	1.4149	-10185.9	-37.8838	212	-0.692	-0.0069	105	49.53	1
24	1 Minute	BTCUSDT.txt	-2520.5	-7.8286	-13.4785	-13441.2	-49.4039	212	-11.8892	-0.0337	105	49.53	0.95
25	1 Minute	BTCUSDT.txt	15.3	0.8328	1.4338	-13103.8	-48.3095	212	0.0722	0.0083	109	51.42	1
26	1 Minute	BTCUSDT.txt	-2069.7	-6.8995	-11.8789	-13818.9	-51.5976	212	-9.7628	-0.0295	105	49.53	0.95
27	1 Minute	BTCUSDT.txt	3445	13.7356	23.6486	-9787.9	-36.5191	212	16.25	0.0672	109	51.42	1.08
28	1 Minute	BTCUSDT.txt	-1786.9	-3.775	-6.4994	-15615.7	-55.9762	212	-8.4288	-0.0216	104	49.06	0.96
29	1 Minute	BTCUSDT.txt	3473	9.6612	16.6337	-9109.6	-34.1979	212	16.3821	0.0601	107	50.47	1.08
30	1 Minute	BTCUSDT.txt	2509.3	5.7874	9.9642	-9082.8	-34.0919	212	11.8363	0.0443	106	50	1.06
31	1 Minute	BTCUSDT.txt	2675	6.3638	10.9565	-9333.3	-34.9371	212	12.6179	0.0486	105	49.53	1.06
32	1 Minute	BTCUSDT.txt	2836.6	7.1191	12.2569	-9561.4	-35.7549	212	13.3802	0.0544	103	48.58	1.07
33	1 Minute	BTCUSDT.txt	5043.3	14.7981	25.4779	-6687.9	-28.9054	212	23.7891	0.0946	102	48.11	1.12
34	1 Minute	BTCUSDT.txt	3024.9	8.7577	15.0781	-6693.4	-28.9271	212	14.2684	0.0647	99	46.7	1.07
35	1 Minute	BTCUSDT.txt	3639.5	11.2815	19.4233	-6685.2	-28.894	212	17.1674	0.0768	98	46.23	1.09
36	1 Minute	BTCUSDT.txt	6876.4	21.276	36.6308	-7236.5	-29.5602	212	32.4359	0.1248	103	48.58	1.17
37	1 Minute	BTCUSDT.txt	6603.7	19.6405	33.815	-7828.7	-32.0447	212	31.1495	0.1168	103	48.58	1.16
38	1 Minute	BTCUSDT.txt	5721.1	16.4281	28.2842	-7987.3	-32.6081	212	26.9863	0.0983	102	48.11	1.14
39	1 Minute	BTCUSDT.txt	6052.5	18.425	31.7223	-6792.9	-29.335	212	28.5495	0.1087	104	49.06	1.15
40	1 Minute	BTCUSDT.txt	2829.7	6.3252	10.8901	-6945.7	-30.036	212	13.3476	0.0444	103	48.58	1.07
41	1 Minute	BTCUSDT.txt	4184.2	11.3658	19.5685	-6994.6	-30.2396	212	19.7368	0.0648	105	49.53	1.1

Upon completion of optimization, the "Start Optimization" button will become active and the time spent on this process will be shown.



Advanced optimization

Advanced optimization is a set of additional features that expand the boundaries of standard optimization.



In order to activate the advanced optimization mode, it is necessary to check the box "Use advanced optimization".

New opportunities:

- Adding a timeframe;
- Adding a tool;
- Using the statistics script.

Adding a timeframe

Adding a timeframe for iterating in advanced optimization mode. Only timeframes that are multiples of the base timeframe of the instrument will be used for sorting.

- click to add your timeframe. In the window that opens, type the value and select the timeframe (tick, second, minute, day, week, month). After adding - the timeframe will appear in the list below.

The list contains various timeframes that can be used.

- this timeframe is enabled and will participate in advanced optimization, to disable it, you need to click on the green circle, it will change color to red.

- this timeframe is turned off and will not participate in advanced optimization, to turn it on, you need to click on the red circle, it will change color to green.

By clicking on the timeframes in the list with the right mouse button, the context menu is called,

where you can:

- add a timeframe;
- edit timeframe;
- delete the timeframe.

Adding a tool

Adding a search tool in advanced optimization mode.

- click to add an additional tool. This tool or tools will be additionally communicated, the original tool will drop out of the list, in order for it to be considered too - it must be added here, in advanced optimization. You can add any available tools.

In the window that opens, select "Class Code". And, accordingly, all the necessary tools for sorting through this class

You can add tools from different classes. The list will display a class with the number of selected tools in it. To add additional tools to a class, you need to edit it.

The list contains classes.

- this class is enabled and will participate in advanced optimization, to disable it, you need to click on the green circle, it will change color to red.

- this class is disabled and will not participate in advanced optimization, to enable it, you need to click on the red circle, it will change color to green.

By clicking on a class in the list with the right mouse button, a context menu is called, where you can:

- add a class;
- edit a class;
- delete a class.

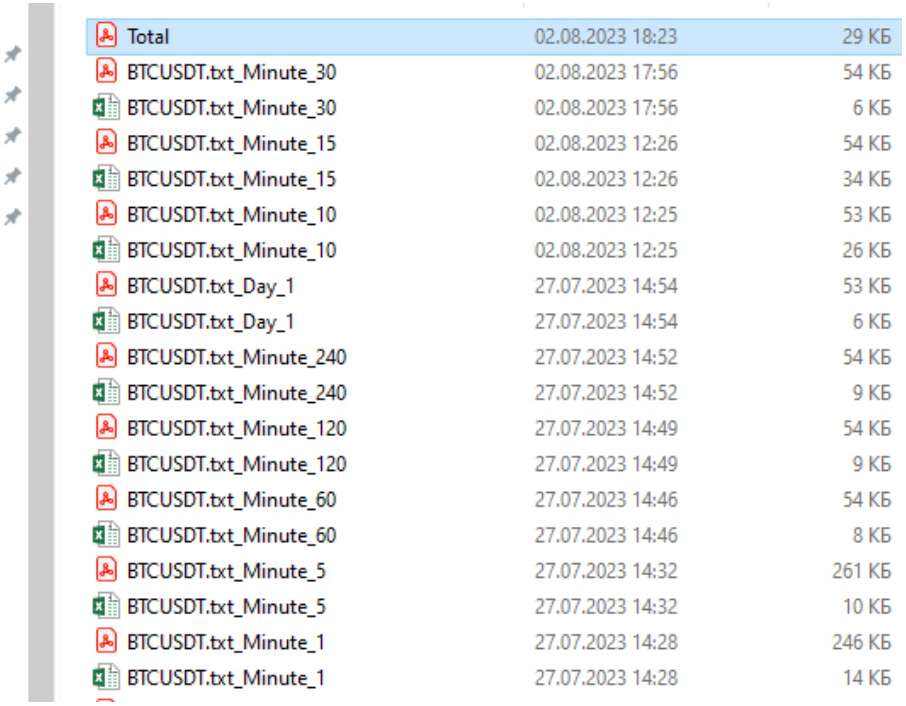
Using the Statistics script

The use of advanced optimization is convenient because you can sort through a large number of combinations of strategies with different tools and timeframes and get a file with recommendations as a result.

In 1ExAlgo, an algorithm for evaluating optimization results has been created and a recommendation will be given for each instrument, in the context of each optimized timeframe. The evaluation algorithm determines the most stable and profitable parameters of the strategy, if there are any or may not find anything at all, all this will be displayed in the file.

The results obtained during the test are located at the address (the path for saving reports). For each instrument, there is a file with a table of all transactions and a system evaluation file, and there is a common file in which all the results are collected - total. Here are all the data that have received an adequate assessment. The Total describes the tools that can be used or they can be viewed in the tool file itself.

For evaluation, the script uses parameters that the user can specify himself: profit in % per annum, drawdown, recovery factor, average per transaction. With the development of this evaluation algorithm, the parameters may change.



Using Forward analysis

When the forward is used in the script. Two settings are set In Sample – in the sample and OutofSample Period – out of the sample. The period from the minimum to the maximum value is determined and the calculation step is set.

Launching Advanced Optimization

After selecting all the necessary timeframes and tools, you can start the optimization process. The "Start optimization" button is pressed.

We look at all the data in the same way as a simple optimization in the "Results" tab.

Forward testing

The forward test is a two-step process. The first step consists of the traditional optimization described in the previous sections. The parameters of the trading model are scanned. The values of the parameters of the top model are evaluated not only by profitability. It is the second step that characterizes forward analysis and is the source of its unusual features.

This step is a criterion for evaluating post-optimization efficiency. The set of parameter values of the "best" model, found at the first step and determined by the objective function, is tested on an additional, adjacent segment of the price history. In other words, the top model is tested by simulating real trading.

The forward test consists of two steps. **First, the trading model is optimized** for a certain historical period. **Then she "trades" on a new segment of history.** This type of testing is also known as out-of-sample testing or blind testing. The forward test is the only method that provides an accurate picture of the post–optimization efficiency of trading.

The purpose of the forward test

The forward test has three main goals. The first two are essential to complete a successful testing and optimization cycle. The third goal provides unique and very useful information that provides fairly accurate measurements of profit expectations and risk for real trading.

The main purpose of the forward test is to establish the possible effectiveness of the optimized trading model or of the implemented adjustment. The effectiveness of a trading model is considered as a "real effectiveness" if the model possesses a predictive potential or can respond effectively to uncertain market dynamics. Forward analysis makes it also possible to determine the necessary working parameters for the future. The selected model itself may be well defined, but still possesses some incorrect parameters. A properly developed trading model should bring a real profit that more or less corresponds to the profit obtained in the optimization process. If you are going to use the model in a real trading, it must first satisfy the forward test.

The second purpose of the forward test is to determine the quality of the actual optimization process. There is an evidence that even well defined model can be rigged. This can be a result of limitations of the degrees of freedom in the context of multiplie rules. It can also be a result of using an insufficient data train, a possible result of considering too many variables, or variable scanning with a very small step.

The forward test provides a unique measure of efficiency, called the forward performance indicator (walk-forward efficiency - WFE). This indicator compares the annual rate of a post-optimization profit with the rate of a profit obtained by the selective optimization. In the section called "What rate of return should I expect?" (in this chapter) it shows how to calculate the forward performance indicator.

A model is rigged if it has a low forward performance indicator: in other words, its forward results are essentially lower than the results of a sample test. This problem is solved by using the diagnosis and elimination of one of four adjustment causes mentioned above.

If a low forward performance indicator is not associated with an obvious error that can be corrected, the model should be evaluated in its original form. If the trading model demonstrates a lower forward efficiency, the trader must either reject it or prepare to accept the resulting level of profitability.

This leads to the third goal of the forward test: the profitability and model risk evaluation with the aims to determine the real trading expectations. An ideally designed and optimized trading model will have a similar profit level in the non-selective or post-optimization trading as in the selective or

optimization testing. If its effectiveness in out-of-sample testing is significantly lower, this may be a sign of an adjustment. An implementable trading model can exceed optimization efficiency if the post-optimization market conditions imply a greater profit potential than optimization conditions.

Forward analysis

Forward analysis is a series of separate forward tests on an extensive and representative segment of price history. Forward analysis simulates the way in which it is planned to trade according to an optimized trading strategy. The first step of this procedure is a separate forward test on the first segment of the price history. The next step of the procedure is another forward test on the next segment of the price history. Then this process is repeated until the historical period on which the trade is checked is completed.

The main goal of forward analysis is to eliminate reasonable doubts about the validity of the trading model and optimization procedure. At the same time, the advantages of the forward test extend to a sufficiently large sample of data and forward tests to ensure statistical accuracy. Forward analysis is designed to perform a sufficiently large number of forward tests to eliminate the randomness of the results. Such reliability can be achieved by a test that includes at least 10 forward tests.

The second goal of forward analysis is to get a more accurate picture of the profit and risk profile based on a larger and more statistically valid sample. This analysis consists of many optimizations and many forward tests. They are brought together to provide a more reliable measurement of efficiency.

The third goal of the forward analytical test is to check the optimization process itself. As mentioned earlier, an unreliable strategy will simply fail the forward analytical test. However, a workable strategy could have been rigged or developed in violation of other principles, and will show poor effectiveness in the forward analytical test. This assessment takes into account considerations such as degrees of freedom, the size of the optimization and test window, the range and accuracy of scanning variables and the number of variables to be scanned. The forward analytical test provides protection against these optimization errors.

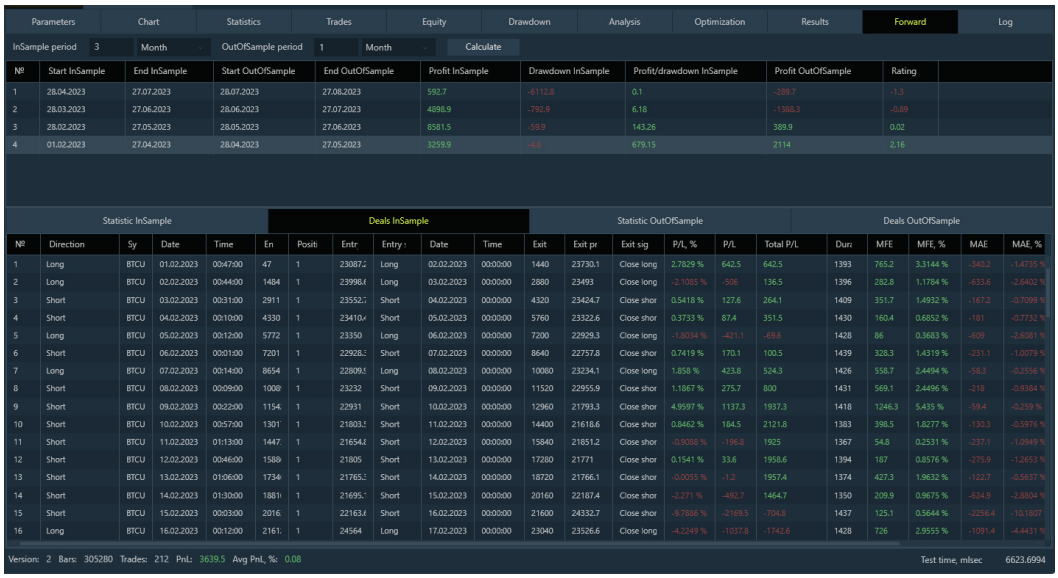
The fourth goal of the forward analytical test provides a unique and deep understanding of the essence of the performance indicator. Often, the maximum subsidence of trading strategies occurs when trends or market conditions change. The unfolding windows of the forward analytical test show exactly what happens when a strategy encounters a condition on which it has not been tested. The very nature of sustainable trading strategies implies that even if such a change can cause losses, they should not be critical. Traditional optimization will mask similar effects. The forward-analytical test detects them.

Forward analysis is a valuable and detailed source of information. It creates and evaluates three levels of model effectiveness. The first level evaluates the income, risk and distribution of transactions of a strategy optimized on one segment of historical data. This is the traditional way in which models are judged. The Level 1 score is good enough; however, it suffers from the disadvantage of checking post-optimization effectiveness.

The second level of evaluation of the model is the forward test. This level checks both the strategy and the testing process. It also compares optimization and post-optimization indicators of the effectiveness of trading. These two important layers of information cannot be obtained at Level 1. Despite the fact that much more is now known than at the first level, there are still reasonable doubts; the results of one forward test do not allow us to draw final conclusions.

At the third level of strategy evaluation — in forward analysis — the strategy is judged solely by the cumulative effectiveness of post-optimization trading obtained in a series of separate forward tests. One very strong side of this level of testing is the statistical significance provided by its completeness and capabilities. Its other advantage is obtaining valuable information about the effect of changes in trends and volatility on efficiency.

Forward analysis is a clear and accurate simulation of the situation, and even it goes beyond modeling and becomes a more important part of the trading system, allowing you to predict the behavior of the trading system in the future based on modeling, telling you when to trade and when not to.



Conducting forward analysis

After testing and optimization (discussed in previous chapters), we proceed to forward analysis.

In testing - following the Results, the Forward tab opens.

Two settings In Sample – in the sample and OutofSample Period – out of the sample.
Periods are set for testing the optimization model in the sample and beyond.
You can check different periods for yourself. When returning to the Results tab, one of the results that needs to be checked by forward testing is selected. Click on it. Go back to the forward tab – and click Calculate.

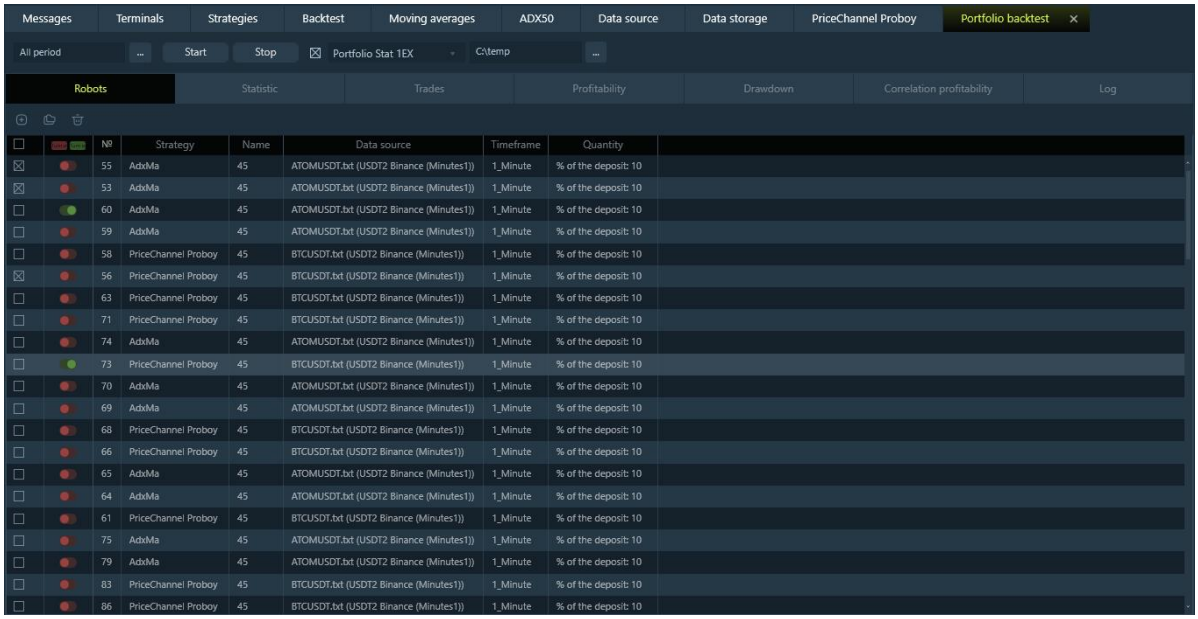
After the end of the forward testing, data analysis is carried out.
There are four tabs for this below:

- Statistics In Sample;
- Transactions In Sample;
- Out of Sample Statistics;
- Transactions Out of Sample.

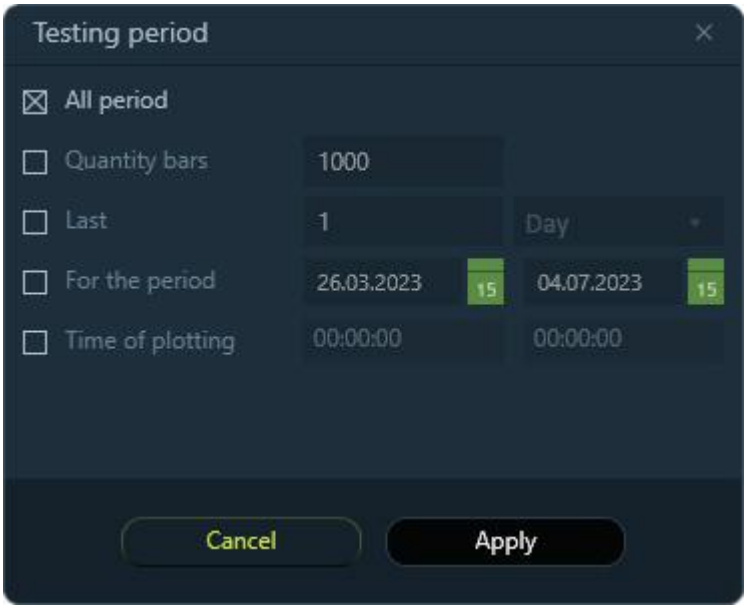
Data analysis here is similar to data analysis in testing. See all the statistics on your trading model. In the "All" column, information on all transactions is displayed, in the "Purchases" column, only information on Long transactions is displayed, in the "Sales" column, only information on Short transactions is displayed, in the "Buy and Hold" column, information about what would have happened with one transaction at the beginning of the test period is displayed.

Portfolio testing

Portfolio testing is designed to test a portfolio of robots.



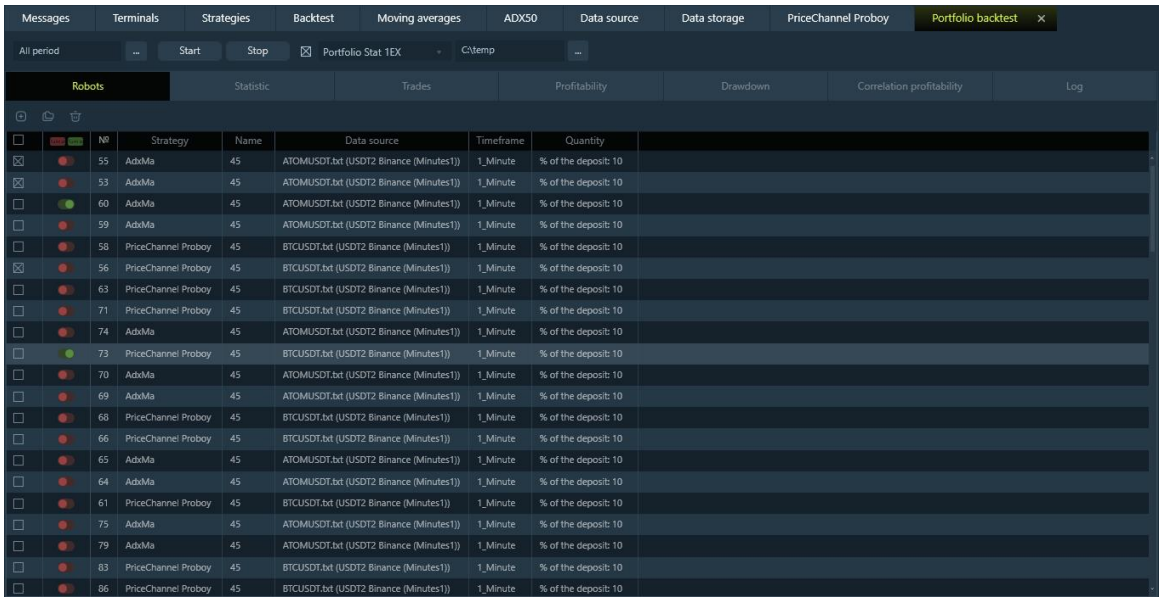
Testing period



Name	Description
All period	Testing on all data.
Quantity bars	Testing on the specified number of bars from the beginning of data receipt.
Last	Testing for the last day/week/month/quarter/year.
For the period	Testing by dates with time indication (time is useful for ticks to select a site for tests), or bars if the bar numbers are known.
Time of plotting	Allows you to configure data for the robot only for a specified period of time. For example, you want to exclude the evening session, you need to exclude the pre-trading candle at 9:59:59. The time is set from 10:00:00 to 18:45:00, then the chart and all indicators will be built only according to the specified time.

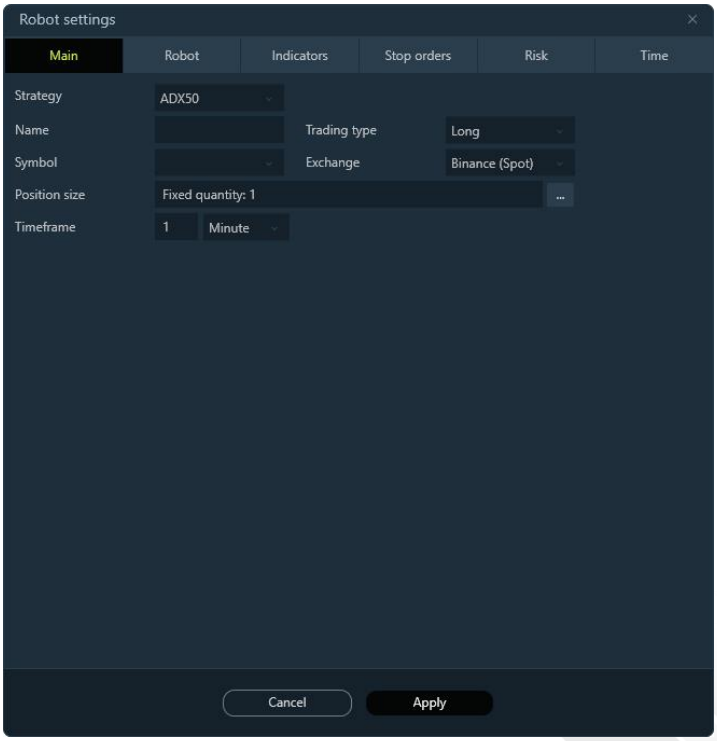
In the main window, the main tabs are: Robots, statistics, transactions, profitability, drawdown, correlation, log.

Configuring robots before portfolio testing



Creating robots for testing

- Click on the button to create a robot
A tab will be opened



Name	Description
Strategy	Choosing a strategy
Name	The name of the job, for identifying messages in the general strategy log (optional parameter).
Type of trade	Long trading is conducted only in a long position, Short trading is conducted only in a short position, Long and Short robot opens long and short positions. If the algorithm makes it possible to trade both long and short, then when choosing the trading mode, t Long robot will open only long positions, ignoring signals to open positions in short.
Symbol	The code of the symbol that will be used for trading. The list of tools is displayed depending on the selected class. The data is displayed only when the 1ExAlgo is connected to a trading terminal or server.
Exchange	The exchange with which this symbol is traded. The data is displayed only when the 1ExAlgo is connected to a trading terminal or server.
Position size	The number of contracts/lots that the robot will open a position with.
Timeframe	The period of candles \bars for plotting

After testing, the time of the test is shown in the lower right part. The time spent on testing is shown in the right part. On the left side, the most significant statistical information is displayed.

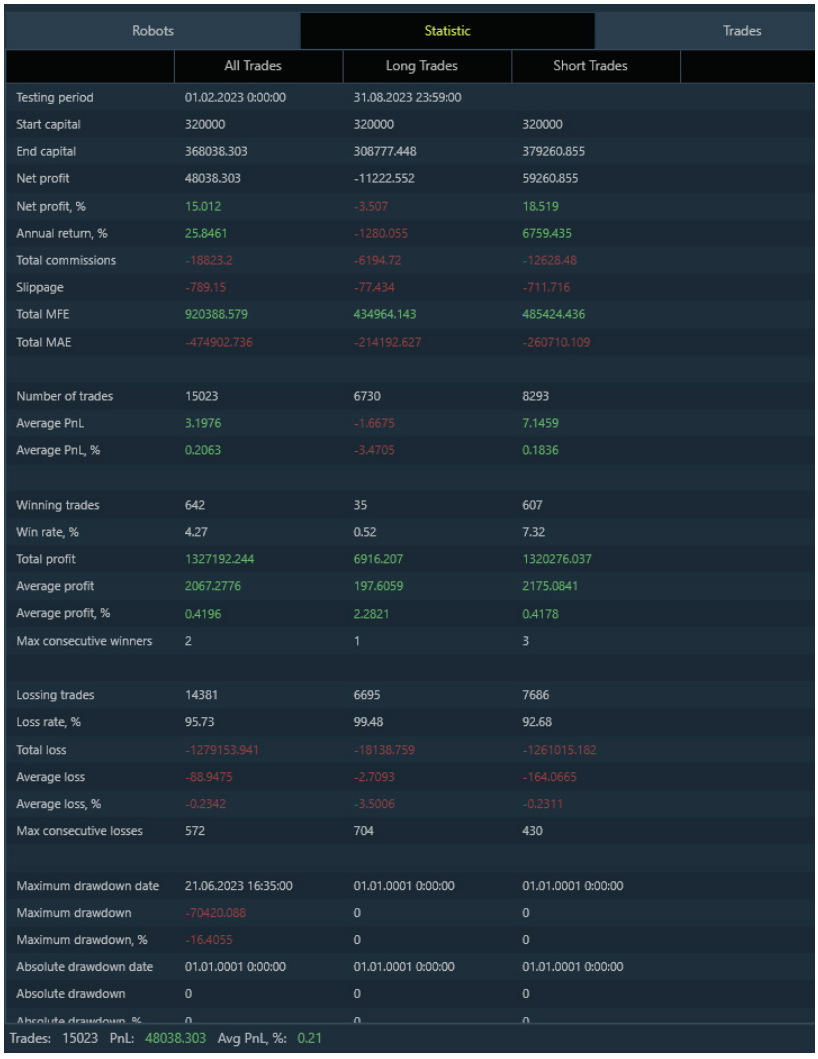
Trades – the total number of transactions made;
PnL – profit/loss in the traded units of the instrument;
Avg PnL % – average profit/loss on closed transactions as a percentage.

Tabs (Service, Stop orders, Risks, Time) are similar, you can see in the "Strategies" section..

Statistics for portfolio testing

The resulting information on trading a portfolio of robots. In the "All" column, information on all transactions is displayed, in the "Purchases" column, only information on Long transactions is displayed, in the "Sales" column, only information on Short transactions is displayed, in the "Buy and Hold" column, information is displayed about what would have happened with one transaction at the beginning of the test period.

If the initial deposit is not specified (in this case), then some of the information is missing (Net PnL%, Max. Drawdown %), because these values are calculated from the initial capital, and in this particular case it is equal to 0, and also because of this, the drawdown graph will be drawn by the absolute value of the drawdown.



Robots | Statistic | Trades

	All Trades	Long Trades	Short Trades
Testing period	01.02.2023 0:00:00	31.08.2023 23:59:00	
Start capital	320000	320000	320000
End capital	368038.303	308777.448	379260.855
Net profit	48038.303	-11222.552	59260.855
Net profit, %	15.012	-3.507	18.519
Annual return, %	25.8461	-1280.055	6759.435
Total commissions	-18823.2	-6194.72	-12628.48
Slippage	-789.15	-77.434	-711.716
Total MFE	920388.579	434964.143	485424.436
Total MAE	-474902.736	-214192.627	-260710.109
Number of trades	15023	6730	8293
Average PnL	3.1976	-1.6675	7.1459
Average PnL, %	0.2063	-3.4705	0.1836
Winning trades	642	35	607
Win rate, %	4.27	0.52	7.32
Total profit	1327192.244	6916.207	1320276.037
Average profit	2067.2776	197.6059	2175.0841
Average profit, %	0.4196	2.2821	0.4178
Max consecutive winners	2	1	3
Lossing trades	14381	6695	7686
Loss rate, %	95.73	99.48	92.68
Total loss	-1279153.941	-18138.759	-1261015.182
Average loss	-88.9475	-2.7093	-164.0665
Average loss, %	-0.2342	-3.5006	-0.2311
Max consecutive losses	572	704	430
Maximum drawdown date	21.06.2023 16:35:00	01.01.0001 0:00:00	01.01.0001 0:00:00
Maximum drawdown	-70420.088	0	0
Maximum drawdown, %	-16.4055	0	0
Absolute drawdown date	01.01.0001 0:00:00	01.01.0001 0:00:00	01.01.0001 0:00:00
Absolute drawdown	0	0	0
Absolute drawdown, %	0	0	0

Trades: 15023 PnL: 48038.303 Avg PnL, %: 0.21

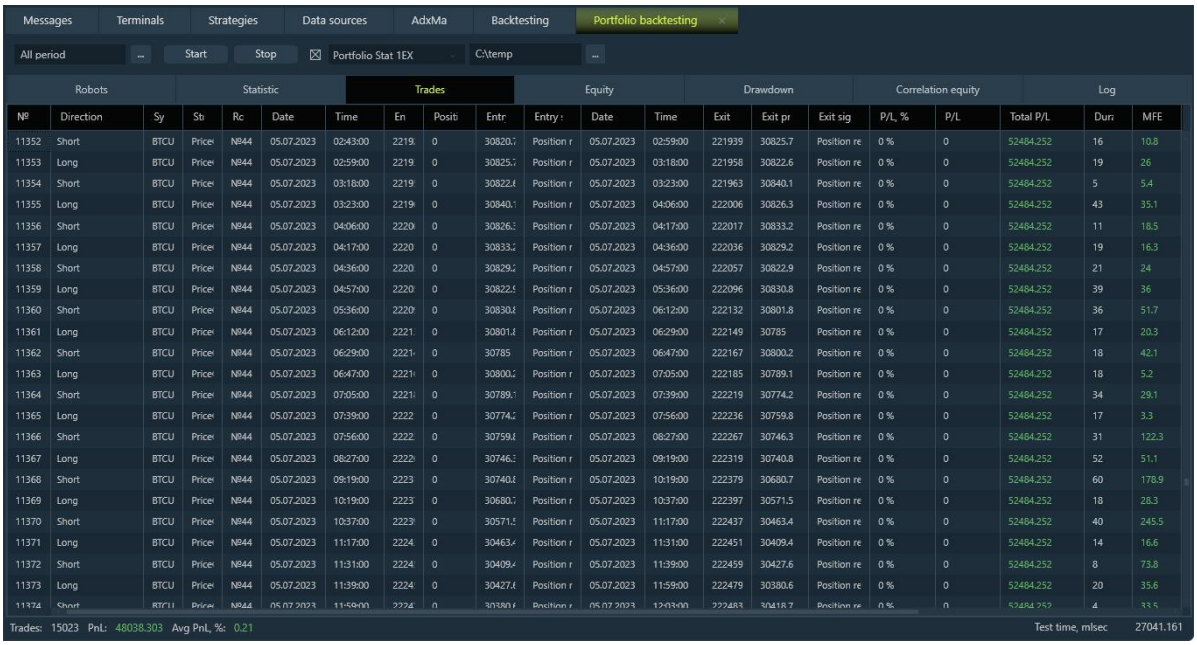
Name	Description
Testing period	Start and end of testing.
Start capital	Capital at the beginning of portfolio testing.
End capital	Capital at the end of portfolio testing.
Net profit	Net profit/loss is calculated according to the formula (Final capital – Initial capital).
Net profit,%	Net profit/loss as a percentage, calculated by the formula (Final capital – Initial capital) / Initial capital *100.
Annual return, %	Annual profitability.
Total Commission	Total commission costs for all transactions.
Slippage	The total cost of slippage on all transactions.
Total MFE	The total positive deviation of the price in points from the entry price.
Total MAE	The total negative deviation of the price in points from the entry price.
Number of trades	The total number of transactions.
Average PnL	The average profit/loss per transaction is calculated using the formula (Net P/Y) / (Number of transactions).
Average PnL, %	The average profit/loss per transaction is calculated using the formula ((Transactions won * Average profit, %)+(Loss-making transactions * Average loss, %)) / (Number of transactions). Calculation example: ((141*0,65)+(235*-0,28))/376 = 0,068% - rounded to the second digit, up to 0.07%.
Winning trades	The number of profitable trades.
Win rate, %	The percentage of profitable trades from the total number of trades.
Total profit	Profit on all profitable trades.
Average profit	The average profit per transaction is calculated using the Total Profit formula/Deals won.
Average profit, %	The average profit as a percentage per transaction is calculated: the profit is calculated as a percentage for each profitable transaction, and the amount is divided by the number of transactions won.
Max consecutive winners	The maximum number of consecutive profitable trades.
Lossing trades	The number of unprofitable transactions.
Loss rate, %	The percentage of unprofitable transactions from the total number of transactions.
Total loss	Loss on all unprofitable transactions.
Average loss	The average loss per transaction is calculated using the Total Loss formula/Unprofitable transactions.
Average loss, %	The average loss as a percentage per transaction is calculated: the loss is added as a percentage for each unprofitable transaction, and the amount is divided by the number of unprofitable transactions.
Max consecutive losses	The maximum number of consecutive losing trades.

