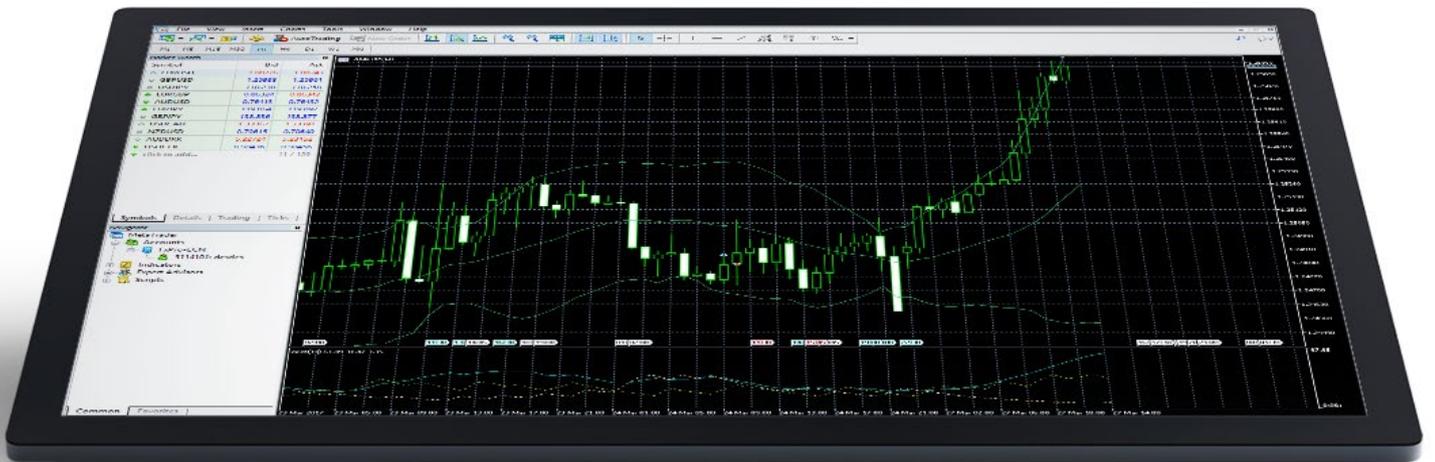


FxPro
Trade Like a Pro



FxPro MT4

Optimization Manual





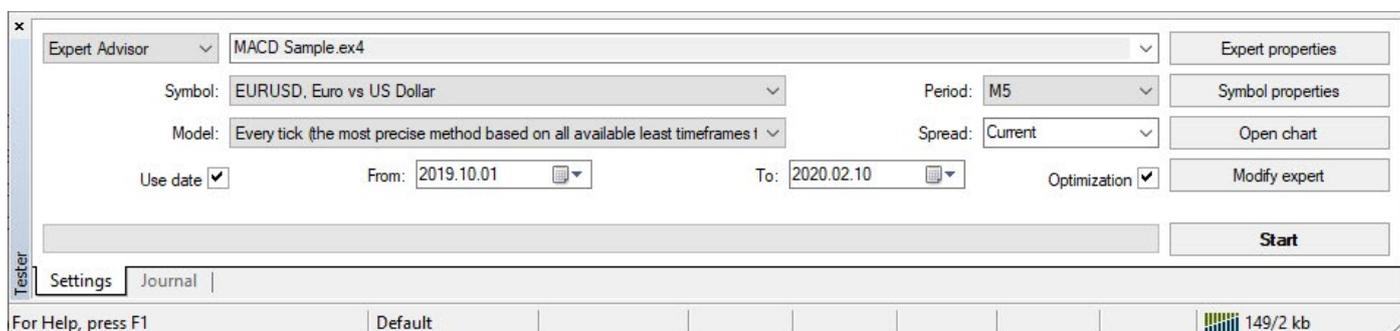
Disclaimer

Under no circumstances, the backtesting and optimization process described in this guide should be interpreted as an indication of the potential profitability of any Expert Advisor. Past performance is not indicative of future results. FxPro cannot guarantee the accuracy of performance and/ or results of the process described herein. Your individual circumstances and trading objectives have not been considered. Therefore, this should not be considered as a personal recommendation or investment advice.

