

User Manual

Table of Contents

1 Introduction	4
1.1 Overview of TangoTrade.....	4
1.2 The Pair Trading Strategy	6
1.3 Installing TangoTrade	7
1.4 Starting TangoTrade	9
1.5 Changing Skins/Screen Colours	12
2 Using TangoTrade.....	14
2.1 Creating Your First Group	14
2.2 Finding Good Pairs with Back Testing	18
2.3 Monitoring All Your Pairs at Once	26
2.4 Receiving Entry and Exit Signals on Your Pairs	29
2.5 Setting Up Audio and Email Alerts	32
2.6 Analyzing Beyond the Trading Signals	34



2.7 Customizing Your Own Trading System	43
2.8 Customizing and Using Entry Levels in TangoTrade.....	46
2.9 Using Co-integration with TangoTrade	49
2.10 Autoloading TangoTrade Top 30 US Equities Pairs.....	51
2.11 Using Max Loss Alert to Trigger Stops and Trailing Stops	54
2.12 Keeping Records and Position Sizing.....	56
3 Using TangoTrade with Other Markets.....	57
3.1 Real-Time Data into TangoTrade: DTN.IQFeed	57
3.2 Real-Time Data: Integrating Interactive Brokers' TWS	60
3.3 Using TangoTrade with International Stocks	62
3.4 Using TangoTrade with Futures and Commodities	64
3.5 Using TangoTrade with Options	67
3.6 Using TangoTrade with Forex and Cryptocurrencies.....	69
3.7 Using TangoTrade with Contracts for Difference (CFDs).....	73
4 How to Get the Most Out of TangoTrade.....	77
4.1 Optimum Performance	77
4.2 Semi-autotrading with TangoTrade & IB TWS	78
4.3 "Pair Trade" Order Type Activation in IB TWS	80
4.4 "Resend at Market" Function	82
4.5 Trading Mentality Required	84
4.6 Risk Management & Diversification	86
4.7 Whether to Use Max Loss Alerts & Stop Losses.....	88
5 Troubleshooting	90
5.1 Troubleshooting Installation Issues	90
5.2 Troubleshooting Running Issues in TangoTrade	91
5.3 Troubleshooting Data Issues	93
6 Other Information	94
6.1 Useful Links to Aide Your Pair Trading	94



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All the screenshots is from
PairTrade Finder ®
software

TRADING INVOLVES SUBSTANTIAL RISK. USING LEVERAGE WILL MAGNIFY YOUR LOSSES AS WELL AS GAINS. THE INFORMATION PRESENTED HEREIN DOES NOT TAKE INTO ACCOUNT YOUR PERSONAL FINANCIAL SITUATION AND THEREFORE MUST NOT BE CONSTRUED AS INVESTMENT ADVICE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE PERFORMANCE. THIS INFORMATION IS INTENDED TO BE USED AS AN EDUCATIONAL GUIDE TO TRADING ONLY. NEITHER EVENT DRIVEN INVESTOR LTD. NOR ANY OF ITS DIRECTORS, SHAREHOLDERS, EMPLOYEES, AGENTS, SUBS CONTRACTORS NOR ANY OTHER KNOWN AFFILIATES WILL BE LIABLE IN ANY SHAPE OR FORM FOR YOUR INVESTMENT DECISIONS ARISING FROM THIS MATERIAL. BY READING THIS DOCUMENT YOU UNDERSTAND AND AGREE TO ALL THE TERMS AND CONDITIONS PRESENTED ABOVE.

1 Introduction

1.1 Overview of TangoTrade

Welcome to the TangoTrade v2.0 (“TangoTrade”) User Manual. This manual is designed to help you understand the concepts within our software and how to get the most out of it. We highly recommend you take the time to read this manual as it could dramatically change your trading. So grab a cup of coffee and enjoy learning our highly popular pair trading software.

At first glance TangoTrade may seem complex or confusing. However, after reading this user manual and playing around with the software for an hour or two, you will begin to realise its simplicity and the power it provides you to be able to create and trade your own pair trading system. As far as we are aware, there is no other retail pair trading software available that comes close to performing what TangoTrade does with such an easy-to-use user interface and experience.

TangoTrade has been developed by professional traders in tandem with qualified programmers and has been continually developed over ten years. TangoTrade is constantly updated and upgraded - that’s our ongoing commitment to our subscribers. We encourage user feedback to develop our software and many user suggestions are implemented in upgrades.

TangoTrade is a stand-alone software program that runs on Windows XP, Windows Vista or Windows 10. In section 1.2 we give you detailed instructions on how to install TangoTrade on your computer free for 15 days. Getting TangoTrade installed and running is a simple process that should take you less than five minutes to implement.

What TangoTrade Can Do for You TangoTrade is a highly customizable tool you can use to generate trading signals on over 1,000,000 tradeable instruments from around the world including stocks, options, futures, CFDs, commodities and forex. It is a truly global platform to help find unique trading opportunities at a click.

TangoTrade allows you to create your own groups categorized by industry, sector, country or whatever else you can think of for grouping securities. You can then backtest all instruments within those groups



against each other to determine correlation, cointegration and for measuring the historical performance of TangoTrade's trading signals. You can then customize how these trading signals are generated and save the pairs with the best historical performance to My Watchlist. Once on My Watchlist, TangoTrade then acts as a 24/7 market radar and will watch over all pairs at once and generate real-time trading signals and other alerts as they arise.

Ease of Execution of Signals After designing your own custom pair trading system, you can use the Trading Signals window to easily see new entry and exit signals on your saved pairs. These signals come in during market hours or any other time which you can specify. TangoTrade's signals can be sent to your email inbox so you don't need to be in front of the computer all day, and you can receive and trade these signals from your phone with the help of one of many free broker applications. What's more, if you integrate TangoTrade with Interactive Brokers Trader Workstation, any of these signals received previously can be resent at current market prices for semi-automatic, 1-click execution at the time of your choosing.

Analytical Powerhouse Most importantly, TangoTrade puts a powerful analytic suite at your disposal to perform additional analysis on the trading signals. Use ratio, correlation, RSI, volatility, standard deviation and our own custom "% from the mean" charts to filter for the best trades. With quick links to news items, earnings release dates, dividend dates, ability to chart two instruments and to easily compare fundamentals, TangoTrade gives you added layers of analysis to improve your trading performance.

Ongoing Commitment to Support TangoTrade is designed to be user-friendly and to quickly perform the millions of near-simultaneous calculations required to run an effective correlation and cointegration-based pair trading system. Our software is also supported by a team of professional programmers and traders that regularly update the software to stay current with market conditions and changes. Subscriber support is available 24/6 [at info@tango-trade.co](mailto:info@tango-trade.co) with a targeted 24-hour response time.

Please turn to section 1.2 for instructions on how to download a free 15-day trial of TangoTrade. If you wish to continue using our software after 15 days, you will need to [subscribe](#).

1.2 The Pair Trading Strategy

To get a further in-depth background on the history of pair trading, how it works, why it works, its historic profitability and the sign up for a 15-day free trial to TangoTrade, please join our FREE webinar here: [Trade Like a Hedge Fund: Harnessing the Power of Technology to Deliver Market Edge](#).

TangoTrade is built around the pair trading strategy. Pair trading involves buying one instrument and at the same time shorting another instrument. This approach leaves you market neutral, as you are not betting on the underlying direction of the market, rather you are betting on the relationship between two correlated and cointegrated instruments.

Pair trading, or statistical arbitrage as it's more commonly known in the investing world, is the most popular trading strategy amongst hedge funds. Hedge funds recognise and value the reduced risk and ability to produce returns in any market environment that the pair trading strategy delivers.

Pair trading has been around since the invention of markets. Jesse Livermore, probably one of the most famous traders of all time, used pair trading back in the late 1800s. He would find a strong stock then short what he called the "sister stock". Pair trading really took off with large investment banks and hedge funds in the 1980s with the help of computers for quantitative analysis.

Today, pair trading is still a relatively new concept amongst most online traders.

That novelty is quickly changing, however. More and more online traders are beginning to see the benefits of the pair trading strategy. The go-go days of 1999 where you could wake up and buy Yahoo!, go out for breakfast, come back and have made \$3k are gone. Markets are a lot more sophisticated now, and so too must be your trading strategy.

With pair trading, it doesn't matter which direction markets trend: up, down or sideways, you can still profit. Risk is greatly reduced as you are not subject to the large directional price shocks the market can often experience (you are, however, subject to event risk which needs to be mitigated through news analysis, date screening, diversification and position sizing). Because of the reduced market risk of the "hedged" pair trading strategy, many pair traders can safely use leverage to magnify portfolio size, something that is not a safe approach when betting on a one-way movement.

We urge you to take some time out of your day and go through this User Manual with TangoTrade open on your desk. The 60-120 minutes you invest in learning our proprietary software we believe will pay handsome dividends and could dramatically change your trading and your income.

You may find it easier to print this user manual and have it in your hand whilst learning our software. The user manual is designed to flow from one section to another, giving you an overview of the software and teaching you how to extract the most value from it.



1.3 Installing TangoTrade

Everyone is welcome to download a free 15-day trial of TangoTrade. This free trial has no feature limitations and you will receive the same support provided to our already large user base. We welcome you to test out our support response by sending an email to info@tango-trade.co. Our aim is to answer 90% of all emails within 24 hours. If at any time you have trouble installing TangoTrade please email us and we will guide you through the process. We can even remotely connect to your computer and install the software for you, right in front of your eyes. We provide this service free of charge.