Maximum drawdown date	The date of the maximum drawdown.
Maximum drawdown	The maximum decrease in cash, from the last maximum on the account, is calculated by the formula: (current value of capital **) - (The last maximum in profit).
Maximum drawdown, %	The maximum decrease in cash as a percentage from the last maximum on the account is calculated using the formula: (current capital value is the last maximum in profit) / current capital value * 100.
Absolute drawdown date	The date of the absolute drawdown.
Absolute drawdown	The amount by which our initial deposit decreased.
Absolute drawdown %	The amount by which our initial deposit decreased as a percentage. It is displayed only when the deposit amount is set for testing, otherwise 0.
Profit factor	The ratio of the profit received from transactions for a certain time period to losses. The total profit for the required reporting period is divided by the total losses for the same period.
Recovery factor	It is calculated as the ratio of the absolute profit to the maximum drawdown. When comparing two systems, the one with a higher recovery factor will be better.
Winning ratio	The ratio of the average profitable transaction to the average loss - reflects how many times the average profit is greater than the average loss.
Sharpe Ratio	The ratio of the average risk premium to the average portfolio deviation., where. — the profitability of the portfolio (asset). — the return on an alternative investment (as a rule, a risk-free interest rate is taken). — risk premium (the mathematical expectation of the excess of the return on assets over the return on an alternative investment). — standard deviation of portfolio (asset) profitability.

** - the value of capital, at the close of the corresponding candle.

Trades in portfolio testing

According to the test results, all transactions that have been made, as well as detailed information on them, will appear in this section.



Name	Description
№	Transaction number.
Direction	Opening a long (long, instrument purchase) or short (short, instrument sale) position.
Symbol	The instrument on which the transaction was made.
Strategy	The strategy by which the robot trades.
Robot	The name of the robot.
Date	The date of the transaction to open.
Time	The time of the transaction to open.
Entry bar	The number of the bar where the transaction was opened.
Position	The number of contracts/lots that the robot will open a position with is determined depending on the "Position Size" settings.
Entry price (signal)	The opening price of the transaction (signal price), excluding slippage and commission.
Entry signal	The signal by which the transaction was opened.
Date	The closing date of the transaction.
Time	The closing time of the transaction.
Exit bar	The deal closing bar.
Exit price (signal)	The closing price of the transaction (signal price), excluding slippage and commission.

Exit signal	The closing signal of the transaction.
PnL%	Profit/loss as a percentage of the entry amount.
PnL	Profit loss in absolute terms and taking into account the number of contracts/lots and their lot size. For text data, information about the lot must be entered independently in the "Paper Parameters" section, but this is not mandatory.
Total PnL	Accumulated profit/loss taking into account previous transactions.
Duration	The number of bars in the position.
MFE	Maximum Favorable Excursion. The maximum favorable deviation (maximum profit) during the time of holding the position in points.
MFE%	Maximum Favorable Excursion. The maximum favorable deviation (maximum profit) for the time of holding the position as a percentage.
MAE	Maximum Adverse Excursion. The maximum unfavorable deviation (maximum loss) during the holding of the position in points.
MAE%	Maximum Adverse Excursion. The maximum unfavorable deviation (maximum loss) during the holding of the position as a percentage.
Commission	Commission for opening and closing in the transaction.
Slippage	Slippage on opening and closing in the transaction.

Profitability and drawdown

The yield graph shows the growth and fall of the capital curve.
The graph shows:

- Total return – the growth and fall of the capital curve for Long and Short trades;
- Yield only Long– the growth and fall of the capital curve on Long transactions;
- Short–only yield- growth and fall of the capital curve on Short trades;
- Buy and hold yield – the rise and fall of the curve according to the "Buy and Hold" strategy. The yield curve shows the market movement over the test period and shows the result of investing the initial amount for trading and its final result.

If necessary, you can hide any yield curve by unchecking the box in the upper left corner of the chart, opposite the corresponding name.

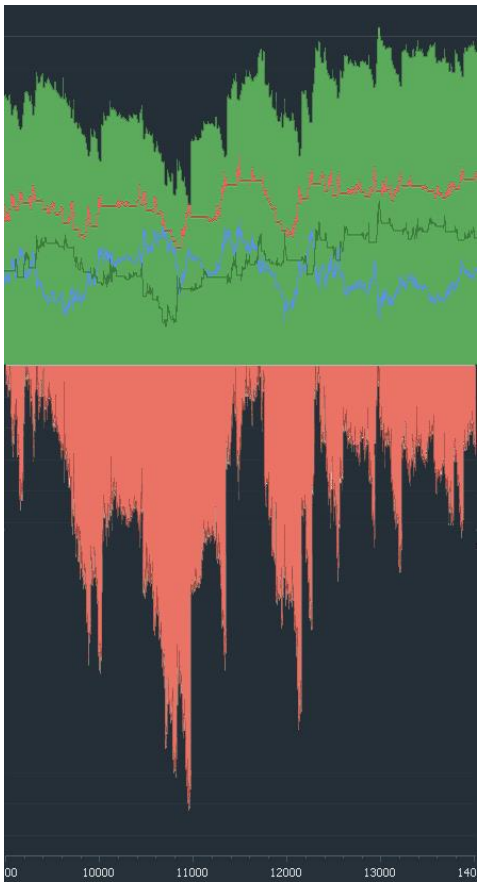
The drawdown chart shows the maximum decrease in funds on the account as a percentage. If the initial capital is 0, then the absolute value will be displayed, and if set, then as a percentage, relative to the initial capital.

What is drawdown?

Drawdown is a decrease in funds relative to the last maximum on the account.

The graph below shows an example. Data was taken from bar #9000 to #14000.

Approximately at bar No. 9500, a new maximum was formed along the yield curve. Further from this maximum, a drawdown will be considered, at this point the values of the drawdown graph were at zero. At bar #11000, the maximum drawdown was reached in this example, also on the chart of the yield curve, a significant decrease is visible. The value on the "Drawdown" chart is equal to the value of the yield curve at bar #9500 minus the value of the yield curve at bar #11000. A new maximum was formed on the yield curve at bar No. 11800, the value became 0 on the "Drawdown" chart, then the drawdown will be considered from the maximum of the yield curve at bar No. 11800, and so on will occur with each new update of the maximum on the yield curve.


00
10000
11000
12000
13000
140

Correlation of returns

Correlation is a concept from statistics that shows the relationship (mutual influence) of two random variables. Since the movements of securities quotations on the stock market are in many ways similar to the behavior of random variables (although they are not 100% such), many patterns of statistical analysis work well with them.

In fact, correlation when working with securities allows you to estimate the probability of synchronous price movement of two assets, for example, stocks, or stocks and an index. This means that if there is a strong correlation, when the price of one stock rises, the other will also become more expensive. Or, simultaneously with the fall of the index, the shares of companies correlating with it will also fall in price.

Correlation is a statistical indicator that can only state the coincidence in one way or another between specific values.

	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
42	1	0.72	∞	0.05	-0.67	0.71	0.71	-0.68	0.05	0.71	0.71	0.41	-0.34	0.69	0.77	0.71	0.72	-0.51	0
43	0.72	1	∞	-0.45	-0.98	0.99	0.99	-0.66	-0.45	0.99	0.99	0.71	-0.37	0.99	0.76	0.99	0.99	-0.12	0
44	∞	∞	1	∞	∞	∞	-∞	-∞	∞	∞	∞	-∞	∞	-∞	-∞	∞	-∞	-∞	0
45	0.05	-0.45	∞	1	0.57	-0.48	-0.48	0.05	1	-0.48	-0.47	-0.62	-0.1	-0.49	-0.31	-0.48	-0.47	-0.37	0
46	-0.67	-0.98	∞	0.57	1	-0.99	-0.99	0.61	0.57	-0.99	-0.99	-0.71	0.36	-0.99	-0.74	-0.99	-0.99	0.03	0
47	0.71	0.99	∞	-0.48	-0.99	1	1	-0.61	-0.48	1	1	0.7	-0.4	1	0.74	1	1	-0.06	0
48	0.71	0.99	-∞	-0.48	-0.99	1	1	-0.62	-0.48	1	1	0.7	-0.39	1	0.74	1	1	-0.07	0
49	-0.68	-0.66	-∞	0.05	0.61	-0.61	-0.62	1	0.05	-0.61	-0.63	-0.44	-0.05	-0.6	-0.84	-0.61	-0.64	0.58	0
50	0.05	-0.45	∞	1	0.57	-0.48	-0.48	0.05	1	-0.48	-0.47	-0.62	-0.1	-0.49	-0.31	-0.48	-0.47	-0.37	0
51	0.71	0.99	∞	-0.48	-0.99	1	1	-0.61	-0.48	1	1	0.69	-0.4	1	0.75	1	1	-0.06	0
52	0.71	0.99	∞	-0.47	-0.99	1	1	-0.63	-0.47	1	1	0.69	-0.39	1	0.75	1	1	-0.07	0
53	0.41	0.71	-∞	-0.62	-0.71	0.7	0.7	-0.44	-0.62	0.69	0.69	1	0	0.69	0.65	0.7	0.69	-0.27	0
54	-0.34	-0.37	∞	-0.1	0.36	-0.4	-0.39	-0.05	-0.1	-0.4	-0.39	0	1	-0.4	0.05	-0.4	-0.39	-0.13	0
55	0.69	0.99	-∞	-0.49	-0.99	1	1	-0.6	-0.49	1	1	0.69	-0.4	1	0.73	1	1	-0.04	0
56	0.77	0.76	-∞	-0.31	-0.74	0.74	0.74	-0.84	-0.31	0.75	0.75	0.65	0.05	0.73	1	0.74	0.76	-0.47	0
57	0.71	0.99	∞	-0.48	-0.99	1	1	-0.61	-0.48	1	1	0.7	-0.4	1	0.74	1	1	-0.06	0
58	0.72	0.99	-∞	-0.47	-0.99	1	1	-0.64	-0.47	1	1	0.69	-0.39	1	0.76	1	1	-0.08	0
59	-0.51	-0.12	-∞	-0.37	0.03	-0.06	-0.07	0.58	-0.37	-0.06	-0.07	-0.27	-0.13	-0.04	-0.47	-0.06	-0.08	1	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

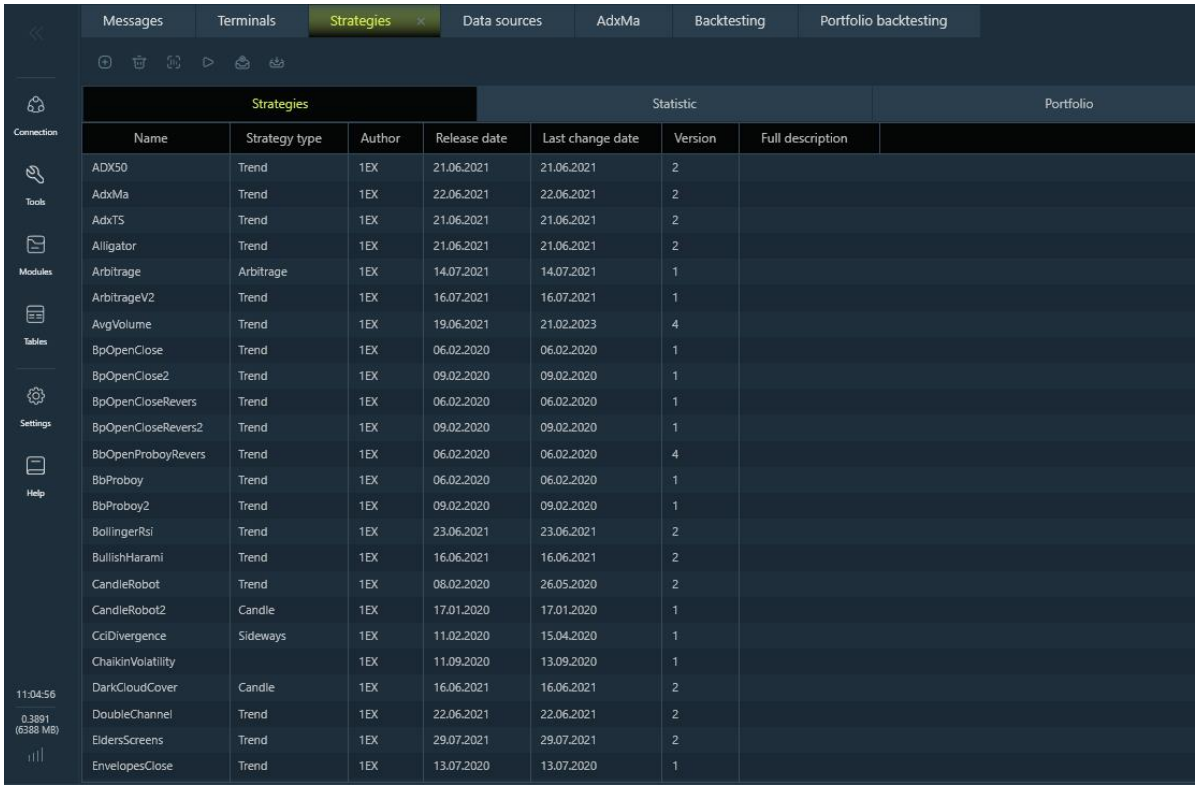
On the "Profitability Correlation" tab, you can track the correlation between the yield curves of each test participant's robot with another robot.

Strategies

Through the "strategies" section, new strategies and scanners are loaded, deleted, and launched in 1ExAlgo, strategy containers are created, information about loaded strategy scripts, scanners, portfolio scripts and user statistics is also displayed in the form of a list.

There are 3 tabs in the strategy window:

- Strategies - list of all strategies;
- Statistics - all statistics scripts will be added here;
- Portfolios - all portfolio scripts will be added here.



Name	Strategy type	Author	Release date	Last change date	Version	Full description
ADX50	Trend	1EX	21.06.2021	21.06.2021	2	
AdxMa	Trend	1EX	22.06.2021	22.06.2021	2	
AdxTS	Trend	1EX	21.06.2021	21.06.2021	2	
Alligator	Trend	1EX	21.06.2021	21.06.2021	2	
Arbitrage	Arbitrage	1EX	14.07.2021	14.07.2021	1	
ArbitrageV2	Trend	1EX	16.07.2021	16.07.2021	1	
AvgVolume	Trend	1EX	19.06.2021	21.02.2023	4	
BpOpenClose	Trend	1EX	06.02.2020	06.02.2020	1	
BpOpenClose2	Trend	1EX	09.02.2020	09.02.2020	1	
BpOpenCloseRevers	Trend	1EX	06.02.2020	06.02.2020	1	
BpOpenCloseRevers2	Trend	1EX	09.02.2020	09.02.2020	1	
BbOpenProboyRevers	Trend	1EX	06.02.2020	06.02.2020	4	
BbProboy	Trend	1EX	06.02.2020	06.02.2020	1	
BbProboy2	Trend	1EX	09.02.2020	09.02.2020	1	
BollingerRsi	Trend	1EX	23.06.2021	23.06.2021	2	
BullishHarami	Trend	1EX	16.06.2021	16.06.2021	2	
CandleRobot	Trend	1EX	08.02.2020	26.05.2020	2	
CandleRobot2	Candle	1EX	17.01.2020	17.01.2020	1	
CciDivergence	Sideways	1EX	11.02.2020	15.04.2020	1	
ChaikinVolatility		1EX	11.09.2020	13.09.2020	1	
DarkCloudCover	Candle	1EX	16.06.2021	16.06.2021	2	
DoubleChannel	Trend	1EX	22.06.2021	22.06.2021	2	
EldersScreens	Trend	1EX	29.07.2021	29.07.2021	2	
EnvelopesClose	Trend	1EX	13.07.2020	13.07.2020	1	

Name	Description
Name	Name of the strategy
Type strategy	Trend, level, candlesticks, arbitrage, etc.
Author	The one who wrote the strategy (code, not an idea). In the originally installed version 1ExAlgo - 1Ex will be the author of all strategies, in the future it is possible to upload your strategies (Api is open).
Release date	The release date of the strategy.
Date of last change	The date of the last change in the strategy.
Version	The version at the time of the last change.
Full description	Link to the strategy description.

- uploading a strategy, scanner, portfolio script or user statistics (a file with the cs extension) to the selected directory or via the context menu. Scanners, portfolio scripts and user statistics are automatically moved to the appropriate folder. For more information about the strategy loading procedure, see the section "Loading and deleting strategies";

- delete the selection script;

- test a dedicated strategy;

- launch a dedicated strategy;

- create a strategy container (to transfer the strategy to another person, with a closed code);

- load the strategy container;

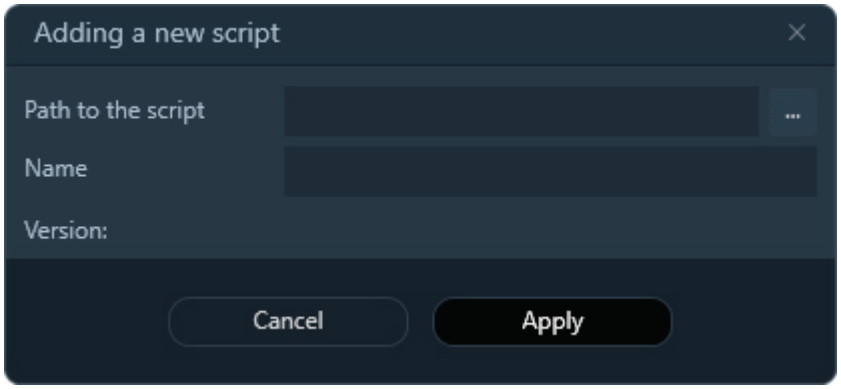
The location of the strategy script file. The "Description" tab displays how the strategy works if the strategy developer has entered this description. If the strategy has changed, then the "Changes" tab will display changes relative to the previous version, if the strategy developer described them.

Loading and deleting a strategy

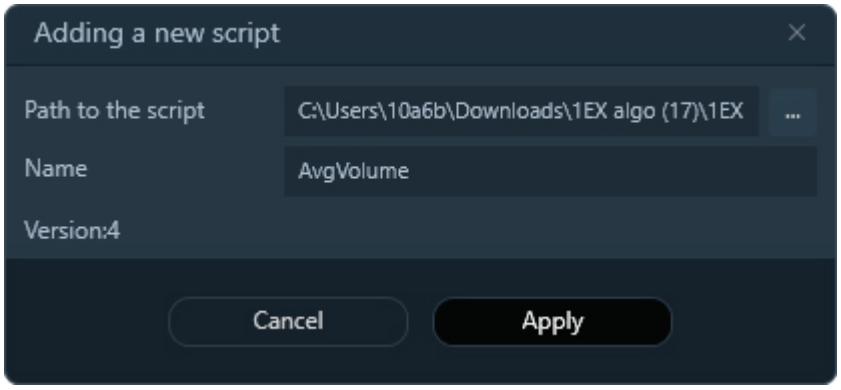
Loading a strategy or scanner

- loading the strategy, the path to the strategy file is indicated in the window that opens.
Name - automatic substitutions from the strategy file. After loading the script, you can change it.

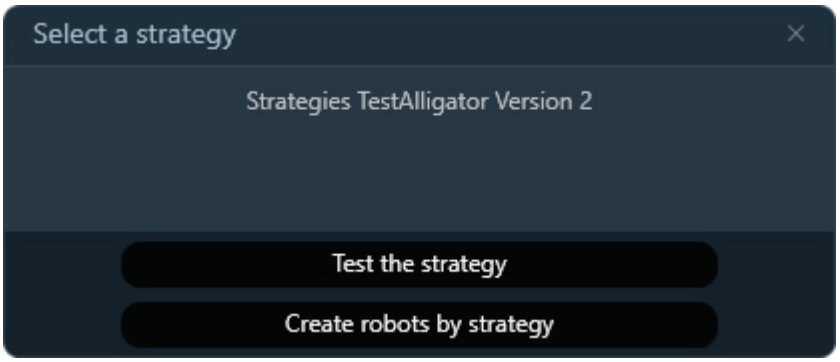
Script path is the full path to the script, a file with the extension *.cs is specified.



After selecting the co file, click "Apply"
If the strategy uses third-party libraries (dll) for calculations, then they must be placed in the Dll folder before launching 1ExAlgo. This folder is located in the 1ExAlgo root directory.



All downloaded strategies are copied to a separate folder on the computer, and therefore, if the robot code changes, you need to upload it to 1ExAlgo again, and it will replace the existing strategy with the same name.
If all the necessary values are selected correctly, the strategy will be added to the list of strategies. When selecting a directory, the strategy will be stored in it, otherwise it will be added to the "Default" directory (folder). After that, you can immediately proceed to the creation of robots or test the strategy on historical data.



Deleting a strategy

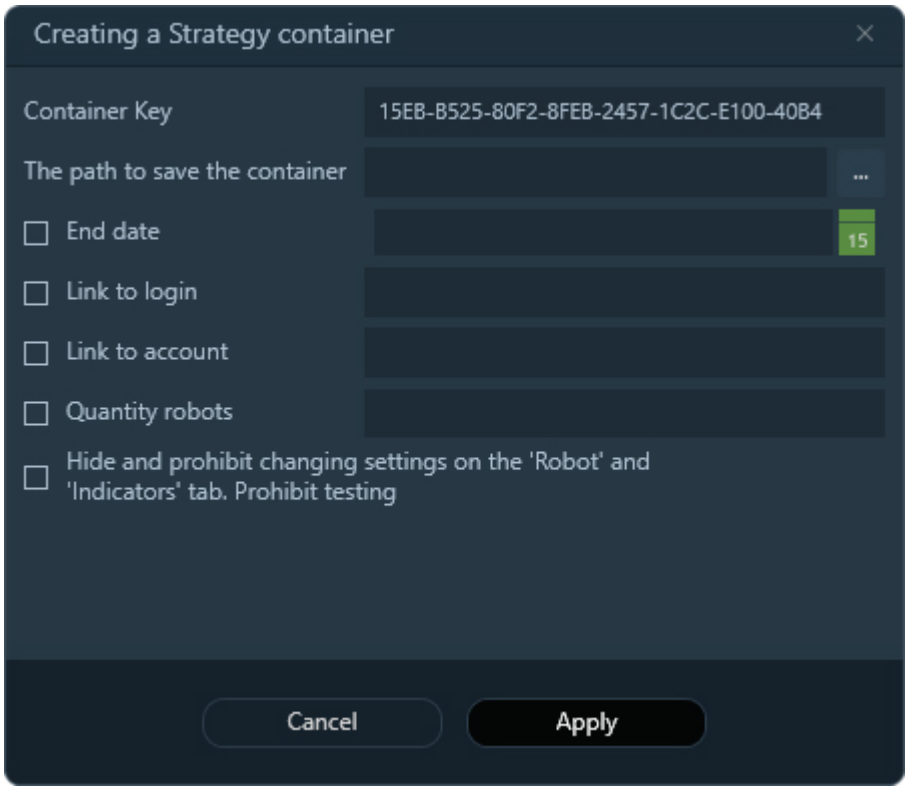
To delete one specific strategy, select it in the list and click the "Delete Strategy" button or through the context menu. After confirmation of deletion, the strategy will be removed from 1ExAlgo.

Loading and creating a container

Containers allow you to encrypt a strategy and transfer it to another person for use. Container creation is possible only on the Pro tariff. When creating a container, you can specify a number of restrictions.

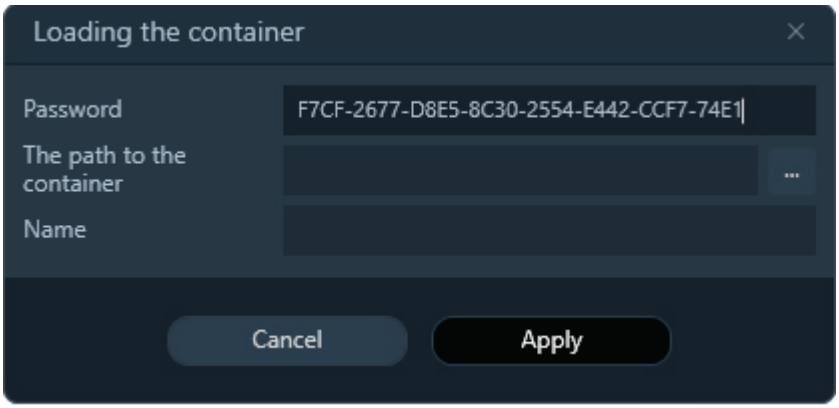
 - click to create a container.

Name	Description
Container Key	A unique key to open a strategy in the 1ExAlgo program
The path to save the container	The path where the container will be created.
End date	The expiration date of the container license. After this period, the strategy will not work
Link to login	The ability to specify that trading is conducted only when using a specific login
Link to account	The ability to specify that trading is conducted only on a specific account or group of accounts, separated by commas
Quantity robots	The number of simultaneously launched robots according to the strategy (cannot exceed the tariff limits)
Hide and prohibit changing settings on the `Robot` and `Indicators` tab. Prohibit testing	When this option is enabled, the container owner will not be allowed to test it and also configure the robot and indicators tabs, they will be hidden. I.e. they will be set by default by the container owner.



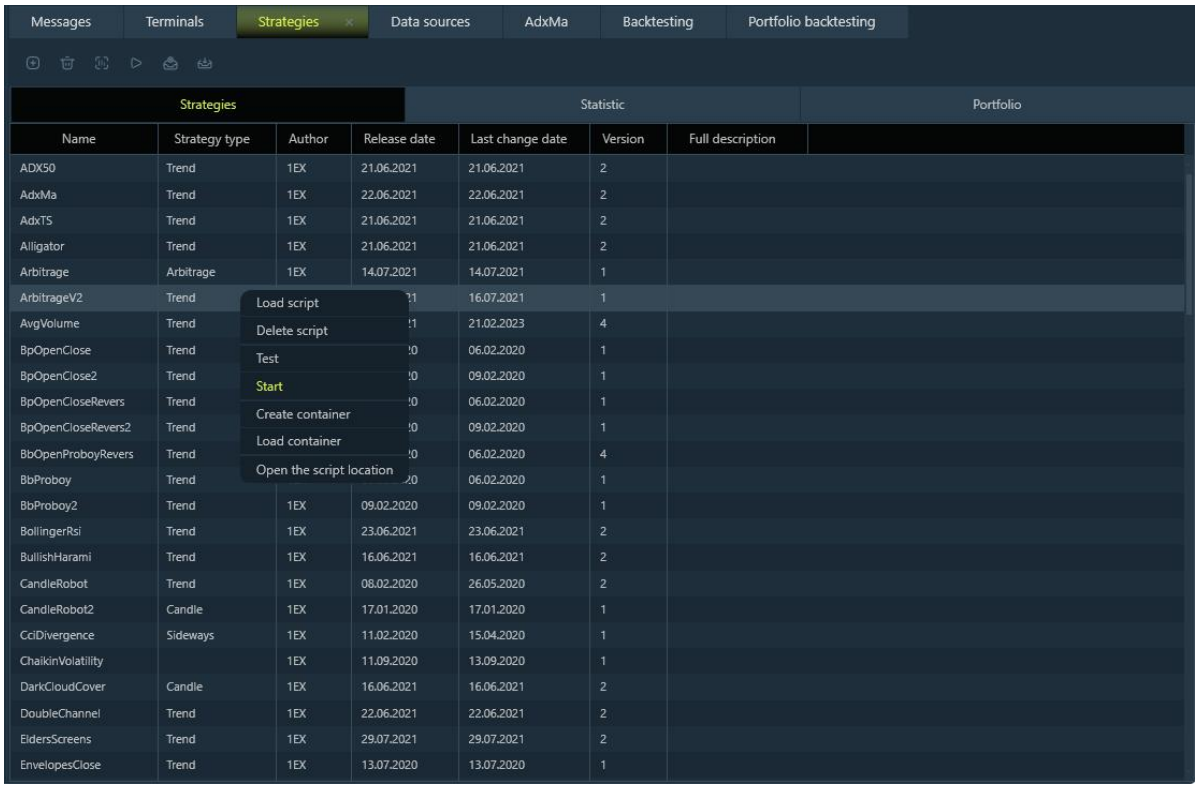
When you click create, a container with the strategy name and the etsc extension and a text file with the container key will be created at the specified path. **Container loading** The use of containers is possible at the Lite tariff and higher. First, the password to the container is specified, then the path to it. After that, if necessary, you can change the name of the strategy and after clicking the apply button, the container is loaded. With this strategy in the container, you can perform the same actions as with a regular strategy, if there are no restrictions imposed on it, except for viewing and editing the source code.

- click to load the container.



Launching a strategy

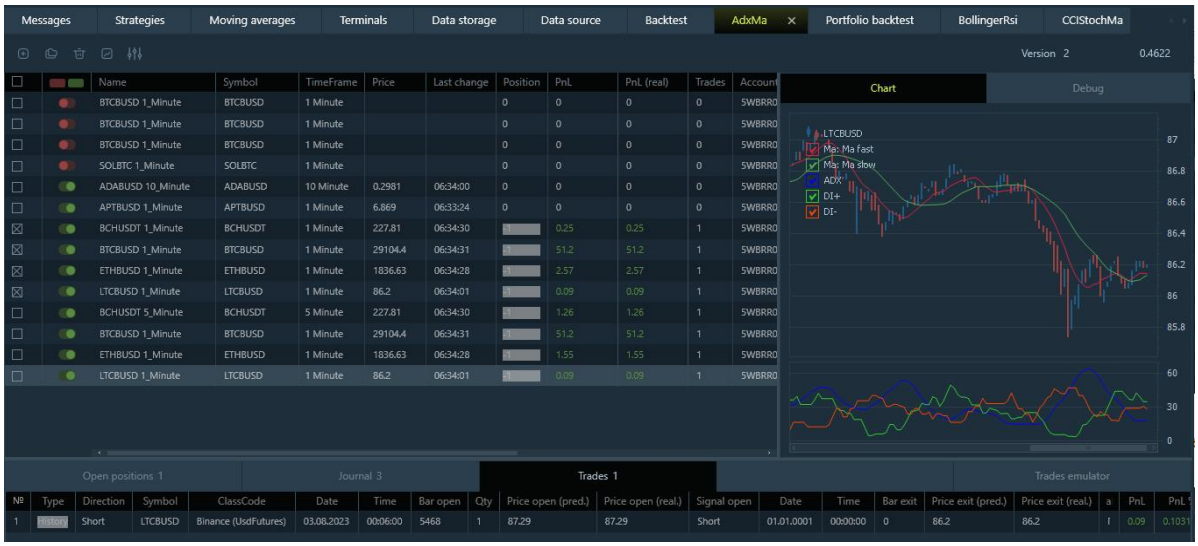
You can launch the strategy by:
- double-clicking;
- right-click on it - Run;
- select a strategy and click ▷.



Name	Strategy type	Author	Release date	Last change date	Version	Full description
ADX50	Trend	1EX	21.06.2021	21.06.2021	2	
AdxMa	Trend	1EX	22.06.2021	22.06.2021	2	
AdxTS	Trend	1EX	21.06.2021	21.06.2021	2	
Alligator	Trend	1EX	21.06.2021	21.06.2021	2	
Arbitrage	Arbitrage	1EX	14.07.2021	14.07.2021	1	
ArbitrageV2	Trend			16.07.2021	1	
AvgVolume	Trend			21.02.2023	4	
BpOpenClose	Trend			06.02.2020	1	
BpOpenClose2	Trend			09.02.2020	1	
BpOpenCloseRevers	Trend			06.02.2020	1	
BpOpenCloseRevers2	Trend			09.02.2020	1	
BbOpenProboyRevers	Trend			06.02.2020	4	
BbProboy	Trend			06.02.2020	1	
BbProboy2	Trend	1EX	09.02.2020	09.02.2020	1	
BollingerRsi	Trend	1EX	23.06.2021	23.06.2021	2	
BullishHarami	Trend	1EX	16.06.2021	16.06.2021	2	
CandleRobot	Trend	1EX	08.02.2020	26.05.2020	2	
CandleRobot2	Candle	1EX	17.01.2020	17.01.2020	1	
CciDivergence	Sideways	1EX	11.02.2020	15.04.2020	1	
ChaikinVolatility		1EX	11.09.2020	13.09.2020	1	
DarkCloudCover	Candle	1EX	16.06.2021	16.06.2021	2	
DoubleChannel	Trend	1EX	22.06.2021	22.06.2021	2	
EldersScreens	Trend	1EX	29.07.2021	29.07.2021	2	
EnvelopesClose	Trend	1EX	13.07.2020	13.07.2020	1	

- The "Testing" section opens with the selected strategy. Or make the appropriate choice through the context menu.

