

# TraderXL Pro Package

Technical Analysis, Data Downloading, Strategy Backtesting and  
Neural Network Analysis using Microsoft Excel

A White Paper

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## ***The Power of Technical Analysis using Excel***

Successful money managers know that technical analysis is a crucial tool for finding future trading opportunities and making better informed and more effective trades. They also know that having instant access to historical and current stock, index, options, and mutual fund quotes lets them make better informed trades and react faster to changes in the market. TraderXL Pro Package is a suite of technical analysis, strategy backtesting, data downloading, neural network analysis and portfolio management tools for Microsoft Excel that are easy enough for beginners to use but powerful enough for the most demanding professionals.

The core component of the package is AnalyzerXL, a library of 146 most effective and well-recognized technical analysis functions, indicators, and experts provided in the form of Excel formulas. The tight integration of AnalyzerXL with Microsoft Excel makes customization tasks much easier than when performed using competing software packages. With just basic knowledge of VBA (Visual Basic for Applications), users can easily develop sophisticated custom strategies, indicators and experts in a fraction of the time it would take with other software. However, VBA knowledge is not required. AnalyzerXL also provides graphical tools for construction of custom strategies, indicators and functions. Users can also create and name macros using the AnalyzerXL interface.

Because trading methods you develop should be able to work in the past as well as in the future, it is important to test them on historical data - a process known as backtesting. Accurate and thorough backtesting is essential to building confidence in a strategy before it is implemented. The TraderXL Pro Package includes BacktestingXL, a comprehensive solution for stress testing and evaluating trading strategies.

TraderXL Pro Package also includes powerful neural network-based tools for forecasting and classifying data in Excel. Neural networks are proven to be more accurate at making forecasts based on complex historical data than traditional methods. This can give analysts a critical edge in predicting the next market move. Their ability to determine non-linear relationships in data also makes them well-suited for classifying or "data mining." NeuroXL Classifier classifies data based on your preferences. For example, you may be interested in classifying stocks as buy, sell, and hold based on certain criteria.

Most software tools for downloading quotes available today require an unwieldy import process to get downloaded quotes into popular analysis tools such as Microsoft Excel. This wastes precious time that could make the difference between a good trade and a missed opportunity. TraderXL Pro Package includes tools for downloading free historical, 15-minute delayed, and fee-based real-time stock, index and mutual fund quotes, as well as 15-minute delayed

options quotes directly into Excel. The software can handle downloads and updates for tens or hundreds of tickers simultaneously.

This white paper will discuss the various Excel tools included in the package, and demonstrate the flexibility and power that performing technical analysis, backtesting, data downloading and portfolio tracking directly in Excel provides.

## ***Performing Technical Analysis with AnalyzerXL***

Technical analysis is a visual method for analyzing market activity. It provides an investor with key indicators, showing where market forces are providing support or resistance, where a stock is overbought or oversold, and where a breakout to the upside or downside will occur. Technical analysis includes varied activities such as charting past and present price movements, trading volume, and the number of stocks advancing and declining on a specific day or over a period of time.

AnalyzerXL is a library of the 146 most effective and well-recognized technical analysis functions, indicators, and experts provided in the form of Excel formulas. The formulas implement only proven algorithms and have been well-tested in real-world scenarios. For a comprehensive list please visit the [www.analyzerxl.com](http://www.analyzerxl.com) Web site. AnalyzerXL provides all the necessary components for successful technical analysis:

### **Charts**

Successful technical analysis requires clear, concise, and customizable charts that provide you with the visual indicators you need to react quickly and decisively. AnalyzerXL lets you build several types of charts, including line, candlestick, and bar charts. You can easily change periodicity and update data with just one click.

### **Indicators**

An **indicator** is used to determine the trend of the market, the strength of the market, or the direction of the market. Popular indicators included with AnalyzerXL include Moving Average, Breadth of Market, Relative Strength Index, and Short Interest Ratio. AnalyzerXL provides you with an exhaustive list of indicators that you can add to your analysis with just a few mouse clicks. This makes it easy for you to create a sophisticated trading system customized to your needs.

### **Experts**

An **expert** is a collection of one or more principles, rules or indicators, such as Bill Williams Profitunity, that an investor follows and applies to make successful trades. Expert functions produce special outputs, such as Buy/Sell signals, trend directions and more. AnalyzerXL provides you with everything you need to apply experts successfully, and provides you with an exhaustive collection of the most highly-regarded and effective experts available today.