If you have already successfully downloaded TangoTrade, please skip this section.

TangoTrade is a Windows-based program and if you have purchased your computer within the last five years, you will have the hardware and software pre-requirements for installing our software - it does not require the latest specifications to run.

Installing TangoTrade is a simple one-step process.

Please download TangoTrade v2.0 software from [here](#). You can follow the detailed instructions on the Download page, if necessary.

The current TangoTrade Installer will automatically install Microsoft SQL Server 2012 Express LocalDB on your machine before installing TangoTrade if it does not detect that you have it already installed. SQL is a database program and creates the database where the historical and intraday securities data used by TangoTrade will be stored. TangoTrade automatically updates data into SQL so once it has setup SQL, you will not need to do anything further for updating and storing data in TangoTrade.

Our installer will also ensure that you have the latest version of Microsoft Visual C++ 2015 x64, which is required for TangoTrade to perform correctly. If for any reason the TangoTrade Installer does not install Microsoft Visual C++ 2015 x64 correctly, you can download and install it manually [here](#).

Troubleshooting on older versions of Windows: If you experience any problems in installing TangoTrade on older versions of Windows, then please make sure you have the latest version of Microsoft .NET framework installed on your machine. This .NET framework can be installed manually [here](#).

TangoTrade installation is quick and straightforward. Upon completion you should see the TangoTrade icon on your desktop. Please read on to section 1.3 for instructions on starting TangoTrade for the first time.

Email info@tango-trade.co for help with any installation issues and the support team will provide assistance or remotely install the software.

Please note only one license per computer is allowed, each machine's IP address is recorded to prevent transfer to another machine. To use TangoTrade on more than one machine, you will need to purchase additional License Keys subscriptions. Please email us at info@tango-trade.co should you need to do so. If you wish to migrate your License Key because you have upgraded or replaced your computer, email us at info@tango-trade.co and we will arrange for the migration.



Using TangoTrade with your Mac and Parallels Hypervisor or Using TangoTrade on a Virtual Machine

By default, TangoTrade License Keys come with activation on hypervisors and virtual machines prohibited. Many users, however, run TangoTrade on Mac using the Parallels hypervisor (www.parallels.com) and many subscribers like to put TangoTrade on a standalone virtual machine instance to run 24/7. In either of these cases send us an email at info@tangotrade.co and we can enable your License Key for hypervisor and virtual machine activation by switching it to a “floating mode” of authentication.

1.4 Starting TangoTrade

Please note much of the information contained in this User Manual is also available in video tutorial format. These Video Tutorials on Getting Started with TangoTrade can be [found here](#).

Before you access the Download page outlined in 1.2 above, and after you have subscribed for our 15-day free trial (you can do so [here](#)), you will be sent a Welcome email with your License Key. Look for that email in your Inbox or spam folder (and add info@tangotrade.co and info@tangotrade.co to your Contacts to ensure you can receive email support from us).

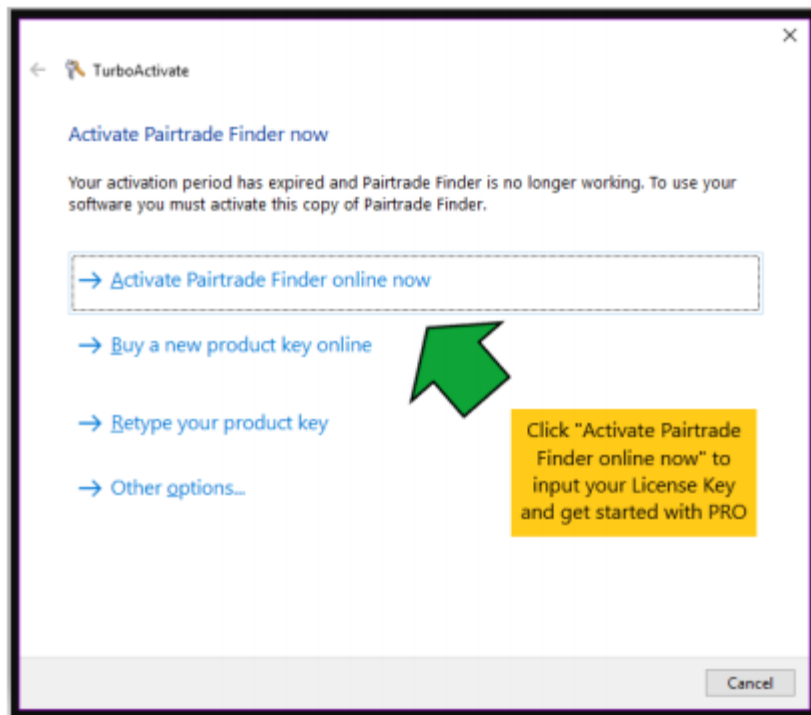
In it you will find your TangoTrade License Key, and instructions as to how to get started with the software, our tutorials and the video training course. Please also ensure you fill out our Members form to ensure you get invited to our special offers and free TangoTrade upgrades. Here are the links:

Download the Software By following instructions at <https://www.tangotrade.co/how-to-install>

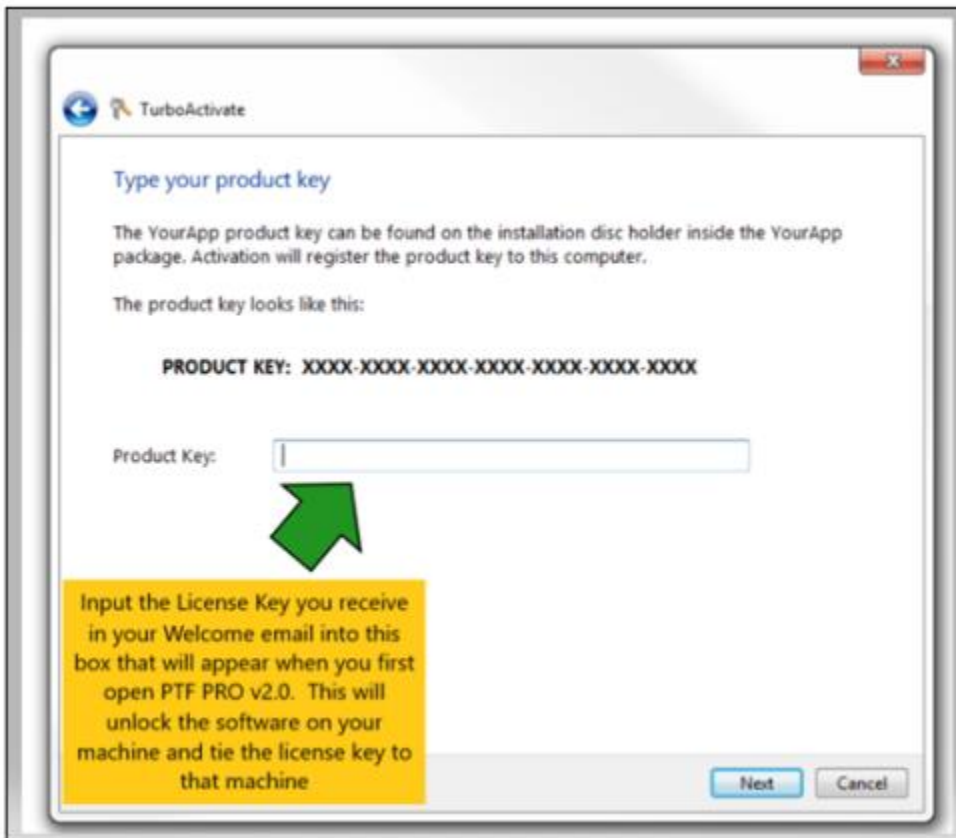
Access All of Our Getting Started with TangoTrade "How To" Tutorial Videos, please go to this link here: <https://www.tangotrade.co/tango-school>

Access to Pair Trading Video Training Course Please visit this link: <https://www.tangotrade.co/tango-school>

Open TangoTrade from your desktop. You will see the below screen once open:

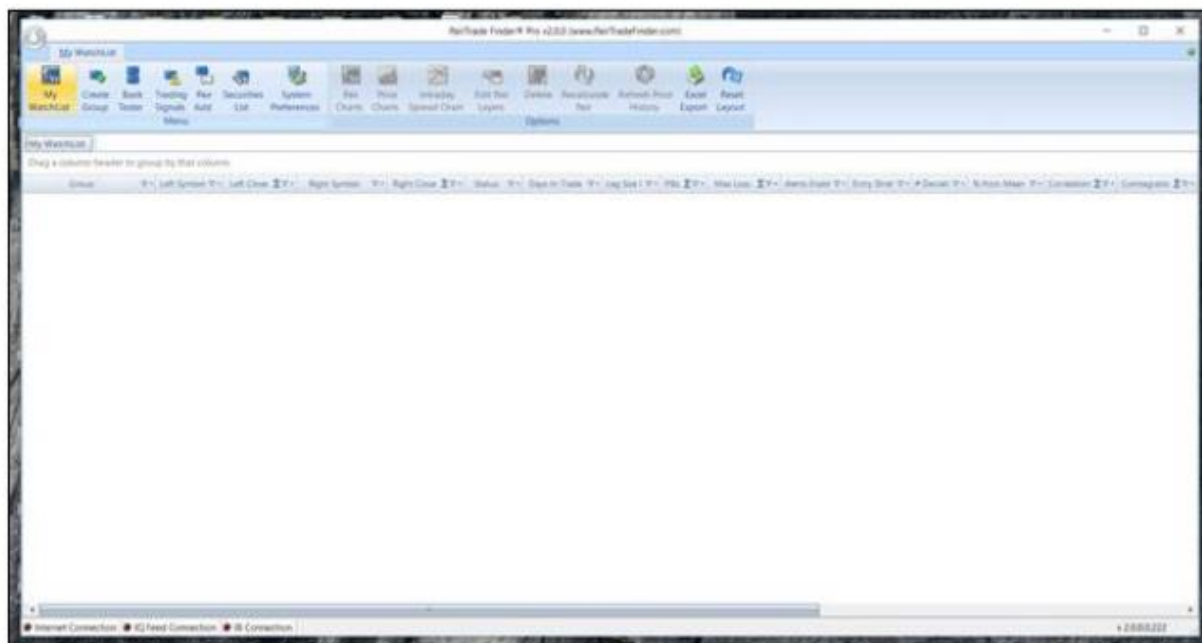


Once you click Activate you will see the following screen:



Please type in your correct License Key and click next. The license key will now be locked to the device on which it is activated.