▷ - Click to launch the strategy, before that, select a strategy from the list, or through the context menu, or double-click on the selected strategy with the left mouse button. A tab opens for creating robots based on this strategy.


Messages
Strategies
Moving averages
Terminals
Data storage
Data source
Backtest
AdxMa
Portfolio backtest
BollingerRsi
CCIStochMa
Version 2
0.4622
Chart
Debug
LTCBUSD
Ma: Ma fast
Ma: Ma slow
ADX
DI+
DI-
Open positions 1
Journal 3
Trades 1
Trades emulator

Starting the robot and setting up

The number of strategies and robots with various settings, traded instruments and accounts, you can create and run any number (there are restrictions depending on the type of license for 1ExAlgo). The more robots are running at the same time and the more complex the algorithm, the more time it takes to process the information. Depending on the power of the computer, the complexity of the strategy and the number of robots, the time spent on processing all robots according to the launched strategy will be different and it is displayed to the left of the ⊕ button in milliseconds. The average processing time of the robot algorithm is 0.2-0.4 milliseconds, depending on the power of the computer and the complexity of the algorithm.

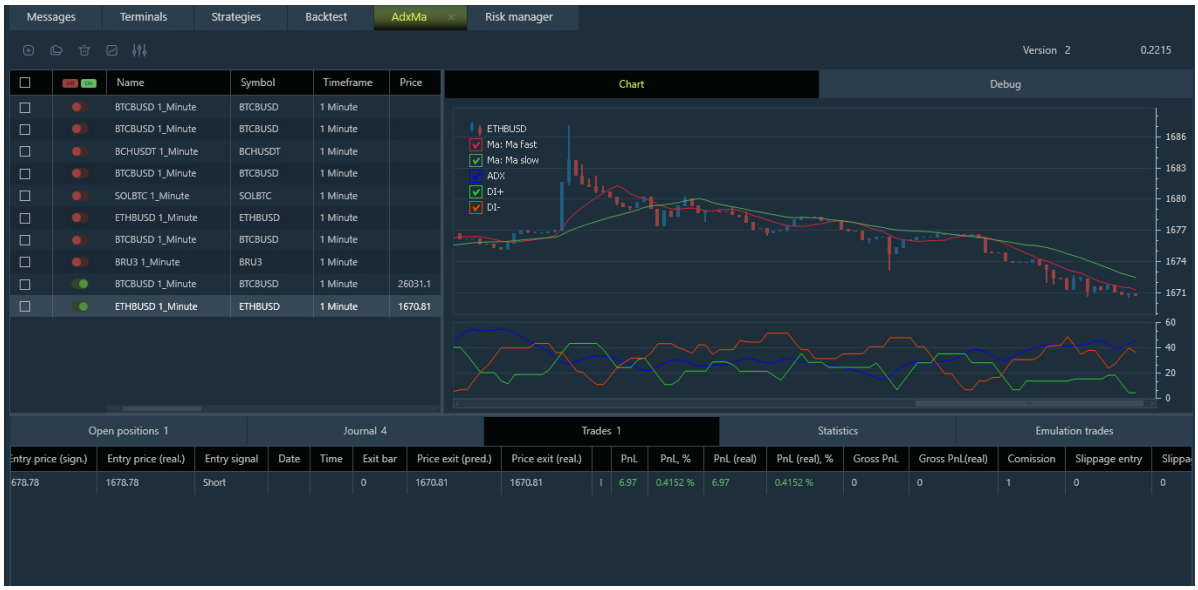
Starting and stopping robots

 - Click if you want to start the robot, the robot is disabled in this position of the toggle switch, click on this toggle switch opposite each robot that needs to be started.

 - The color of the button changes to green as the status of the robot being launched changes. And as soon as the information appears in the "Price" and "Post. change" columns, trading will begin. To stop the robot, you need to press the green button again.

 - Tap to launch all robots at once.

 - Tap to stop all robots.



Adding, copying, deleting and editing a robot

⊕ - Click to add a new robot

To edit the robot, you need to double-click the left mouse button on the robot line or through the context menu. It is possible to edit the enabled robot without stopping it.

If the account or instrument for the robot has been changed, then all information about open positions will be reset by the robot (if there is a real trade, the positions will not be closed, and active orders for opening a position or closing will not be removed), and if the parameters affecting the trading algorithm have been changed, the robot will continue its work and it will close open positions already according to the new rules and parameters.

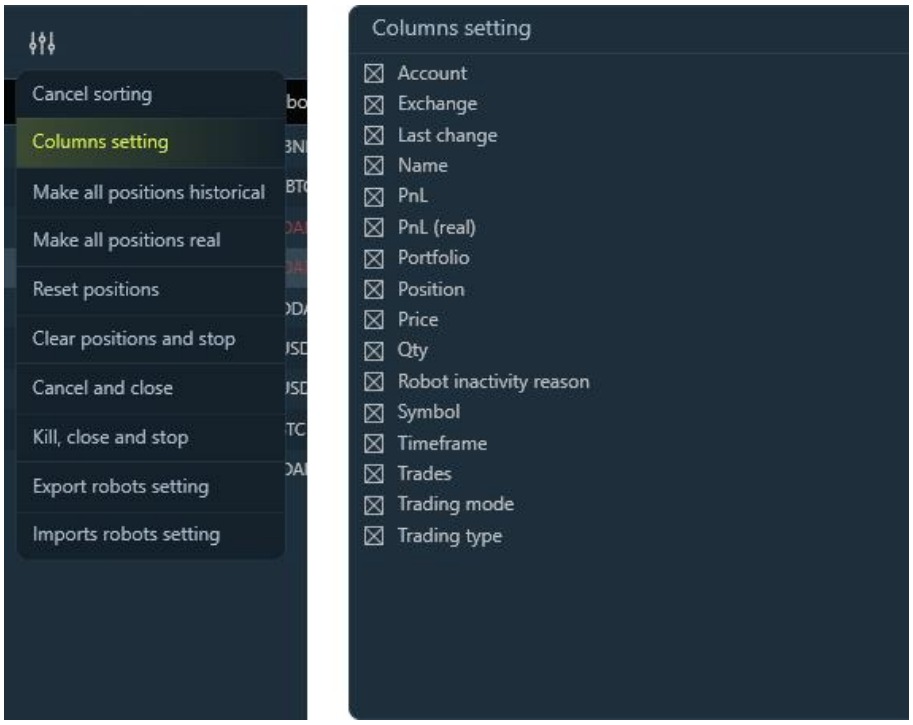
- In order to delete a robot or robots (you need to tick it (them)), after confirming the removal of the robot, they will be permanently deleted.

For operations with several robots at once, they need to be ticked, as it was in the case of deletion. If there are a lot of robots or you need to cancel the selection on all robots, then you can use the field in the table header.

- Click to copy robots (you need to tick the robots that will be copied). After that, the robots will be added to the end of the list in the off state, even if the running robot was copied.

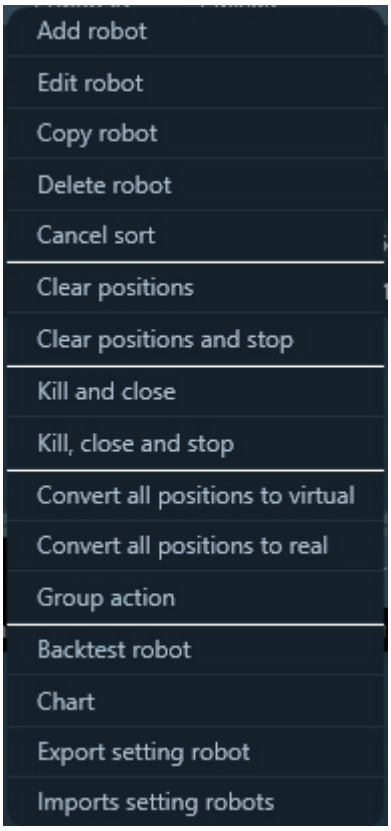
- Graph, click to show the graph in a separate window, the window can be changed to any size convenient for work.

- Press to open the settings context menu.



Here it is possible to cancel sorting, as well as setup the columns by adding or removing table columns.

Also, all operations are duplicated through the context menu or through the menu.



To apply a command to a specific robot, a context menu is called by right-clicking the menu on it, and for group operations, robots are ticked and operations are performed through the menu.

Add a robot - add a new robot.

Edit Robot - edit the settings of the selected robot.

Copy robot - copy the robot marked with a check mark.

Delete robot - delete the robot marked with a check mark.

Cancel sort - when sorting by a certain column value of the column (by clicking on the column name, sorted), this sorting can be canceled.

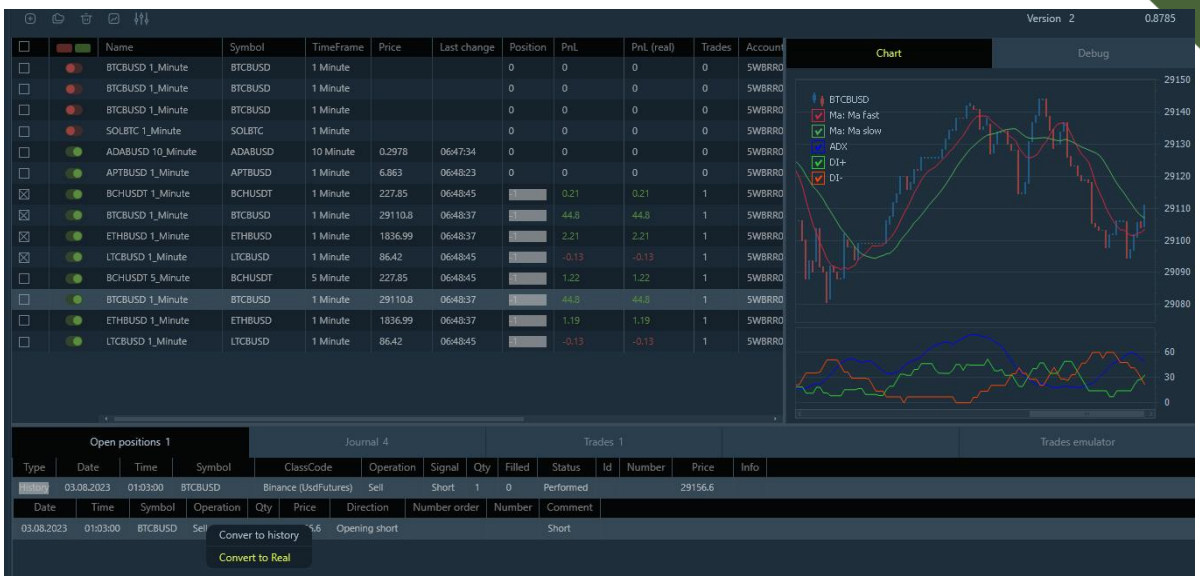
Clear positions - in some cases, it is necessary for robots to reset all information about current open positions and start trading from scratch.

Clear positions and stop - all information about positions is reset and stops the robot.

Kill and close - removes all active orders and stop orders for the robot and closes the current positions.

Kill, close and stop - removes all active orders and stop orders for the robot and closes the current positions and stops the robot.

Convert all positions to virtual - if a position on the robot was closed manually in the terminal, and it is required that the robot continues trading according to its algorithm and does not close this position in the terminal, it can be made historical, then it will close it virtually, inside the robot.



Convert all positions to real - makes historical transactions real, for this open position, when a signal for closing a position occurs, a transaction will be sent to the terminal or to the exchange.

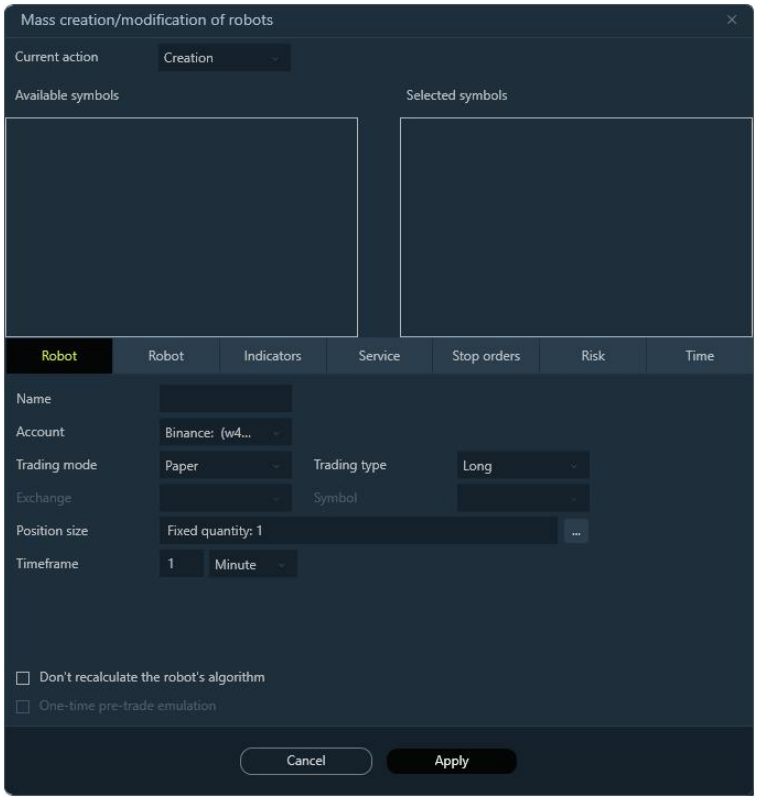
Group actions - allows you to simultaneously change or create robots with the same parameters for different accounts and instruments.

Backtest the robot - creates a strategy test with the parameters specified in the robot.

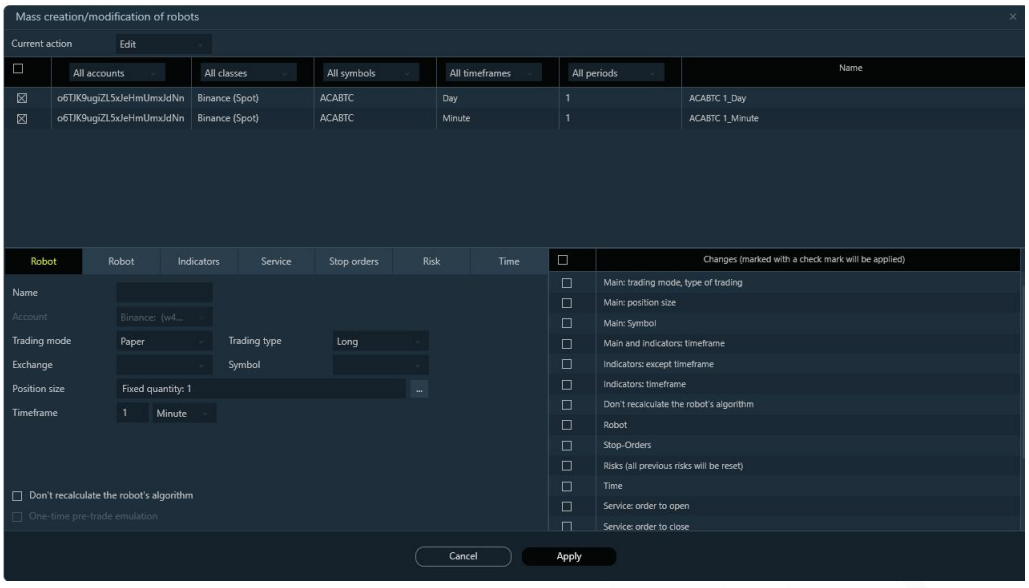
Chart - helps to visually monitor changes in quotes at different time intervals.

Export setting robot - export robot settings to a file.

Import setting robot - import robot settings from a file.



Editing robots. To start editing, you need to select "Edit" in the "Current Action" menu. Robots should be turned off. The necessary robots are selected by the appropriate filter and only those items that need to be changed in these robots are marked on the right.



List of robots

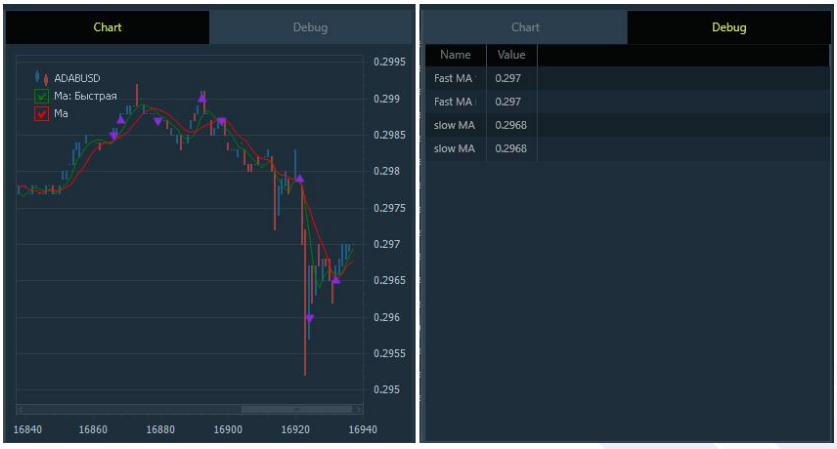
The list is presented in the form of a table. The table can have up to 15 columns (you can

add or remove columns higher in the column settings).

Name	Description
Off/On	The ID of the robot, whether it trades or not.
Name	Name of the robot
Symbol	The main traded symbol for the robot
Exchange	The exchange from which the quotes for this instrument come
Timeframe	Time interval for grouping price quotes
Price	The price of the last transaction on the exchange for the traded instrument
Last change	The time of the last transaction on the exchange
Position	The current position of the robot
PnL	Profit/loss on the robot
PnL (real)	The actual profit/loss on the robot, taking into account the actual execution prices and the commission set by the user
Trades	Number of robot transactions
Account	The account on which the trade is conducted
Trading mode	Manual - emulation of trading operations (all transactions are conducted inside the robot, without physically sending transactions to the exchange), automatic - trading is conducted on account, with sending transactions to the exchange.
Trading type	Long - trading is conducted only in a long position, Short - trading is conducted only in a short position. Long and short - trading is conducted both in a long position and in a short one
Qty	The number of lots calculated by the robot or set by the trader. If the position size is calculated in a script, then this column will have the value "script"
Robot inactivity reason	The reason why the robot is not trading.
Briefcase	In which portfolio these strategies are combined.

Table variables and values

The table is located to the right of the list of robots for the launched strategy. In this area, you can output additional information from the robot code, for example, the calculation of a variable or a value. For convenience, there is a graph tab in the table.



Information about robots

The following tables are used for visual control of robot operation:

- **Open positions** – positions for which the order has been executed or is active in the trading system to which 1ExAlgo is connected.
- **Journal** – personal log of the robot. This table displays data on the operations performed by the robot (opening and closing positions), and it is also possible to additionally output information to the robot log from the robot code required by the user. This table also displays information about the actions performed by the user on the robot, for example, resetting data, stopping / starting the robot, changing robot settings.
- **Trades** – information about open and closed positions on the robot and statistical information on transactions.
- **Statistics day** - daily summary data on robot actions (transactions, profit/loss, drawdown, etc.)
- **Trades emulator** - information on open and closed emulation transactions

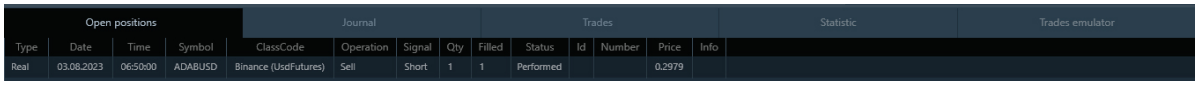


Table "Open positions"

Name	Description
Type	Real or historical
Date	Date of application submission
Time	Time of application submission
Symbol	The main traded instrument for the robot
Exchange	The exchange from which the quotes are coming
Operation	is a "Buy" or "Sell"
Signal	Forecasting system that informs the trader about a change in the direction of the trend
Qty	Number of lots in the application
Filled	Executed number of lots
Status	Application status "Active", "Executed", "Canceled"
Id	unique number for the application
Number	Application number
Price	Application price
Info	Additional information on transactions

Table "Journal"

Name	Description
No	Serial number of the message
Date	Date of the message
Time	Message time
Message	Information in the message

Table "Trades"

Name	Description
No.	Serial number of the transaction
Type	Type of transaction
Direction	Purchase or sale
Symbol	The code of the instrument for which the transaction was made
Exchange	The exchange from which the quotes are coming
Date	date of the position opening signal
Time	Time of the signal to open a position
Entry bar	The bar where the entry into the position is made
Qty	Number of lots/contracts to open a position
Entry price (sign.)	Signal entry price, excluding slippage
Entry price (real.)	Information about the reasons for opening a position
Entry signal	Information about the reasons for opening a position
Date	The date of the signal to close the position (if the position is open, the field will be empty)
Time	The time of the signal to close the position (if the position is open, the field will be empty)
Exit bar	The bar on which the exit from the position was carried out (if the position is open, the field will be empty)
Price exit (pred.)	Signal entry price, excluding slippage (if the position is opened, the price of the last transaction will be displayed in)
Price exit (real.)	The actual closing price of the position
Signal exit	Information about the reasons for closing a position, if the position is open, it will be written "position is open"
PnL	Profit/loss on the transaction from the signal price
PnL%	Profit/loss on the transaction as a percentage of the position amount from the signal price
PnL (real)	Actual profit/loss on the transaction from the signal price
PnL (real), %	Actual profit/loss on the transaction as a percentage of the position amount from the signal price
Gross PnL	Accumulated profit/loss on previous transactions, taking into account its profit/loss
Gross PnL(real)	Total actual profit/loss on transactions
Commission	Transaction commission
Slippage entry	The difference between the signal price and the actual entry price
Slippage exit	The difference between the signal price and the actual exit price
Number of bars	The number of bars during which the position was held
MFE	The maximum positive deviation of the price in points from the entry price (sign.).
MFE%	The maximum positive deviation of the price as a percentage of the entry price (sign.).
MAE	The maximum negative deviation of the price in points from the

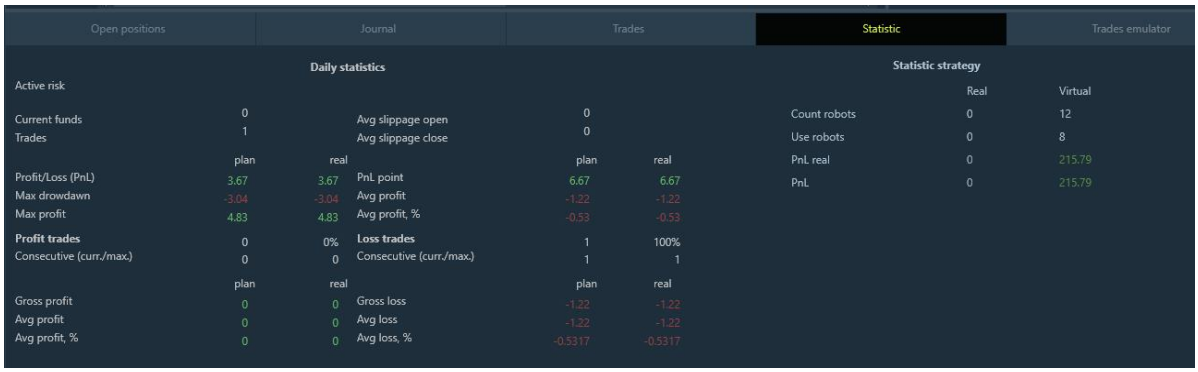
	entry price (sign.).
MAE%	The maximum negative deviation of the price as a percentage of the entry price (sign.).
Info	Additional information on transactions

Daily statistics

Trading indicators for the day. To find out what this or that parameter means without opening the instructions, it is enough to hover over its name.

The plan - Calculation is carried out according to the indicators of signal prices of execution of transactions

Fact - The calculation is based on the indicators of actual transaction execution prices



Name	Description
Active risk	Activated risk, which introduces restrictions on the robot's trading for a specified period
Current funds	Current cash balance on the account
Trades	Number of closed transactions
Avg slippage open	Average slippage on opening a position in money on closed transactions
Avg slippage close	Average slippage to close a position in money on closed transactions
Profit/Loss (PnL)	Profit/loss in money
Max. drawdown	The maximum value of the loss in money, takes into account closed and open transactions
Max. profit	The maximum value of profit in money for the robot, takes into account closed and open transactions
PnL point	Return/loss -
Avg PnL	the average return/loss on closed transactions in money is calculated in points
Avg PnL, %	Average return/loss on closed transactions as a percentage
Profit trades	The number of profitable trades, only closed trades are taken into account
Consecutive (curr./max.)	The number of profitable trades in a row, the current value and the maximum achieved for the current day
Loss trades	The number of unprofitable transactions, only the closing of the

	transaction is taken into account
Consecutive (curr./max.)	The number of losing trades in a row, the current value and the maximum reached for the current day
Gross profit	Total profit on all profitable closed transactions in money
Avg profit	Average profit on closed profitable transactions in money
Avg profit, %	Average profit on closed profitable transactions as a percentage
Gross loss	Total loss on all unprofitable closed transactions in money
Avg loss	Average loss on closed unprofitable transactions in money
Avg loss, %	Average loss on closed unprofitable transactions as a percentage

Table "General strategy statistics"

Name	**Description**
Number of robots	Number of robots by strategy
Working robots	Number of working robots
PnL (real)	The actual profit/loss for all robots, taking into account the actual execution prices and the commission set by the user
PnL	Profit/loss on all works
Trades	Number of closed transactions
Profit trades	The number of profitable trades, only closed trades are taken into account

The "**Trades emulator** " table is similar to the "Transactions" table, it already displays all emulation trades..

Basic Settings

The main tabs of the robot settings by default are all available in all robots and can be used by all algorithms, unless a particular section has been disabled or used by the developer of the trading algorithm. "Basic settings" and "Service" are present in all robots without exception. The sections "Stop orders", "Risks" and "Time" can be disabled by the developer of the trading algorithm, and these sections are also available for operation depending on the tariff. The sections "Robot" and "Indicators" - automatically appear if an indicator is used in the algorithm, the section "Indicator" will appear, and if additional settings are used that are output by the algorithm developer to the interface, they will be displayed in the "Robot" section.

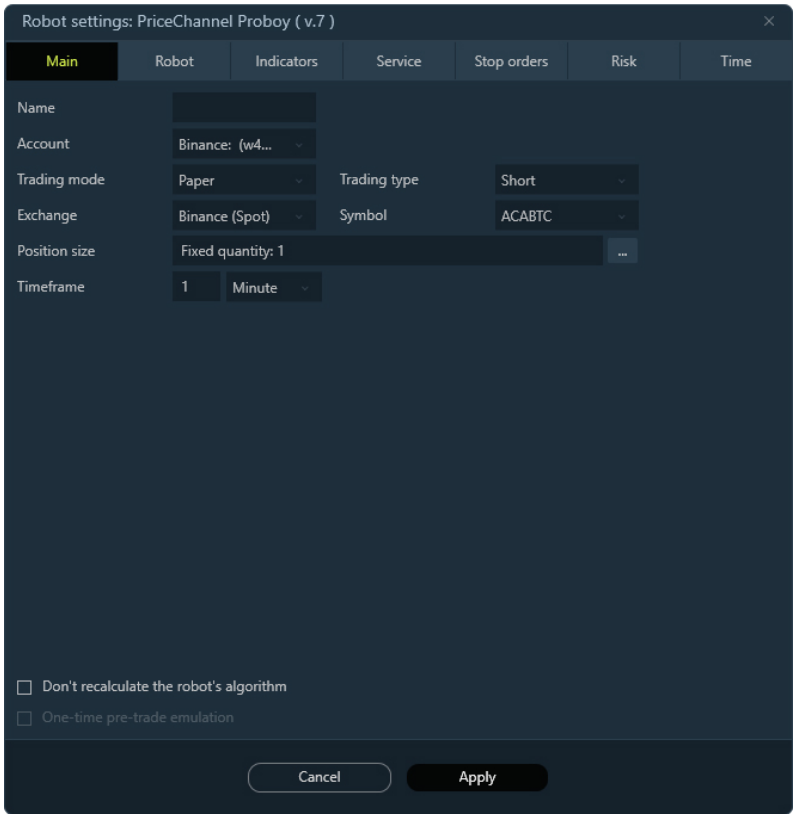
When starting the robot for the first time, it is initially necessary to familiarize yourself with and configure the following tabs:

- Basic Settings;
- Robot (if this section is available);
- Indicators (if this section is available);
- Service.

Important!!! In a real trading, the robot keeps its own account of positions and it does not know how many lots / contracts of a particular instrument are on the account now, it trades the amount that it is assigned. When closing a position manually, not via 1ExAlgo, you need to tell the robot that the position is closed so that it does not close it again. For more information, please refer to the previous section "Robots" and familiarize yourself with the "Reset data" function.

Important for QUIK!!! When you turn it on for the first time, if trading requires data for more than the current day, then you need to download data for candles. It is also necessary to perform this function when 1ExAlgo does not work until the end of the session and it does not have a complete history for the previous session. To load data, one of the standard timeframes is used, in case of loading data other than the standard frames, candlesticks may be formed incorrectly. When loading any standard timeframe, except for the month, all the higher timeframes are formed based on the loaded timeframe. For example, if you upload 10-minute data, data for a timeframe higher than 10 minutes will be automatically generated, and 1 and 5 minute data for this period will not be added. Data loading can be found in the "History loading" section.

Recommended. During the initial acquaintance with the robot and its settings, it is recommended to choose the virtual trading mode. When the robot is first launched in automatic trading mode, it is recommended to use either a demo account (for the concept of how the robot trades and checking the correctness of the settings) or, if the account is "combat", it is recommended to set the position size fixed, equal to 1 contract / lot. After you have mastered the management, you can switch to the "normal" trading mode, with your settings.



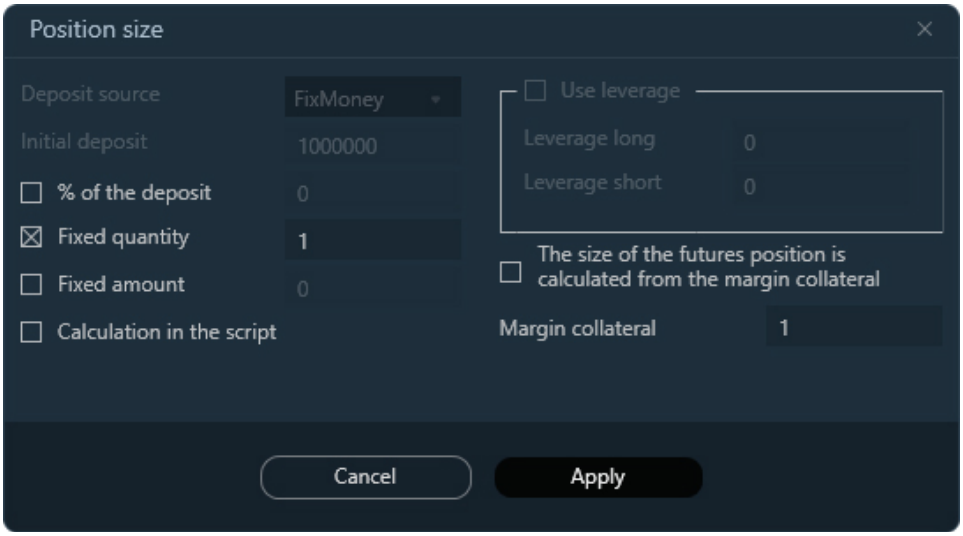
Name	Description
Name	The name of the robot, for identifying messages in the general strategy log (optional parameter)
Account	The account that will be used for trading
Trading mode	Virtual mode - the robot emits real trading (no purchase/sale orders are sent to the exchange), recording the financial result of transactions and the transactions themselves. Real - fully automated trading, with the sending of buy/sell orders to the exchange.
Trading type	Long - trading is conducted only in a long position, "Short" - trading is conducted only in a short position, "Long and Short" - the robot opens long and short positions. If the algorithm makes it possible to trade both Long and Short, then when choosing the "Long" trading mode, the robot will open only long positions, ignoring signals to open short positions.
Exchange	The exchange from which the quotes for the selected instrument come. The data is displayed only when the 1ExAlgo is connected to a trading terminal or server.
Symbol	The code of the instrument that will be used for trading. The list of tools is displayed depending on the selected class. The data is displayed only when the 1ExAlgo is connected to a trading terminal or server.
Position size	The size of the position opened by the robot. For more information, see the section "Position size".
Timeframe	The interval period. It is necessary to select the interval type for

	candles/bars. Possible options: ticks, seconds, minutes, days, weeks and months.
Don't recalculate the robot's algorithm	If there is no check mark, then changing the parameters in the Main or Robot or Indicators section entails recalculation of the algorithm, and if a position is open, it can be closed. If there is a check mark, then the algorithm is recalculated only in cases of changes in the Timeframe, Client Code or Instrument.
One-time pre-trade emulation	It appears when you click the check mark "Do not recalculate the robot algorithm". If it is required for the robot algorithm to perform one pre-trading emulation when starting work or restarting the robot, then you need to check this box. After performing pre-trade emulation, this check mark is removed.

