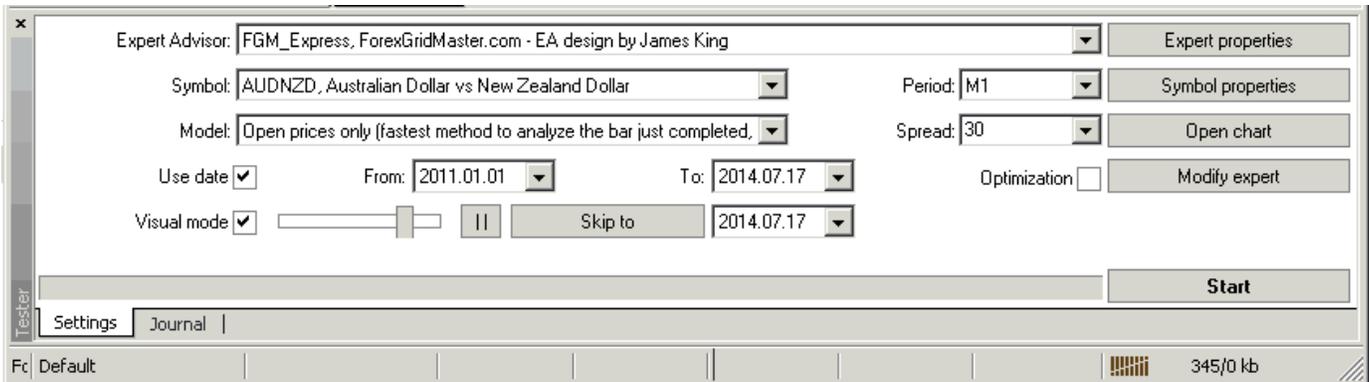


## ForexGridMaster Back-testing M1 Data in MT4

Setup . Back-testing . Optimization . Walk Forward . Portfolio Analysis . Updated Mar 3, 2015

It is **IMPORTANT** to properly back-test and understand ForexGridMaster strategies and adjust settings and their values where needed before risking real money trading them. The MT4 trading platform program has an on board feature called Strategy Tester (top menu > Tools > Strategy Tester, or Ctrl + r) which enables back-testing of M1 historical data (1 minute bars), the **ONLY** timeframe suitable for ForexGridMaster strategy back-tests. The image below displays Strategy Tester setup to run a 3+ year back-test using AUDNZD M1 historical data. In History Center (top menu > Tools > History Center) use the Download button to download MetaQuotes data, or we recommend <http://www.histdata.com/download-free-forex-data/?/metatrader/1-minute-bar-quotes> to Import the best M1 data.



To be fast and efficient, first back-test FGM strategies over a short time period of 6 months to a year using Model: "Open prices", which may take a half hour of back-testing time depending on how fast the computer is, and the complexity of the strategy being back-tested. If test results from a 6 month to 1 year period indicate that the strategy has potential, then back-test the strategy again over at least 3 years of M1 data. If the strategy still shows potential then do some [Walk Forward testing](#) by staggering back-test start times on different days, weeks and years. The back-testing can happen on its own or can be watched in Visual mode at whatever speed chosen.

If the Walk Forward testing goes well enough, then trader can run the strategy thru an Optimization cycle to narrow in on better settings values for the strategy. It only takes a few minutes or so to set the Start, Step and Stop values of several FGM input settings and then run an Optimization cycle to test upwards of 100 or even 500 or more variations of different FGM settings values. The more variations however, the more time consuming the optimization cycle will take to complete. I generally keep the number of variations to 360 or less. When finished, the Optimization Report can be saved (Report tab, right click in the table and "Save as Report") to see the resulting Profit, Maximum Equity Drawdown and other stats. Trader can sort the columns before saving. An Optimization cycle can also be done before the Walk Forward testing or go back and forth between the two until results are satisfactory. [Top](#)

In the Strategy Tester "Optimization Results" tab, select the Pass of interest and double click it to load those particular settings variations into FGM for that particular Pass, and it will automatically switch over to the "Settings" tab where that strategy can then be back-tested over whatever time period chosen. Walk Forward testing can be done from there as well. Uncheck the "Optimization" check box and check the "Visual mode" box before back-testing one or more of the Passes. The "Optimization Results" tab will still be there to go back to, where other Pass variations of settings values can be loaded and back-tested and their preset files saved. Because settings variations are different for each Pass, it is good to change the "SetFileName" and "SetFileInfo" values to match, especially if the preset file will be saved. Naming preset files well makes life much easier when searching through them later.

The "Optimization Report" can be saved for future reference either publicly or privately. I usually save 4 different copies of the Optimization Report, sorted by Drawdown %, Profit, Pass and the Changed Settings because once saved, those results in the htm file are not sortable. However, I also created **FORO** (FGM Optimization Reports Online), available to all FGMers, which is useful for Optimization Reports analysis and also sharing Optimization Results and exact preset files for each Pass, either by Link, View or Download. The ORs (Optimization Reports) are also sortable and can also be linked to forum discussions ... [http://forexgridmaster.com/opt\\_reports.php](http://forexgridmaster.com/opt_reports.php).