For example, an analyst can, in just two steps, apply the Cutler's RSI Expert to historical Microsoft (MSFT) data, producing the Buy/Sell signals shown below:

	A	B	C	D	E	F	G
1	Date	Open	High	Low	Close	Volume	Cutler's RSI
2	12.08.2002	17.20	17.61	17.00	17.53	35477300	
3	13.08.2002	17.40	17.99	16.69	16.70	48730600	
4	14.08.2002	16.92	18.32	16.72	18.29	55038600	
5	15.08.2002	18.34	18.80	18.02	18.61	51558800	
6	16.08.2002	18.06	19.02	17.98	18.75	54921500	S
7	19.08.2002	18.61	19.63	18.44	19.46	51720400	B
8	20.08.2002	19.18	19.32	18.75	18.97	45347100	S
9	21.08.2002	19.23	19.67	18.80	19.59	57883400	S
10	22.08.2002	19.43	19.50	18.89	19.15	55744000	-
11	23.08.2002	18.84	18.84	17.89	17.96	48371600	B
12	26.08.2002	18.10	18.22	17.61	18.13	46069000	-
13	27.08.2002	17.91	17.96	17.15	17.18	60623500	B
14	28.08.2002	17.11	17.44	16.77	16.84	55663700	B
15	29.08.2002	16.58	17.45	16.51	17.14	50516700	B
16	30.08.2002	16.89	17.08	16.65	16.67	32857100	B
17	03.09.2002	16.47	16.50	15.85	15.86	58140400	B
18	04.09.2002	15.81	16.17	15.58	16.11	66790200	-
19	05.09.2002	15.81	15.83	15.03	15.11	86969600	B
20	06.09.2002	16.40	16.55	16.11	16.22	77957400	-
21	09.09.2002	16.03	16.34	15.69	16.08	51444400	-
22	10.09.2002	16.19	16.64	16.10	16.47	57279400	-
23	11.09.2002	16.73	17.04	16.58	16.62	45864800	S
24	12.09.2002	16.36	16.38	15.67	15.70	48750200	-

## Trading Systems

AnalyzerXL provides all the tools investors need for creating their own winning **trading systems**. A trading system is a combination of one or more functions, indicators and experts that a trader uses to identify market trends. The visual patterns displayed by a trading system provide the basis for developing trading strategies and determining successful and profitable entry and exit strategies.

The AnalyzerXL component of the AnalyzerXL Package provides traders and investors with all the tools necessary for successful technical analysis. With over 146 functions, experts, and indicators, it provides enough options and flexibility for even the most demanding analyst.

## ***Strategy Backtesting using BacktestingXL***

Trading methods you develop should be able to work in the past as well as in the future. Therefore, after developing a new strategy, it is important to test it on historical data - a process known as backtesting. Accurate and thorough backtesting is essential to building confidence in a strategy before it is implemented. Many portfolio management systems lack a comprehensive backtesting system for investors to stress test and verify their trading rules and models. The BacktestingXL add-in brings this essential functionality to the TraderXL Pro Suite.

Users have the option of using VBA (Visual Basic for Applications) to develop strategies for BacktestingXL or, alternatively, to implement pre-defined testing codes included with the software. There is no need to learn a proprietary scripting language as is common with competing packages. This lets users focus on developing strategies instead of learning and debugging code.

BacktestingXL supports advanced functionality, including pyramiding (change of position size during an open trade), short/long position limiting, commission calculation, equity tracking, out-of-money controlling, and buy/sell price customizing. You can trade at Today's or Tomorrow's Open, Close, High or Low prices.

BacktestingXL provides detailed reports of the results of strategy testing. Each report has seven sections:

- **Summary Report** - the most important backtesting results in a compact form
- **Data Series Report** - trades, equity and profit/loss dynamics displayed in tabled and chart formats
- **Trades Report** - trades grouped by positions
- **Trades (chronological) Report** - trades in chronological order
- **Signals Report** - all signals produced by a strategy and their results (order processed or not)
- **Settings Report** - all configuration settings
- **Strategy Code Report** - raw strategy code

BacktestingXL provides you with all the tools you need to stress test and evaluate thoroughly your trading rules, allowing you to gain confidence in a strategy before implementation.