Position size

The number of contracts/lots that the robot will open a position with is determined depending on the "Position Size" settings. Options for determining the position size:

- Percentage of the initial deposit;
- Fixed quantity;
- Fixed amount;
- Calculation in the script.



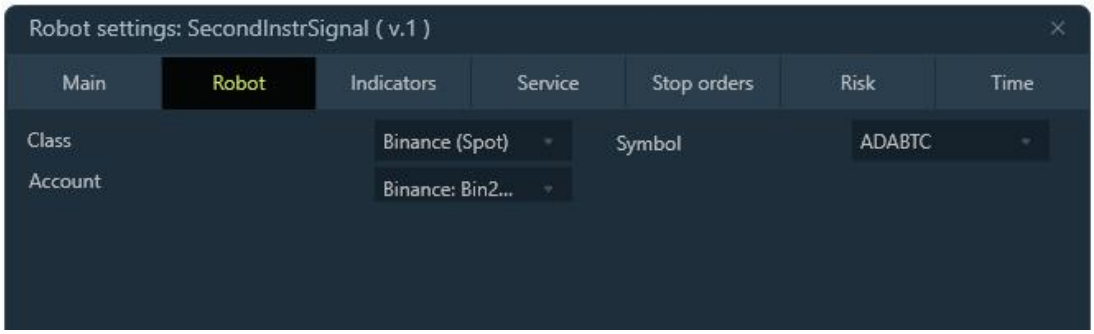
Name	Description
Deposit source	The initial amount of funds from which the robot calculates the position size. *Fixed amount* - the initial deposit is manually set, which is calculated during the bidding process. *Current funds* - information about the funds (Money) on the account (free Money + Money in positions and in applications) is taken from the trading terminal or server. *Incoming funds* - funds in the account at the beginning of the trading session (free Money + Money in positions and in applications). *Calculation in the portfolio* - if the robot is in any portfolio, the information about the funds to determine the size of the position will be calculated depending on the portfolio settings.
Initial deposit	The funds used to calculate the position size. For testing, this item must be filled in if (% deposit) is used and / or it is necessary that the deposit increase in % be shown in statistics.
% of the deposit	The percentage of the deposit used to calculate the position size.
Fixed quantity	Fixed quantity. The robot trades the number of contracts/lots that is set.
Fixed amount	A fixed amount. The position size is always calculated from the specified amount.
Calculation in the script	In the case when the position size depends on indicators or is calculated depending on formulas and the calculation is embedded in the robot

	algorithm, it is necessary to select this item to calculate the position.
Use leverage	If "% of the deposit" is used to calculate the position size, then additional settings can be used in this case. The amount of funds allocated to open a position is multiplied by the coefficient "leverage long" - for long positions, "leverage short" - for short positions.
The size of the futures position is calculated from the guarantee	The use of this option is possible if "% of the deposit" or "Fix" is used to calculate the position size. the amount". The size of the position is not based on the full value of the contract, but on the GC. It is also possible to increase or decrease the warranty by using the coefficient for GC.
Margin collateral	The coefficient for the guarantee. Allows you to increase or decrease the size of the guarantee (GC *Coef. for GC).

Robot

This tab displays variables that the user can change without editing the code of the trading algorithm. The number and types of configurable parameters depend on the developer of the trading algorithm, if there are no parameters to configure, then this tab will not be displayed. There are 6 types of controls in total:

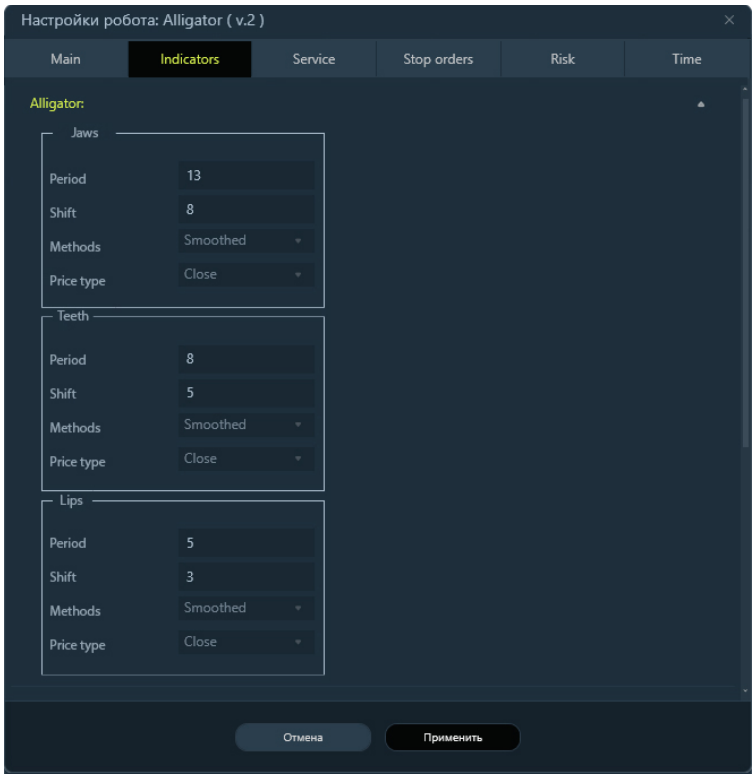
Name	Description
Number	It is possible to enter an integer or a fractional number
Boolean value	If the robot algorithm uses a choice between "yes" and "no" or "true" and "false", etc., then it is recommended to use this option
File path	If you need to work with a file, you can use this control to specify the path to it
Selection from the list	Used if the list consists of more than two elements
Time	A control that provides the ability to enter time
Tool Selection	Information about the instrument appears after connecting to a trading terminal or server. Allows the trading algorithm to use information on an additional instrument, but having the same timeframe as the "Instrument" in the "Basic Settings"



If the name of the variable is not clear what it affects, then you can see its description if the developer of the trading algorithm has written an explanation for it. You need to hover the mouse over the name of the variable and a hint will appear.

Indicators

If trading uses indicators embedded in 1ExAlgo by default, then you can configure it on this tab. If the indicators are not used in the robot, then this tab will be missing.



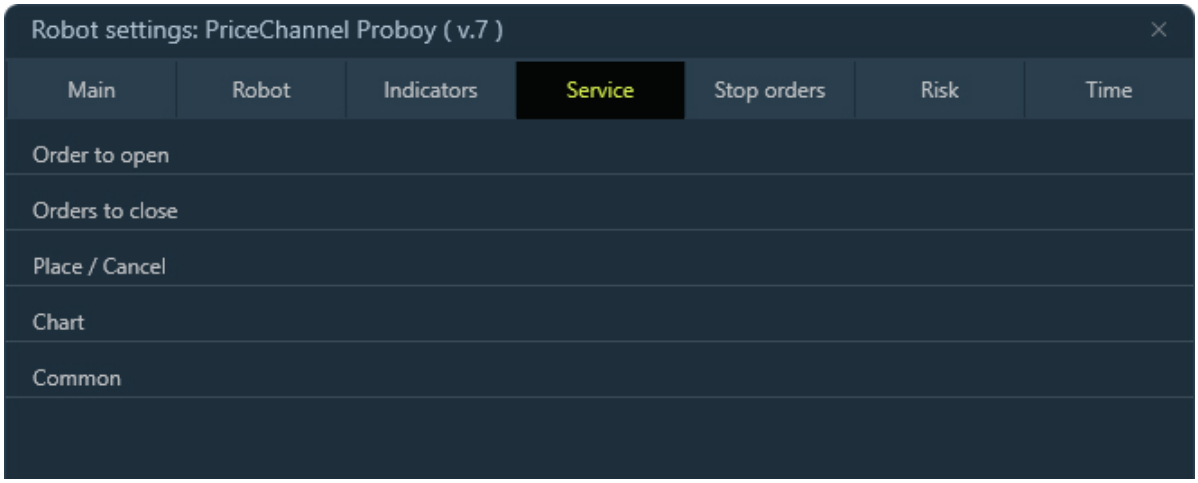
Settings that are present in all built-in indicators: "Tool", "Interval type" and "Period". All these parameters exactly repeat the settings of the corresponding types on the "Basic Settings" tab. "Interval type" and "Period" are the timeframe of the chart on which the indicator will be built. By default, the "Interval Type" and "Interval" are hidden, in this case, the timeframe is taken by default as in the main settings. To display it, go to the Settings section/Main/Trade and put a check mark in the item "Show the menu for selecting the time frame in the indicator"

Then there are individual settings for each indicator. For the "Price Channel" indicator, it is proposed to select the channel period and the type of price for building the channel, separately you can set values for both the lower and the upper. The type of prices that can be set to the following values:

- High - the maximum of the candle/bar;
- Low - minimum of the candle/bar;
- Close - closing the candle/bar;
- Open - opening a candle/bar;
- Median - average price of a candle/bar (High+Low)/2;
- Typical - typical price (High+Low+Close)/3.

Service

Service - a section for fine-tuning the robot, which should be given special attention.



The tabs **"Orders to open"** and **"Orders to close"** have the same functionality, the settings "Opening positions" affect the behavior of applications opening a position, another tab affects the behavior of applications closing a position.

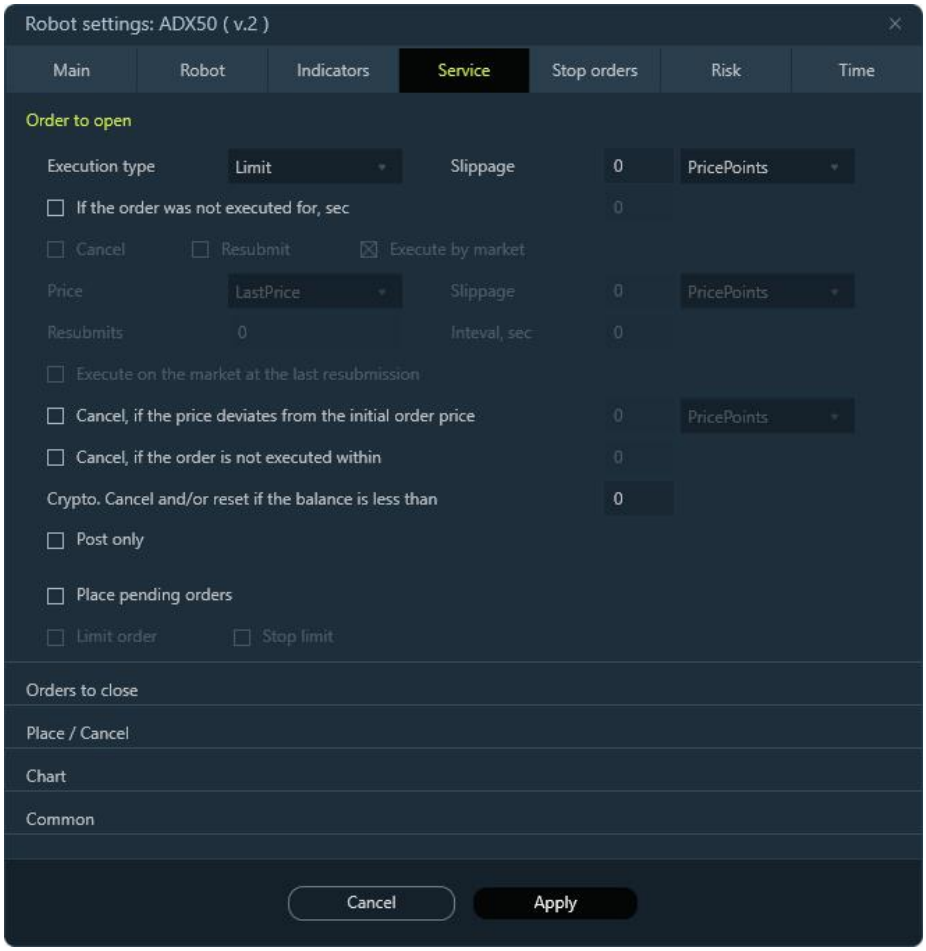
Place/Cancel - when working with pending orders, it allows you to control the depth of exposure and withdrawal.

Chart - allows you to configure the receipt of data for the robot only data for the specified period.

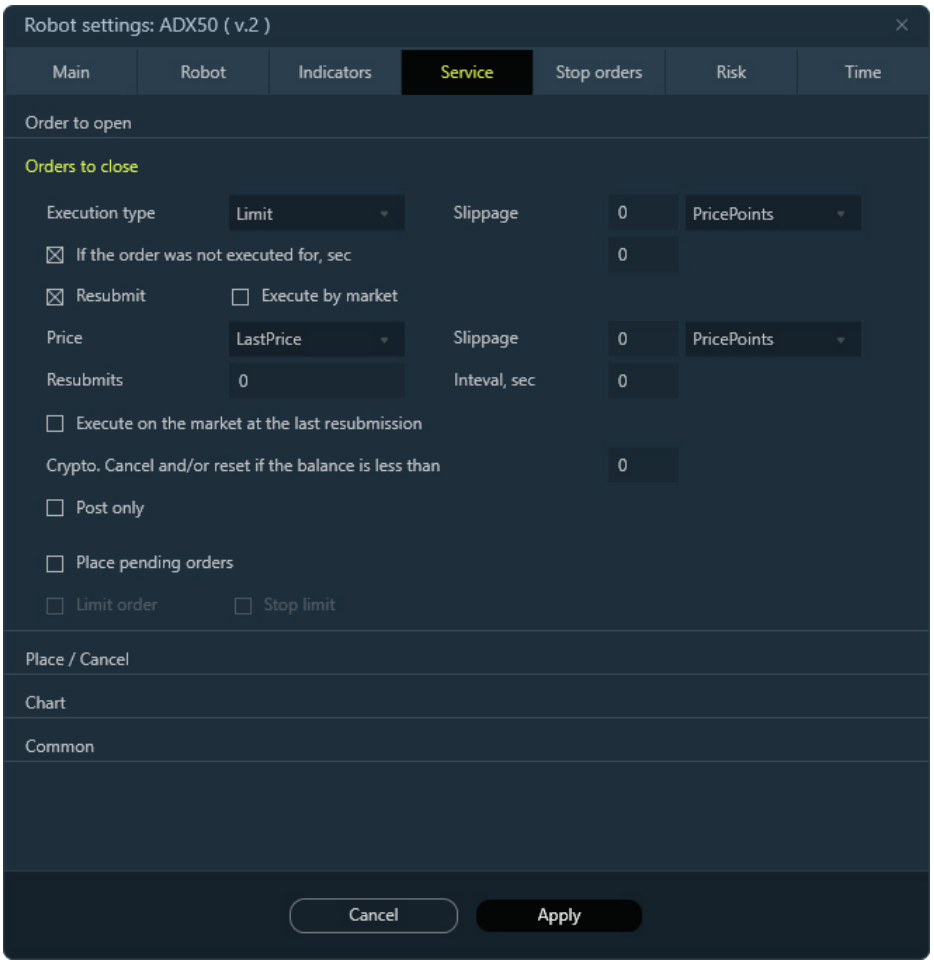
Common - allows you to save trades in the statistics module when working in manual mode, as well as to withdraw orders and close positions when the robot is suspended by a trader.

Opening and closing orders

Open orders



Close orders



Name	Description
Execution type	The price to sent order to the trading terminal or server. The market order guarantees the execution in any case, at the best price in the DOM at the time of the arrival of the order on the exchange When trading futures and if a market order is selected, the market price is formed as follows, an example for a purchase. The values from the table of current parameters are: "The maximum possible purchase price" 10000 , the current price is 9500 and the basic warranty (BGO) is 1500. The futures order is sent to the exchange at the price of 10000, and the execution will be at the best price in the DOM, but at this price the broker's cost increases for the order and GC = BGO + (the price of the order is the current price), total GC = 1500 + (10000-9500) = 2000. Therefore, you need to be careful that the broker does not reject your order, especially for closing a position.

	Due to changes on the stock exchange, it is recommended to choose the type of execution "Limit" and independently indicate slippage, both for futures and stocks. When selecting the "Limit" execution type, some of the settings become active (the rest of the settings will be activated depending on the choice of this or that option in the activated settings).
Slippage	The amount to increase the signal price for buying and reduced for selling on a limit order
If the order was not executed for, sec	hen placing a limit order with zero slippage or a specified value, there is a possibility that the order will be partially executed or not executed at all. The following options are available for managing the submitted order
Cancel	**Only for opening applications.** After the specified period of time, the order will be withdrawn, in case of partly order execution, the position will be closed according to the robot's algorithm.
Resubmit	After the specified period of time, the order will be withdrawn and a new order will be issued with the parameters specified in the resubmission settings
Execute by market	After the specified period of time, the order will be withdrawn and a new one will be placed on the market, in this case, the execution of the entire position is guaranteed **(Note that not all brokers support the market application).**
Price	The price to calculate the price for a new order when resubmitting **The last order price** is the price specified in the last bid to open the current position for which there is a re–bid **The price of the last transaction** is the price of the last transaction on the trading tool, at the time of sending a new order **Offer for buy / Bid for sale** - for a buy order is taken a best market sell price, and for the best sell order is taken a best market buy price **Bid for buy / Offer for sale** - for the buy order is taken a best market, and for the best sale order is taken the best market sell price.
Resubmits	Indicates how many times the order will be resubmitted
Slippage	The number of minimum steps of the price of the tool by which it will be increased for buy and decreased for sale. The price calculation for the limit order is carried out from the value of the "Price" field, in the re-presentation settings.
Interval, sec.	Time interval to cancel an order and place a new one
Execute on the market at the last resubmission	On the last resubmission, the order will be placed as a market order. Please note that not all brokers support market orders
Cancel, if the price deviates from the initial order price	**Only for opening applications.** IIf the price deviates by more than the specified amount after placing an order, the order will be canceled. For example, if the price step is 0.01, and the order price for buying is 98, and the deviation to cancel order is 25, the order will be canceled if the

	price reaches 98.25 (98 + 0.01 * 25) or higher. For sell, the order will be canceled if the price deviates in the opposite direction, which would be 97.75 (98 - 0.01 * 25) or lower.
Cancel, if the order is not executed within	**Only for opening applications.** If candles or bars are used in trading, then when a limit order is placed and it is not executed or partially executed within the specified number of candles / bars, the order will be withdrawn, and the executed position will be closed according to the strategy algorithm. If 0 is specified, then this function does not work, 1 is the candle/bar on which the application was placed, 2 is the candle of the setting and the next candle/bar, etc.
Crypto. Cancel and/or reset if the balance is less than	The order is canceled if the following conditions are met: 1. If the re-presentation or execution by market is configured. 2. The balance in the closing request is less than the specified amount (usually less than 10 in dollar equivalent). In other cases, the application remains. The robot resets positions to continue trading if the closing request is withdrawn and the remaining open position is less than the specified value (usually less than 10 in dollar equivalent). If zero is set, this setting is ignored.
Post only	An order of the "Placement Only" type will be added to the order book and will not be executed instantly if there is an existing order or its validity expires.
Place pending orders	Pending orders are used in strategies where the level is predetermined in advance. For example, breakout channel strategies, grid strategies
Limit order	Limit order. Start using the basic settings, after partial execution of the order.
Stop limit	Stop limit. Start using the basic settings after activating the stop request and submitting the request to the terminal.

Place / Cancel

In order for the settings from the "Opening positions" and "Closing positions" tabs to take effect, it will be necessary to tick the type of order for which these rules will apply. In order for the fields to become active, it is necessary to tick the menu item "Timely placing of pending orders ...", and then choose for which types of pending orders the rules will apply.

In the case of stop orders and an unfulfilled limit order, the re-submission rules do not apply to them. Therefore, if it is necessary to remove pending orders, then it is necessary to take this into account and program it in the Strategy. If the price or the number of contracts in the stop order or the limit order that has not been executed has changed, the system will rearrange it itself with the right number of contracts and at the right price.

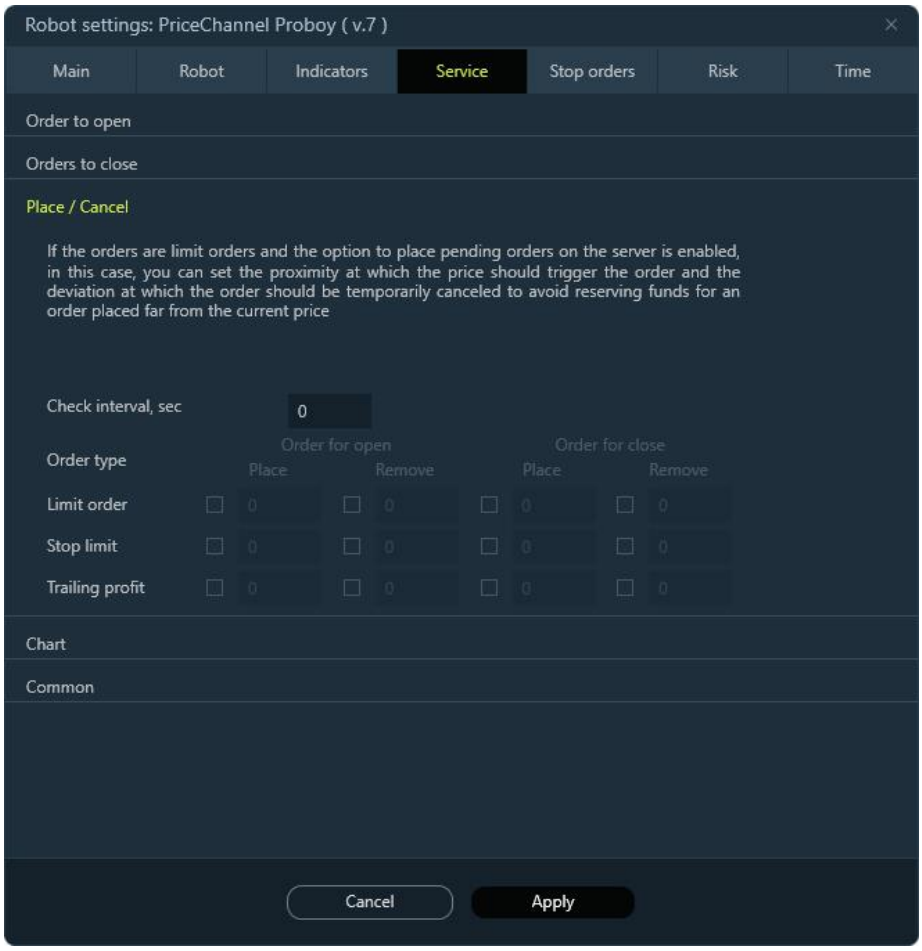
The re-submission rules apply only to applications:

Limit order – the re-submission rules for a limit order come into effect when at least one lot/contract for this bid has been executed;

Stop limit - the rules of re–submission begin to take effect only when the stop limit is activated and an order is issued;

Trailing profit – the rules of re-presentation begin to take effect when the trailing return is activated and an application is submitted.

If the orders are limit orders and the option to place pending orders on the server is enabled, in this case, you can set the proximity at which the price should trigger the order and the deviation at which the order should be temporarily canceled to avoid reserving funds for an order placed far from the current price. The specified values are set as integers, and in the code they are multiplied by the minimum step of the price of the instrument. The amount of withdrawal must be greater than the value of the invoice, otherwise it will be looping and the application will be constantly removed and placed until the price meets both conditions.



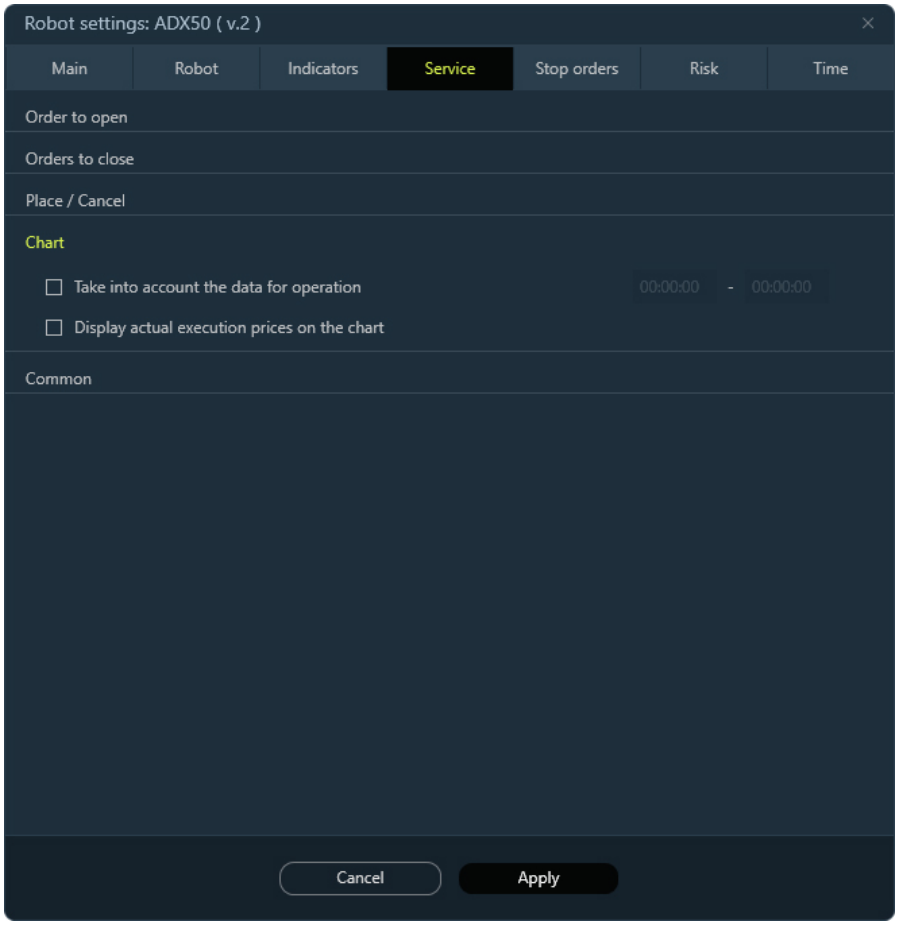
Check interval, sec

According to the type of application, they are divided into Order for open and Order for close. Depending on the type of stop order (limit, stop limit, trailing profit), you can select order for place and remove.

Chart

Take into account the data for operation - Server time. Data for charting and generating candles/bars are taken only for the specified period.

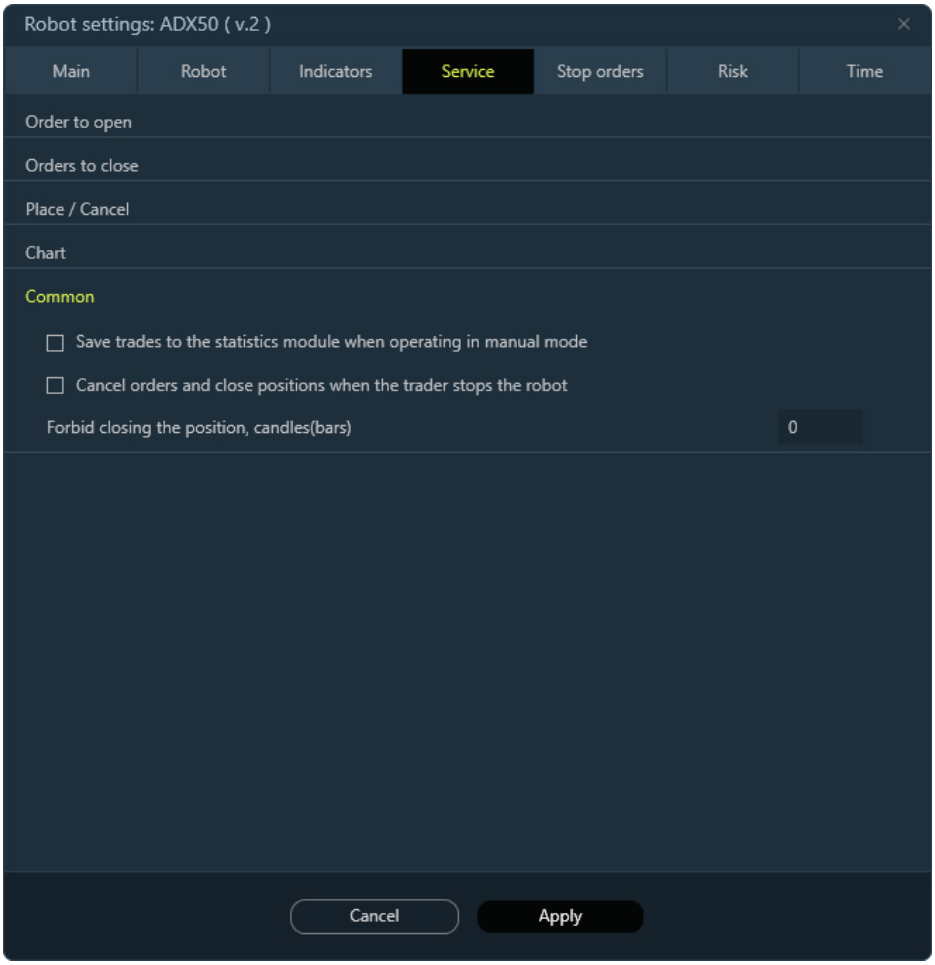
For example, where you want to exclude the evening session, you need to exclude the pre-trading candle at 9:59:59, the time is set from 10:00:00 to 18:45:00, then the chart and all indicators will be built only according to the specified time.



Display actual execution prices on the chart - By default, the chart displays signal prices. When checking the box, actual execution prices will be displayed on the chart.

Common

Service Section - General



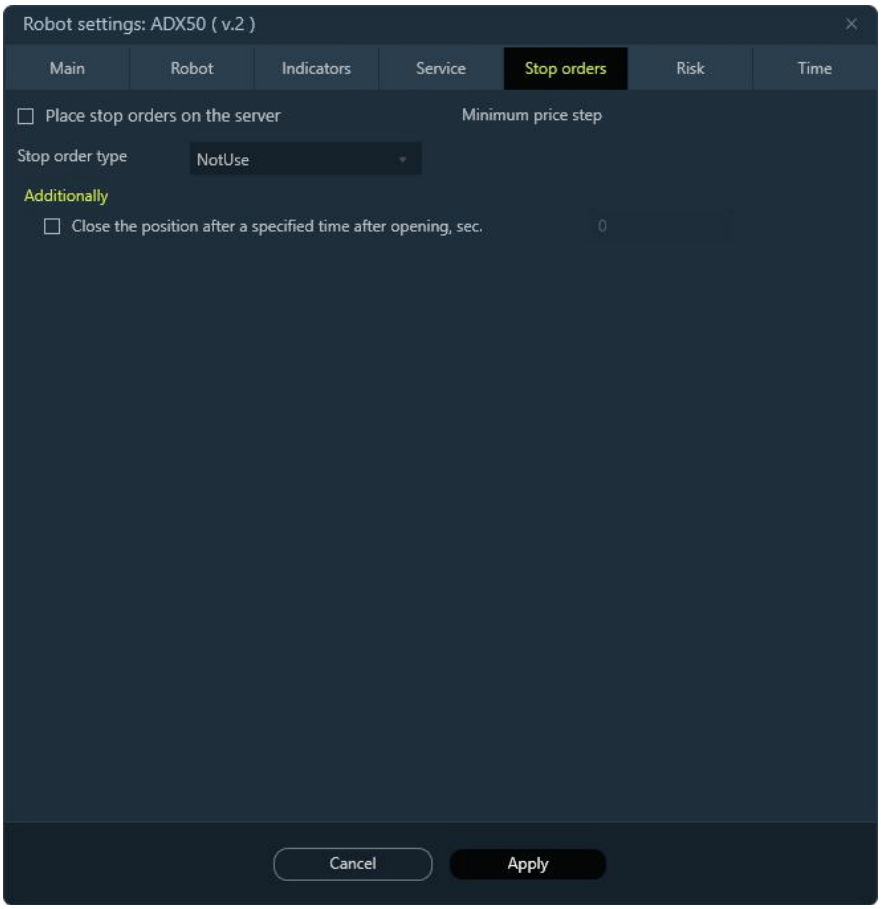
Save trades to the statistics module when operating in manual mode - Save trades from robots traded in manual or semi-automatic mode to the statistics module.

Cancel orders and close positions when the trader stops the robot - When the trader stops robot, it first cancels all orders and then stops.

Forbid closing the position, candles (bars) - prohibition on closing based on any signal for the specified number of bars. 0 - no prohibition, 1 - prohibition on the current closing candle, 2 - on the current and next candles, and so on.

Stop orders

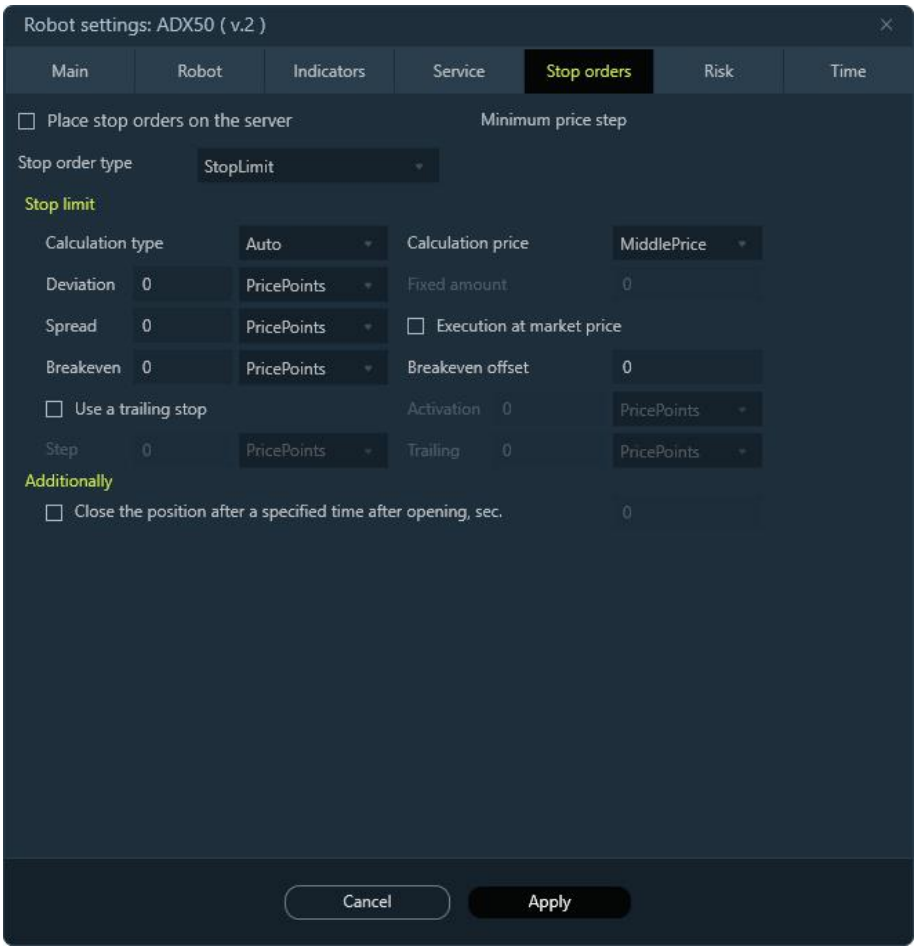
If the robot script does not contain any stop orders, then you can use the basic functionality of stop orders. By default, stop orders are not used.