It is important to understand and **avoid "curve-fitting" or "over-fitting"**, that is choosing the best back-testing results obtained from trading only a limited dataset and or ignoring not so good results. If back-testing a strategy produced great results, for example, a starting balance of \$25,000 increased to \$2,500,000 over a 3 year period (13.64% per month compounding), then it can appear as tho the Holy Grail has been found. There are a great many samples of this on the Internet used by EA robot sellers showing the best back-testing results that were cherry picked from many back-tests, most of which failed, and this is very easy to do and will fool in-experienced traders. It is very possible, that starting the exact same Holy Grail strategy back-testing from a day or week earlier or later from where the first back-test began, that it can fail badly, be margined out within the first week or two. So best to back-test from as many different starting points as it takes to learn how to avoid curve-fitting and also to specifically back-test the price ranges that produce the highest Max equity draw-downs. Randomness in price action is a deep black hole. Jump in with some light and learn well that **"Risk comes from not knowing what you are doing."** - Warren Buffet.

Do not be too concerned about doing everything perfectly when working with "Open prices" Model back-testing, Walk Forward testing and Optimization. This is only a process to help quickly come up with a strategy that has good potential to be a winner. Once a good prototype has been produced out of that process, then it is important to back-test using the **"Every tick"** Model to verify results more accurately, which is much slower than using "Open prices" model. With some thorough back-testing experience a lot becomes obvious, more than can be imagined, and a very satisfying level of knowing what you are doing can be reached. Be careful of greed however, the biggest downfall of all traders in my opinion. Start with conservative strategies and build on that with more and more experience. High risk high profit strategies can have great potential and I recommend at first or always, that they only be traded on sub-accounts each representing 10-25% of total trading capital (FGM's ChartEquity setting can be used for this on one account). Profit targets trading FGM totally hands off, ranging between 3 and 7% per month depending on risk tolerance are reasonable, but certainly not guaranteed and it is the trader's responsibility to know the risk. It is also good to diversify by trading 2 or more non-correlating strategies and or currency pairs on one or several accounts (or charts using ChartEquity), which can increase potential for more profit and even risk. [Top](#)

When back-testing M1 data using "Open prices" Model, only the 4 OHLC (Open-High-Low-Close) prices of each M1 bar (or candle) are used, so the results are more conservative than using "Every tick" Model which randomly creates the ticks from the volume of each M1 bar. These ticks are all prices ranging between the High and Low prices of the M1 bar which exposes the strategy to more price activity than just the OHLC prices, and so the results from back-testing FGM strategies using "Open prices" compared to "Every tick" Model can vary significantly, and by how much, depends on the strategy itself. It's very important to test the final strategy choice using "Every tick" Model and Walk Forward back-testing to learn best how that strategy will perform live on a demo or real money account.

If trading a tight scalping strategy with a small GridSpacing of say 5 pips or less and or a small individual order TakeProfit of say 10 pips or less, Trader may want to further back-test the strategy using **Tick data at 99% modelling quality**, best obtained from the broker where FGM will be traded on a real money account. An alternative is to back-test Tick data from DukasCopy using Birt's [TickDataSuite](#). Be aware however that Tick data definitely varies from broker to broker and most times considerably. Working with TickDataSuite is easy enough, but back-testing the gigabytes of Tick data is very time consuming, days if not weeks. I only cover M1 data testing here, highly recommending that this step be done very well first, before ever considering using Tick data, which in most cases simply is not necessary. [Top](#)

**Four important stats** for fine tuning strategies are displayed in the FGM chart comments ...

**Drawdown** and **Date of Drawdown**,  
**Min MarginLevel** and **Net Profit**

1) --- **Drawdown** means the maximum floating equity drawdown reached during the time period back-tested. Equity is the account cash balance minus the total net value of all open trades. This is measured from equity high watermark to equity low. As an example, if the highest equity was \$100,000 and then lowest equity after that was \$70,000, and there was no drop lower that that from a previous equity high, then max floating equity drawdown was 30% (\$30,000). Floating means that the equity drawdown is not a loss actualized until the trades are closed by individual order stop-losses and or a CloseRun stop-loss. Larger equity drawdowns can be acceptable as long as you know the strategy well and the drawdown doesn't turn into a losing CloseRun or a margin call. Personally, I am comfortable with