-  Expert Advisor optimization allows traders to check how their strategy behaves given different sets of parameters. The main reason to use optimization is to save time. It is an alternative to having to manually back-test an EA multiple times, changing the parameters each time. The optimization feature of the Strategy Tester does the work for you and collates the information in a table of results.
-  The optimization procedure may be used as a research tool. Using different combinations of indicator parameters as well as Take Profit and Stop Loss settings may show different results. The system can test literally thousands of combinations and will then show the sets of parameters that are profitable or unprofitable during backtesting.

Enable Optimization

To switch from back-test to Optimization mode, simply tick the **<Optimization>** box.

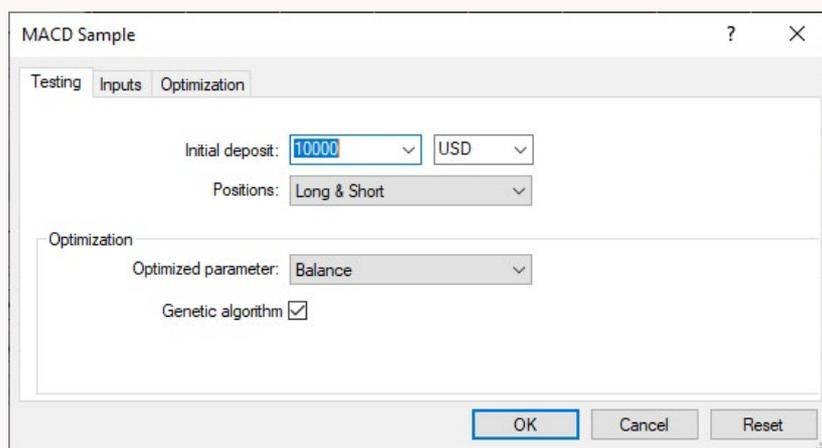


You can specify the Expert Advisor, Symbol, Model and the Start and End dates just as you would do for a back-test. You can choose to either use the **'Current'** spread available at the start of the optimization process, or specify a constant spread of your choice

Then click on the **<Expert properties>** button to specify the settings for optimization.

General optimization settings

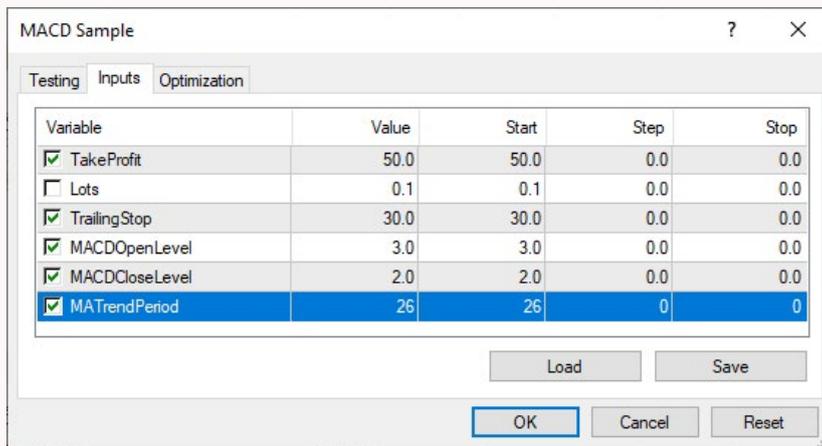
Here you can specify whether or not you want to use the Genetic Algorithm and also what value the EA should be optimized for. Use of the Genetic algorithm can speed up the optimization process, since it will allow the Strategy Tester to skip the back-tests which it expects to be unprofitable. The Strategy Tester will decide the most successful strategy based on the Optimized parameter selected from the list (in this example Profit Factor).