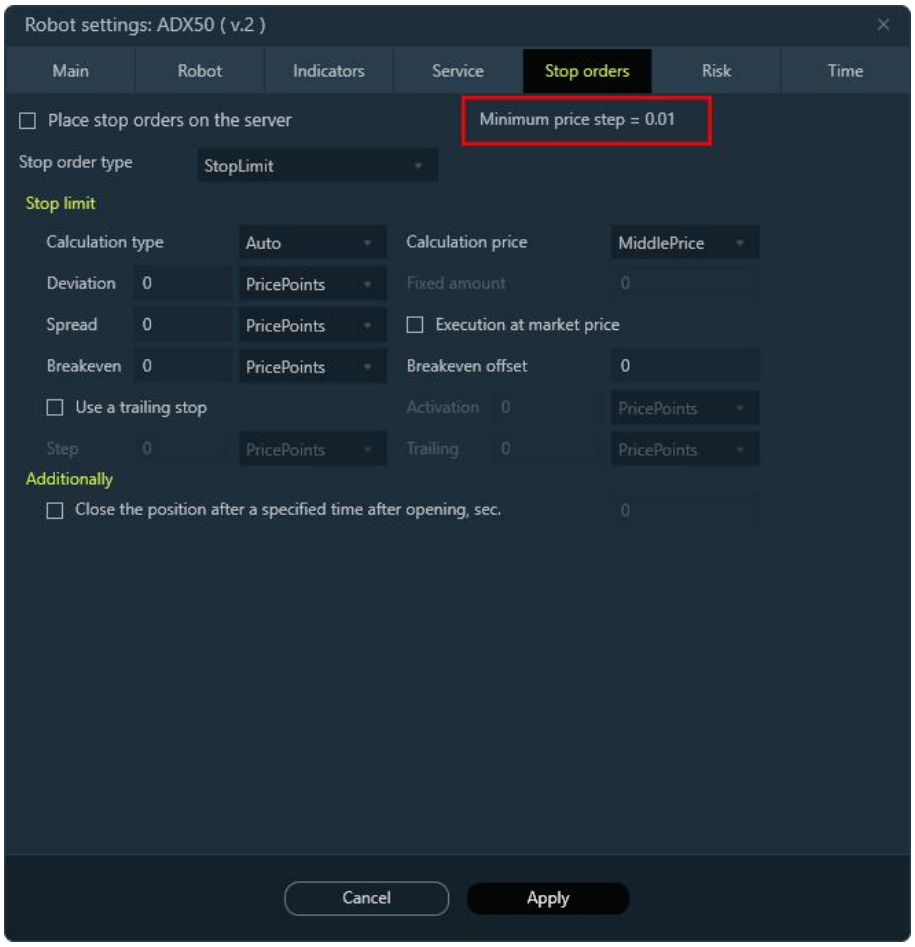
The main parameters of stop orders:

Name	Possible values	Description
Place stop orders on the server	*yes/no*	It makes it possible to make calculations inside the robot, the application for the operation will be made at the time of the occurrence of the corresponding conditions.
Stop order type	*Not use*	stop orders are not used

	Stop limit	A stop order is used to fix losses. If the price changes towards a loss by a specified amount, the position will be closed.
	Take profit (limit order)	A limit order is used to fix returns, in the case of using a virtual profit, it is worth considering the following. Conditions for triggering an order, for example, +10 points from the opening price of the transaction, as soon as the price is +10 points, the order will go to the trading terminal. If the order is market, then there will be execution at the price of demand (for example, the best prices of supply and demand in a DOM of 120 and 130. The closing of a long position will be at the price of 120, i.e., in fact, the conditions are met, and in this case no profit is received due to the large spread in the DOM).
	StopAndProfit	Stop limit and return (limit order) are used
	Trailing profit	The possibility for a growing return and in case of deviation from the maximum return value in the transaction by a given amount and close the position.
	Trelling profit and stop limit	A stop limit and a trailing return are used.

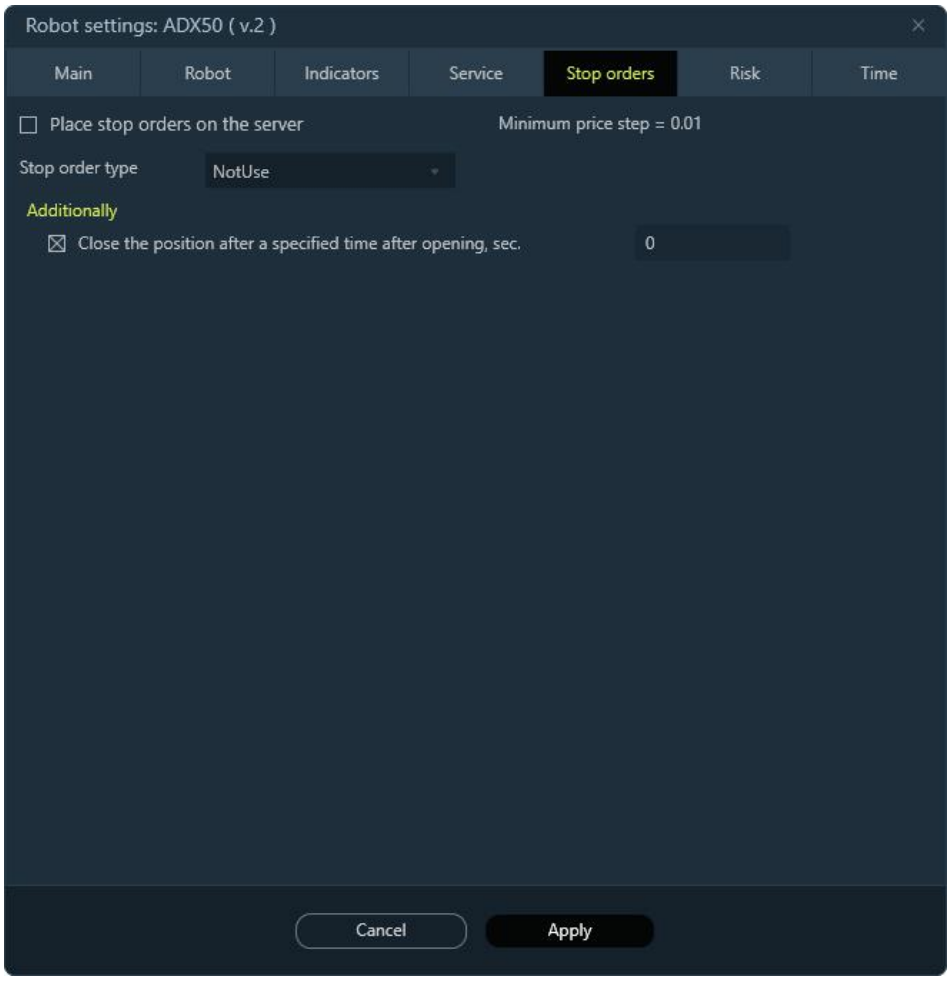


Important! **If the calculation is specified in the price steps.** Each instrument has its own price step - this parameter is displayed in the upper right corner of the form.



The "Additionally" tab

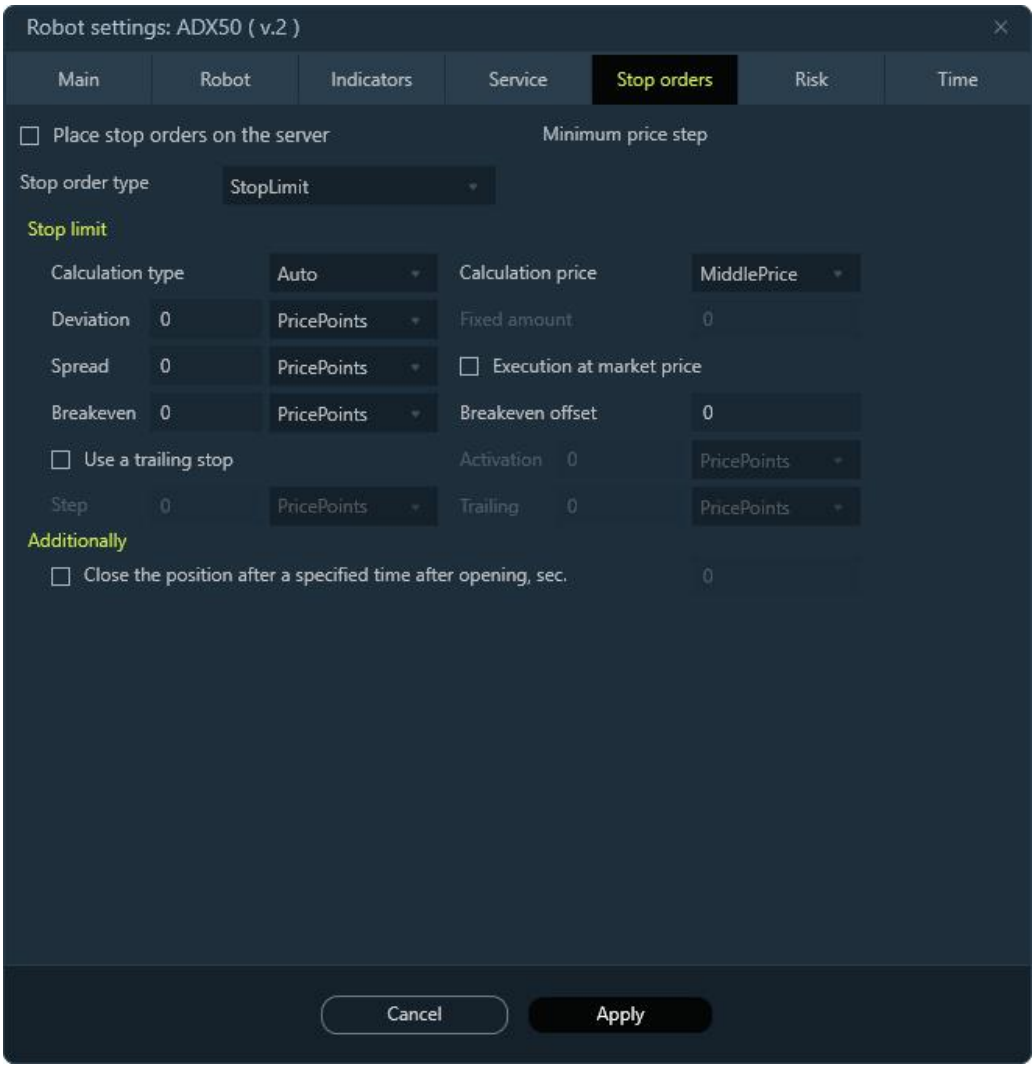
The functionality of this tab is valid only when the "Place stop orders on the server" checkbox is unchecked and only for real trades.



If the item "Close the position after a specified time, after its opening, sec" is selected, then the transaction will be closed after the position holding time exceeds the specified number of seconds, after that an application for closing the position will be sent. The type of application for closing a position is selected in the "Opening and closing orders" tab.

Stop limit

Important!!! For Deviationation, spread, Breakeven, activation, step, trailing and Breakeven of Deviationation, if the calculation is not carried out as a percentage, the entered number (you can enter only an integer) is multiplied by the minimum tool step. Each tool has its own price step - this parameter is displayed in the upper right corner of the form.



Name	Description
Place stop orders on the server	Orders are sent to the broker's server if the specified type of stop order is supported by the terminal.

Calculation type	Automatic - all data is set by the trader. Fixed amount - the amount of the margin is calculated based on the size of the position and a fixed amount. From the script - data on the stop order price is taken from the strategy script, if they are set.
Calculation price	Signal price - The stop limit activation price is calculated from the signal price. Execution prices - the stop limit activation price is calculated from the average execution price of the transaction.
Deviation	The amount to which the stop limit will be set from the settlement price. **Calculation Price +/- Deviation= Activation Price**
Fixed amount	The amount of money allocated at the position. Based on this amount and the number of open lots/contracts, the size of the margin is calculated, rounding goes down.
Spread	Protective spread, for the execution of the application. If the spread is equal to 0, then the application will go to the terminal at the activation price and there is a chance that this application will remain standing in the DOM and execution will not occur. In this case, it is recommended to lay an adequate spread or use the option - execution at the market price - in this case, the execution of your stop order is guaranteed (if the DOM is not empty).
	Execution Price = Activation Price +/- Spread
Execution at market price	The request from the stop limit will be executed (if the order book is not empty).
Breakeven	The parameter that allows for additional expenses to be taken into account (such as commissions), and the activation price in this case will be: Long = Calculation Price + Breakeven Offset, Short = Calculation Price - Breakeven Offset Allows you to transfer the stop limit to the price - calculation prices. I.e., as the price goes into the profitable zone by the amount of breakeven, the activation price of the stop limit will be equal to the calculation price. If the breakeven value is 0, then the breakeven is not active.
Breakeven offset	A parameter that allows you to take into account additional costs (for example, commissions), and the activation price in this case will be:
	Long = Calculation price + Breakeven deviation
	Short = Calculation Price - Breakeven
Use a trailing stop	After the activation of the trailing stop, the breakeven is not taken into account in calculating the stop value. When the stop order is triggered, the stop-limit price initially moves by the specified trailing amount from the activation price. Subsequently, the price moves by the specified step size when the price moves favorably.

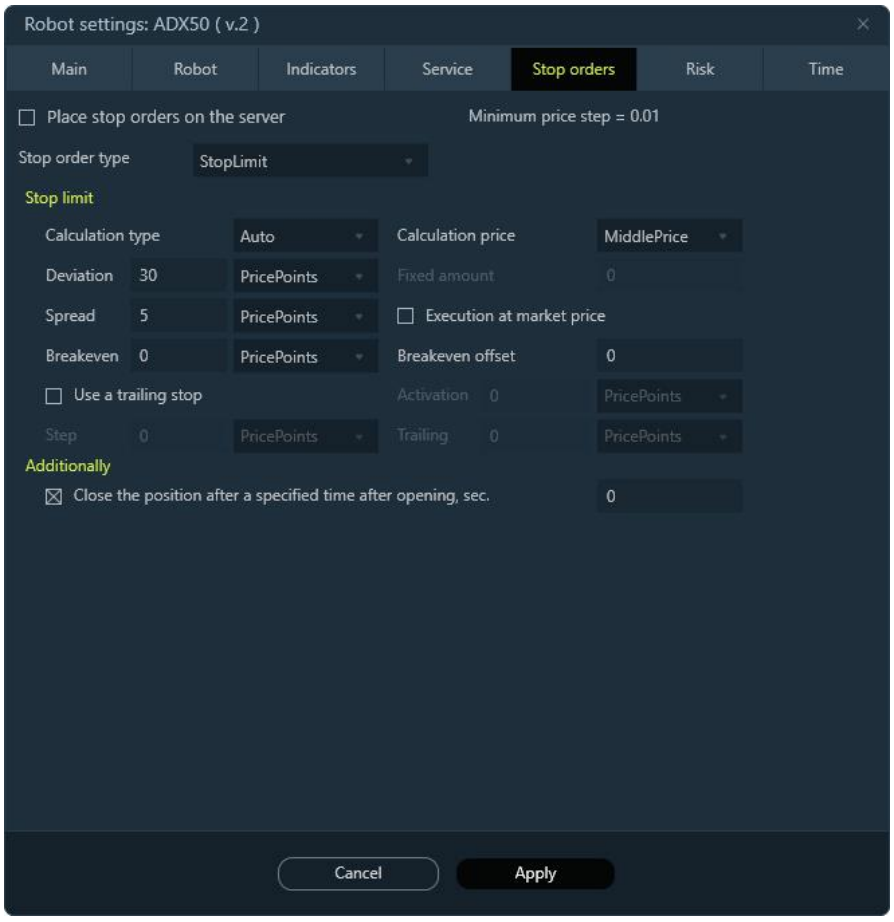
	Example (all values in price steps: Activation=10, Step=30, Trelling=20. Purchase at the price of 200 (tool step =1), the current price has reached 210, the trailing is activated and the stop price is rearranged by the value of the trailing 210-20=190, then the price rises 220, then 230, and as soon as it reaches the value 240 (210+30), the stop price 240-20=220 changes if the price If the growth continues, then the next stop price change will be at 270 (240+30).
Activation	The value at which the trailing stop is activated.
Step	The value at which the stop price changes by the value of the trailing.
Trailing	The distance at which the trailing stop will be set, either after activation or after readjustment, taking into account the step size.

The principle of operation of the stop limit

Example #1

Initial data: Deviation=30, Spread=5, Calculation price - signal price.

The opening of the position was at the price of 57288, from this price the value of the price at which the stop order will be placed is calculated: the price of the stop order = the price of opening the position - Deviation * the minimum price step = 57288-30*1 =57258. When the stop order is activated, the exchange order will be placed at the price of 57258-spread * minimum price step =57258-5*1=57253, and its execution will be at the best price on the market. If the spread is "small" or the market is highly volatile, then the order may remain standing in the DOM.


Robot settings: ADX50 (v.2)
Main
Robot
Indicators
Service
Stop orders
Risk
Time
Place stop orders on the server
Minimum price step = 0.01
Stop order type
StopLimit
Stop limit
Calculation type
Auto
Calculation price
MiddlePrice
Deviation
30
PricePoints
Fixed amount
Spread
5
PricePoints
Execution at market price
Breakeven
0
PricePoints
Breakeven offset
0
Use a trailing stop
Activation
PricePoints
Step
PricePoints
Trailing
PricePoints
Additionally
Close the position after a specified time after opening, sec.
0
Cancel
Apply

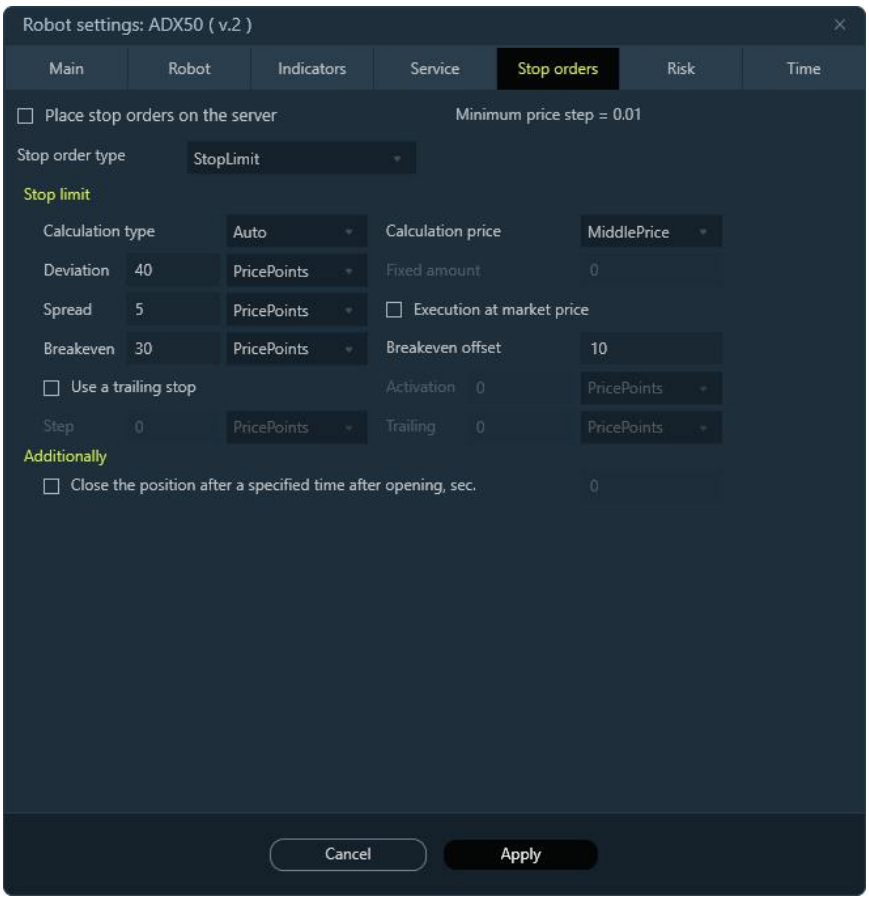

BNB_150601_150630.txt
Ma: fast
Ma: slow
Buy 57288
Stop 57258
57400
57300
57200
57100
57000
56900
56800
56700
56600
56500
3295
3300
3305
3310
3315
3320
3325
3330

Example #2

Initial data: Margin=40, Spread=5, Breakeven=30, Breakeven deviation=10, Calculation price - signal price, minimum price step = 0.01, .

The opening of the position was at the price of 37.45, the value of the price at which the stop order will be placed is calculated from this price: the price of the stop order = the price of opening the position - Deviation * minimum price step =37.45-40*0.01 =37.05. In case of price movement towards an open position, Breakeven is activated and the stop order price is activated recalculated. Breakeven activation price = position opening price + Breakeven * minimum price step=37.45+30*0.01 =37.75. The price of a new stop order after the Breakeven activation will be equal to = position opening price + Breakeven Deviation * minimum price step =37.45+10*0.01 =37.55.

When the stop order is activated, the exchange order will be placed at the price of 37.55-spread * minimum price step=37.55-5*0.01 =37.50, and its execution will be at the best price on the market. If the spread is "small" or the market is highly volatile, then the order may remain standing in the DOM.

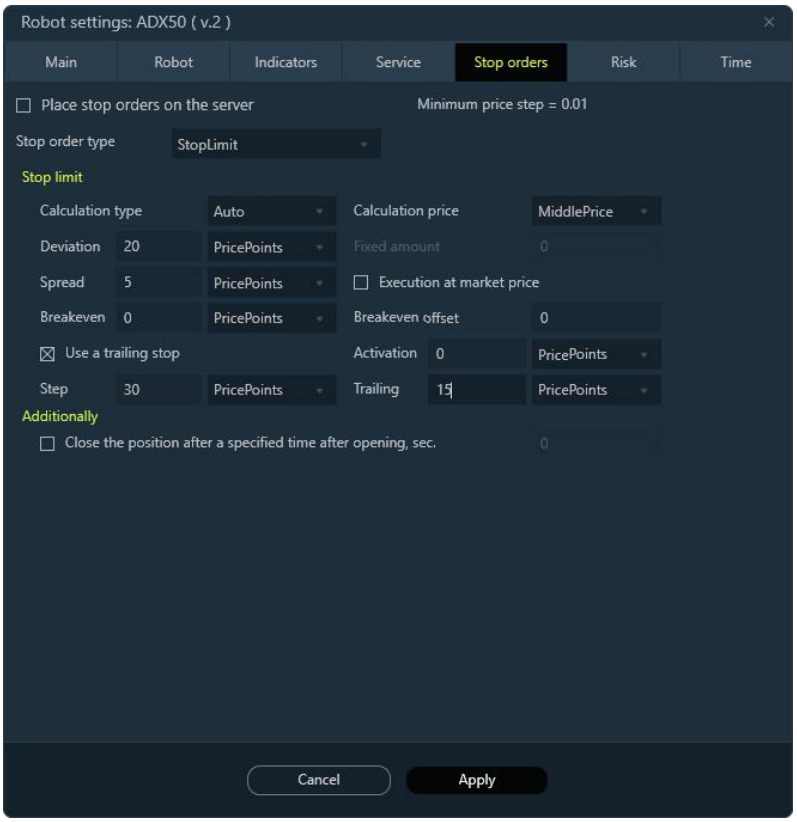


Example #3

Initial data: Deviation=20, Spread=5, Trailing stop is used, Activation=10, Step=30, Trelling=15 Calculation price - signal price, minimum price step = 10.

The opening of a short position was at the price of 85940, from this price the value of the price at which the stop order will be placed is calculated: the price of the stop order = the price of opening the position + Deviation* the minimum price step =85940+20*10 =86140. In case of price movement towards an open position, a trailing stop is activated and the price of the stop order is recalculated. Price activation of the trailing stop = position opening price - Activation * minimum price step=85940-10*10=85840. The price of a new stop order after the activation of the trailing stop will be equal to = the activation price of the trailing stop - Trailing * the minimum price step==85840+15*10=85990. Next, the trailing stop is recalculated when the price moves towards an open position by 30 price steps. The first change of the trailing stop occurs at the price of 85840-30*10=85540, the price of the stop order = the price of the trailing stop -Trailing * the minimum price step=85540+15*10 =85690, the subsequent change of the trailing stop will be at the price of 85240, and the price of the stop order will be equal to 85390.

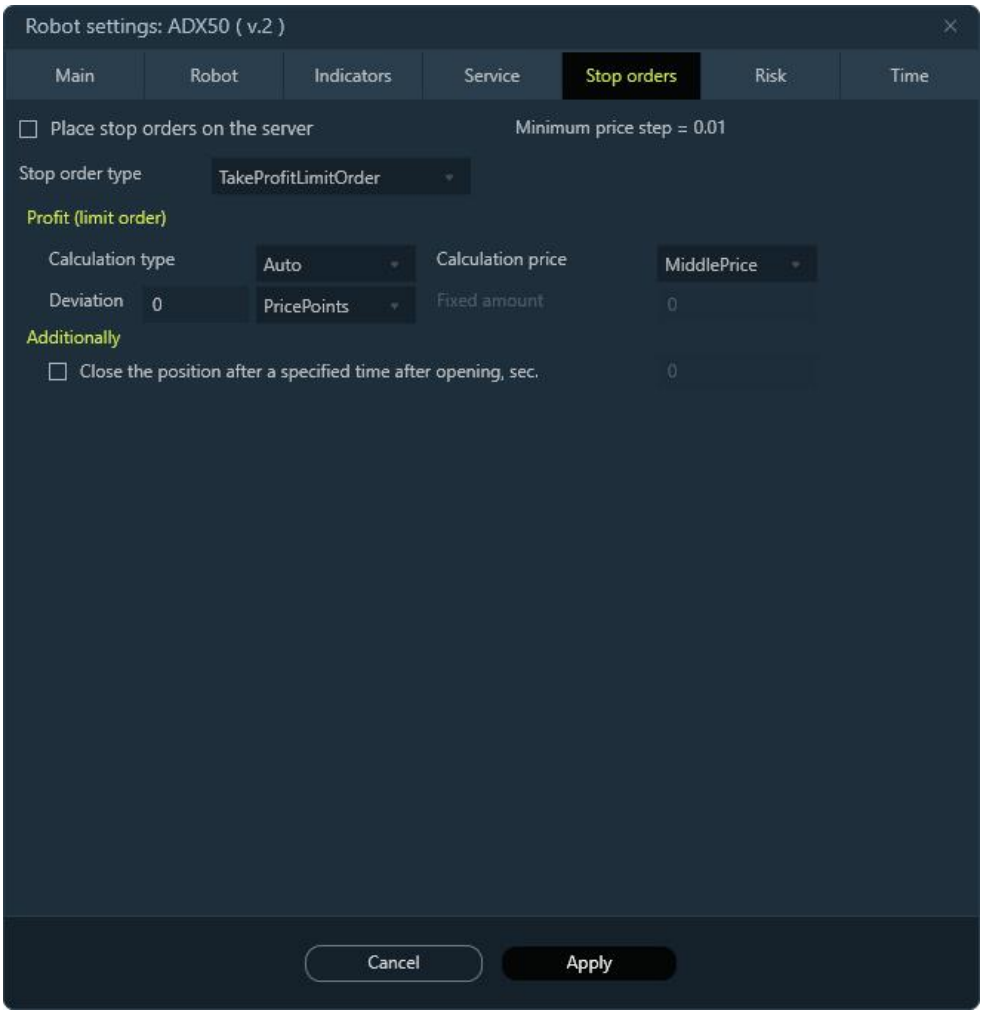
When the stop order is activated, the exchange order will be placed at the price of 85390 + spread * minimum price step=85390+5*10 =85440, and its execution will be at the best price on the market. If the spread is "small" or the market is highly volatile, then the application may remain standing in the DOM.



After the trailing stop is activated, the margin and breakeven are not taken into account, the price of the stop order is calculated only according to the parameters of the trailing stop.

Profit (limit order)

Important! For Deviationation, if the calculation is not carried out as a percentage, the entered number (you can enter only an integer) is multiplied by the minimum step of the tool. Each instrument has its own price step - this parameter is displayed in the upper right corner of the form.

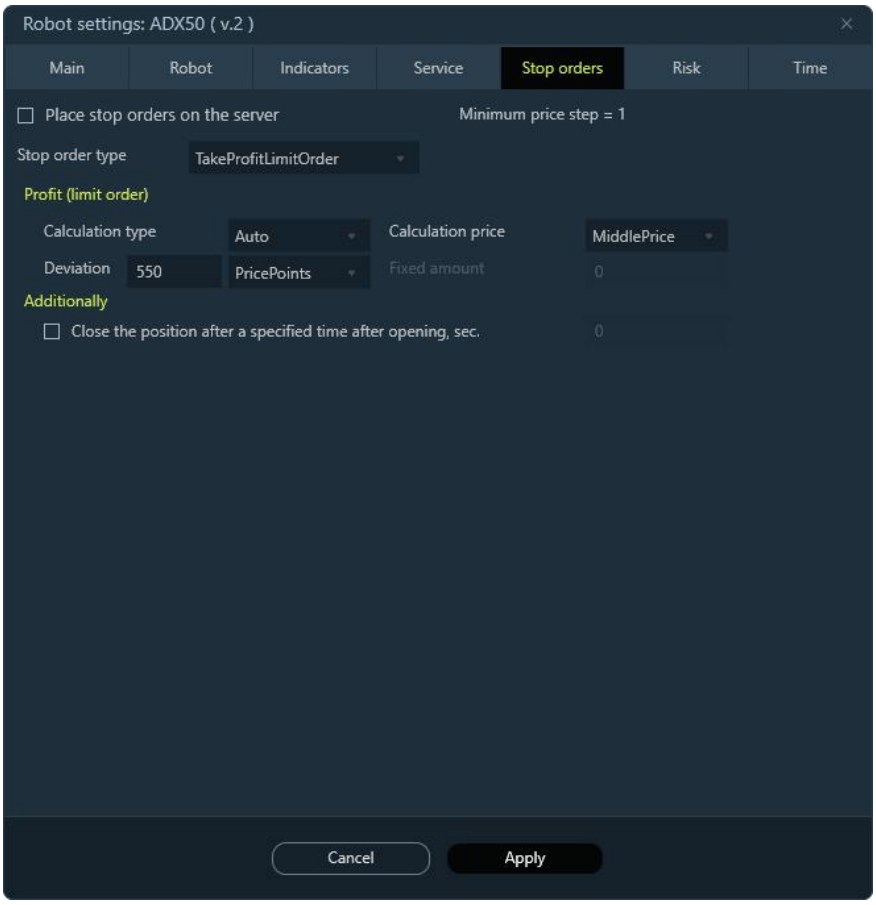


Name	Description
Place stop orders on the server	Orders are sent to the broker's server if the specified type of stop order is supported by the terminal. The limit order is supported by all brokers.
Calculation type	Automatic - all data is set by the trader. Fixed amount - the amount of the margin is calculated based on the size of the position and a fixed amount. From the script - data on the stop order price is taken from the strategy script, if they are set.
Calculation price	Signal price - The stop limit activation price is calculated from the signal price. Execution prices - the stop limit activation price is calculated from the average execution price of the transaction.
Deviation	The amount for which the limit order will be placed from the settlement price. **Calculation price +/- Deviation = Execution price.**
Fixed amount	The amount of money allocated to the position. Based on this amount and the number of open lots /contracts, the size of the margin is calculated, rounding goes down.

The principle of Profit (limit order)

Initial data: Deviation=550, The calculation price is the price of the signal.