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Set file = e_audnzd_bsct5-s0.05_lsp0.03-tp16.2_tp21 1.09335
Set file = m990-3_crppbts0.3_ts0.0001_ce25_us100k
Account Equity = $119,139 / Chart Equity = $44,139 1.09230
Run 1 Start Equity = $25,000 on 2014.01.01 at 23:00
Run 1 to Run 179 Net Profit = $19,073.22 (76.29%) 1.09125
Run 180 Start Equity = $44,073 on 2014.12.08 at 15:20
Current Run Net Profit = $65.77 (0.15%) 1.09020
Drawdown = 85.22% ($28,170) on 2014.07.24 at 07:58
Min Chart Equity = $4,885 / Min MarginLevel = 547% 1.08915
ProfitPercent BTS = 0.30% and TrailStop = 0.00%
MainGrid Buys: 4, Lots 0.35 / Sells: 0, Lots 0.00 1.08810

```

drawdowns up to 50% that occur only once or twice within a year or more, if profit is high enough and the strategy has been thoroughly examined and tested and my confidence is built on a solid foundation. I build strategies with CloseRunLossPercent set to values that I think will never be reached. For some strategies, I am prepared to manually intervene with hedge trades if only needed say 1 to 3 times a year, and it can be effective enough to transform the situation into a positive CloseRun. FGM Advanced includes a HedgeGrid (or 2<sup>nd</sup> grid) system [Top](#)

2) --- **Date of Drawdown** is the time when the max equity drawdown was reached. This is important to know in order to fine tune strategies to lower the potential drawdown. In the above image sample it says drawdown of 85.22%. The strategy started trading a ChartEquity amount of \$25,000 which is 25% of the \$100,000 account start equity, so the 85.22% drawdown on the ChartEquity is a 22.3% drawdown on the account equity. A margin out of the ChartEquity was my stop-loss, so a total risk of a 25% drawdown loss and possibly a bit of slippage. The 85% seems high and trader may want less risk, so she can explore this directly by going back to the exact price action time period that caused that drawdown. The back-test was done in Visual mode using "Open prices" Model to quickly test one of our potential AUDNZD default strategies using a higher lot-size (0.03). Starting in Visual mode and then immediately clicking "Skip to", it only took about 7 minutes to complete the 11 month back-test period. Displayed on the above chart image, the time of the 85% ChartEquity drawdown was 2014.07.24 at 07:58. The left arrow key on the keyboard can be used to scroll back to that time or Page Up for even faster scrolling. Home on the keyboard goes to the beginning of the test and End to the end. There's also a trick that's very useful to go directly to the beginning of the drawdown day on the chart. Double click the last date on the left bottom of the chart and it opens up a field where the date of that day, 2014.07.24 in this case, can be typed (with period separators) and then Enter, and the

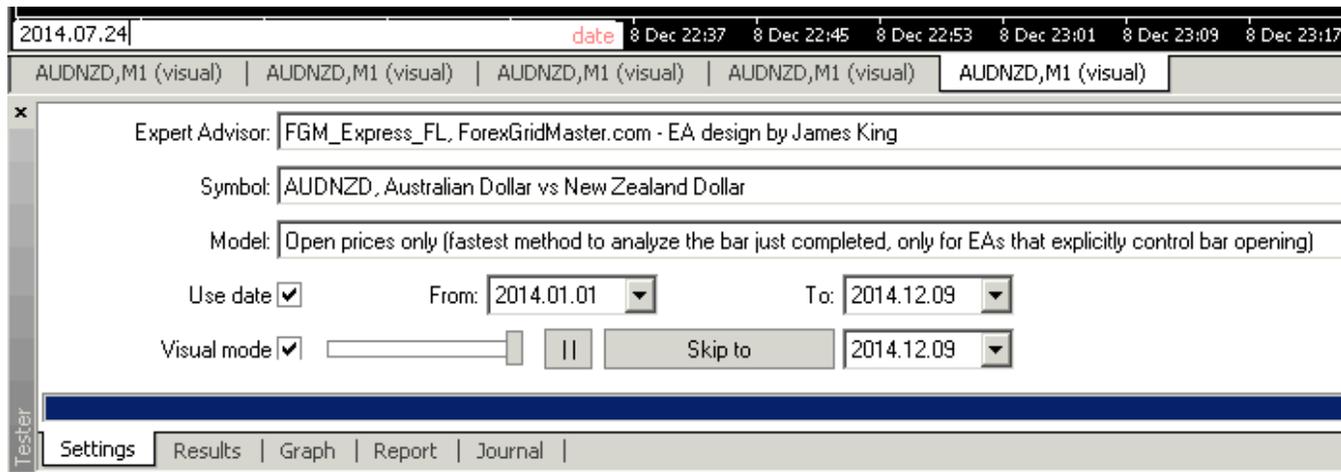


chart goes immediately to the beginning of that day. From there trader can scroll back to that Run's start, then forward, watching FGM and price action until reaching the max equity drawdown time, of 2014.07.24 at 07:58. That provides valuable visual and stats info to consider what changes to make to the strategy settings and their values to improve the strategy. Trader can then test those changes directly in that smaller time period for effective solutions.

3) --- **Min MarginLevel** is very important too as it shows how close or not the back-test came to getting margined out. Displayed in the above sample chart comments, Min MarginLevel was down to 547% which is OK and it can be better when using 1:500 leverage. When the default AUDNZD CounterTrend strategy grid is stretched and a relatively high LotSizeIncreasePercent such as 16.2% is used, there's not many pips between a 547% margin level and a 200% level where the broker probably will not allow any more trades to be opened, giving the popup red error message "Margin level limit reached, no new orders are accepted." Price can retrace and trading resume, but that would be a close call.

4) --- **Net Profit** --- In the FGM chart comments image above, it shows net Profit Run 1 to Run 179 = \$19,073 (76.29%). I multiply the number of Runs by the CloseRunProfitPercent value to make sure the result matches the Net Profit value accurately enough. So  $0.3 \times 179 = 53.7\%$ . The compounding from Run to Run and the trail stop of 0.0001% and maybe some positive slippage

TOTAL ?	or	PRINCIPAL ?	or	MONTHS ?	or	RATE ?
INPUT PRINCIPAL	>>>>>	25000				
INPUT MONTHS	>>>>>	11				
INPUT TOTAL	>>>>>	44139				
Profit Rate Compounded Monthly						
CALCULATE						
RATE =	5.303756 % compounded monthly					
Effective Annual Rate = 185.920099 %						