Next you will see the below screen:

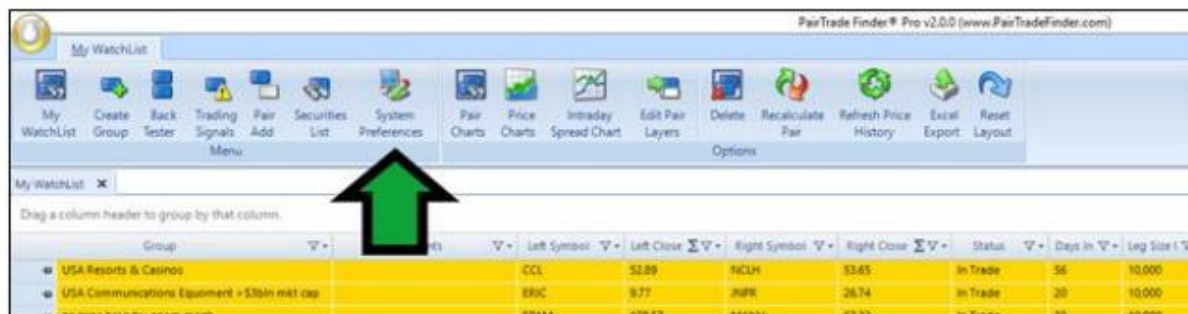


Please read onto section 2.1 for instructions on how to input your first group of stocks into the program to find high-probability pairs to trade.

1.5 Changing Skins/Screen Colours

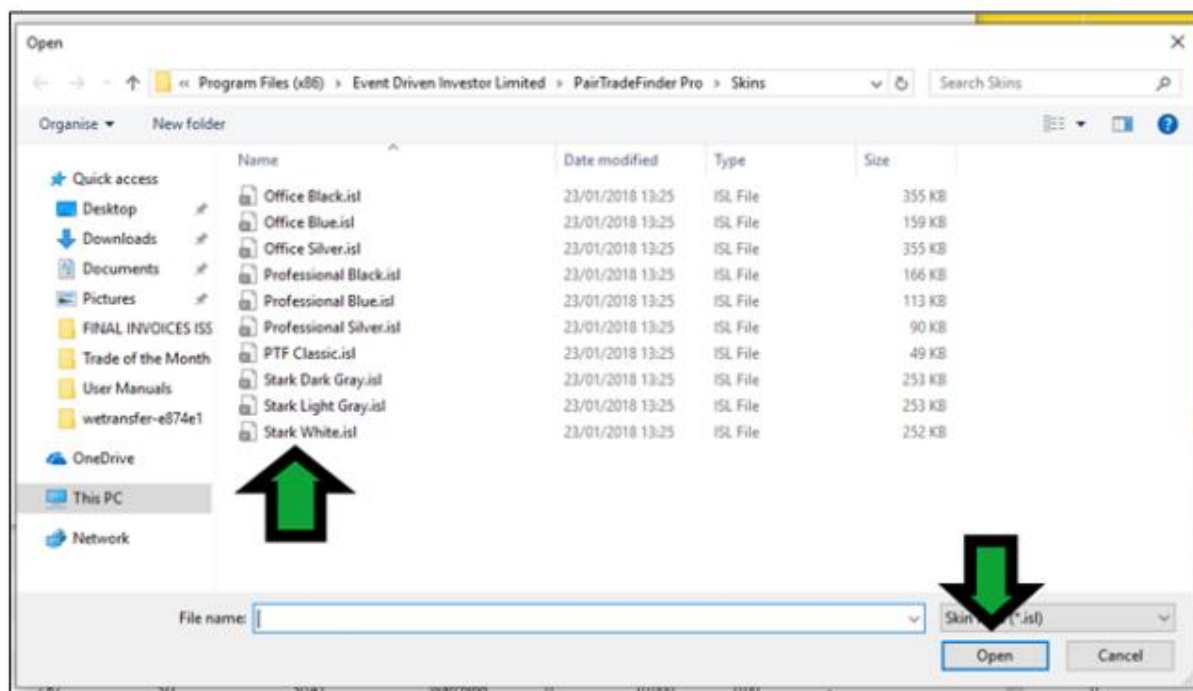
In this example we will show you how to choose one of nine different skins for TangoTrade, so that you can choose a setting that goes best with your use case and preferences.

Go to System Preferences on the upper toolbar:

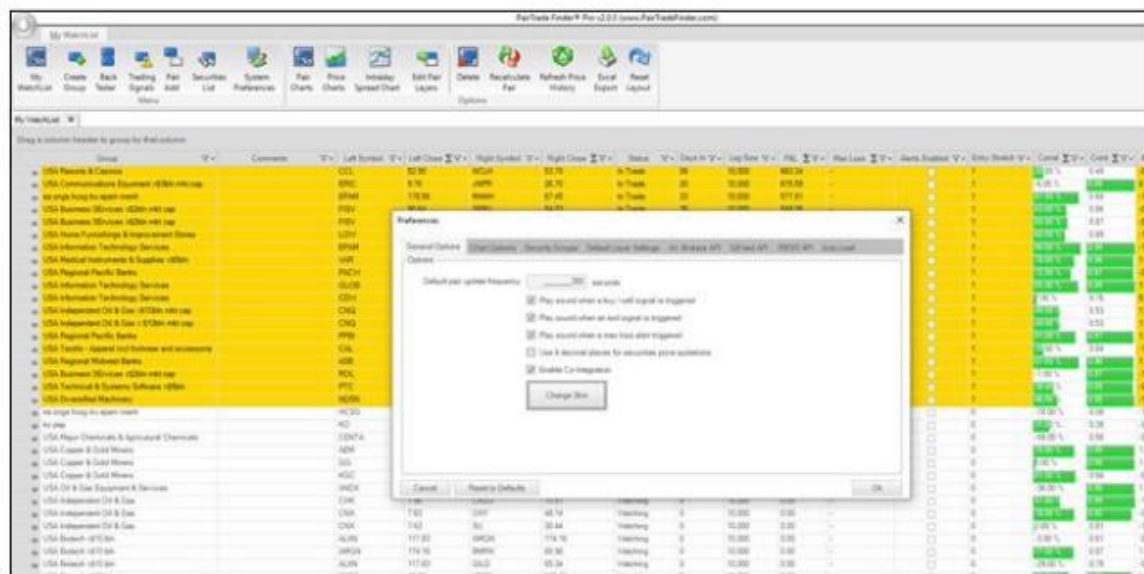


Hit the Change Skin button:

Select one of the nine skins other than Classic to create a different look (Office, Professional and Stark, Select one of the nine skins otheach offering three different colour palettes). Hit the “Open” button and TangoTrade will automatically change skin:



Example of Office Silver:



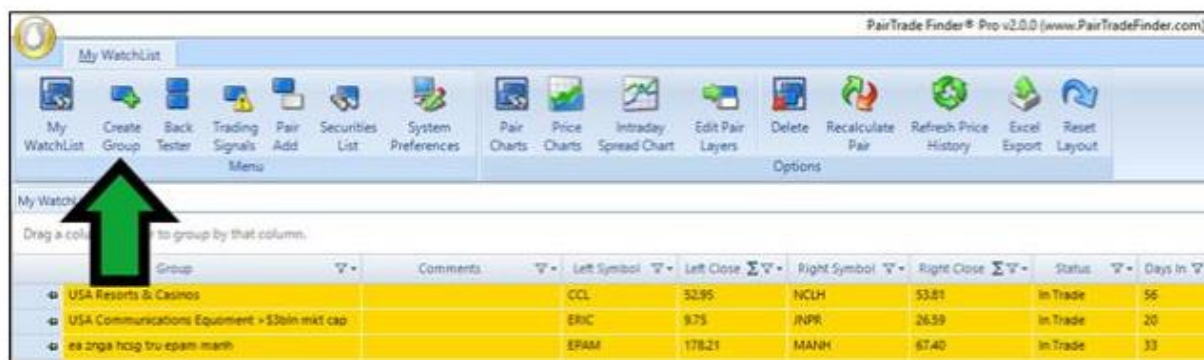
NB: some skins may make Trade Confirmations and other alerts lose colour coding.