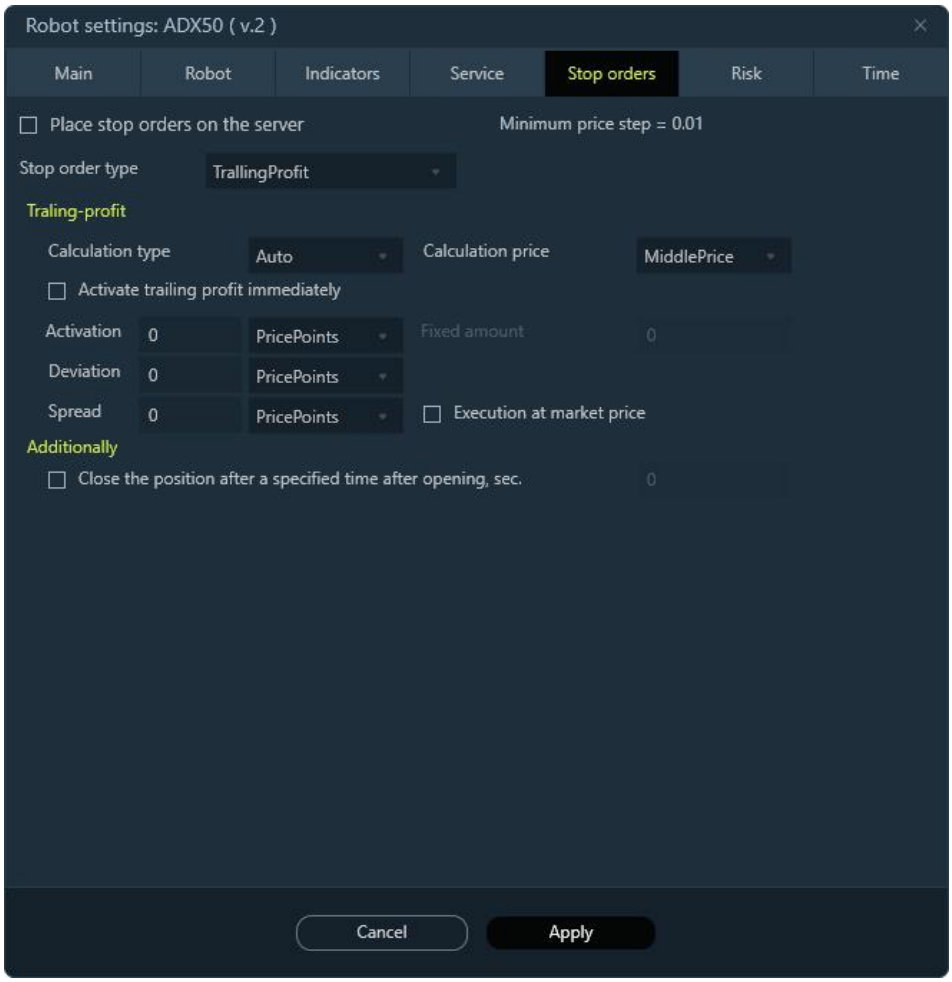
The opening of the position was at the price of 55103, the value of the price at which the profit will be calculated from this price: price profit = price of opening the position + Deviation * minimum price step =55103+550*1 =55653. If there is a check mark to place stop orders on the server, then the order will be immediately placed in the terminal or on the stock exchange in a DOM at the specified price, if the price is calculated in the robot's memory, then it is necessary to specify in the Service/Closing Orders section how the application will be placed: at the market price or with a specified slippage


Robot settings: ADX50 (v.2)
Main
Robot
Indicators
Service
Stop orders
Risk
Time
Place stop orders on the server
Minimum price step = 1
Stop order type
TakeProfitLimitOrder
Profit (limit order)
Calculation type
Auto
Calculation price
MiddlePrice
Deviation
550
PricePoints
Fixed amount
0
Additionally
Close the position after a specified time after opening, sec.
0
Cancel
Apply


SPFB.Si_150601_150630.txt
Ma: fast
Ma: slow
Profit 55653
Buy 55103
55900
55800
55700
55600
55500
55400
55300
55200
55100
55000
54900
54800
2070
2075
2080
2085
2090
2095
2100
2105

Trailing profit

Important! For deviationation, spread, activation, if the calculation is not carried out as a percentage, the entered number (you can enter only an integer) is multiplied by the minimum step of the instrument. Each instrument has its own price step - this parameter is displayed in the upper right corner of the form.



Name	Description
Place stop orders on the server	Orders are sent to the broker's server if the specified type of stop order is supported by the terminal.
Calculation type	Automatic - all data is set by the trader. Fixed amount - the amount of the margin is calculated based on the size of the position and a fixed amount. From the script - data on the stop order price is taken from the strategy script, if they are set.

Calculation price	Automatic - all data is set by the trader. Fixed amount - the amount of the margin is calculated based on the size of the position and a fixed amount. From the script - data on the stop order price is taken from the strategy script, if they are set.
Activate trailing profit immediately	The activation of trailing profit for FORTS futures occurs at the price of bars, for other symbols and markets, the activation price is set lower / higher by 20 steps of the price for buying / selling.
Activation	The value to activate trailing profit.
	Activation price for long = Calculation price + Activation * Minimum price step
Fixed amount	The amount of money allocated to the position. Based on this amount and the number of open lots/contracts, the size of the margin is calculated, rounding goes down.
Deviation	Activation price for long = Calculation price + Activation * Minimum price step
Spread	The value from the maximum for long / minimum for short will be followed by a trailing profit
	Protective spread, for the execution of the application. If the spread is equal to 0, then the application will go to the terminal at the estimated price, taking into account the offset, and there is a chance that this application will remain standing in the DOM and execution will not occur. In this case, it is recommended to lay an adequate spread or use the option - execution at the market price - if the calculation is carried out in the robot's memory.
	Execution Price = Activation Price +/- Spread
Execution at market price	The request for the trailing profit will be executed (if the DOM is not empty) and the calculation is carried out in the robot's memory.

The principle of operation of the Trailing profit

Initial data: Activation=50, deviation=40, Spread=15, Calculation price - signal price.

The opening of the position was at the price of 22885, the activation price is calculated from this price = the opening price of the position - activation * the minimum price step =22885-50* 1 = 22835, and a new minimum = 22835 is set. After activation, the recalculation of the prices of the trailing profit begins. The price of the trailing return = minimum + Deviation * minimum price step =22835+40*1 =22875. Further, when the minimum is updated, the price of the trailing profit will be updated.

The algorithm of actions will be as follows:

new low = 22834, the price is a trailing return 22834+40*1 =22874

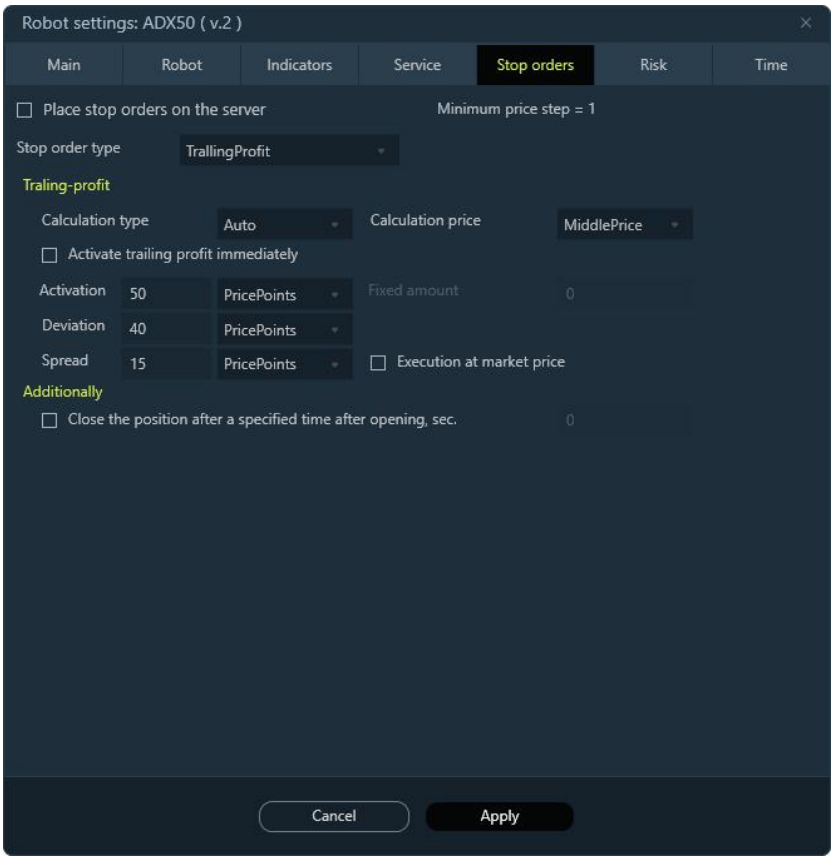
new low = 22833, the price is a trailing return 22833+40*1 =22873

new low = 22832, the price is a trailing return 22832+40*1 =22872

new low = 22831, the price is a trailing return 22831+40*1 =22871, etc.

new minimum = 22790, the price is a trailing return 22790+40*1 =22830

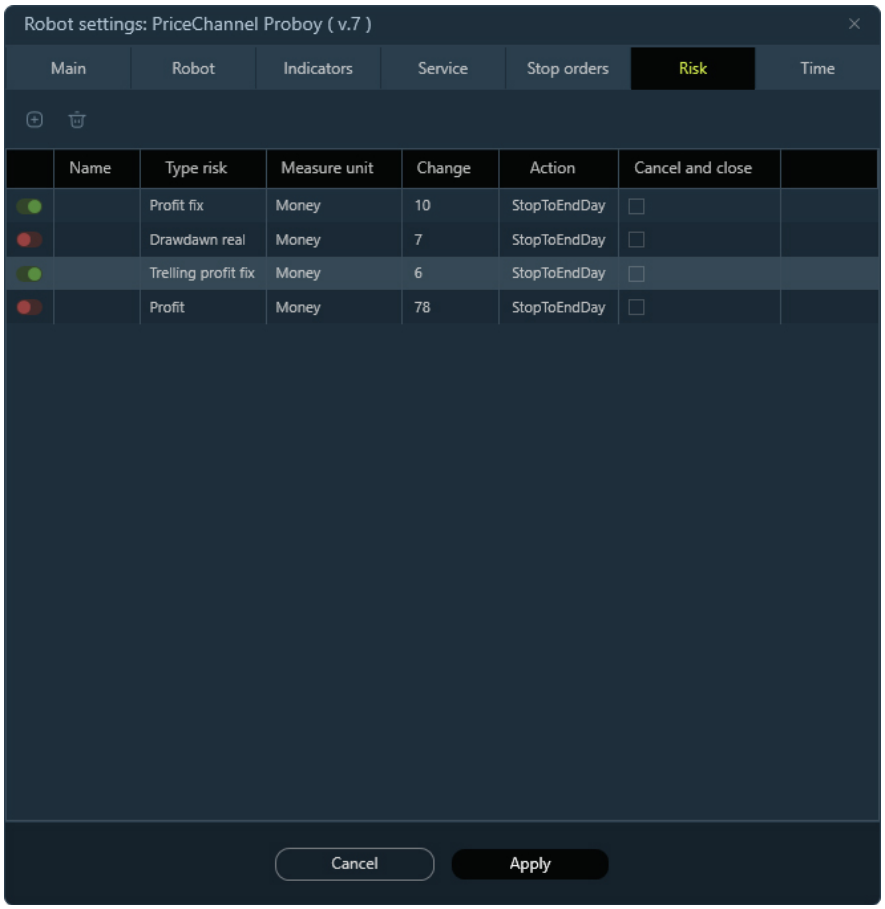
When the price of the instrument reaches the trailing return price of 22830, the position is closed.



When executing a trailing return, an order to the exchange will be placed at the price of 22830 + spread * minimum price step=22830+15*1 =22845, and its execution will be at the best price on the market. If the spread is "small" or the market is highly volatile, then the order may remain standing in the DOM.

Risks

For each robot, you can set your own risk limits for the day, upon reaching which it will stop trading before the end of the day or for a specified pause.



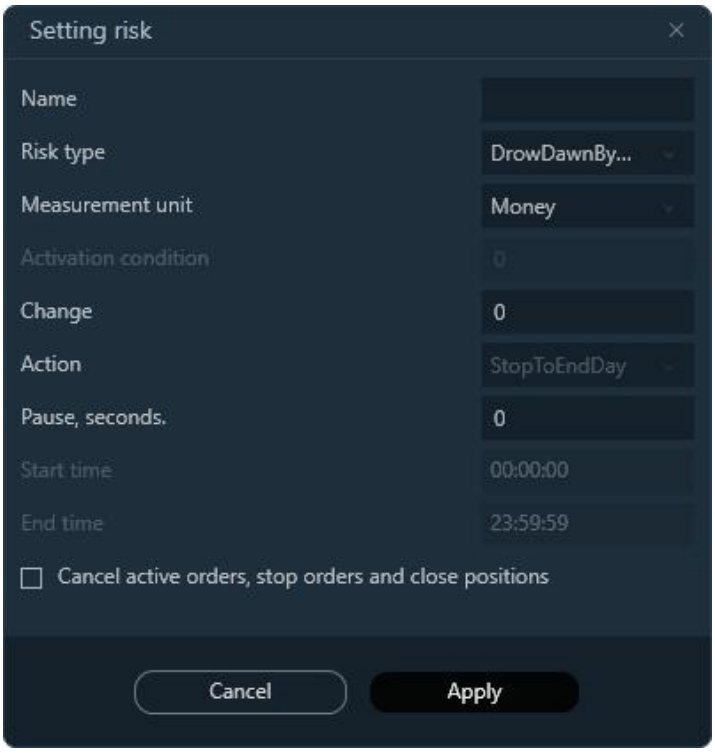
- The green color of the button indicates that this risk is currently being used in the robot, when pressed, it turns off, turns red.

- The red color of the button indicates that this risk is not currently used in the robot, when pressed, it turns on, turns green.

Actions: "Add Risk", "Edit" and "Remove risk" can also be done through the context menu or buttons. To edit the risk, you need to double-click the left mouse button on the line.

- Click to remove risks (you need to highlight them).

- Click to add a new risk.

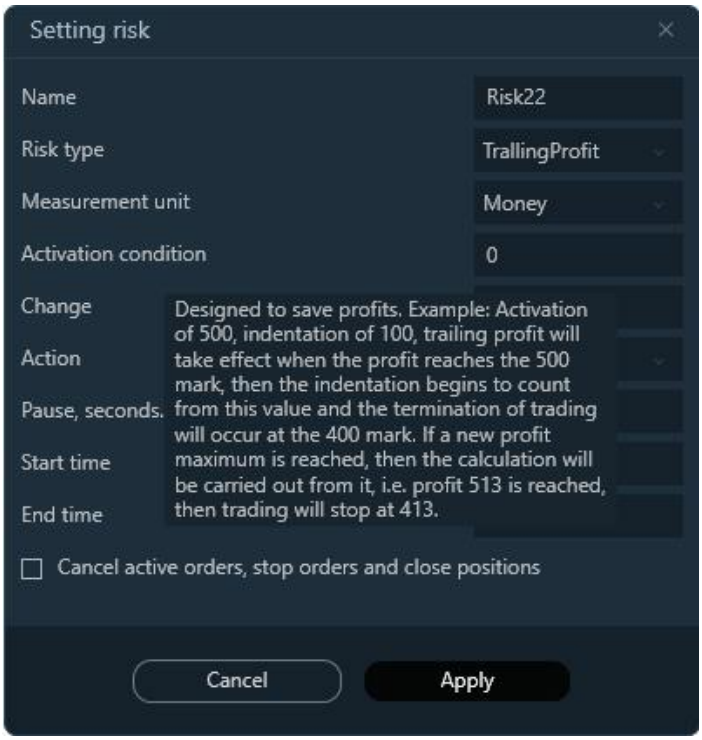


Name	Description
Name	The name of the additional risk (optional parameter).
Risk type	Possible values:
	DrowDawnByAccount - The minimum account balance.
	Profit - profit when trading a robot.
	ProfitFix - profit on closed transactions is calculated at signal prices, i.e. open positions and P/A on them are not taken into account.
	ProfitReal - profit, the actual execution prices of orders are used for calculations, and not the signal one.
	DrowDawn - loss when trading a robot.
	DrowDawnFix - A fixed loss is a loss on closed transactions, calculated at signal prices.
	DrowDawnReal is a loss, the actual execution prices of orders are used for calculations, and not signal ones.
	TrailingProfit - Designed to save profits.

	TrailingProfitFix - activation from fixed profit.
	TrailingProfitReal - activation from the actual profit.
	DefenceProfit - Designed to save profits.
	DefenceProfitFix - activation from fixed profit.
	DefenceProfitReal - activation from actual profit.
	CountTrades - the total number of trades that a trader is allowed to make.
	CountLossTrades - is the total number of losing trades per day.
	CountLossTradesSeries - closing consecutive trades with a loss.
	CountProfitTradesSeries - closing consecutive trades with profit.
	Example: Activation of 500 $, Deviationof 100 $, the trailing profit will take effect when the profit reaches the 500 $ mark, then the Deviationbegins to count from this value and the termination of trading will occur at the 400 $ mark. If a new profit maximum is reached, then the calculation will be carried out from it, i.e. a profit of 513 $ is reached, then the termination of trading will occur at around 413 $.
	Trailing return - Designed to protect profits.
	Example: Activation of 500 $, the protection level is 300 $, the protection will take effect when the profit reaches 500 $ and if the profit decreases to 300 $, trading will be prohibited. Unlike trailing, the protection level will always be in one place after activation, no matter what the profit received
Measurement unit	Measurement unit for activation and modification conditions. For example: risk type loss in points = 0.25 oil futures instrument, opening long at the price of 66 with one contract, in order for the risk to work, the price must drop to 65.75.
	Example 2: opening a long on futures at a price of 98,000, a loss of 500 points, i.e. 250 points for one contract, and as soon as the price drops to 97750, the risk will work.
Activation condition	It is used only to protect profits and Trailing profit. The value at which the "Change" begins to be taken into account.
Change	The value at which the condition specified in the action is activated.
Action	The time for which trading is prohibited. Variants: 1. Pause, sec. - stop for the specified number of seconds. 2. - Pause, bar - stop for the specified number of bars. 3. - Stop until the end of the day. 4. - stop before the specified time.
Pause	The time for which trading will be prohibited when the action occurs is a

	Pause. Pause, bar - if set to 0, then until the end of the current bar.
Time of action (start time, end time)	The time until which this risk is valid. If the time is set to 00:00:00, this parameter is not taken into account.
Cancel active orders, stop orders and close position	If this checkbox is checked, all active orders and stop orders will be canceled, and all positions will be closed when the action is triggered

When choosing a particular risk, you can always get a hint right in the window that opens. To do this, hover the mouse over the item of interest and a pop-up menu will appear.



Type of risk

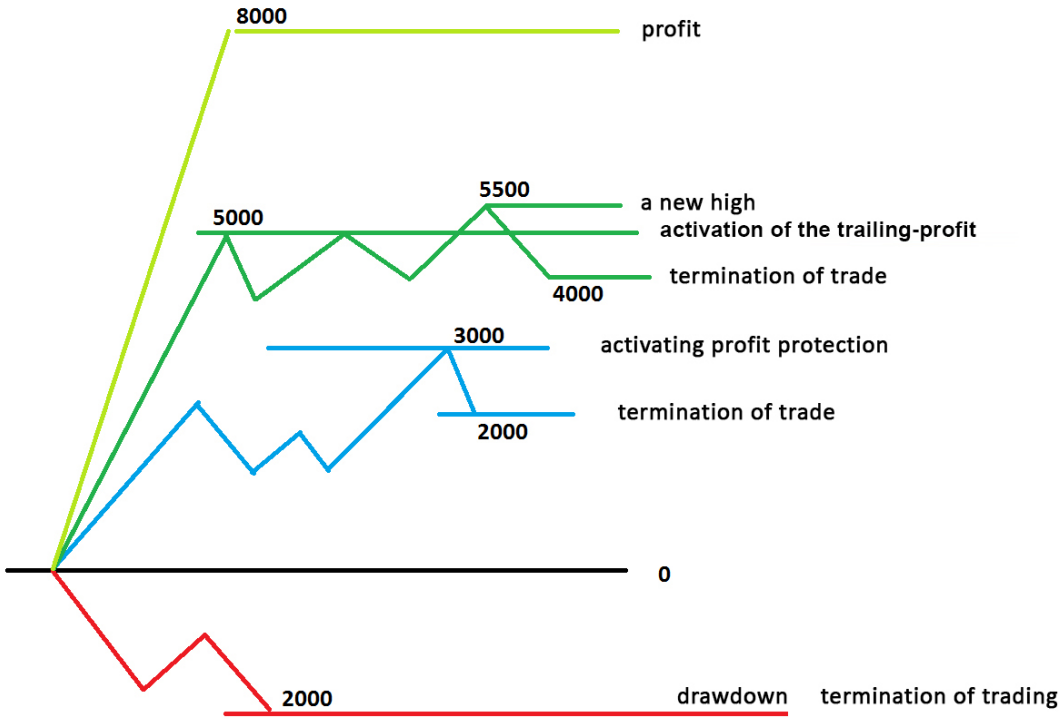
Profit - Upon reaching the specified profit, further trading will be prohibited today. Closes all positions and, if possible, removes all orders and stop orders. If this value is zero, it does not participate in the calculations

Drawdown - When the specified loss is reached, further trading will be prohibited today. Closes all positions and, if possible, removes all orders and stop orders. If this value is zero, it does not participate in the calculations

Trailing return - Designed to save profits. Example: Activation of 5000 $, deviation 1500 $, the trailing profit will take effect when the profit reaches the mark of 5000 $, then the offset begins to count from this value and the termination of trading will occur at around 3500 $. If a new profit maximum is reached, then the calculation will be carried out from it, i.e. a profit of 5500 $ is reached, then the trading will stop at around 4000 $.

Profit Protection - Designed to protect profits. Example: Activation of 3000 $, Protection level of 2000 $, protection will take effect when the profit reaches the mark of 3000 $ and in case of

a decrease in profit to 2000 $, trading will be prohibited. Unlike trailing, the protection level will always be in one place after activation, no matter what the profit received. In this case, trading can be continued until the profit decreases to 2000 $.



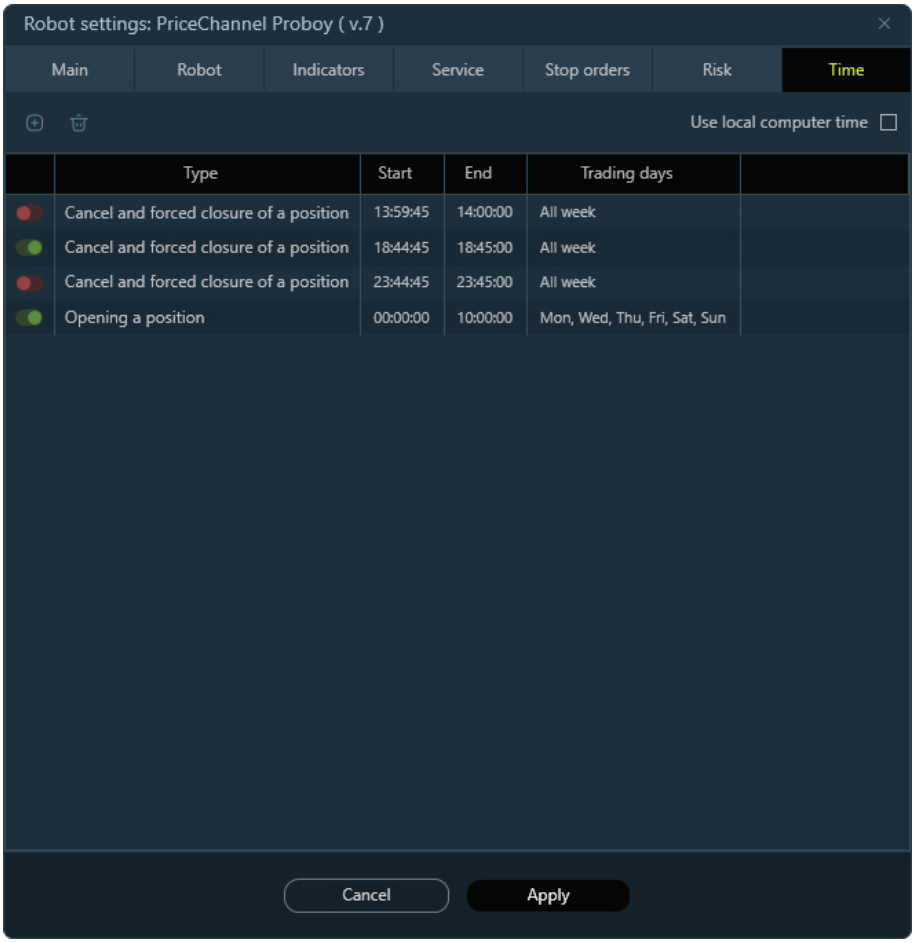
Important! **Risks** are triggered regardless of the time settings.

Time

The time settings allow you to configure the robot to work at a certain time and make it possible to close positions on the robot before the end of the session and before clearing.

To activate the conditions for closing positions before the start of clearing or before the end of the session, select the appropriate item and specify the number of seconds for which the robot should close positions before the event occurs.

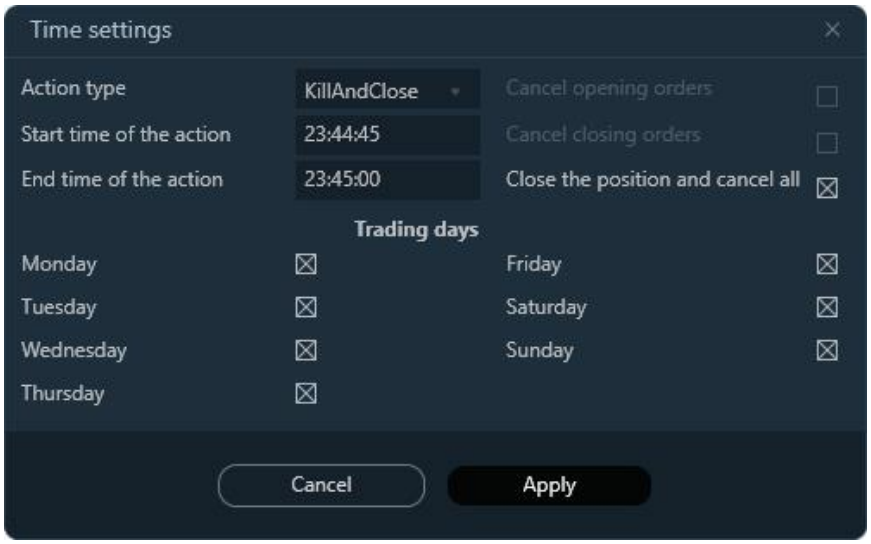
Example: Closing in all cases will occur 10 seconds before the event. It is recommended to set the time from 5 seconds, because the robot may be required to first remove pending orders and then it will only close the position, and the Internet speed will also affect.



- To set the robot to work only at the appropriate time and on certain days, it is necessary to activate the menu item "Opening new positions only at the specified time" and press the button.

- Delete the time setting (select the desired setting in the list beforehand).

Use local computer time - Transactions on the symbol begin to be sent at the specified time, ignoring the exchange's operating time.



- Action type**:**

OpenAndClose - is a permission to send signals from the script to open\closing a position according to some internal algorithms of the robot in a given period of time. Outside of this time opening\closing on internal signals will not happen.

Close - is a permission to send signals from the script to close a position according to some internal algorithms of the robot in a given period of time. Outside of this time, closing by internal signals will not occur. Example: A robot, a global stop closing signal has been set in it, the position closing time is from 10-12, now it is 13 and if a global stop signal is given, then this signal will not work.

Open - is a permission to send signals from the script to Open a position according to some internal algorithms of the robot in a given period of time. Outside of this time, the opening by internal signals will not occur.

KillAndClose - forced closure at a specified time, regardless of internal signals.

- Start time of the action;
- End time of the action;
- Cancel opening orders;
- Cancel closing orders;
- Close the position and cancel all;
- Trading days - the choice of working days.

Important! Risks are triggered regardless of the time settings.

You can also configure it to close the position N seconds before the "End Time".

In this way, you can configure the robot's working time for each day individually, or set several trading time intervals for one day.

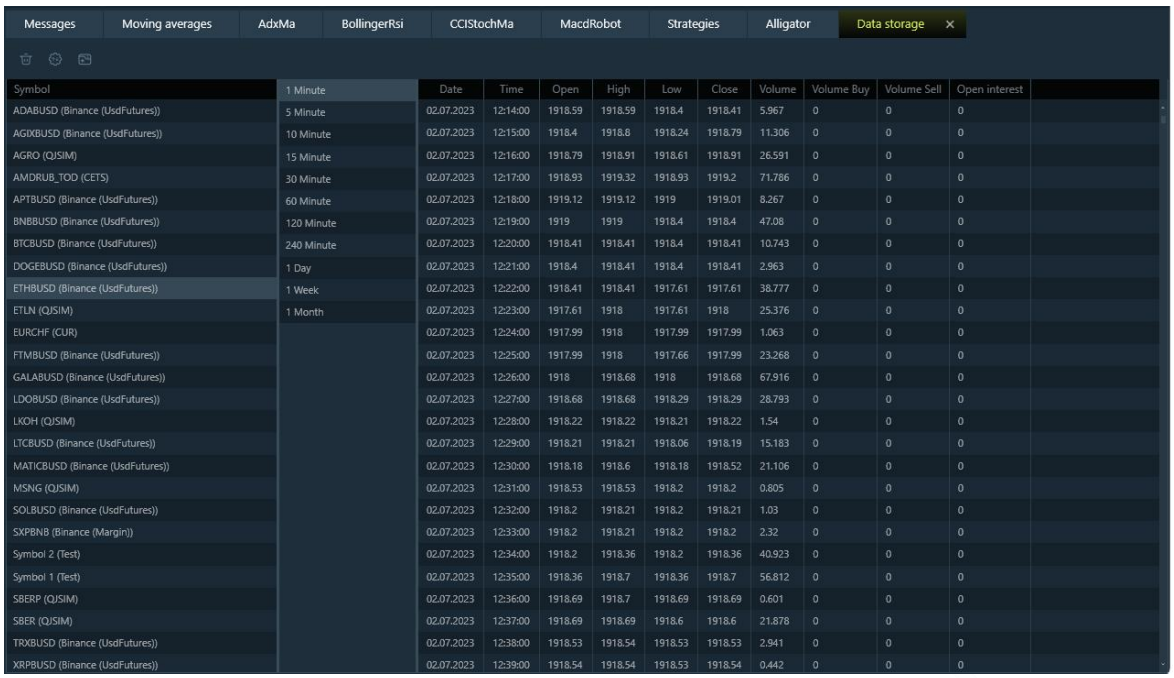
Data Storage

Initially, the storage is empty. The data warehouse stores information on traded instruments, for which data transmission for all transactions is configured from the terminal in the case of Quik or from the server, in the case of TransaqConnector. 1ExAlgo will save the data itself at shutdown or at 00:00:00 if 1ExAlgo is running without shutdown.

The following timeframes, which are standard, are automatically generated and stored in the storage. Ticks are not stored in the storage, they are stored in the 1ExAlgo memory and are deleted when it is turned off, or when new ticks appear for another date, so tick data will be available only for the current trading session.

Standard timeframes:

- 1 minute
- 5 minutes
- 10 minutes
- 15 minutes
- 30 minutes
- 60 minutes (1 hour)
- 120 minutes (2 hours)
- 240 minutes (4 hours)
- 1 day
- 1 week
- 1 month



- delete symbol;
- data storage settings;
- upload history.

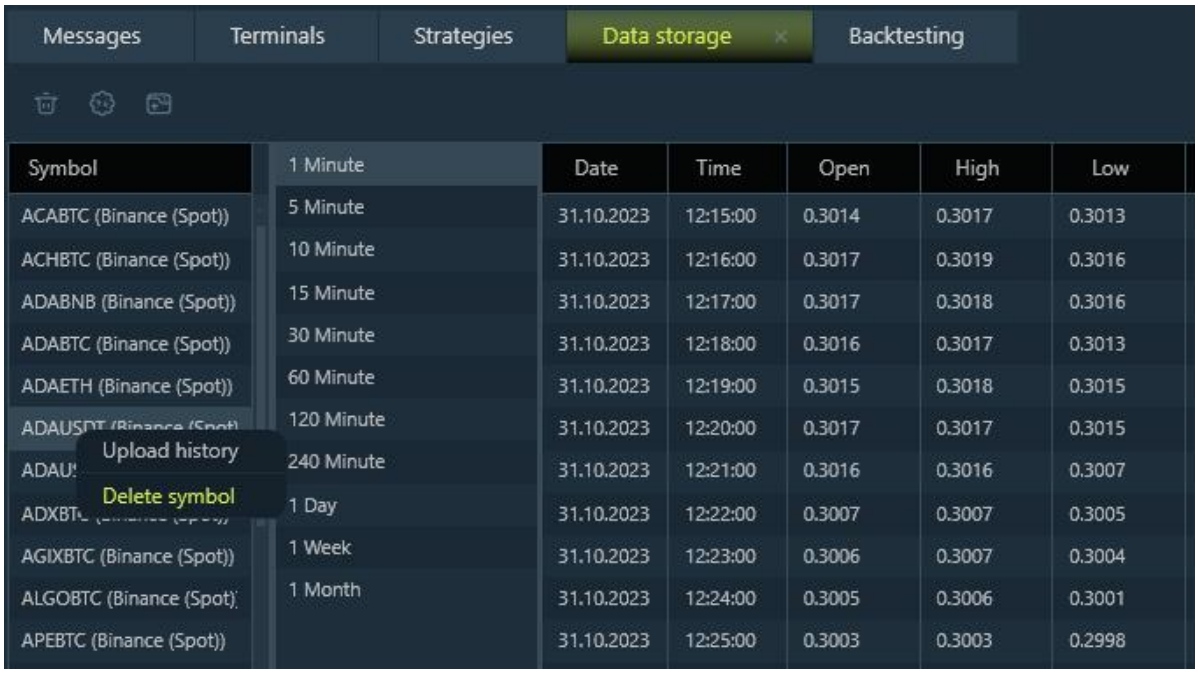
Physically, all files are stored at: menu Settings /Open the settings folder /StorageHistory.

Important for QUIK!!! When you turn it on for the first time, if trading requires data for more than the current day, then you need to download data for candles. It is also necessary to perform this function when 1ExAlgo does not work until the end of the session and it does not have a complete history for the previous session. To load data, one of the standard timeframes is used, in case of loading data other than the standard frames, candlesticks may be formed incorrectly. When loading any standard timeframe, except for the month, all the higher timeframes are formed based on the loaded timeframe. For example, if you upload 10-minute data, data for a timeframe higher than 10 minutes will be automatically generated, and 1 and 5 minute data for this period will not be added. How to upload data can be found in the History Upload section.

Delete symbol

The removal of the instrument may be required to stop trading on this instrument, or to stop trading the instrument itself on the exchange. Also, when the tool is removed, the amount of stored data decreases, when 1ExAlgo is turned off and data is loaded when it is turned on.

- delete symbol button. Or right-click on the deleted tool by calling the context menu.