has created an extra 12.44% profit over the 11 months which is good. I also convert Net Profit to a profit per month percentage, making it much easier to compare results over many different back-testing time periods. I do this by using the compound calculator at <http://forexgridmaster.com/compound.php> as demonstrated in the image above right. In this example, I click the "Rate ?" button (what I want an answer for), type in 25000 in the INPUT PRINCIPAL field, then, 11 in the INPUT MONTHS field and then \$44,139. as the INPUT TOTAL (the ending ChartEquity amount) and the CALCULATE button to get 5.30% per month compounding, a reasonable result.

**Portfolio Analysis** - To back-test portfolio strategies, FGM trading AUDNZD, AUDCAD, and NZDCAD on the same account as one example, a program outside of MT4 is needed that enables combining results of more than one back-test to enable analysis of Portfolio strategies. This program [HERE](#) is excellent but buy v3 however. The new feature ChartEquity in both FGM Express and FGM Advanced is great for Portfolio trading within the same account. It can determine how much of account equity each instance of FGM trades per chart. [Top](#)

**VIDEO** - Visit [ForexGridMaster YouTube Channel](#) to view demonstrations of FGM trading in Strategy Tester. Reset the viewing quality to 480p or better in Settings at the bottom right of the video screen, to clearly see important details. The videos there complement each other and are very informative for experienced and beginner traders.

## Setup ... for back-testing FGM strategies using MT4 Strategy Tester

**1. Download** a new MetaTrader 4 installation from any MT4 broker and install it to a separate folder. I very highly recommend MT4 ECN accounts, the best for most FGM strategies. I am an IB for IC Markets in Australia ... <http://www.icmarkets.com/?camp=1085>, and they have 1:500 leverage, excellent low spreads and trade execution, and no trade restrictions on order placement, meaning that trade orders can be placed inside the spread which is ideal for FGM strategies. M1 historical data can take up a lot of disk space, so best to install the MT4 platform to a drive with at least 5 Gb of free space. Each of the MT4 platforms I use for Strategy Tester are uniquely named to avoid MT4 conflicts. I also test at other brokers and include demo start date in the name in case it has an expiry date I want to remember, for example ... "E:\0-TradeICMarkets ecn demo 208905144 Jan 12-15". Depending on the broker, sometimes the MT4 platform can only be installed using its default name, and then afterwards the installation folder, shortcuts and program listing can be renamed to whatever is preferred. Make sure to save the login and password information first however, as sometimes the password needs to be manually typed in again because the password info in the Mailbox tab is no longer available. At that point check automatically login.

**2. Open** the newly installed MT4 trading platform program and then open a free demo account as prompted, naming it exactly the name ForexGridMaster is licensed to and then install all FGM files to their proper locations. At IC Markets it is best to setup demo accounts using their web accounts, then login to the newly installed demo using the login info emailed by IC Markets. Then they will not delete the demo account if it is being used.

**3. Once logged in**, go to the MT4 top menu > Tools > Options > Charts tab and change "Max bars in history" to all 9s, as many as possible to allow the maximum download or import of M1 historical data. Set "Max bars in chart" to as low as 5000 so that Strategy Tester consumes less RAM and back-tests faster. [Top](#)

**4. Download M1 data** for the currency pair to be back-tested. Go to MT4 top menu > Tools > History Center (F2 on a keyboard) and then from the list of Symbols on the left select the pair to trade and select the "1 Minute (M1)" time-frame. Click the Download button bottom left, read the download warning and click OK, and wait for the download to complete which can take several minutes and is greyed out until complete. The OHLC price and volume

Time	Open	High	Low	Close	Volume
1993.04.27 00:00	1.31220	1.31220	1.31220	1.31220	1
1993.04.26 00:00	1.31890	1.31890	1.31890	1.31890	1
1993.04.23 00:00	1.31320	1.31320	1.31320	1.31320	1
1993.04.22 00:00	1.31480	1.31480	1.31480	1.31480	1
1993.04.21 00:00	1.32100	1.32100	1.32100	1.32100	1
1993.04.20 00:00	1.32430	1.32430	1.32430	1.32430	1
1993.04.19 00:00	1.32660	1.32660	1.32660	1.32660	1
1993.04.16 00:00	1.33140	1.33140	1.33140	1.33140	1
1993.04.15 00:00	1.33640	1.33640	1.33640	1.33640	1
1993.04.14 00:00	1.32600	1.32600	1.32600	1.32600	1
1993.04.13 00:00	1.32320	1.32320	1.32320	1.32320	1