## ***Forecasting using NeuroXL Predictor***

A critical task for any money manager or investor is predicting the future value of stocks, options, mutual funds and other investment vehicles based on historical data. TraderXL Pro Package includes the powerful NeuroXL Predictor add-in, a tool that harnesses the power of neural networks for solving forecasting and estimation problems. It is extremely easy to use, and requires absolutely no prior knowledge of neural networks.

Neural networks excel at determining non-linear relationships in input data - this makes them ideally suited for forecasting dynamic systems like the stock market. The price of stocks and other investment vehicles are influenced by many different factors that are often interrelated. Traditional forecasting methods, such as regression and data reduction models, are limited in their effectiveness as they make assumptions about the distribution of the underlying data, and often fail to recognize the interrelatedness of variables.

NeuroXL Predictor's neural network technology recognizes even subtle relationships between variables. This results in more accurate forecasts than traditional methods. After downloading historical data using DownloaderXL or BulkquotesXL, with just a few clicks of the mouse you can predict future values using NeuroXL Predictor.

## ***Classifying Data using NeuroXL Classifier***

TraderXL Pro Package also includes the NeuroXL Classifier add-in for Excel. This tool automatically classifies your data according to your preferences. NeuroXL Classifier implements *self-organizing* neural networks, which perform categorization by learning the trends and relationships within your data. For example, you may be interested in categorizing a group of stocks as buy/sell/or hold based on trends in the historical data.

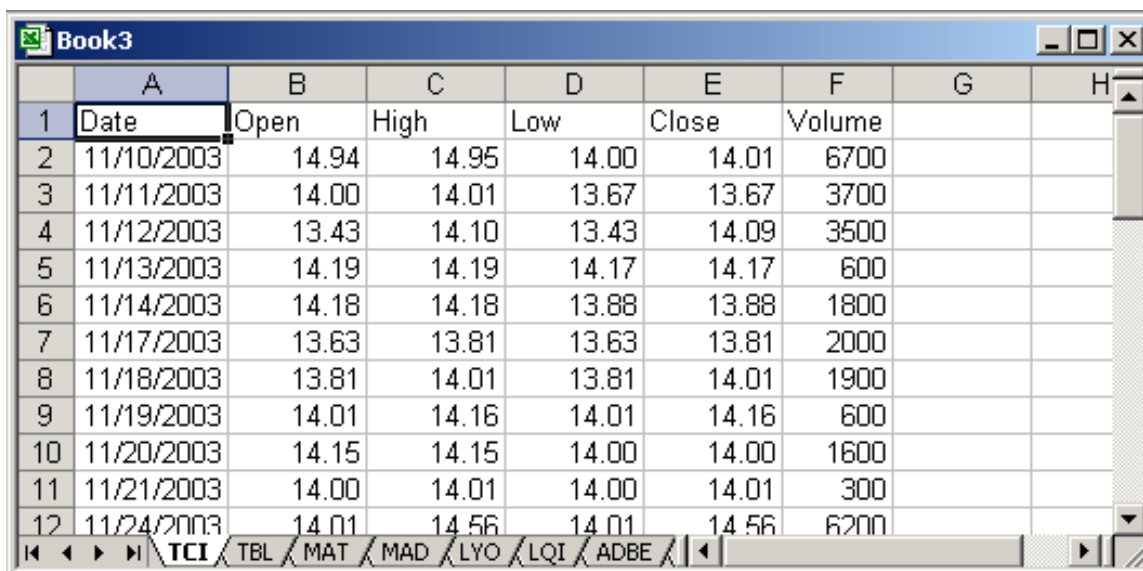
NeuroXL Classifier, like NeuroXL Predictor, requires no prior knowledge of neural networks. You simply supply the input parameters, and the software does the work of training and implementing the neural network. NeuroXL Classifier is also seamlessly integrated with Excel and fully compatible with all other components in the TraderXL Pro suite.

## Downloading Bulk Investment Data with BulkQuotesXL

The BulkQuotesXL component of the AnalyzerXL suite is a powerful data downloading solution that can easily handle simultaneous updates/downloads for tens or hundreds of tickers. It downloads free historical stock, index and mutual fund data from Yahoo! Finance for major worldwide exchanges, and free historical end-of-day data for financial futures, commodity futures, and indexes from PiFin.