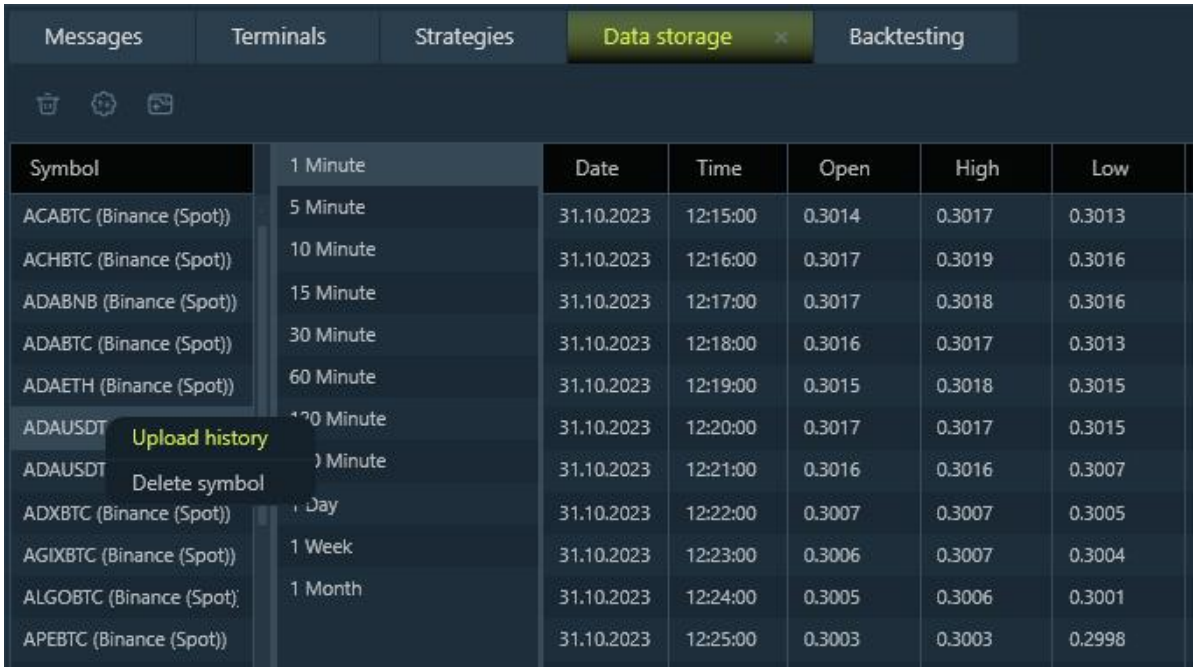


If the deletion is confirmed, all information about the tool will be deleted.

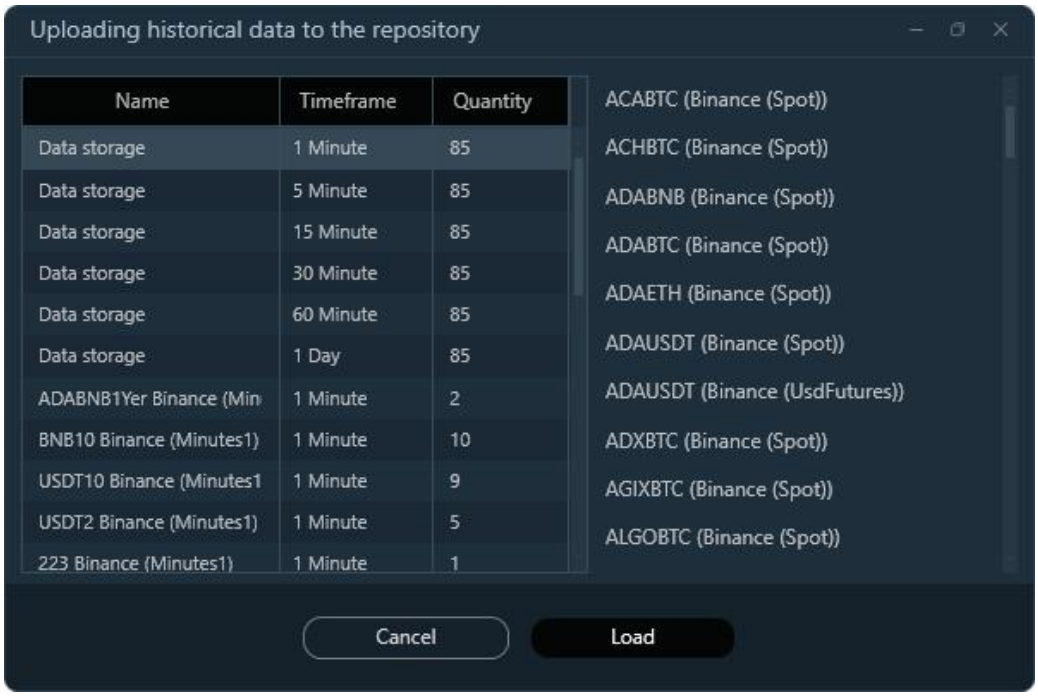
- when clicked, the following form will appear to delete several tools at once. When deleting, the program will ask for confirmation for this action.

Uploading history

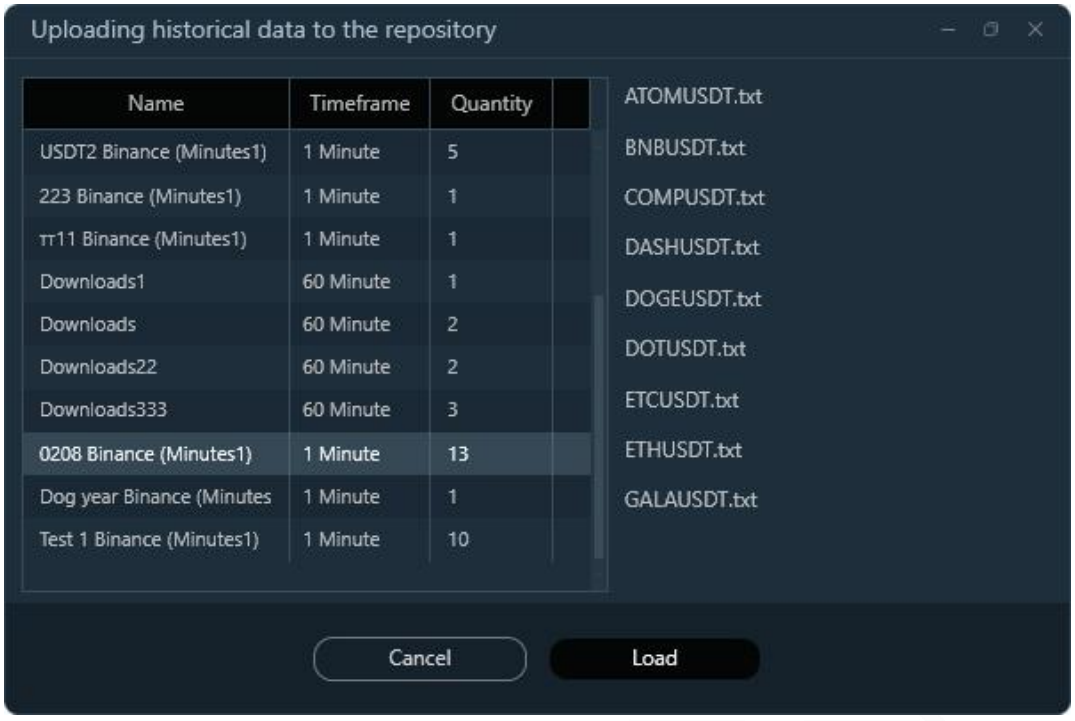
- click to load historical data or right-click on the selected tool, calling the context menu.



As a result of clicking the button or the context menu item "Load history", the following menu will open. The historical data that is loaded into the system is displayed as a list, if it is not there, then it is necessary to create it initially. The section "Adding a data source" describes in detail the section of creating a data source.



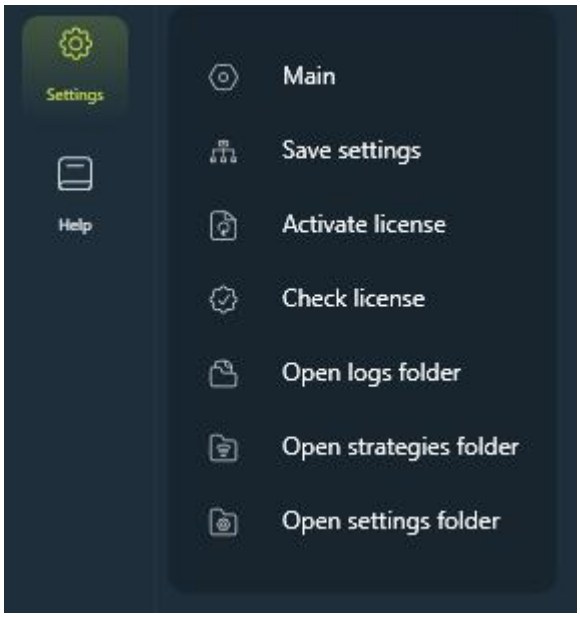
After that, select the necessary tool, specify the source from which you need to take information and in the source specify the file from which historical data on candles will be loaded.



After everything is selected, the "Upload" button is pressed.

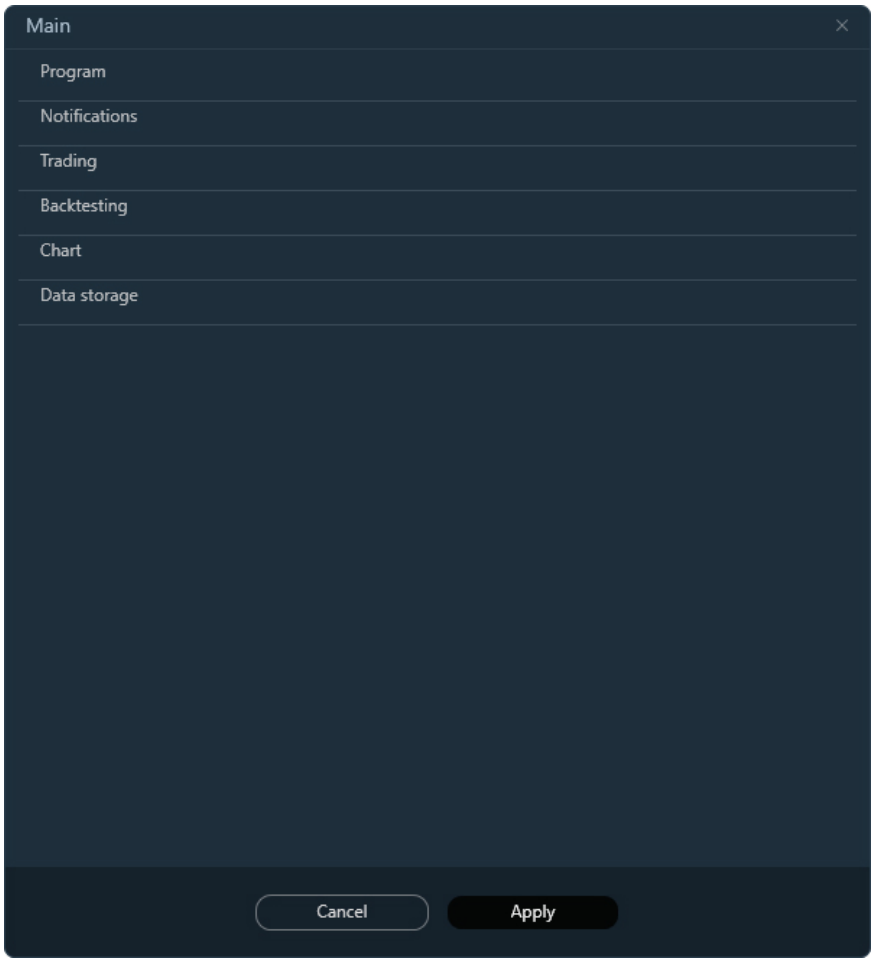
Important for QUIK! When you turn it on for the first time, if trading requires data for more than the current day, you need to download data for candles. This function must be performed when 1ExAlgo does not work until the end of the session and it does not have a complete history for the previous session. To load data, one of the standard timeframes is used, in case of loading data other than the standard frames, candlesticks may be formed incorrectly. When loading any standard timeframe, except for the month, all the higher timeframes are formed based on the loaded timeframe. For example, if you upload 10-minute data, data for a timeframe higher than 10 minutes will be automatically generated, and 1 and 5 minute data for this period will not be added. How to download data can be found in this section.

Settings



Main - various settings for 1ExAlgo.
Save settings - saves the settings of the entire system (automatically occurs when you exit the program).
Activate license - a window for activating the license key .
Check license - request for information about licenses for 1ExAlgo and modules.
Open logs folder - opens the folder where the program logs are stored.
Open strategies folder - opens the folder where the robot settings for all strategies are saved.
Open settings folder - opens the folder where all settings are saved.

Main

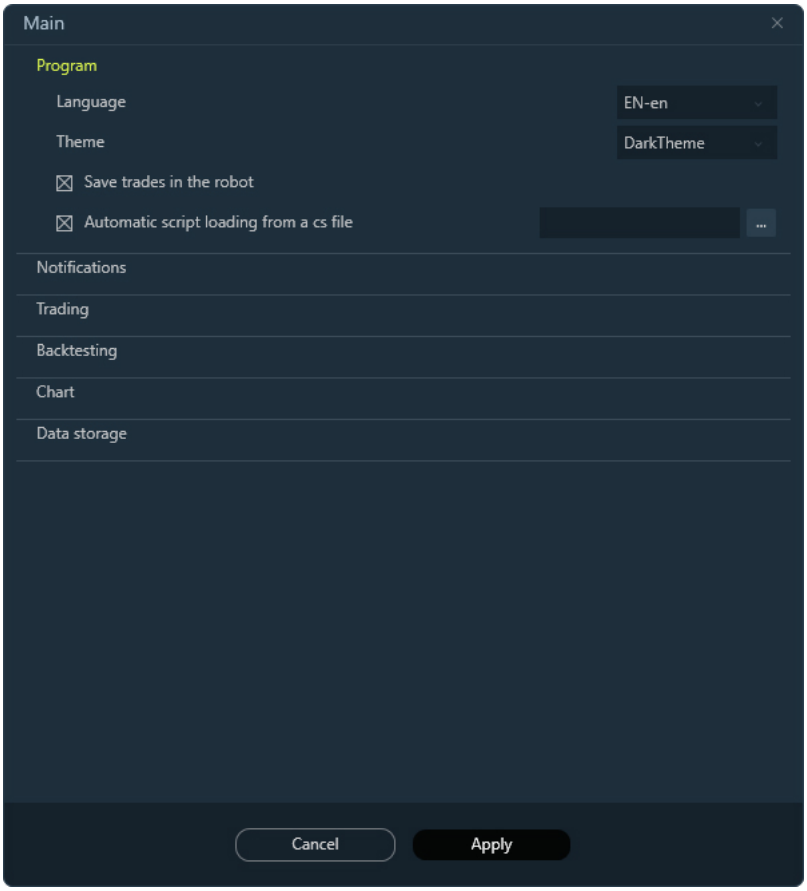


Program - general settings for the program.
Notifications - notifications of the user, via selected communication channels, about the work of robots and the 1ExAlgo program.
Trading - settings for trading robots.
Backtest - additional settings used when testing trading strategies.
Chart - setting up charts for testing and real trading.
Data storage - managing the amount of data stored in the storage.

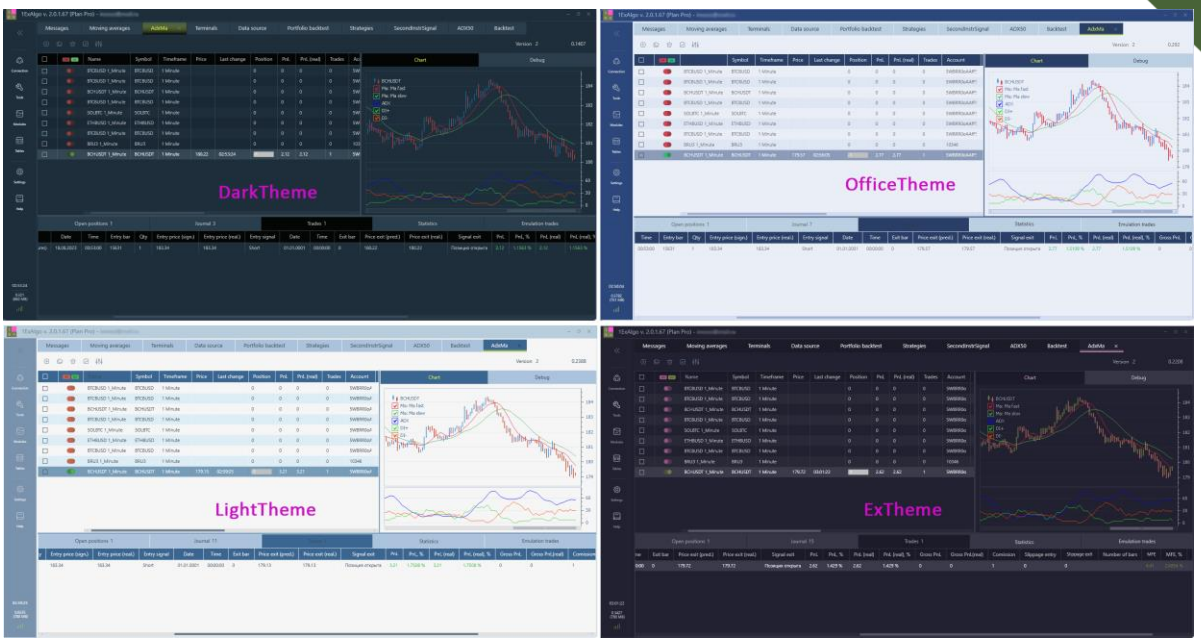
The terminal settings are described in the connection settings of the corresponding terminal.

General Settings

Main - setting up updates and setting additional settings for the built-in connectors.



Language - select the program menu language (Russian\English).
Theme - 4 themes to choose from: DarkTheme, OfficeTheme, LightTheme, ExTheme.



Save trades in the robot - transactions in the robot are stored until there are critical changes on it.

Automatic script loading from a cs file - automatic script loading from a file at the specified path when logging into 1ExAlgo.

Notifications

Notifications in 1ExAlgo are necessary to notify the trader about what is happening now in the robots: opening a position, closing, disconnection, errors, statistics, etc. For each type of notification, you can set your own settings for each type of communication channel.

Name	Description
Connect	Establishing a connection to the exchange or terminal
Disconnect	Loss of at least one connection to the exchange or terminal
OpenPos	Partial or full opening of a position is sent once, regardless of how long the application was executed
ClosePos	Partial or full closing of a position is sent once, regardless of how long the order was executed
SignalsFromScript	Additional information from the strategy algorithm, pre-programmed by the strategy developer
Transactions	Information about transactions and callbacks on them
PersonalLogs	All information is sent, which adds to the log of each robot

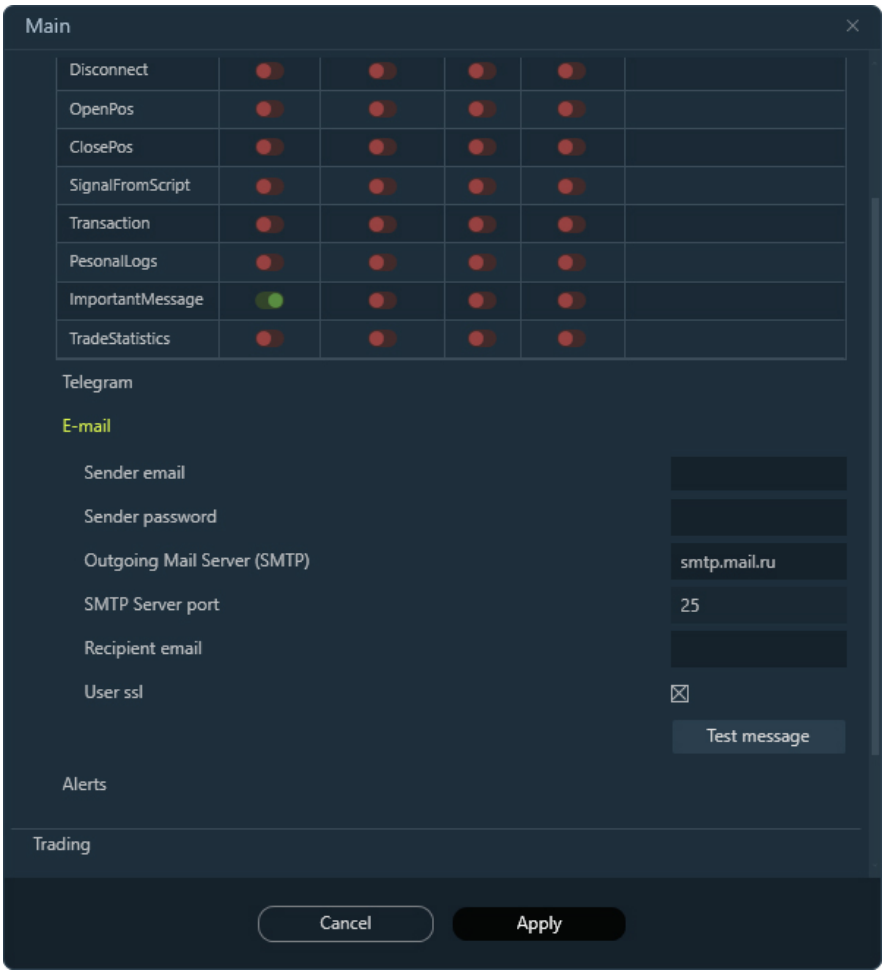
ImportantMessages	Such messages include critical errors in the code, transaction errors
TradeStatistics	Data on trade statistics

Notification

Audio notification of the user about events. The file format of the downloaded file must have the wav extension. The "play" button allows you to listen and check the installed melody.

E-mail

Sending notifications and messages to email. A rather slow way to receive information and there is no guarantee that with frequent sending of letters, they will all be forwarded. You need to create an additional mail to send from it to your main mail. Additional mail is necessary, because if notifications are sent frequently, this mail may be blocked.

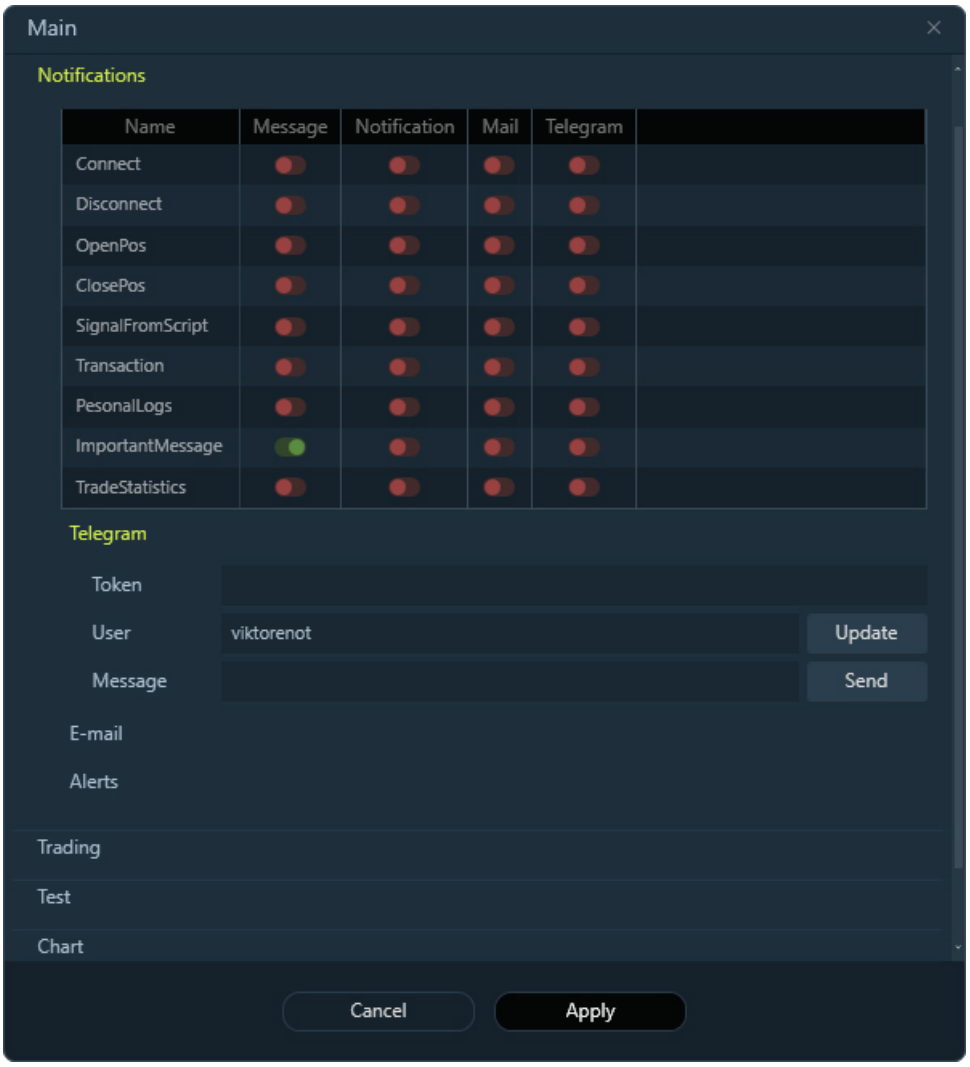


Name	Description
Sender email	The mail from which notifications will be sent
Sender password	Password to the email from which notifications will be sent
Outgoing Mail Server (SMTP)	This parameter must be viewed in the help of the configured mail. For example: smtp.mail.ru
SMPT Server port	Ports can be used: 465, 587 or 25 port
Recipient email	The mail to which notifications will be sent
User ssl	For some E-mail - this parameter is necessary

At the end of filling in all the fields, you need to send a test letter. In case of a sending error, a message will appear with a description of the error.

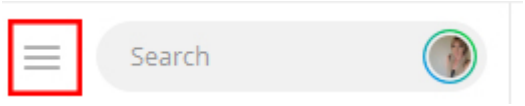
Telegram

The fastest, free and 100% way to receive notifications.

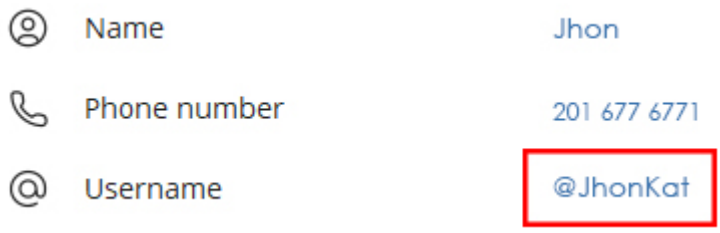


Download telegram and create an account. It does not matter which device the installation will be on, but still, for the simplicity of creating a bot, it is desirable on a computer.

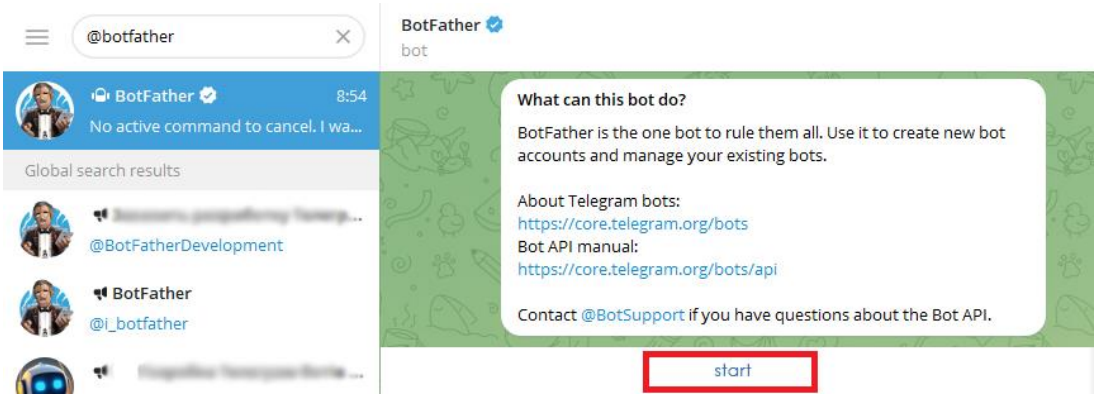
Important! After completing the registration, fill in the username. Click on the menu in the upper left part of the program and select the settings menu item.



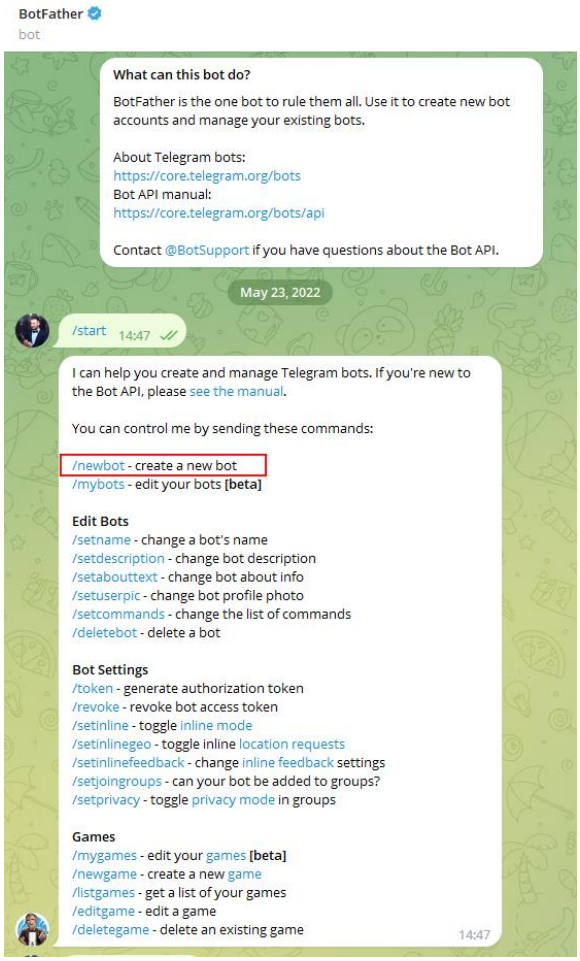
And fill in the user name



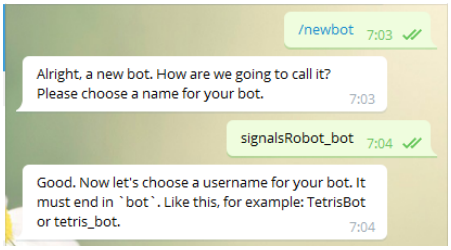
Next, type @botfather in the search box, select it and click run in the window.



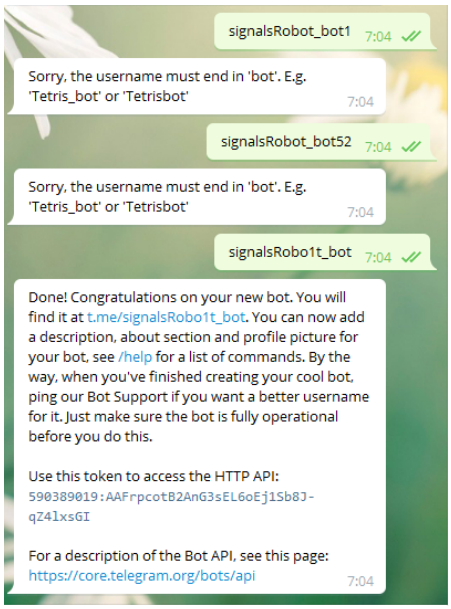
In the window that appears, select newbot.



Specify the bot name and enter



Next, the username of the bot is in English and at the end we add _bot and press enter. Example: name - bot for the robot, username - signalsRobot_bot.



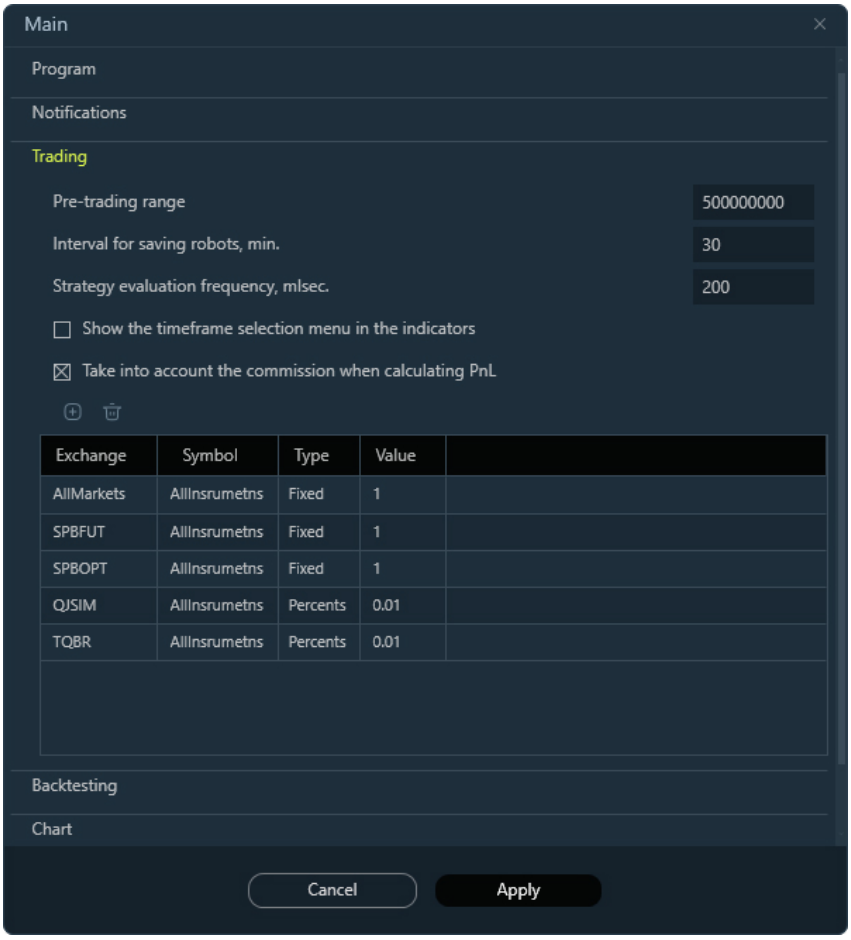
A message will appear with your bot's token (example token 590389019:AAFrpctB2AnG3sEL6oEj1Sb8J-qZ4lxsGI), your token must be written in the "Token" field.