1993.04.12 00:00	1.31770	1.31770	1.31770	1.31770	1
1993.04.09 00:00	1.31740	1.31740	1.31740	1.31740	1
1993.04.08 00:00	1.31790	1.31790	1.31790	1.31790	1
1993.04.07 00:00	1.31820	1.31820	1.31820	1.31820	1
1993.04.06 00:00	1.32550	1.32550	1.32550	1.32550	1
1993.04.05 00:00	1.31610	1.31610	1.31610	1.31610	1

data is in the table on the right and scrolling down to the very bottom shows how far back the M1 historical data goes. The data downloaded comes from Metaquotes which is generally suitable for major currency pairs. If not suitable (missing data on some pairs) use the Import button in History Center and import data from somewhere else, such as the free M1 historical data from <http://www.histdata.com> which we find is excellent for AUDNZD M1 data. Trader can check the data when importing with a fast scroll using Page Up or Down. [Top](#)

**Conversion pair** - FGM Express and Advanced have introduced a new process to MT4 automated EA forex trading called Normalization, which integrates currency conversion pairs into its calculations to obtain more accurate results when using different account-currencies trading the same strategy and same currency pair on real money accounts or in Strategy Tester. Metaquotes does not acknowledge this issue and consequently Strategy Tester results are not as accurate as they could be. For example, trading the AUDNZD using a USD account-currency, the NZDUSD is the conversion pair (ratio of account-currency USD to NZD, the quoted currency). This means in Strategy Tester that M1 historical data must be loaded for NZDUSD as well as AUDNZD for FGM Express and Advanced to work and also obtain the most accurate back-testing results. In Strategy Tester the NZDUSD price action is tracked bottom right of the chart. Same example, but on a real money account, the NZDUSD must be listed in the Market Watch window so that FGM will work and integrate the NZDUSD conversion pair price action in real time as well. Trading the AUDNZD with NZD as the account-currency, no conversion pair is needed. Trading the AUDNZD with AUD as the account-currency, the conversion pair is the AUDNZD itself. Our master programmer solved this important issue. ☺

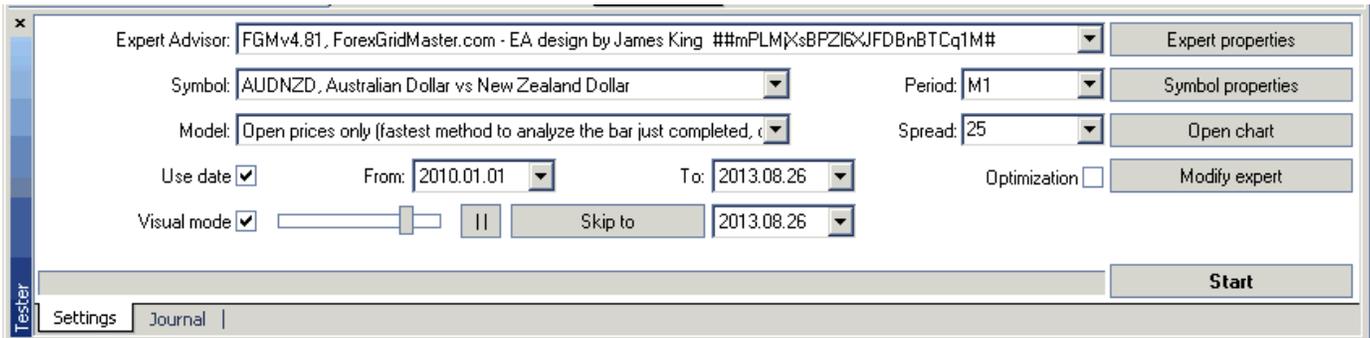
**5. Before starting** a back-test in Strategy Tester, it is important to fix the spread of the currency pair being back-tested to a value that is most realistic. MT4 Strategy Tester by default, uses the current market spread at the time the back-test starts and applies that same spread to all of the back-test trades in the back-test time period. As an example, back-testing is started after Friday market close, the results will not be very accurate because the spreads after hours are routinely as much as 10 times higher than at other times, or even more. Also during the week's open market hours there are low volume trading times when the spread is also higher than normal and during high volume trading times the spread can be much lower. Strategy Tester now enables the spread to be fixed by setting the value in points in the small "Spread:" field on the right just above Optimization. 25 points as an example means 2.5 pips. I highly recommend Spread Monitor EA, an excellent tool to monitor spreads live and keep a running average from its start ... <http://expert4x.com/new-expert4x-broker-spreads-monitoring-indicator/>. Once Spread Monitor EA has monitored the spread of a pair for a few weeks then choosing an appropriate spread to fix for that pair for a back-test is much easier. I generally use the average spread plus commission value (ECN account) plus a few more points to be more on the safe side. It is good to always keep Spread Monitor running to track the average spread over several months and different market conditions. Also it is good to run it from a VPS with low latency to the broker server which also provides 24/7 reliability. [Top](#)

Back-testing with the MT4 platform disconnected from the broker is also possible, and advisable for the most control and accuracy, by adding a fake proxy server to the MT4 platform to block it from connecting to the broker's server. Open the MT4 platform > top menu >Tools > Options > Server tab > Enable proxy server > Proxy... (button on right), set Server: 0.0.0.0:111 > SOCKS5 > Leave Login and Password fields blank, click OK, close the MT4 and the platform will disconnect and remain disconnected from the broker server when started up again. Not only is it an advantage to back-test without Internet, it also enables the best control of M1 data. MT4 when connected can or will change some or all of the imported M1 data when connected. **Important** - When disconnected, edit the "AccountNameTester" entry in \tester\FGM\_Express.prf (or Advanced) file by replacing the "d"s and the default name between the "d"s with the exact name the license was created for (case sensitive). Then trader is independent of the broker for as long as she likes.