The disadvantage of using the Genetic Algorithm is a possible loss of accuracy. Since the optimizer will not try every single possible configuration of the inputs, it may miss the most profitable ones. As a general rule, it is often a good idea to use the Genetic Algorithm for large optimizations. If the optimizer only has to run relatively few back-tests, then it will not use the Genetic Algorithm, even if its enabled.

To select which of the EA parameters to optimize, click on the **<Inputs>** tab. If the **<Inputs>** tab is not there, the EA does not have any external parameters and therefore cannot be optimized, since every back-test will be the same.

Input parameters settings



All external parameters of the EA will appear in the **<Inputs>** tab. Simply tick the checkboxes on the left hand side to specify which of the parameters to optimize and set the Start, Step and Stop values accordingly.

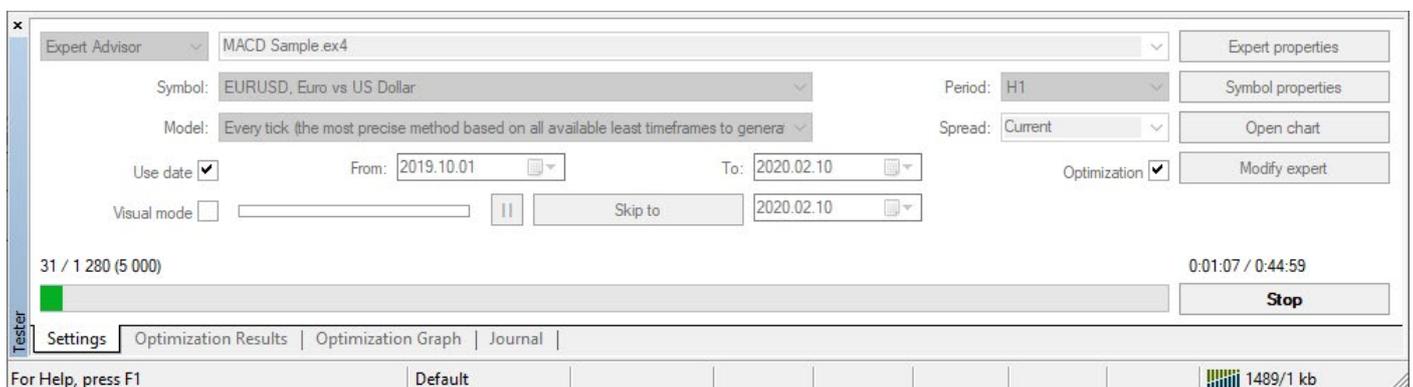
For example, if you only tick the TakeProfit with Start = 10 Step = 10 Stop = 100, then the optimiser will run the back-test 10 times with the TakeProfit set to (10, 20, 30, 40, 50, 60, 70, 80, 90, 100) while keeping all other Inputs unchanged.

On the other hand, if you tick several inputs (as in the above example), then the optimizer will run every possible combination of the Inputs within the ranges you have specified.

Once the inputs are set up, simply click **<OK>** and then click on **<Start>** button to begin the optimization process.

Optimization start

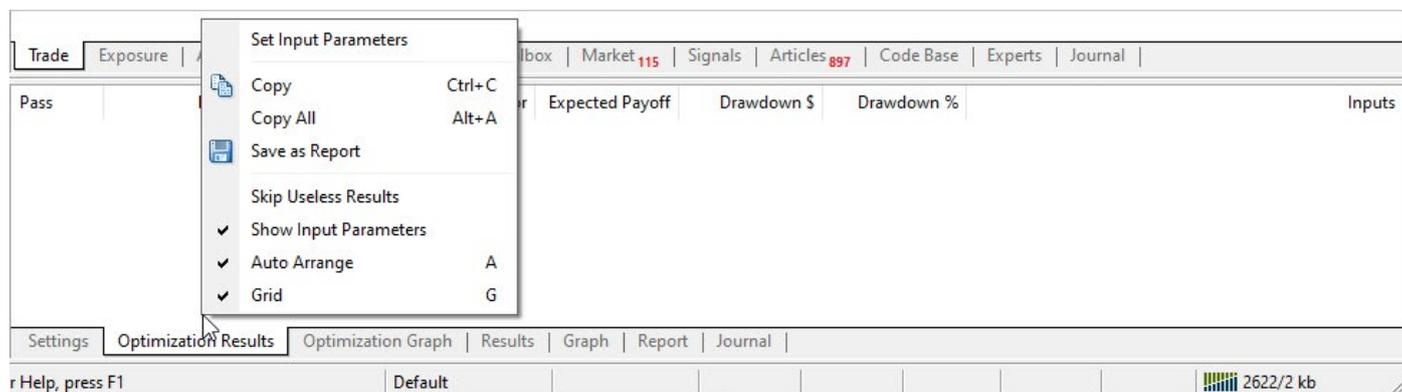
When the optimization has started and the first back-test out of the set completes, you will see the estimated time of completion (in this case 21 minutes) and the total number of expected combinations for back-tests. In this case, the system shows that it completed 2 out of 1280 back-tests. The total number of back-tests was calculated as 42 240, but the tester is only planning to do 1280, owing to the restrictions Metatrader 4 places on the maximum number of backtests per optimization.