Write a message in your bot's chat so that the robot has information with whom to communicate. After that, in front of the user, click the "Update" button. Information about the last user the bot communicated with will appear in the drop-down list. Choose a name.

After that, you can boil a test message.

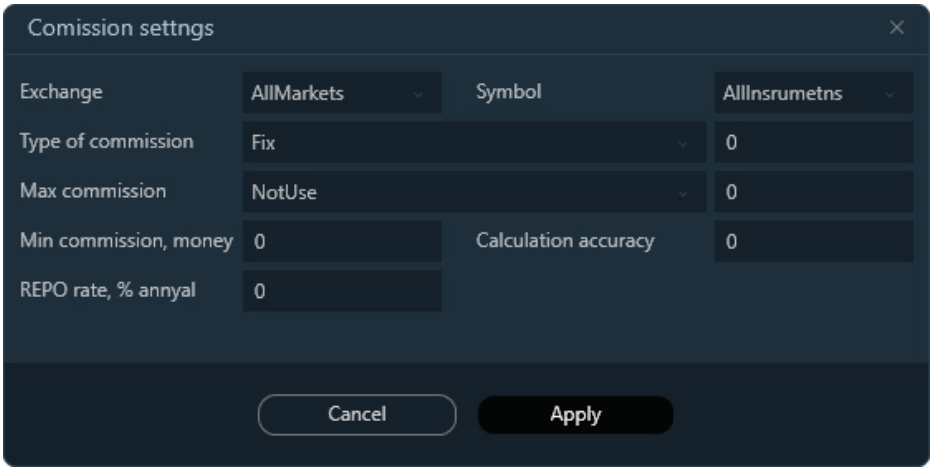
Trading

Trading - settings for robots to work in real time.



Name	Description
Pre-trading range	The number of candles/bars that are recalculated when starting/restarting the robot
Interval for saving robots, min.	The time in minutes after which data on robots will be saved from the start of the launch or after the last save
Strategy evalution frequency, mlsec	The minimum time to check strategy conditions again
Show the timeframe selection menu in the indicators	It is possible to set the timeframe of indicators different from the timeframe of the main chart
Take into account the commission when calculating PnL	he exchange commission and the broker's commission are taken into account, when calculating the actual profit

In order to open the commission settings, you need to check the box "Take into account the commission", then click ⊕.

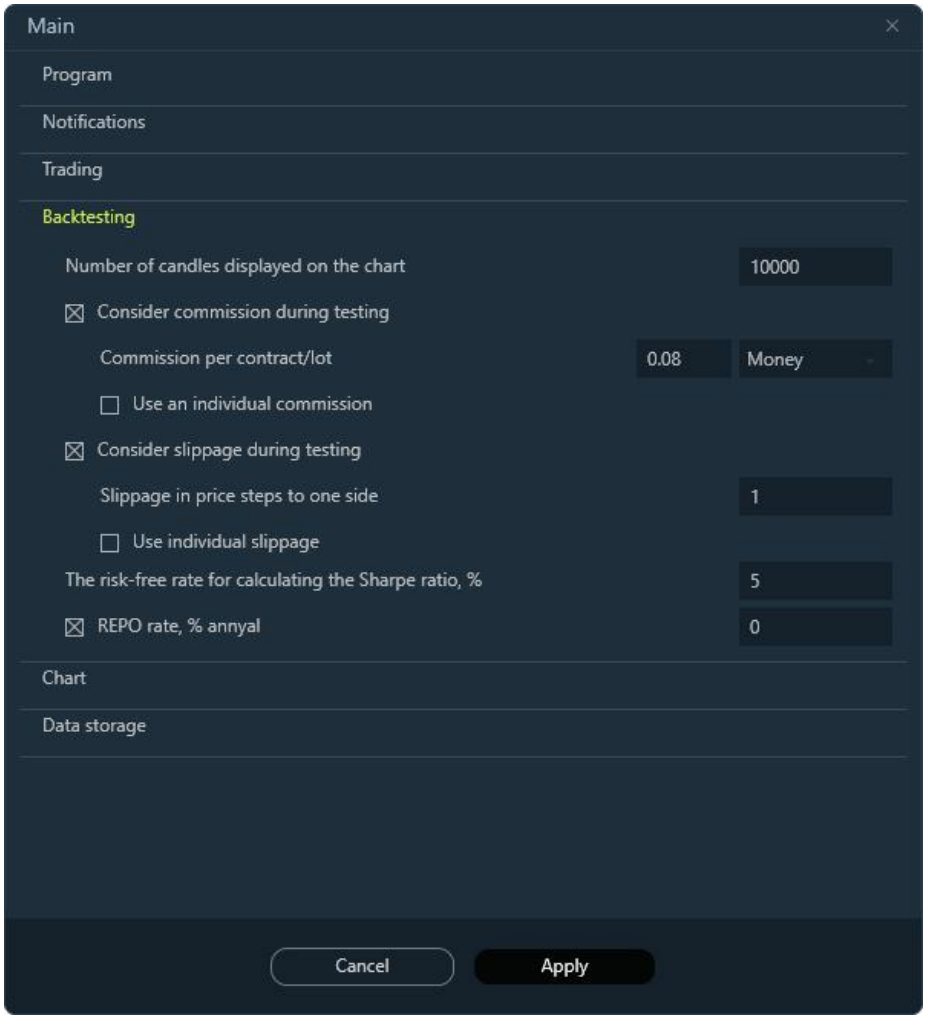


The commission can be set as a percentage or fixed. It can be installed on the entire class as a whole, or on each tool individually.

Name	Description
Exchange	The exchange from which the data on the instrument is received
Symbol	The code of the instrument in the trading system
Type of commission	Fixed - sets a fixed commission for all transactions. As a percentage - a percentage of the transaction.
Max. commission	The maximum commission cannot be more than the specified one.
Min. commission, money	The minimum commission cannot be less than the specified one.
Calculation accuracy	Number of decimal places
REPO rate, % annyal	The rate at which shares are lent to make short transactions. The fee is charged if the shares are postponed to the next day.

Backtesting

Backtesting - additional settings when testing strategies.



Name	Description
Number of candles displayed on the chart	To speed up the drawing of the graph and reduce the load on the system. The larger the number of candles, the more resources and time it takes to draw and load the chart.
Consider commission during testing	The commission is taken into account in transactions during testing and for Profit/loss. When testing, you can set your own commission for each tool.
Commission per contract/lot	Absolute commission in price points. used for futures and options.
Use an individual commission	If you check this box, then, during testing, the commission set in the individual settings of the tool will be considered.
Consider slippage	Allows you to take into account the slippage in the test results,

during testing	which may be in real trading
Slippage, in price steps, to one side	Slippage is taken into account for both sides of the transaction: open and close a position
Use individual slippage	If you check this box, then, during testing, the slippage set in the individual settings of the tool will be considered.
The risk-free rate for calculating the Sharpe ratio, %	The return on an alternative investment is a risk-free rate. The Sharpe coefficient is an indicator of the effectiveness of an investment portfolio (asset), which is calculated as the ratio of the average risk premium to the average portfolio deviation.
REPO rate, % annyal	The rate to loan stocks for short selling operations. A fee is charged if the stocks are held overnight

Chart

Chart display settings.

Default chart type - the setting allows you to choose the type of data display on the chart by prices in the form of candles or bars.

Candlesticks for robot charts - the number of candles visible when plotting a chart for robots traded in real time, the lower the value, the faster the charts are plotted.

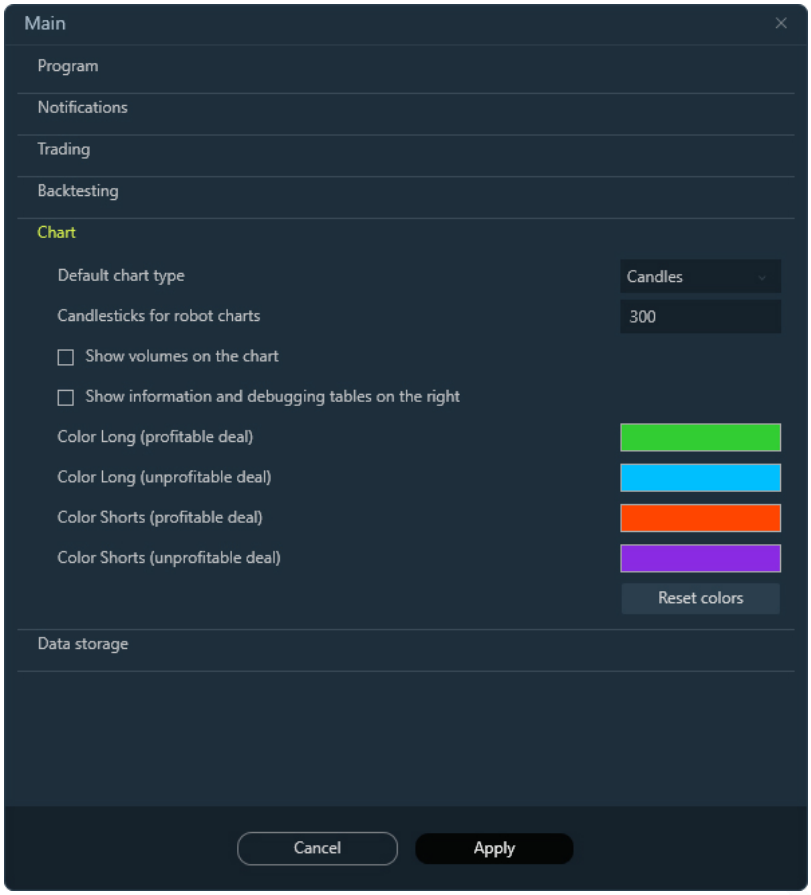
Show volumes on the chart - volumes are shown on all charts, both for robots in real trading and for testing.

Show information and debugging tables on the right - when this check box is selected, information and debugging tables will be displayed on the right.

Choosing a color to display on the chart:

- Color Long (profitable deal);
- Color Long (unprofitable deal);
- Color Short (profitable deal);
- Color Short (unprofitable deal).

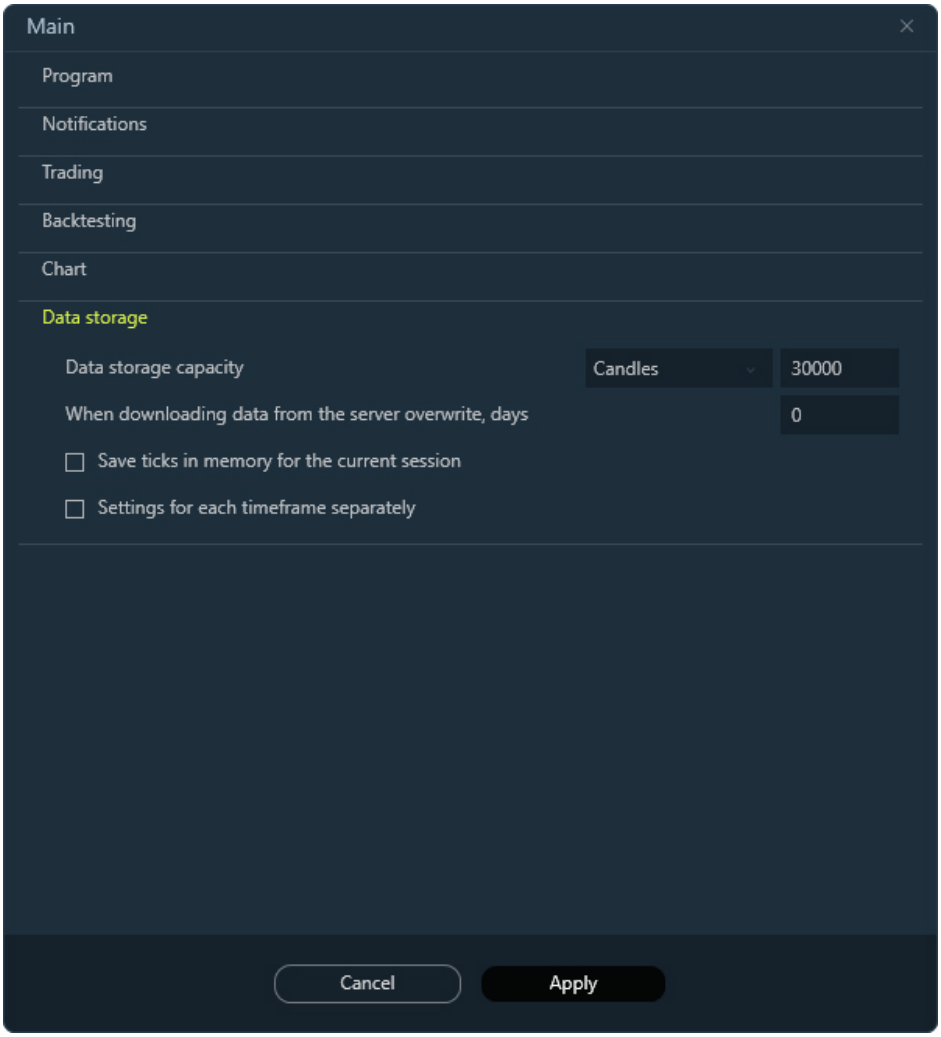
Reset colors - returns all colors - by default.



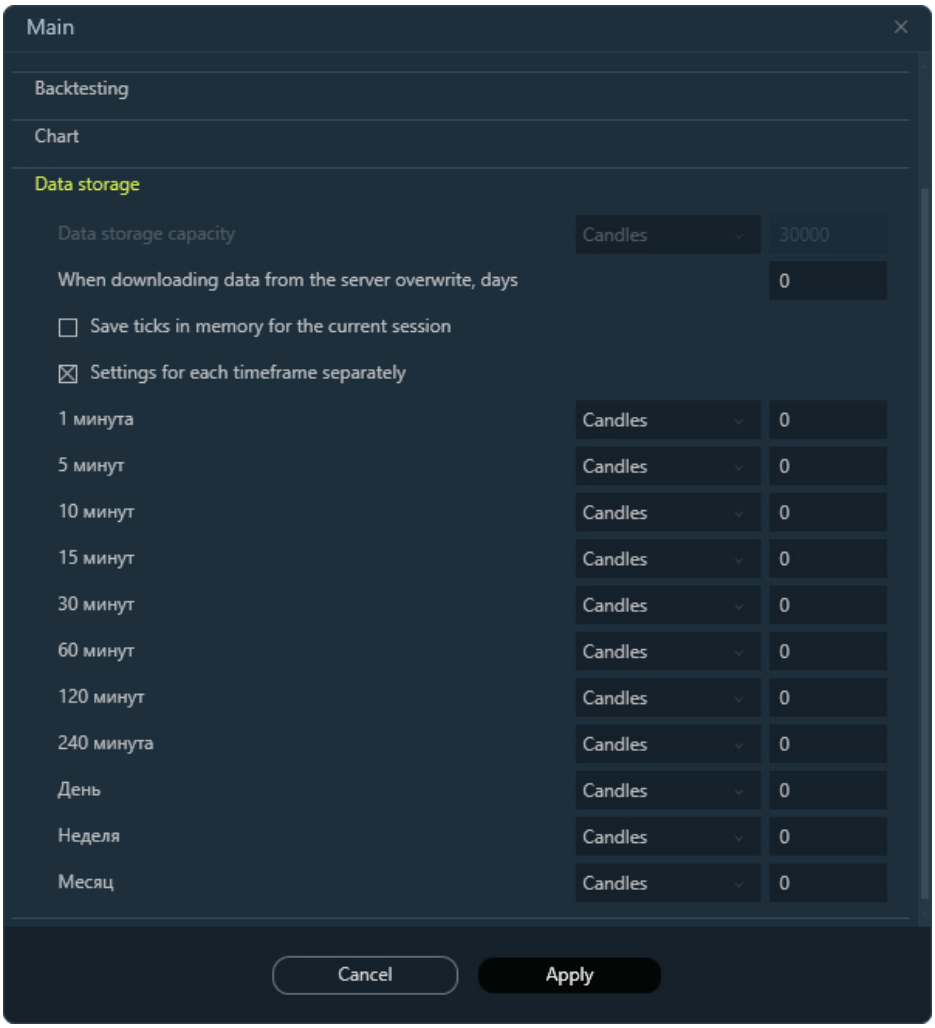
An alternative way to open the menu is to right-click on the chart and select "Settings" in the context menu.

Data Storage

The data warehouse is designed to store data on the results of trades.



By default, the amount of candlestick **data storage** for each timeframe is 30,000 candles, or you can specify data storage in days. If a large number of instruments are being analyzed, then it is better not to store the ticks received from the exchange in memory, they will be deleted after updating the information on the timeframe.



When downloading data from the server overwrite, days - If the volumes of the candlesticks are different, then recording will occur. If 0 is specified, the data is overwritten to the full depth of the received data, otherwise, the overwriting goes for the specified number of days, excluding the current one. If -1, the data is not overwritten at all.

Save ticks in memory for the current session - because tick data takes up a lot of space, setting this setting allows you to save memory.

Settings for each timeframe separately - when clicked, all available, standard timeframes appear, the number of bars or days can be adjusted for each of them.

Tables

The tables section contains the following main tables:

- Quotes;
- Positions;
- Balance;
- Deals;
- Orders;
- Stop orders;
- Notifications.

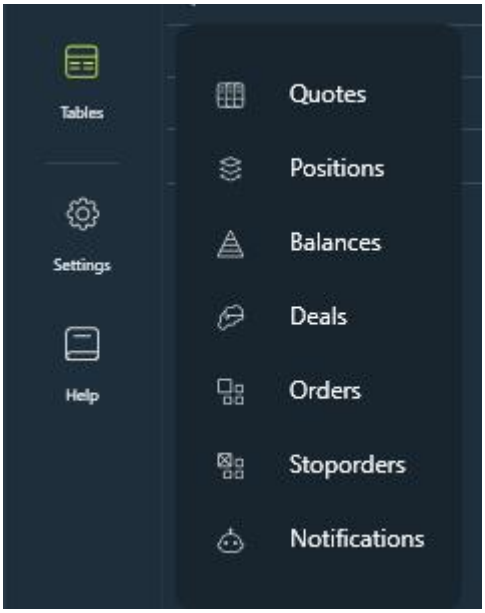


Table "Quotes"

Name	Description
Symbol	The code of the instrument in the trading system
Exchange	The exchange from which the data on the instrument is received
Last price	The price of the last transaction for which there was a transaction in the trading system.
Best bid	Best purchase price
Best ask	Best price for sale
Max. price	Maximum allowable price for the instrument (only for futures)
Min. price	Minimum allowable price for the instrument (only for futures)
Close price	The closing price of the previous trading day (for futures, data at the end of the main session)
Open price	The opening price of the current trading session (for futures, data on the opening of the evening session)
Seller margin requirement	Seller's warranty obligations (futures market)

Buyer margin requirement	Warranty obligations of the buyer (futures market)
Session status	Trading session status "Traded" "Stopped"
Symbol status	Possible values "Traded" "Stopped" ""
Lot size	Minimum allowable number of securities in one order, pieces
Price step cost	Monetary expression of the cost of the price step
Step price	Minimum allowable change in the value of the instrument
Accuracy	Number of decimal places
Last change	Time of the last transaction
Trading	Boolean values: True - trading is underway, False - trading is not underway
Base asset	The asset on which the derivative financial instrument, financial derivative (futures, option) is based
Expiration date	Date of execution of the underlying asset contract
Lot accuracy	Accuracy of displaying lots

Table "Positions"

Name	**Description**
Name symbol	Tool name
Symbol	The code of the instrument in the trading system
Exchange	Stock market/The section where this instrument is traded
Account	Client's trading account
Opening balance	Number of shares/lots at the beginning of the trading session
Balance	Current number of shares/lots

The "Balance" table

Name	**Description**
Account	Trading account
Exchange	Stock market/The section where this instrument is traded
Currency	The currency in which the balance is shown
Opening balance	Cash at the beginning of the trading session
Balance	Current cash balance
Available funds	Planned net positions on all instruments in monetary terms

The "Deals" table

Name	**Description**
DateTime	Date and time of the transaction
Account	Client's trading account
Client Code	Client Code
Symbol	The code of the instrument in the trading system
Exchange	Stock market/The section where this instrument is traded
Direction	"Purchase" or "Sale"
Price	Transaction price
Qty	Number of lots/contracts in the transaction

Volume	Transaction volume = price * quantity
Number	Transaction number in the trading system
Order number	The number of the application that triggered this transaction
Market	If the application is market-based
Comment	Comment

The "Orders" table

Name	Description
Date time	Date and time of the transaction
Account	Client's trading account
Client Code	Client Code
Symbol	The code of the instrument in the trading system
Exchange	The exchange from which the data on the instrument is received
Direction	"Purchase" or "Sale"
Price	Application price
Qty	Number of lots/contracts in the application
Balance	The number of remaining lots awaiting execution
Status	The status of the application is "Active", "Withdrawn" or "Executed"
Number	Application number in the trading system
Id	A unique identifier that is specified when trading robots.
Comment	Comment
Ping	Ping Size

The "Stop Orders" table

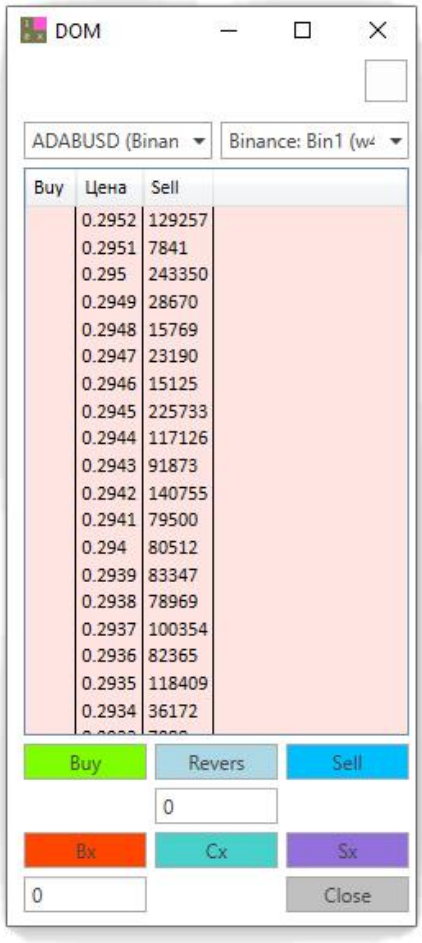
Name	Description
Date time	Date and time of the transaction
Account	Client's trading account
Client Code	Client Code
Symbol	Traded instrument
Exchange	The exchange from which the data on the instrument is received
Type	The type of stop order. Possible values: Stop limit – standard stop order, With a link. by application – a stop application related to a limited application of the same orientation and volume, Take profit - take profit, Take profit and stop limit - combined take profit and stop limit, Take profit and stop limit by application – combined take-profit and stop limit set for the execution

Direction	of the "Purchase" or "Sale" application
Stop price	The activation price of the stop order
Price	Stop order execution price
Activation price	TP activation price
Offset min/max	The amount to which the stop limit will be set from the settlement price. Calculation price +/- Deviation = activation price.
Spread	Protective spread, for the execution of the application. If the spread is equal to 0, then the application will go to the terminal at the activation price and there is a chance that this application will remain standing in the DOM and execution will not occur. In this case, it is recommended to lay an adequate spread or use the option - execution at the market price - in this case, the execution of your stop order is guaranteed (if the DOM is not empty). Execution Price = Activation Price +/- Spread
Qty	Number of lots/contracts in the stop order
Status	Possible values ("Active", "Executed", "Withdrawn")
Result	are the result of the execution of the stop order. Possible values:
	Application submitted to the vehicle – the application is accepted by the trading system,
	Rejected by the vehicle – the application is rejected by the trading system,
	Withdrawn – the application is withdrawn by the user.
	I did not pass the limits control – there are not enough funds of the client to fulfill the request,
	The related the request has been withdrawn – the limited request associated with the stop order has been withdrawn.
	The related the order has been executed – the trading system has satisfied the limited order associated with the stop order,
	Waiting for activation - the activation condition has not occurred. The parameter of orders of the "Take profit" and "execution" types.
	Min/max is calculated - the activation condition has come, the calculation of the minimum / maximum price has begun. The parameter of the "Take profit" types of applications.

	Min/max is calculated and is waiting for activation - the application is activated for an incomplete volume as a result of partial execution of the application-conditions, the calculation of the minimum / maximum price has begun.
Number	Stop order number
Order number	Application number when activating the stop order
Id	A unique identifier that is specified when trading robots.
Comment	Comment

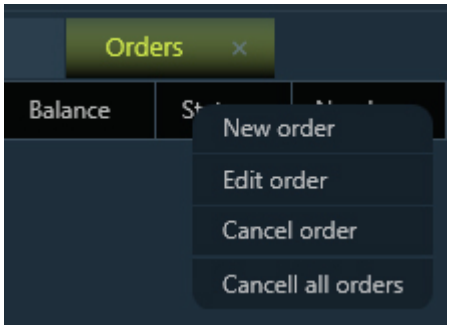
DOM

It is possible to connect a classic DOM. Install it on top of all windows. It implements all the functionality of a classic DOM.



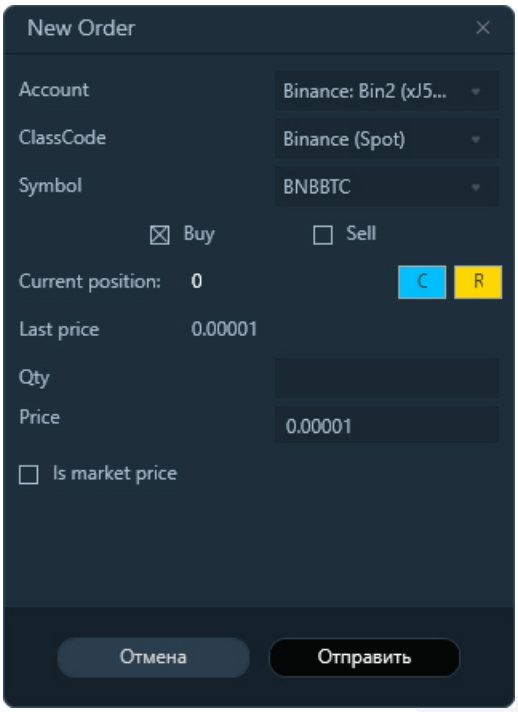
New application

1ExAlgo gives you the opportunity to make a simple purchase or sale request at any time. This functionality is implemented in the following tables: Quotes, Positions, Transactions, Orders. You can create an application through the context menu by clicking the right mouse button. In the nurse's table, this menu will be more detailed.



New order - create a new order;
Edit order - edit the selected order, while the old order is closed and a new one is opened;
Cancel order - remove the selected order;
Cancel all order - remove all active orders.

When you click on "New order" (this button is present in all of the above windows), a window for creating a new order appears.



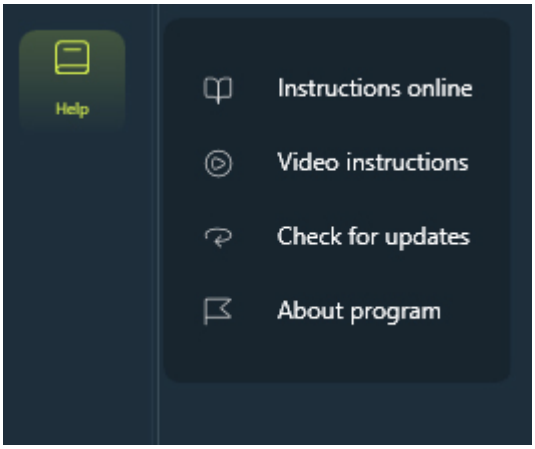
Classic order window:

Name	Description
Account	The account from which the request is made
Class code	The code of the class to which the tool belongs
Symbol	Traded instrument
Buy/Sell	Cash at the beginning of the trading session
Current position	Current position on the instrument
Last price	Current market price
Qty	Number of lots per application
Price	The purchase or sale price, you can set a limit order
Is market price	Execute at the market price

Reference

Information about the program

Instruction online - opens the instruction for 1ExAlgo located on the network.
Video instructions - opens the video instructions page for 1ExAlgo located online on the official website.
Check for updates - a request is sent for the latest version of updates.
About program - information window, ownership and version.



The Risk Manager module

Appointment:

Loss control and profit protection, the quality of transactions and deposit protection in case of a series of failures – the risk manager is your assistant in this. Designed for personal self-control, risk control of the deposit under management and for managing a group of traders..

Features:

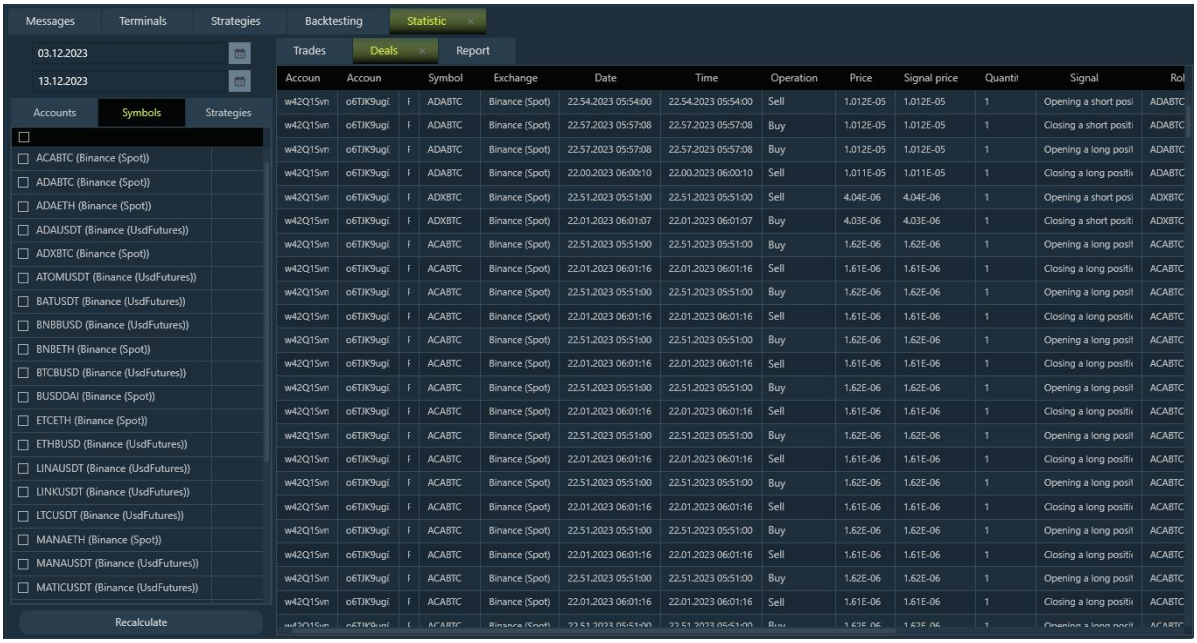
- The ability to order a trial version;
- Works with all instruments that are broadcast by the terminal or the exchange (stocks, futures, options, bonds, currency pairs, etc.);
- Work with an unlimited number of Quik trading terminals (added if necessary, 10 by default).
- Work with quik, transaq, Interactive Brokers, crypto exchanges (Binance, Derebit, Huobi, Ocx, etc.) and other terminals (exchanges) for which a connector (API open) will be developed;
- Individual parameter settings for each account or sub-account;
- It is installed on the trader's local computer or on a dedicated server;
- Setting limits on each instrument;
- Setting time risks and additional risks;
- Setting the commission separately for each instrument and for the whole class;
- Various limits on transactions (total number, number of unprofitable and a series of unprofitable);
- The possibility of continuous operation without disconnecting;
- Ability to receive notifications via SMS, email, telegram or audio notification;
- Displaying statistics for the day;
- The ability to install profit protection and trailing profit;
- The ability of the risk manager to work in manual mode - i.e. sending recommendations on closing a position and withdrawing positions;
- Setting the minimum deposit on the account;
- Setting a lock for a certain period of time (pause in trading);
- The ability to set various lock parameters;
- Clustering the losses into several parts, for example, for the first and second half of the trading session.

For whom this program is intended

- for those who are just starting their trading on the market and cannot control losses or save their profits;
- for experienced traders, for personal self-control or being in a tilt;
- for traders who find it difficult to control their emotions;
- for investors who have submitted their accounts to the trader for management. On the part of the investor, it is possible to set limits to the trader for a trading session so that he does not lose more than the agreed amount and/or the minimum account balance;
- for dealing halls, brokers, management companies and their clients;
- for managers managing a team of traders. With the help of the program, limits of possible losses are set for each of the traders and you do not have to worry that at the time of your absence the trader will exceed the established limits or violate the rules.

Statistic

The Statistics module is a backoffice that allows you to control the correctness of trading for admins, collecting general statistics in a single terminal, and send reports to clients on the profitability of transactions.



Features:

- The ability to order a trial version;
- It works with all instruments that are broadcast by the terminal or the exchange (stocks, futures, options, bonds, currency pairs. crypto, etc.);
- Work with any exchanges that 1ExAlgo supports: quik, transaq, Interactive Brokers, crypto exchanges (Binance, Deribit, Huobi, Okx, etc.) and other terminals (exchanges) for which a connector will be developed (API open);
- Individual parameter settings for each account or subaccount;
- It is installed on the manager's local computer or on a dedicated server;
- Displaying statistics for the period.

For whom is this program intended

- for administrators of asset managers;
- for dealing rooms, brokers, management companies and their clients;
- for managers managing a team of traders.