## Back-testing Instructions

As shown in the image below, select *Expert Advisor*, *Symbol*, *Model*, *Period* (M1 only for FGM), and *Spread*. Check the *Use Date* box and select a date range From: 0000.00.00 To: 0000.00.00. Use *Visual Mode* for watching how the strategy performs on the chart which I highly recommend for the best information to use for adjustment of the settings and their values. Use the Visual mode slider at anytime to speed up or slow down the trading action. Leave *Optimization* unchecked as that is best done later if needed. It's also important to be able to see all the action within a grid Run range. To do that, click and hold on the right side of the chart within the price scale and drag down to contract the price and grid range on the chart, or drag up to expand, or double click to return to the default. Play with the slider and price range contraction and expansion as well as the pause button to quickly get a feel for how useful it is. Be careful not to accidentally click the "Skip to" button as that stops Visual mode until another back-test is started. The "Skip to" button after starting Visual mode speeds up back-testing considerably

until it reaches the date set for it to end. It is still possible however to scroll back the chart manually to see different time periods within the back-test period. Also the End, Home and arrow keys on the keyboard can be used to automatically scroll back or forward in the back-test during or after it is testing, by just holding the keys down. [Top](#)



When back-testing M1 historical data using “Open prices” model, modelling quality “n/a” will be seen in the results report statement simply because there are no ticks being modelled, only the OHLC prices are used. When back-testing using “Every tick” Model, modelling quality “25%” will be seen but that’s not exactly true. It can be as good as 90%, but using M1 data cannot show a higher value than 25%, a MetaTrader quirk shall we say. Testing higher time frames like M5 or H1 can result in 90% modelling quality but be sure to **ONLY back-test FGM on M1 data**, as any higher timeframe is useless, giving very inaccurate results. For further info on Strategy Tester and more, in the MT4 platform top menu go to ... Help > Help Topics > Client Terminal > Articles > Tester, where more info can be found in several articles about Strategy Tester. [Top](#)

In Strategy Tester click the “*Expert Properties*” button on the top right, and in the *Inputs* tab, enter settings values in the “*Value*” column”. Preset files can also be loaded or saved using the buttons on the bottom right. The *Start*, *Step* and *Stop* columns are ignored, as are the checkboxes. They can be used later when using the Optimization feature of Strategy Tester. Good to save the created preset file before starting the back-test. That preset file is stored by default in the MT4 Data \tester folder but can also be saved anywhere convenient, and hopefully uploaded to the [FGM forum](#) when a winner or potential one has been created to share and receive input from other traders.

Also in the Expert Properties window on the *Testing* tab, “*Initial deposit*” can be changed to whatever wanted by choosing from what is listed or by typing in the amount desired. Also account currency can be changed to 1 of the 4 choices listed ... USD, EUR, GBP, and CHF or type in whatever base currency desired that the broker offers. I generally change the initial deposit to \$25,000 or \$100,000, uncheck Genetic algorithm, and choose “Optimized parameter: Balance” so that all results are available and none filtered out, and leave the other settings as is. The higher the “*Initial deposit*” is, the more accurate the lot-size increases are as the grid expands, because they must be rounded off at the broker restriction of 2 decimal places. To see this clearly, set the MaxPendingOrders to 10 or more, then start the back-test and the chart will show the increased lot-sizes of those trade orders. Then set MaxPendingOrders back to 1 which is all that is needed for back-testing. Depending on the strategy settings choices, a higher initial deposit may be needed to get the incremental lot-size progression desired.

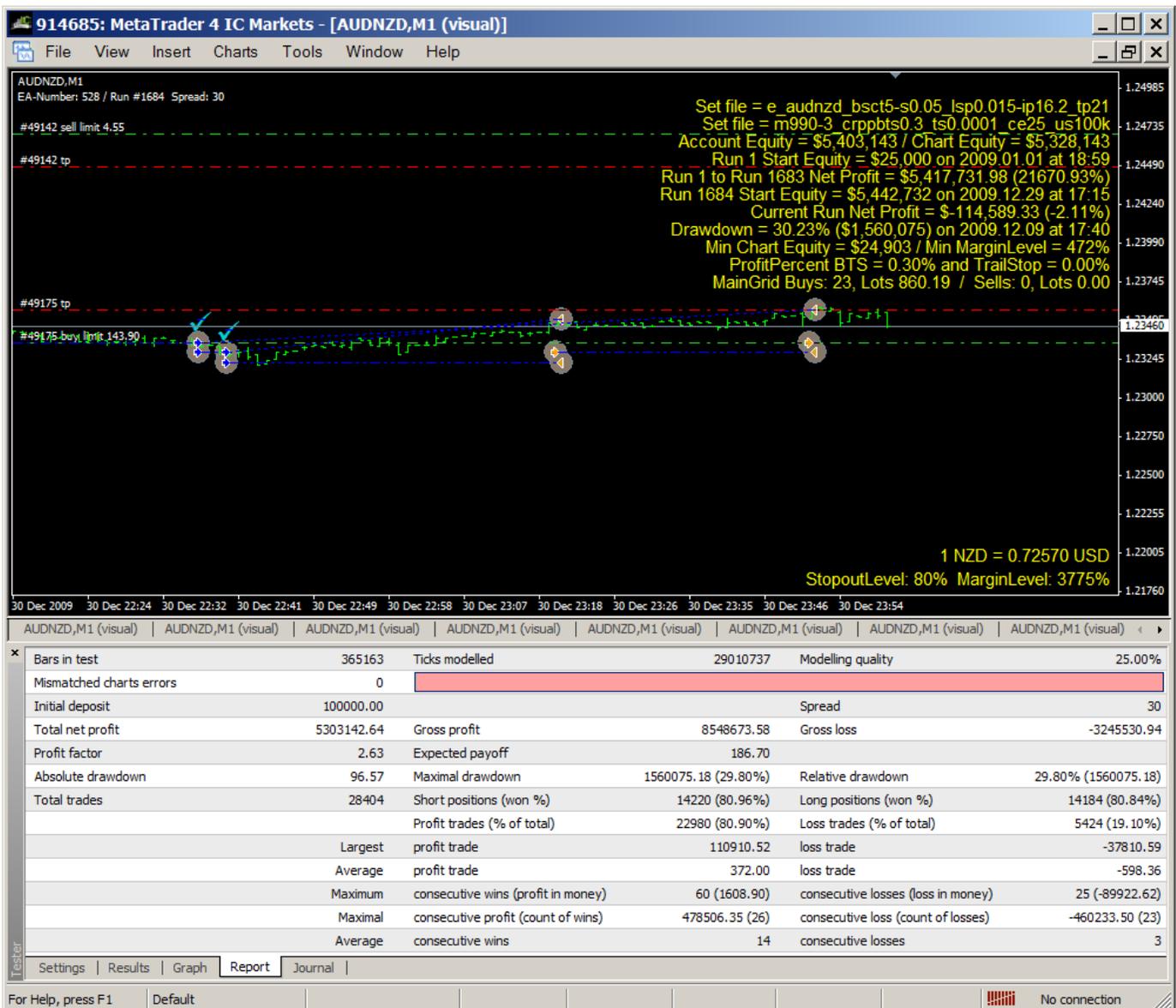
Click OK, closing the Expert Properties window, and then go to the Journal tab at the bottom of the Strategy Tester window, right click on any entry in the Journal window and click “Clear All Journals”. Go back to the Settings tab and click the Start button on the very bottom right of the Strategy Tester window to start the back-test.