Please note that if the Genetic Algorithm is being used, the number of back-tests will be less than the estimated, but it is not possible to tell exactly how many in the first instance. Hence the total optimization time is likely to be less than the estimated total time.

Do not skip 'Useless parameters'

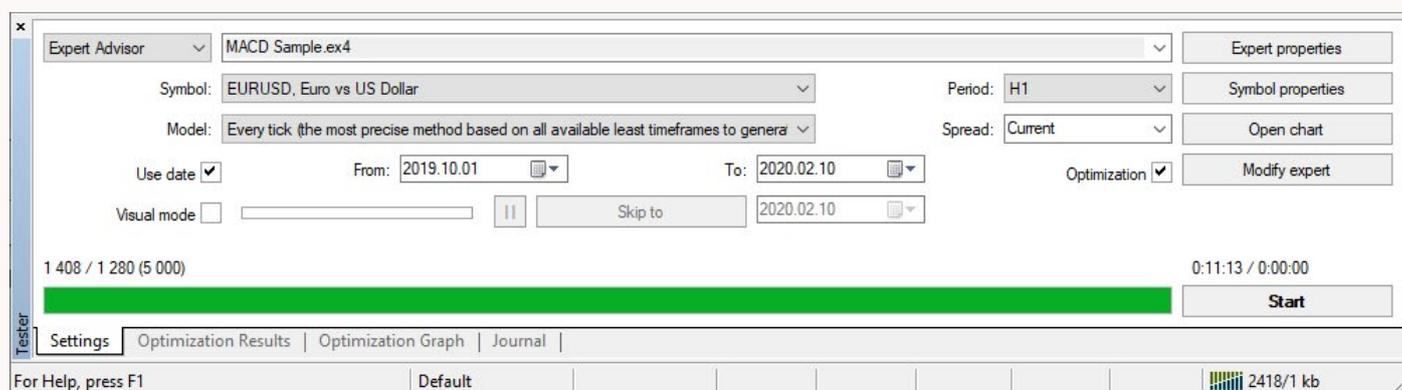
After the optimization starts, Optimization Results and Optimization Graph tabs will appear. It may be useful to go into the Optimization Results tab, right click on the empty white space in the window and deselect '**Skip Useless Results**'. This will ensure that the results of each back-test are shown, otherwise the Strategy Tester will not show any back-tests that made a loss or did not produce trades.



Seeing results that are loss making or had no trades may be helpful in determining whether the EA performs particularly badly with a certain set of parameters.

Optimization ended

Once the optimization is completed you can see how many back-tests it actually had to do and how long it took



In this case the system only performed 1408 back-tests and the total time was less than half of the original estimation. It took just 11 minutes and 13 seconds.