Using the AnalyzerXL component, you can apply technical analysis functions directly to downloaded data from BulkQuotesXL. You can also specify your own custom macros to be run with each data download. Candlestick, bar, and line charts can also be easily generated and manipulated.

The downloaded data for each ticker can be placed on a separate worksheet, as shown below:



	A	B	C	D	E	F	G	H
1	Date	Open	High	Low	Close	Volume		
2	11/10/2003	14.94	14.95	14.00	14.01	6700		
3	11/11/2003	14.00	14.01	13.67	13.67	3700		
4	11/12/2003	13.43	14.10	13.43	14.09	3500		
5	11/13/2003	14.19	14.19	14.17	14.17	600		
6	11/14/2003	14.18	14.18	13.88	13.88	1800		
7	11/17/2003	13.63	13.81	13.63	13.81	2000		
8	11/18/2003	13.81	14.01	13.81	14.01	1900		
9	11/19/2003	14.01	14.16	14.01	14.16	600		
10	11/20/2003	14.15	14.15	14.00	14.00	1600		
11	11/21/2003	14.00	14.01	14.00	14.01	300		
12	11/24/2003	14.01	14.56	14.01	14.56	6200		

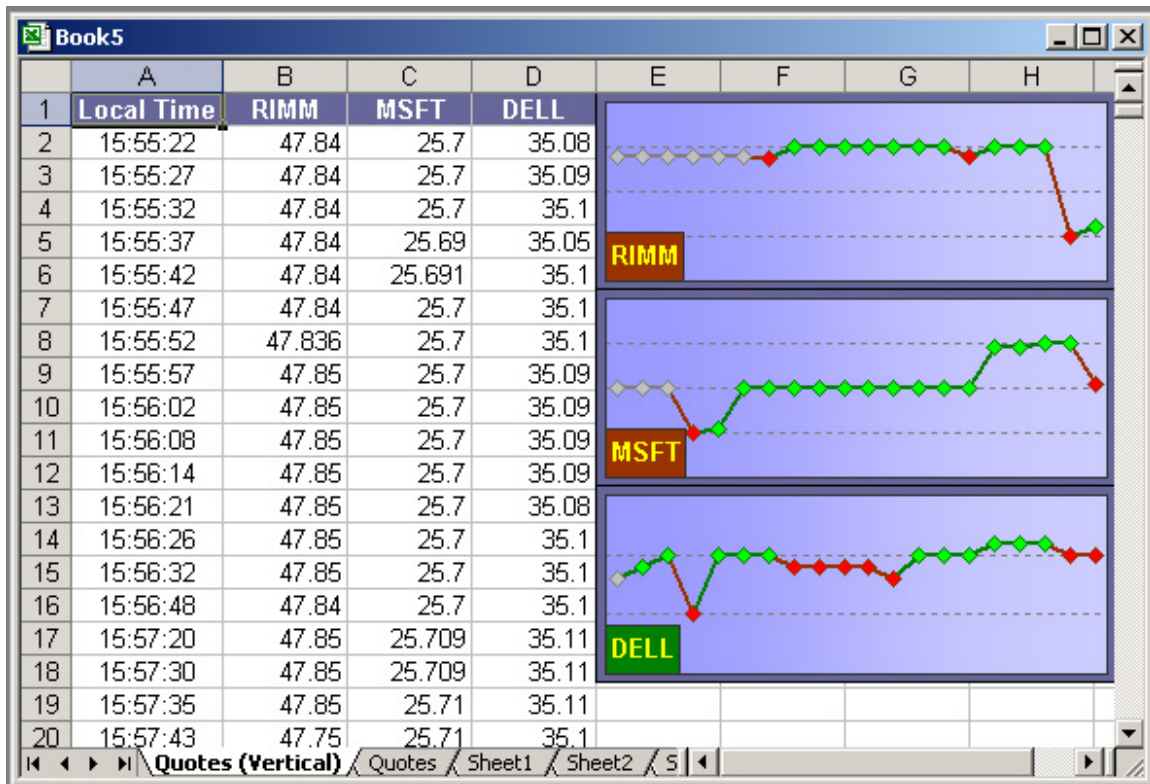
This is just one of the many ways you can download data to Excel. BulkQuotesXL provides a number of pre-defined templates, including column-by-column, row-by-row, and summary templates. This makes it easy for users to download data into a format that suits the way they work. You can also selectively update data, choosing only those tickers you need to see updated right away, saving you time and bandwidth.