It will take anywhere from a few seconds (“Open prices” Model) to several minutes (“Every tick” Model) for Strategy Tester to first load the M1 data to back-test, and then depending on the strategy settings and speed of the computer, when using the “Open prices” Model, which I recommend to start with, it will take about 10 to 30 minutes to back-test a time period of 6 months to a year or so, depending on how fast the computer is and how much time is spent in Visual mode not using the “Skip to” feature. Once back-testing has finished, open the “*Report*” tab on the bottom to see results (image of sample below). Right click on the info and the whole report can be saved, which can be very large depending on the strategy and time period tested. I just finished testing the time period from 20090101 to 20091231 to extract the report results below and the report file is 43 Mb, difficult for a browser to even open. To save large files like this, compress them into a zip which reduces to at 5-10%. [Top](#)

A few statistics to take note of:

- **Total net profit** - The *Gross profit* minus the *Gross loss*.
- **Profit factor** - The ratio of gross profit to gross loss. Higher is better, anything above 1.5 is good.
- **Maximal drawdown** - The highest drawdown from closed trades, a CloseRun loss as an FGM example.
- **Relative drawdown** - The highest drawdown from a high equity point to a low equity point.

The "Results" tab at the bottom of Strategy Tester displays the details of opened and closed orders, including trailing stop, take profit and stop loss. Click the "Graph" tab to get a visual representation of results. When back-testing, examine all these results closely to ensure that the strategy is working as intended. If the strategy meets expectations, then back-test it again, but for at least a 3 year time period. If it still does well, then it is time to do an Optimization test to possibly find even better settings for lower drawdown and more profit.



The Net Profit in the above image equates to 56% per month compounding to 21,671% profit over the 2009 year, 12 months. If only the AUDNZD price action was like that now! I have only paid attention to the 10 or so most popular currency pairs in the last 5 years or so. Now I want to explore them all to see if there is another opportunity like there was back in 2009 and earlier with the AUDNZD. Lots to do. Participation in the forum is needed please!

## Optimization Instructions

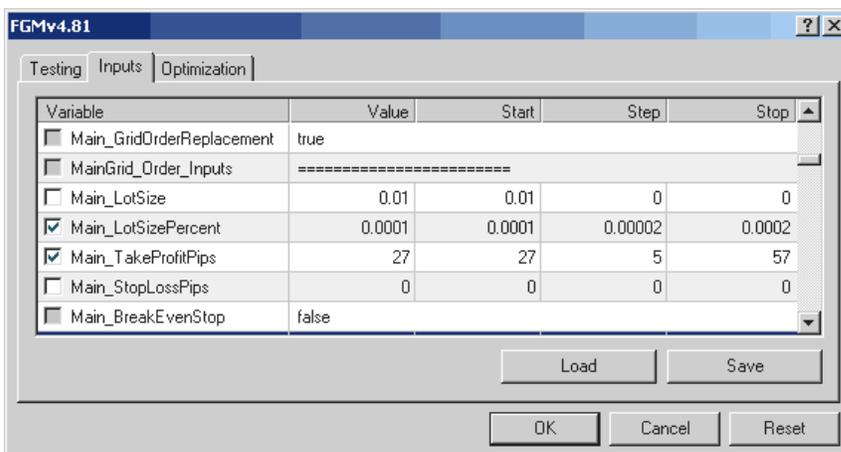
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The MT4 Strategy Tester Optimization feature enables testing of 100s to 1000s of variations of FGM settings and their values to find what is most profitable for the selected currency pair and date range. While the Optimization process will return the most profitable settings for the selected date range, this is no guarantee that these settings will be profitable in the future. Market conditions change often, so depending on the strategy, it can be important sometimes to re-optimize FGM settings every 6 months or so for best results.

To run an Optimization, same as running a back-test, select ForexGridMaster from the "*Expert Advisor*" drop-down box menu, the currency pair from the "*Symbol*" drop-down box menu, and the M1 timeframe from the "*Period*" drop-down box menu. For "*Model*", select "Open prices", unless optimizing an EA that runs on tick data. In that case, select "Every tick". It is important when first learning this, to try both on the same time-period of back-testing to see the differences. Check the "*Use Date*" option and select a the time period range to optimize for. Lastly, make sure that "*Optimization*" is checked and "Visual mode" unchecked. [Top](#)

Click the "*Expert Properties* button" to open the expert advisor settings. Under the "*Inputs*" tab is where to enter the range of values to optimize for each setting desired to be optimized. The "*Start*" column will be the lowest value for a given setting, while the "*Stop*" column will be the highest. The "*Step*" column is the amount that the optimizer will "step through" from the Start to the Stop setting.