Optimization Results

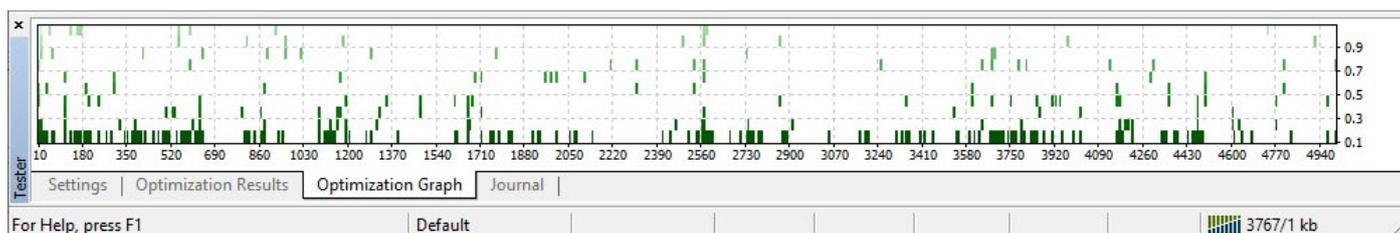
Even before the optimization is complete you can start viewing the results.

Pass	Profit	Total trades	Profit factor	Expected Payoff	Drawdown \$	Drawdown %	Inputs
2	-1151.87	54	0.40	-21.33	1245.78	12.36	TakeProfit=4160; Lots=0.4; TrailingStop=30; MACDO...
3	-1727.80	54	0.40	-32.00	1868.67	18.46	TakeProfit=4290; Lots=0.6; TrailingStop=30; MACDO...
4	-2303.74	54	0.40	-42.66	2491.55	24.51	TakeProfit=1770; Lots=0.8; TrailingStop=30; MACDO...
5	-2015.77	54	0.40	-37.33	2180.11	21.49	TakeProfit=3640; Lots=0.7; TrailingStop=30; MACDO...
6	-2591.71	54	0.40	-47.99	2803.00	27.52	TakeProfit=550; Lots=0.9; TrailingStop=30; MACDOp...
7	-287.97	54	0.40	-5.33	311.44	3.11	TakeProfit=2740; Lots=0.1; TrailingStop=30; MACDO...
8	-863.90	54	0.40	-16.00	934.33	9.29	TakeProfit=520; Lots=0.3; TrailingStop=30; MACDOp...
9	-1151.87	54	0.40	-21.33	1245.78	12.36	TakeProfit=4770; Lots=0.4; TrailingStop=30; MACDO...
10	-1151.87	54	0.40	-21.33	1245.78	12.36	TakeProfit=4470; Lots=0.4; TrailingStop=30; MACDO...
11	-1727.80	54	0.40	-32.00	1868.67	18.46	TakeProfit=1960; Lots=0.6; TrailingStop=30; MACDO...

The table shows the Net Profit of each back-test, as well as Profit Factor (Gross Profit/ Gross Loss). Expected Payoff (average profit per trade) and Drawdown (the largest drop in the account balance relative to the highpoint) in cash terms as well as percentages. Each back-test shows, on the right hand side, the parameters used to achieve these results.

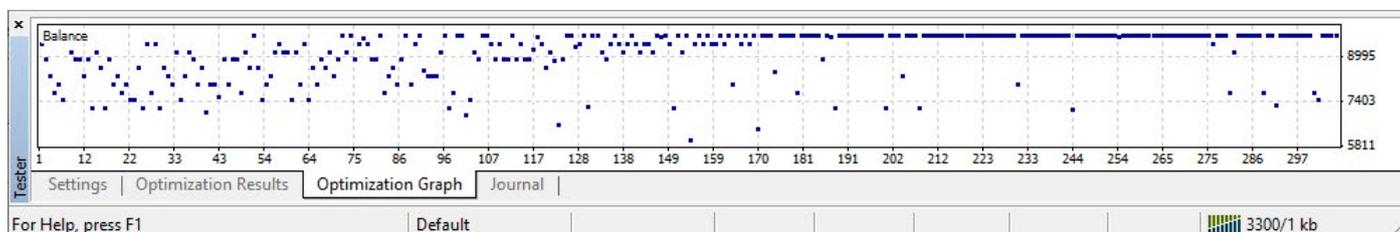
Optimization graph

You can also view the Optimization Graph, in both 2-D and the scatter plot mode. In 2-D mode the graph will show one of the optimized parameters plotted against the other.