Also included in the TraderXL Pro package is the DownloaderXL add-in, which is very useful for downloading historical data for one or a small number of stocks. BulkQuotesXL is recommended, however, if you are interested in downloading tens or hundreds of tickers.

## Accessing Real-time Market Data with RTQuotesXL

The next component of the suite, RTQuotesXL, downloads fee-based real-time stock, index, futures, options and mutual fund quotes from Yahoo! Finance and PCQuotes. It also downloads free 15-minute delayed quotes from Yahoo! Finance.

Data is updated continuously as a background process. Since the data is available in Excel form, it is easy to integrate your own macros or apply technical analysis functions from AnalyzerXL. In the example below, the price of three stocks is being constantly updated in Excel, with a real-time chart also displayed for each stock:



RTQuotesXL can also be used as a Dynamic Data Exchange (DDE) Server, meaning it can provide real-time quotes to any third party application which is DDE-compliant.

## Downloading Options Data with OptionsXL

The next component in the TraderXL Pro Package, OptionsXL, downloads free options data directly into your Microsoft Excel spreadsheets. The downloaded information is quite comprehensive, including Strike Price, Bid, Ask, and Expiration Date for all downloaded Calls and Puts, as shown below for Microsoft (MSFT):

	A	B	C	D	E	F	G	H
1	MSFT (Nasdaq)		28.21	-0.03				
2	Jan 07 200	Bid	28.23	Ask	28.24	Size	1x52	Vol
3	<b>Calls</b>	Expire Dat	Strike Pric	Last Sale	Net	Bid	Ask	Vol
4	MQFAV-E	04 Jan	12.50	13.40	pc	15.70	15.80	0.00
5	MQFAV-A	04 Jan	12.50	13.40	pc	15.60	15.80	0.00
6	MQFAV-P	04 Jan	12.50	16.20	pc	15.50	16.00	0.00
7	MQFAV-X	04 Jan	12.50	14.80	pc	15.40	16.20	0.00
8	MQFAV-B	04 Jan	12.50	15.60	pc	15.70	15.80	0.00
9	MQFAC-E	04 Jan	15.00	13.10	--	13.20	13.30	4.00
10	MQFAC-A	04 Jan	15.00	11.10	pc	13.10	13.30	0.00
11	MQFAC-P	04 Jan	15.00	12.30	pc	13.00	13.50	0.00
12	MQFAC-X	04 Jan	15.00	12.80	pc	12.90	13.60	0.00
13	MQFAC-B	04 Jan	15.00	12.40	pc	13.20	13.30	0.00
14	MQFAW-E	04 Jan	17.50	8.20	pc	10.70	10.80	0.00
15	MQFAW-A	04 Jan	17.50	7.80	pc	10.60	10.80	0.00
16	MQFAW-F	04 Jan	17.50	10.00	pc	10.50	11.00	0.00

OptionsXL downloads data from the CBOE (Chicago Board Options Exchange) for virtually all options listed on the CBOE, AMEX (American Stock Exchange), PHLX (Philadelphia Stock Exchange), PCX or PSE (Pacific Stock Exchange), and ISE (International Securities Exchange).

Technical analysis can be easily performed on the downloaded data using AnalyzerXL. You can also apply your own custom macros and functions.

## ***Portfolio Tracking in Excel using PortfolioXL***

The PortfolioXL add-in brings powerful portfolio tracking capabilities to the TraderXL Pro suite. It allows you to create a portfolio of stocks that can be updated intraday. Specify the tickers, commission rate, purchase price and date, and PortfolioXL will monitor the current price value of your portfolio, along with the net and percentage gain/loss for each position. PortfolioXL downloads free delayed stock, index, and options quotes from Yahoo! Finance from over 50 markets worldwide.

In addition to providing you with a snapshot view of the current state of your investments, PortfolioXL will keep a detailed record of your transaction history in a separate worksheet. This gives you a complete record of all buy/sell activity and commissions paid on transactions.

## ***Conclusion***

The TraderXL Pro suite of Excel add-ins is a comprehensive technical analysis, investment data downloading, neural network analysis, backtesting, and portfolio tracking solution. The tight integration with Excel provides unmatched flexibility and opportunities for customization. TraderXL Pro Package provides similar, and, in many cases, superior functionality than leading advanced trading software packages, but at a fraction of the cost.