2 Using TangoTrade

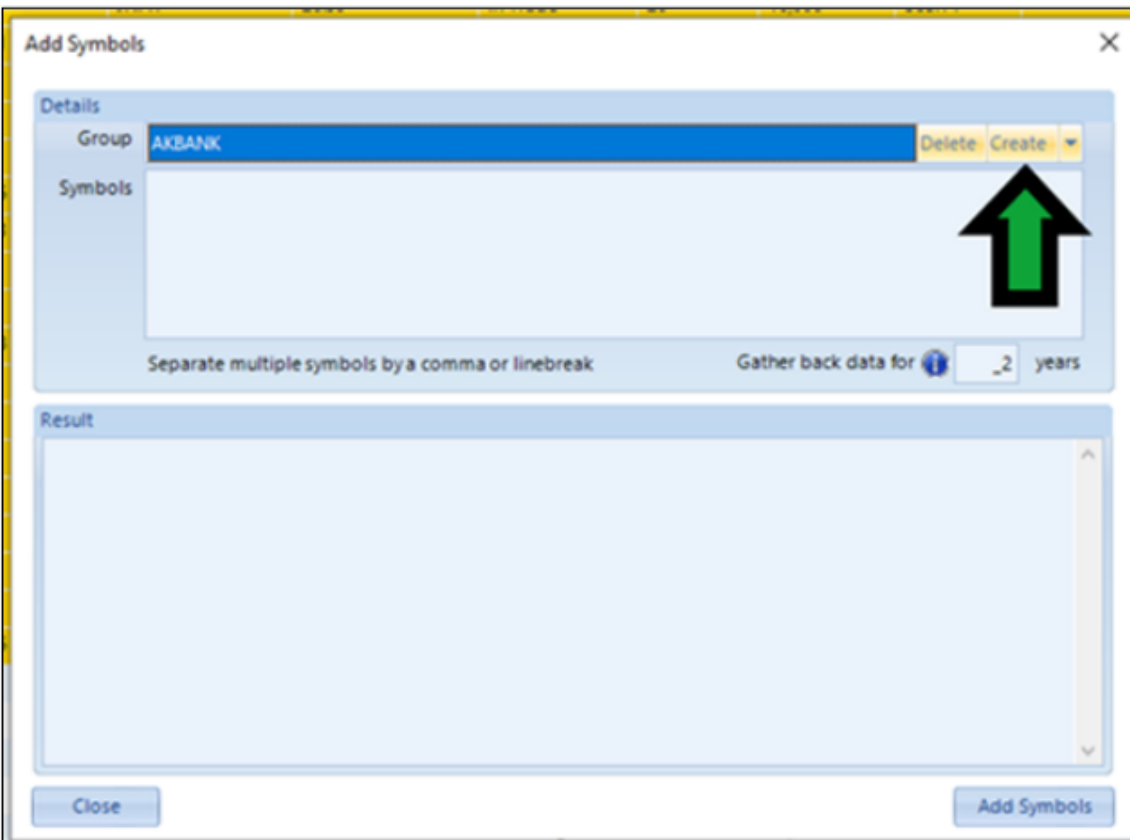
2.1 Creating Your First Group

For a detailed Tutorial Video How to Download our Ticker Spreadsheets (Tutorial #2) and of How to Create your first Group (Tutorial #3), please go to tango-trade.co.

In this example we will create a group of stocks in the USA Consumer Goods sector, in the Personal Products sub-sector. Please click on the **create group** button.



Then cli



Add Symbols

Details

Group: AKBANK [Delete] [Create]

Symbols

Separate multiple symbols by a comma or linebreak

Gather back data for 2 years

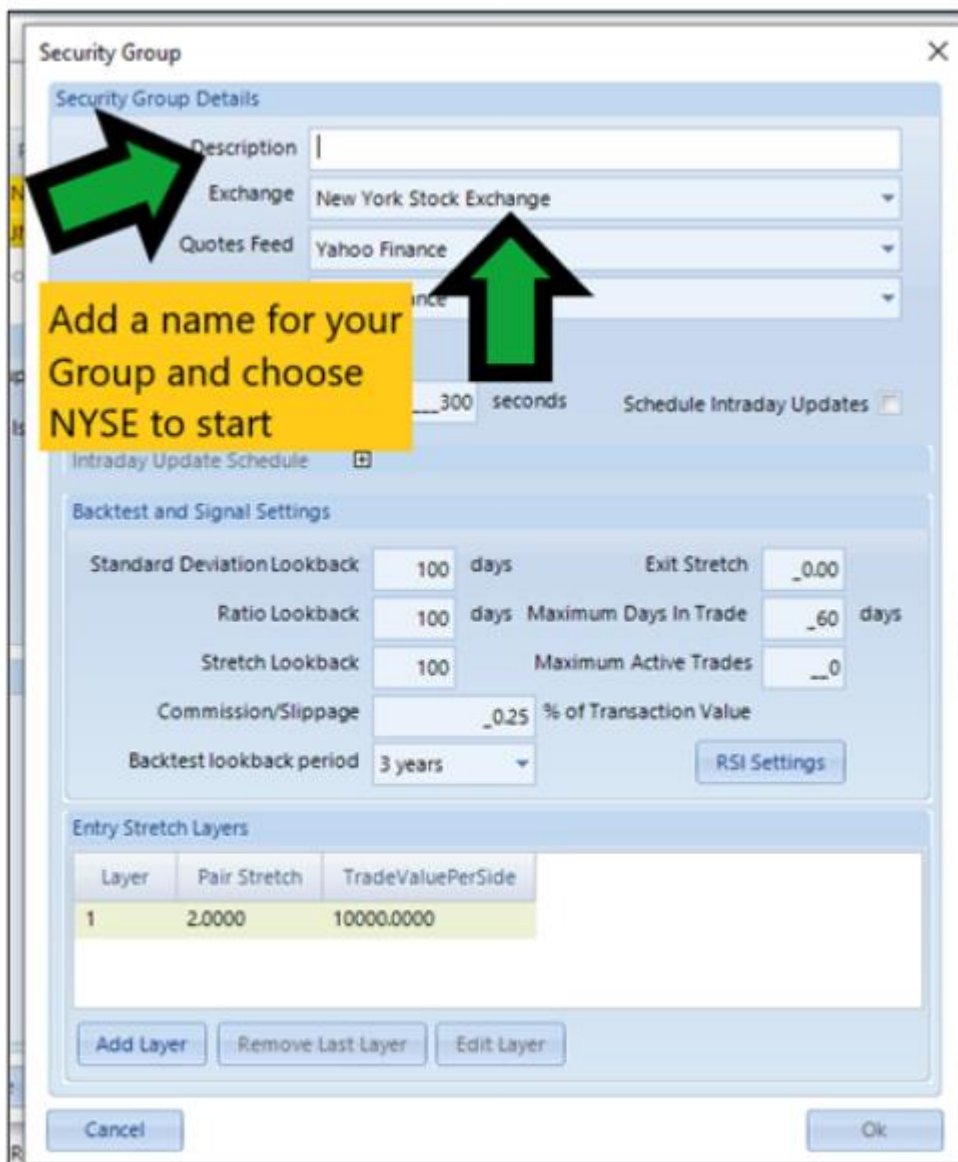
Result

[Close] [Add Symbols]

create.

Type a name for your securities group (please note from here forward we will use “stocks” as the default securities, unless otherwise noted). Then **choose the New York Stock Exchange. Click ok.**

We will €



The screenshot shows the 'Security Group' configuration window. A yellow callout box with the text 'Add a name for your Group and choose NYSE to start' has two green arrows pointing to the 'Description' and 'Exchange' fields. The 'Description' field is empty, and the 'Exchange' dropdown is set to 'New York Stock Exchange'. Other settings include 'Quotes Feed' as 'Yahoo Finance', 'Intraday Update Schedule' as '300 seconds', and 'Schedule Intraday Updates' as an unchecked checkbox. The 'Backtest and Signal Settings' section includes fields for 'Standard Deviation Lookback' (100 days), 'Ratio Lookback' (100 days), 'Stretch Lookback' (100), 'Exit Stretch' (_0.00), 'Maximum Days In Trade' (_60 days), 'Maximum Active Trades' (_0), 'Commission/Slippage' (_0.25 % of Transaction Value), and 'Backtest lookback period' (3 years). The 'Entry Stretch Layers' table has one layer with 'Pair Stretch' 2.0000 and 'TradeValuePerSide' 10000.0000. Buttons for 'Add Layer', 'Remove Last Layer', 'Edit Layer', 'Cancel', and 'Ok' are at the bottom.

Layer	Pair Stretch	TradeValuePerSide
1	2.0000	10000.0000

manual.

At this point, you will need the ticker symbol Excel Spreadsheets that we offer to you for download. These sheets have been created in order to allow you to quickly and easily download stock tickers/symbols that have been pre-screened to be minimum \$1 billion market capitalisation and with an average daily traded volume of approx. \$2 million or more. These symbols have then been organised by Sector and Industry Sub Sector to allow you to perform your initial fundamental screening. The excels sheets are available for download on the [Download page](#) as follows:



תמיכה

רכשתם מני למערכת?