In the image on the right, values for the input settings Main\_LotSizePercent and Main\_TakeProfitPips are being optimized. The Start value for Main\_LotSizePercent is 0.0001, the Step is 0.00002, and the Stop is 0.0002. The Optimizer will then test each of these Main\_LotSizePercent values ... 0.0001, 0.00012, 0.00014, 0.00016, 0.00018, and 0.0002. The Start value for Main\_TakeProfitPips is 27, the Step is 5, and the Stop is 57. The Optimizer will then test using each of these Main\_TakeProfitPips values ... 27, 32, 37, 42, 47, 52, 57. Use a start, step and stop value that is appropriate for the setting being optimized. I generally do not optimize any more than 5 settings per Optimization cycle and 3 or 4 steps per setting. It depends on how fast the computer is and the wait time period desired for all results to finish.



The checkbox on the left must be selected for that setting to be optimized. Any settings that aren't checked will use the number in the "*Value*" column only when optimizing. Under the "*Testing*" tab, the "*Initial*" *Deposit* can be adjusted to something that may be more realistic. Leave the other settings at their defaults except best to uncheck "Genetic algorithm" to receive ALL results which is important for best analysis and final strategy choice.

When ready to begin optimizing, click "*Start*" button at the bottom right of the Strategy Tester window. Depending on the back-testing time period, modelling method and the number of settings to be optimized it can take anywhere from a few hours to several days (using Every tick model) and even weeks (using tick data). If it's taking too long, consider shortening time period, using fewer settings, larger step values and or faster back-test model. After completing a few Optimization tests, it becomes easy to do and Optimizations can run for long periods of time totally hands off. It's a great tool when working with potential profitable strategies.

Once Optimization is finished, open the "*Optimization Results*" tab and double-click the "*Profit*" or "*Drawdown %*" column titles to sort the results. Select and double-click any Pass in the results entries to load that preset file into FGM for trading right away, and it also automatically switches to the Settings tab where the Start button can be clicked again to back-test with those settings selected from that Pass. [Top](#)

Pass	Profit	Total trades	Profit factor	Expected Payoff	Drawdown \$	Drawdown %
2	101115.85	14333	1.87	7.05	23021.06	19.43
1	142234.72	16677	1.87	8.53	31055.71	20.13
3	81125.73	12449	1.97	6.52	15643.33	20.47
5	81597.98	11282	1.95	7.23	19422.65	28.95
4	165334.00	16911	1.79	9.78	42644.53	30.09

## Walk Forward Analysis Instructions

While back-testing and optimization gives a good idea of how FGM will trade, extensive Walk Forward back-testing needs to be done to ensure that the trading strategy is truly profitable and reliable. Walk Forward analysis consists of multiple cycles of back-testing by staggering start days and weeks, and analysing results of testing over a long back-testing time period. The [Walk Forward Analyzer for MetaTrader](#) allows Walk Forward back-testing to be done quickly and easily. Visit ... <http://www.easyexpertforex.com/walk-forward-analysis.html> to see more about Walk Forward testing. Otherwise, this process can easily be done manually, but it will be more time consuming.

Darwin's Walk Forward Analyzer can also be downloaded for free from here ...

<http://www.trade2win.com/boards/trading-systems/181362-darwins-walk-forward-analyzer-v0-1-free-open-source.html>

I have not yet gotten to comparing the two different Walk Forward Analyzers yet however.

## Final Notes

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When back-testing using Strategy Tester, the latency is close to 0 ms because it is all done on the same computer, no Internet or network to travel across. When trading real money, it is best to trade ForexGridMaster using a VPS in the same city as the broker server. For example, I trade using a [Commercial Network Services VPS](#) (the very best) in New York where my broker IC Markets has their server as well, in fact, they are in the same data center with a special ultra fast pipeline between them, so only a few ms (mille-seconds) needed for most trade order executions.

May the pips be with you, James King and Team

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Suggestions for further improvement are invited.

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**Disclaimer** - All results obtained from back-testing, walk-forward and optimization as described in this guide should only be considered as an indication of the potential profitability and or risk of ForexGridMaster. Past performance is not indicative of future results. ForexGridMaster cannot guarantee the accuracy of performance and or results of the processes described herein. Individual circumstances, experience, skills and trading objectives have not been taken into account, therefore this cannot be considered as a personal recommendation or investment advice.