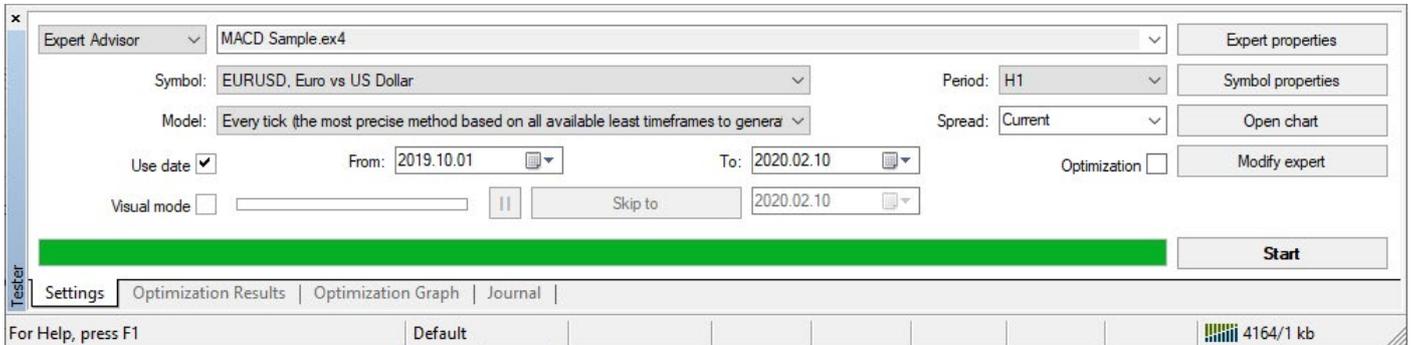
In this case Take Profit is the X-axis and Trailing Stop is the Y-axis. To change which input parameters are used, simply right click on the graph. The darker green indicating higher profits or lower drawdown, depending on what was chosen as the optimization parameter.

The scatter plot mode enables you to see how the back-test results were distributed. In this case you can understand the Profit factor of each backtest plotted on the chart.



Backtest

To get full details of how an EA traded with a specific set of parameters, you can simply double click on any of the results in Optimization Results. This will take you out of the Optimization Results tab. Deselect the Optimization tick-box and it will set the back-test input parameters to the most profitable set.

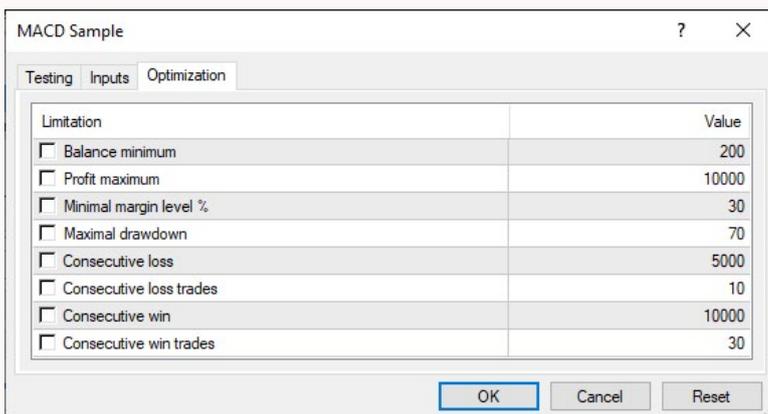


Then you can simply click **<Start>** and the Strategy Tester will back-test the EA with the selected input parameters. You can then view the back-test results in more detail and use the Open Chart feature to go through the trades.



Optimization Tab

You can use 'Limitation' settings inside the optimization tab to speed up the optimization process. Ticking the 'Balance minimum' box, for example, will ensure that whenever the balance falls below the specified value, in this case 200, the current back-test will be interrupted and the optimization process will proceed with the next one.



This approach ensures that the system will not waste time finishing a back-test when a performance measure reaches an extreme value



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