הורידו מכאן רשימות מניות שמתאימות לעסקאות Tango-Trade

מורידים את רשימת האקסלים המוכנים שממיינים לפי תעשייה ובורסות,
ניתן לעלות את רשימת המניות בקלות למערכת Tango - Trade בעמוד Create Groups

US Stocks

UK Stocks

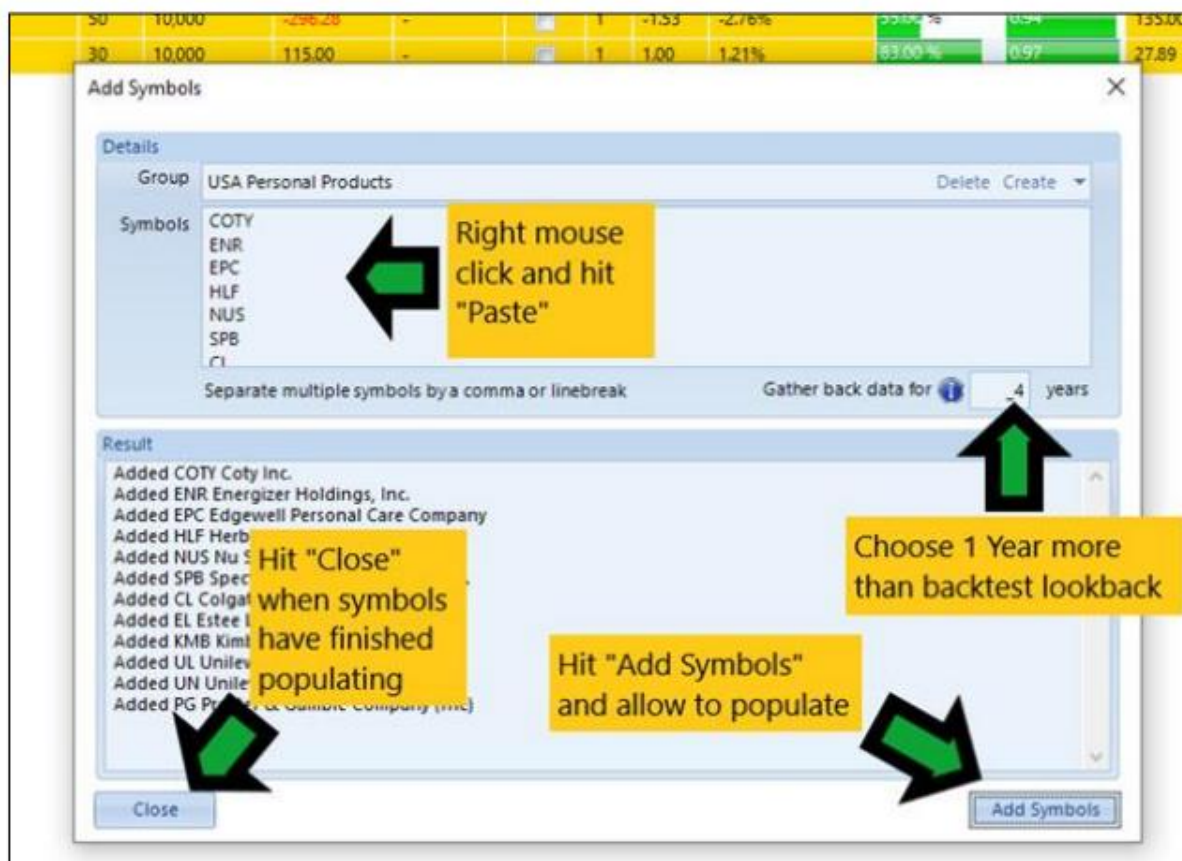
Canadian Stocks

Australian Stocks

Using the NYSE NASDAQ Amex Tickers Spreadsheet, scroll down to the Consumer Goods Sector in column 3, scroll down further to the Personal Products Industry section in column 4, select the tickers from column 1 for the companies in that section and right mouse click, then click on copy.

1	2	3	4	5	6	7	8
Ticker	Company	Sector	Industry	Country	Market Cap (\$B)	Avg Daily Volume(\$)	
1859	KPS	Consumer Goods	Paper & Paper Products	USA	3.39	\$6,738,372	
1860	QPS	Consumer Goods	Paper & Paper Products	Canada	3.18	\$10,707,631	
1861	FBR	Consumer Goods	Paper & Paper Products	Brazil	10.94	\$3,013,578	
1862	WIP	Consumer Goods	Paper & Paper Products	India	10.00	\$7,882,004	
1863	COTY	Consumer Goods	Personal Products	USA	9.81	\$37,386,558	
1864	ENR	Consumer Goods	Personal Products	USA	3.82	\$9,431,265	
1865	EPC	Consumer Goods	Personal Products	USA	3.06	\$5,083,790	
1866	HLF	Consumer Goods	Personal Products	Cayman Islands	9.65	\$23,161,438	
1867	WJB	Consumer Goods	Personal Products	USA	4.67	\$11,634,676	
1868	SPB	Consumer Goods	Personal Products	USA	4.78	\$5,526,306	
1869	CL	Consumer Goods	Personal Products	USA	57.86	\$122,886,182	
1870	EL	Consumer Goods	Personal Products	USA	48.58	\$97,788,194	
1871	KMB	Consumer Goods	Personal Products	USA	39.35	\$278,412,074	
1872	UL	Consumer Goods	Personal Products	United Kingdom	168.42	\$30,921,604	
1873	UN	Consumer Goods	Personal Products	Netherlands	167.19	\$36,436,773	
1874	PG	Consumer Goods	Personal Products	USA	206.77	\$234,889,352	
1875	WUW	Consumer Goods	Processed & Packaged Goods	USA	4.43	\$3,360,305	
1876	RGS	Consumer Goods	Processed & Packaged Goods	USA	2.06	\$3,718,515	
1877	FLO	Consumer Goods	Processed & Packaged Goods	USA	4.34	\$7,948,161	
1878	INGR	Consumer Goods	Processed & Packaged Goods	USA	7.19	\$57,558,125	
1879	ICMR	Consumer Goods	Processed & Packaged Goods	United Kingdom	3.21	\$4,839,570	
1880	THS	Consumer Goods	Processed & Packaged Goods	USA	2.80	\$5,095,655	
1881	CAG	Consumer Goods	Processed & Packaged Goods	USA	18.40	\$61,298,192	
1882	CPB	Consumer Goods	Processed & Packaged Goods	USA	12.74	\$36,623,524	
1883	GIS	Consumer Goods	Processed & Packaged Goods	USA	27.20	\$81,029,084	
1884	K	Consumer Goods	Processed & Packaged Goods	USA	24.67	\$22,326,801	
1885	MKC	Consumer Goods	Processed & Packaged Goods	USA	16.67	\$21,918,410	
1886	SJM	Consumer Goods	Processed & Packaged Goods	USA	12.78	\$42,152,880	
1887	BC	Consumer Goods	Recreational Goods, Other	USA	5.57	\$7,530,251	

In the create group box in TangoTrade, in the codes window, right click on your mouse then click paste.

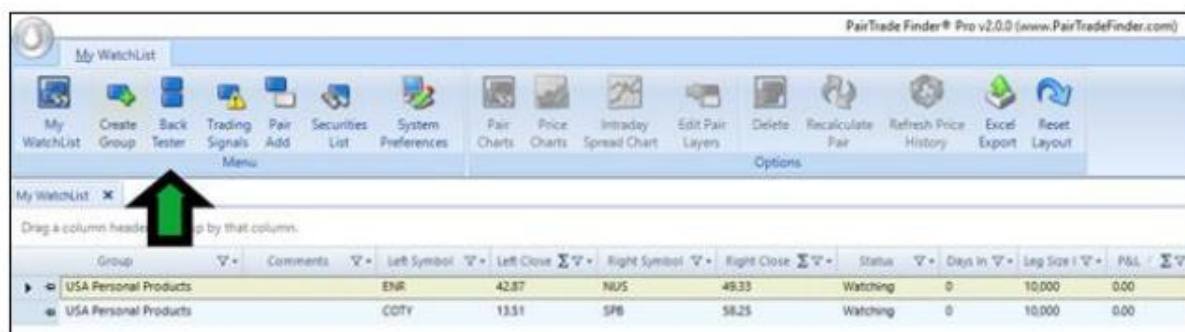


After copying codes, ensure “Gather back data” is set for 1 year more than you are setting your backtest lookback in order to ensure sufficient historical data for the ratio and moving average lookbacks. So, for a 3-year backtest choose minimum 4 years. Then **click on Add Symbols**. You should now see the symbols populate the result box. Once finished, click **Close**.

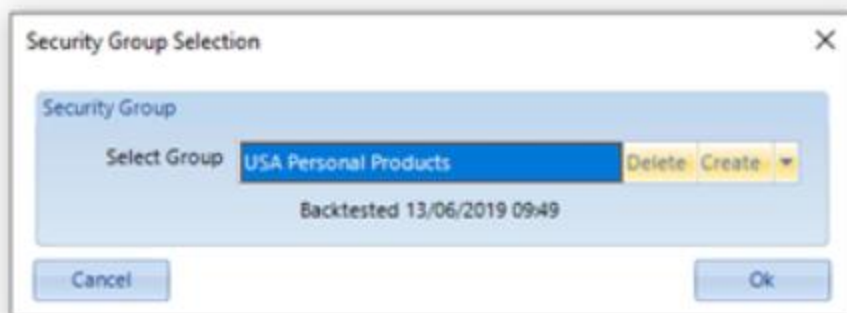
2.2 Finding Good Pairs with Back Testing

Now that you have created your first stock group, now is time to back test them to find good pairs to save to your home page. You can watch a detailed Tutorial Video on how to conduct and read a backtest in here: <https://www.tangotrade.co/tango-school>

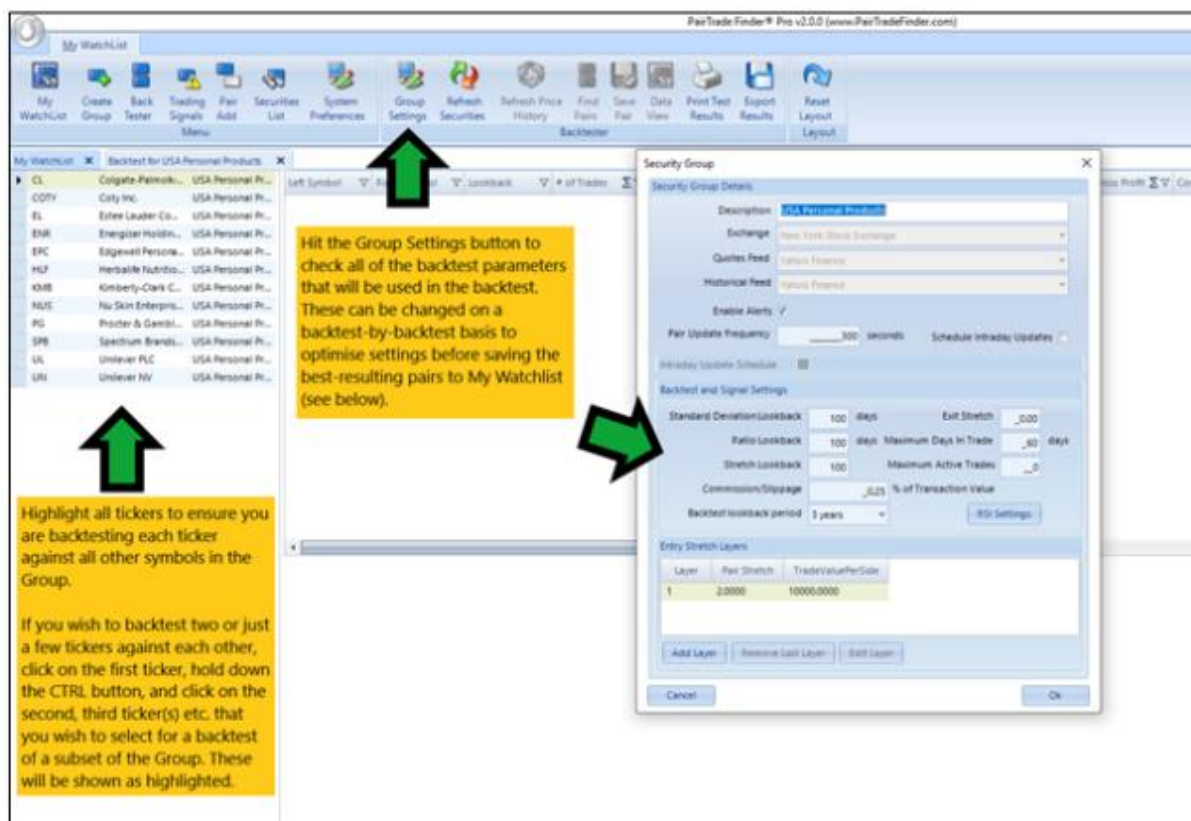
Please **click on Backtester** from the front screen.



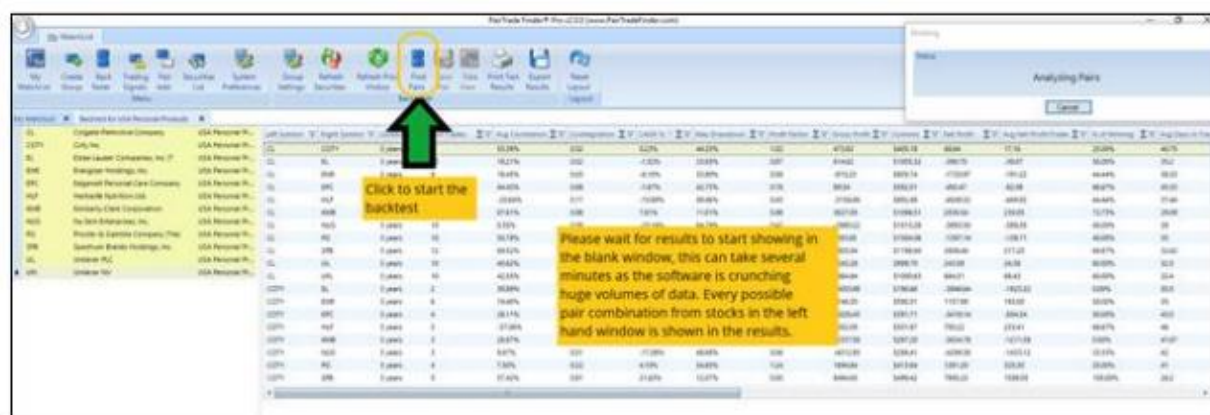
Select the **Group** you just created. Then **click on ok**.



You will see the backtesting screen appear. Next highlight all stocks using the SHIFT key in the left-hand column. You can also click on Group Settings to ensure you are testing the settings you want. These can be modified here to perform various backtests to optimise settings.



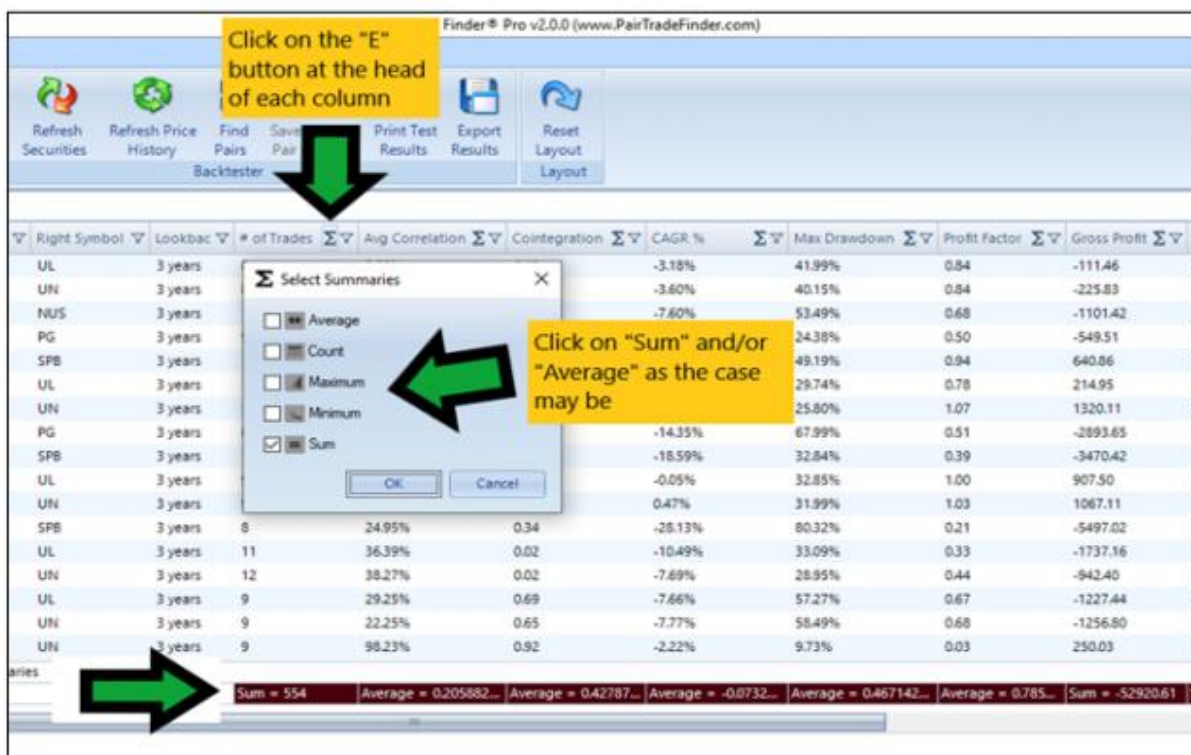
Once you have confirmed the Group Settings are what you want, **click on Find Pairs** and please wait for results to start showing in the blank window, this can take several minutes as the software is crunching huge volumes of data. The “Analysing Pairs” status box will appear in the upper right-hand corner to indicate the backtest is in progress. Every possible pair combination from stocks in the left-hand window is shown in the results.



The results shown are based on the in-built pair trading system, the same signals that you can receive in real-time going forward. These results provide tangible evidence that our system works in the past: real-data-derived signals and trade results don't lie.

When you see the last two stocks codes paired, in this case its UL & UN, backtesting has finished and the Analysing Pairs status indicator in the upper right-hand corner will disappear.

Now let's sum the number of trades, the profit figures and get the average results for every pair in this group, click on the E symbol in each column header to select the figures you want to display at the foot of each column.

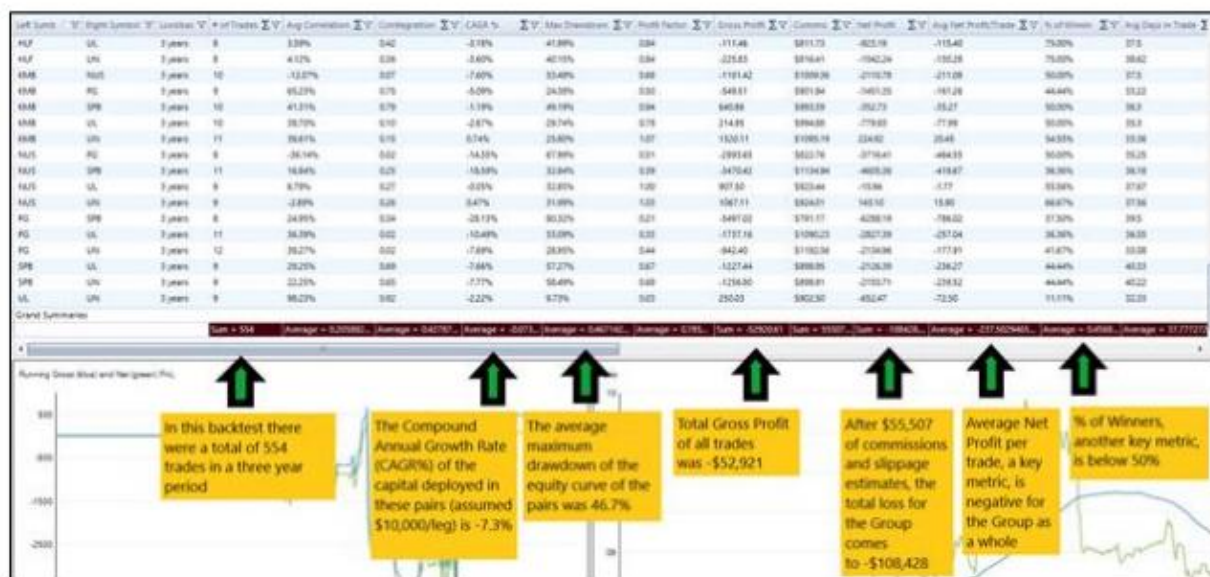


Click on the "E" button at the head of each column

Click on "Sum" and/or "Average" as the case may be

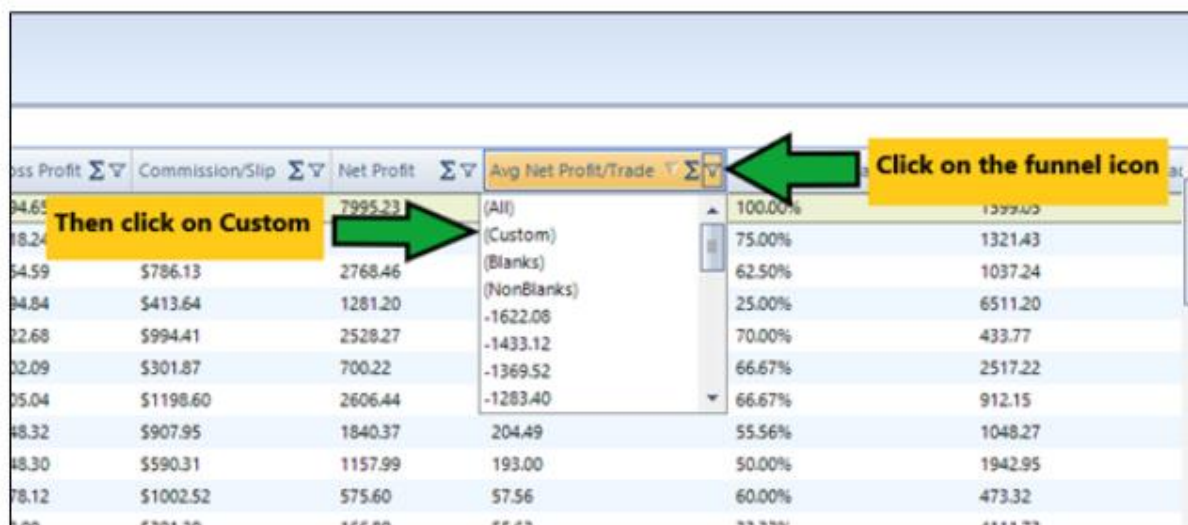
Right Symbol	Lookback	# of Trades	Avg Correlation	Cointegration	CAGR %	Max Drawdown	Profit Factor	Gross Profit
UL	3 years				-3.18%	41.99%	0.84	-111.46
UN	3 years				-3.60%	40.15%	0.84	-225.83
NUS	3 years				-7.60%	53.49%	0.68	-1101.42
PG	3 years					24.38%	0.50	-549.51
SPB	3 years					49.19%	0.94	640.86
UL	3 years					29.74%	0.78	214.95
UN	3 years					25.80%	1.07	1320.11
PG	3 years				-14.35%	67.99%	0.51	-2893.65
SPB	3 years				-18.59%	32.84%	0.39	-3470.42
UL	3 years				-0.05%	32.85%	1.00	907.50
UN	3 years				0.47%	31.99%	1.03	1067.11
SPB	3 years	8	24.95%	0.34	-28.13%	80.32%	0.21	-5497.02
UL	3 years	11	36.39%	0.02	-10.49%	33.09%	0.33	-1737.16
UN	3 years	12	38.27%	0.02	-7.89%	28.95%	0.44	-942.40
UL	3 years	9	29.25%	0.69	-7.66%	57.27%	0.67	-1227.44
UN	3 years	9	22.25%	0.65	-7.77%	58.49%	0.68	-1256.80
UN	3 years	9	98.23%	0.92	-2.22%	9.73%	0.03	250.03
		Sum = 554	Average = 0.205882...	Average = 0.42787...	Average = -0.0732...	Average = 0.467142...	Average = 0.785...	Sum = -52920.61

You can do this for each column. Feel free to average any column you want to get a deeper look at the performance of the group as a whole. Ideally you want to focus on groups that show good performance as a whole, though filtering is key. Shown below is the sum of all trades, the Compound Annual Growth Rate (CAGR%) of those trades, the Maximum Drawdown, Gross Profit, Commissions & Slippage, Net Profit, the average profit per trade and the winning %.



The above results look pretty unattractive in aggregate. Accordingly, you must look to filter all of the Group results to find the most attractive subset of pairs that are worth transferring onto My Watchlist for monitoring.

When it comes to back testing all pair combinations, you want to focus on pairs that have shown good results historically. Historical profitability of fundamentally correlated and cointegrated pairs is the best indicator of future performance that we have. Using the triangle icon in each column header you can filter results based on your own defined parameters. Shown below is our backtest filtered to show only pairs that make at least \$300 average profit per trade.



This screenshot shows the filtered backtest results, displaying only pairs with an average profit per trade of at least \$300. Annotations include a green arrow pointing to the 'Avg Net Profit/Trade' column header with the text 'Click on the funnel icon', and another green arrow pointing to the '(Custom)' filter option in the dropdown menu with the text 'Then click on Custom'.

Gross Profit	Commission/Slip	Net Profit	Avg Net Profit/Trade	% of Wins	Avg Days in Trade
94.65		7995.23	(All)	100.00%	1337.10
18.24			(Custom)	75.00%	1321.43
54.59	\$786.13	2768.46	(Blanks)	62.50%	1037.24
94.84	\$413.64	1281.20	(NonBlanks)	25.00%	6511.20
22.68	\$994.41	2528.27	-1622.06	70.00%	433.77
32.09	\$301.87	700.22	-1369.52	66.67%	2517.22
35.04	\$1198.60	2606.44	-1283.40	66.67%	912.15
48.32	\$907.95	1840.37	204.49	55.56%	1048.27
48.30	\$590.31	1157.99	193.00	50.00%	1942.95
78.12	\$1002.52	575.60	57.56	60.00%	473.32

Then filter for pairs above \$300 average profit per trade.

Avg Correlation	Cointegration	CAGR %	Profit Factor	Max Drawd	Gross Profit	Commission/Slip	Net Profit	Avg Net Profit/Trade
5.22%	0.86	21.63%	0.00	12.07%	8494.65	\$499.42	7995.23	1599.05
47.39%	0.99	12.69%	1.57	71.39%	5518.24	\$1209.36	4308.88	359.07
42.86%	0.02	8.49%	2.15	25.78%	3554.59	\$786.13	2768.46	346.06
3.87%	0.47	4.10%	1.24	54.65%	1694.84	\$413.64	1281.20	320.30
10.39%	0.97	7.80%	5.98	11.01%	3522.68	\$994.41	2528.27	252.83
42.13%	0.22	2.28%	1.16	49.32%	1002.09	\$301.87	700.22	233.41
19.62%	0.65	8.03%	1.56	28.59%	3805.04	\$1198.60	2606.44	217.20
3.88%	0.46	5.79%	1.54	17.67%	2748.32	\$907.95	1840.37	204.49
3.21%	0.26	3.00%	0.22%	1748.30	\$590.31	1157.99	193.00	
1.30%	0.68	1.00%	1.66%	1578.12	\$1002.52	575.60	57.56	
1.02%	0.37	0.00%	1.56%	468.09	\$301.20	166.89	55.63	
0.25%					\$301.38	150.06	90.02	
17.06%					\$1003.96	458.02	45.80	
17.49%					\$895.68	278.16	30.91	
11.25%					\$924.01	143.10	15.90	
14.99%					\$991.27	144.91	14.49	
4.12%					\$923.44	-15.94	-1.77	
19.22%								
1.48%								

Custom Filter

Filter based on All of the following columns:

Add

Delete

Avg Net Profit/Trade

= Equals

≠ Does not equal

< Less than

≤ Less than or equal to

> Greater than

≥ Greater than or equal to

OK

Cancel

Change this operator to Greater than or equal to

Enter 300 in this box

This filter has reduced the shown pairs down to 4 out of all 66 possible combinations. All pairs showing in the filtered results make at least \$300 per trade (assuming 10k invested per trade). The filter has also increased all our other back test statistics, lifting the average winning trades to 65.6%

# of Trades	Avg Correlation	Cointegration	CAGR %	Profit Factor	Max Drawd	Gross Profit	Commission/Slip	Net Profit	Avg Net Profit/Trade	% of Winning Trades
5	55.22%	0.86	21.63%	0.00	12.07%	8494.65	\$499.42	7995.23	1599.05	100.00%
12	47.39%	0.99	12.69%	1.57	71.39%	5518.24	\$1209.36	4308.88	359.07	75.00%
8	42.86%	0.02	8.49%	2.15	25.78%	3554.59	\$786.13	2768.46	346.06	62.50%
4	3.87%	0.47	4.10%	1.24	54.65%	1694.84	\$413.64	1281.20	320.30	25.00%

Count = 4

Average = 5.180861

Average = 0.584422

Average = 8.11

Average = 1.278

Average = 0.408

Average = 4813

Average = 727.1275

Average = 408

Average = 895.113281121

Average = 0.65625

All trade system performance stats have improved as a result of the filter

We can now run a further filter, for example to choose only those pairs with a positive reward/risk ratio if capital were to be continuously deployed in the pair over the backtest period, i.e. that CAGR% is greater than Maximum Drawdown %. Usually, after filtering based on

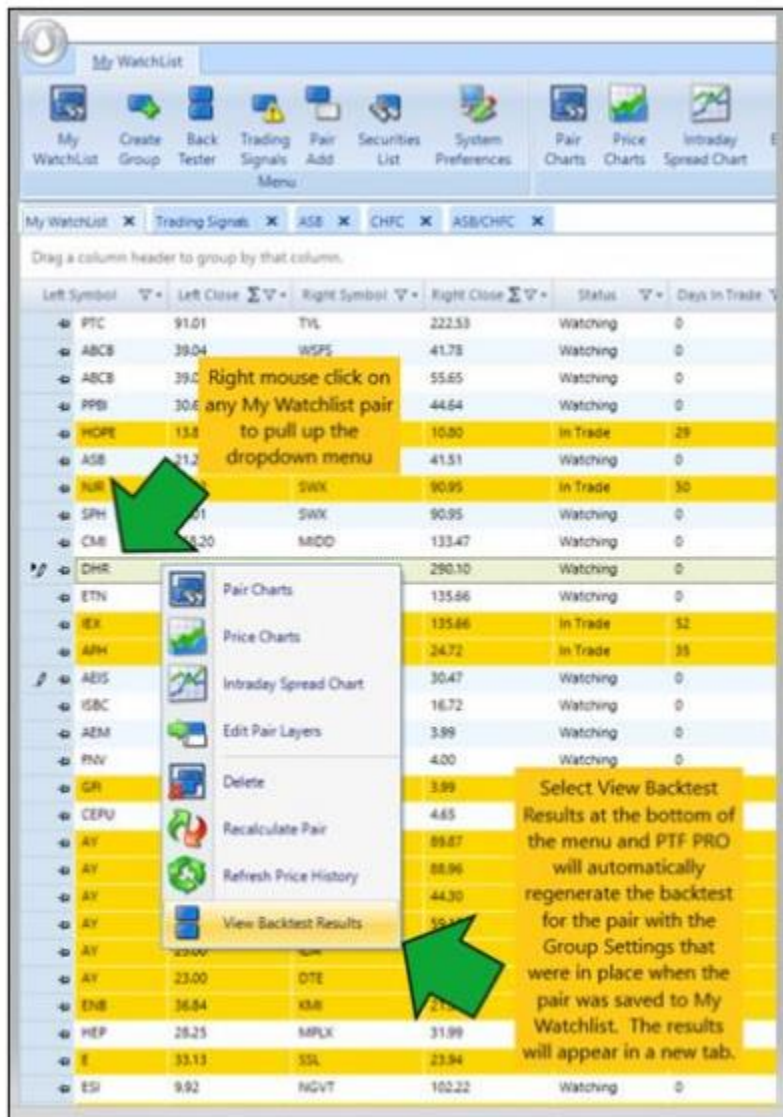
Average Net Profit/Trade > \$300, and % of Winning Trades > 67% (winning 2 out of every 3 trades), one can eyeball whether a pair has a positive CAGR%/Max DD %. In the example above, only the first pair does, delivering a CAGR% of 21.63% over the period vs. a maximum drawdown of only 12.07%. This great reward/risk can also be quickly measured by scanning the PnL chart that appears in the lower left of the page when you highlight the pair. Look to ensure a smooth bottom left to top right equity curve that doesn't have to pay a high proportion of commissions, and also look for a Ratio chart that shows many zero crossings and does not exhibit trendiness:



Now we will save only this ONE attractive reward/risk pair COTY/SPB (out of 66 possible pairs in this industry sub-sector group using these backtest parameters) to our home page to monitor further for trading signals from COTY/SPB going forward. Using the SHIFT key again, highlight this pair in the results window, then click on Save Pair. You can save multiple pairs at once by highlighting all the pairs you wish to add to Watchlist and hitting Save Pair:

You have now completed a back test, found what we consider to be a possible “high-probability” or “good” pair and added it to your home page. Further screening for Cointegration, News and Fundamental similarity should be applied (more on this later).

A convenient feature of TangoTrade is the ability to view the backtest results of any pair that has been saved to My Watchlist. Simply highlight the pair in My Watchlist, right click on it with the mouse, and select View Backtest Results from the dropdown menu that appears. TangoTrade will automatically regenerate the backtest results for the pair using the Group Settings with which it was saved:



The screenshot shows the 'My WatchList' window in the TANGO TRADE software. The window has a menu bar with options: My WatchList, Create Group, Back Tester, Trading Signals, Pair Add, Securities List, System Preferences, Pair Charts, Price Charts, and Intraday Spread Chart. Below the menu bar, there are tabs for 'My WatchList', 'Trading Signals', 'ASB', 'CHFC', and 'ASB/CHFC'. The main area displays a table of trading pairs with columns: Left Symbol, Left Close, Right Symbol, Right Close, Status, and Days in Trade. A right-click context menu is open over the 'ASB' pair, showing options: Pair Charts, Price Charts, Intraday Spread Chart, Edit Pair Layers, Delete, Recalculate Pair, Refresh Price History, and View Backtest Results. A green arrow points to the 'View Backtest Results' option. Another green arrow points to the 'ASB' pair in the table. Text annotations explain the process of viewing backtest results.

Drag a column header to group by that column.

Left Symbol	Left Close	Right Symbol	Right Close	Status	Days in Trade
PTC	91.01	TVL	222.53	Watching	0
ABCB	39.04	WSPS	41.78	Watching	0
ABCB	39.0		55.65	Watching	0
PPB	30.6		44.64	Watching	0
HOPE	13.8		10.80	In Trade	29
ASB	21.2		41.51	Watching	0
NUR		SWK	90.95	In Trade	30
SPH		SWK	90.95	Watching	0
CME	16.20	MDD	133.47	Watching	0
DHR			290.10	Watching	0
ETN			135.66	Watching	0
EX			135.66	In Trade	52
APH			24.72	In Trade	35
ABIS			30.47	Watching	0
ISBC			16.72	Watching	0
AEM			3.99	Watching	0
PNV			4.00	Watching	0
GR			3.99	Watching	0
CEPU			4.65	Watching	0
AY			89.87	Watching	0
AY			88.96	Watching	0
AY			44.30	Watching	0
AY			59.11	Watching	0
AY			23.00	Watching	0
AY		OTE	2.11	Watching	0
ENB	36.84	XBL	2.11	Watching	0
HEP	28.25	MPLX	31.99	Watching	0
E	33.13	SSA	23.94	Watching	0
ESI	9.92	NGVT	102.22	Watching	0

Right mouse click on any My Watchlist pair to pull up the dropdown menu

Select View Backtest Results at the bottom of the menu and PTF PRO will automatically regenerate the backtest for the pair with the Group Settings that were in place when the pair was saved to My Watchlist. The results will appear in a new tab.

Backtest results show in a new tab:



We encourage you to explore extensively with TangoTrade's backtester. It can backtest your custom system (Group Settings) on up to 10 years' worth of historical data, using various scenarios of Group Settings, Layers etc. and you can deploy any combination of filters you see fit to the results to select your choicest pairs for monitoring. As you can see above, results are shown in the backtester for each pair in the following order:

1. Left Symbol
2. Right Symbol
3. Lookback Period for the Backtest
4. Number of Trades
5. Average Correlation
6. Cointegration
7. Compound Annual Growth Rate % (CAGR%)
8. Profit Factor
9. Maximum Drawdown % (MaxDD%)
10. Gross Profit
11. Commissions/Slippage Estimate
12. Net Profit
13. Average Net Profit/Trade
14. %age of Winning Trades
15. Average Profit of Winning Trades
16. Average Loss of Losing Trades



17. Median Net Profit/Trade

18. Average Winning/losing Ratio

19. Biggest Win

20. Biggest Loss

21. Average Days in Trade

22. Total PnL minus
Biggest Win

23. Total PnL minus Biggest Loss

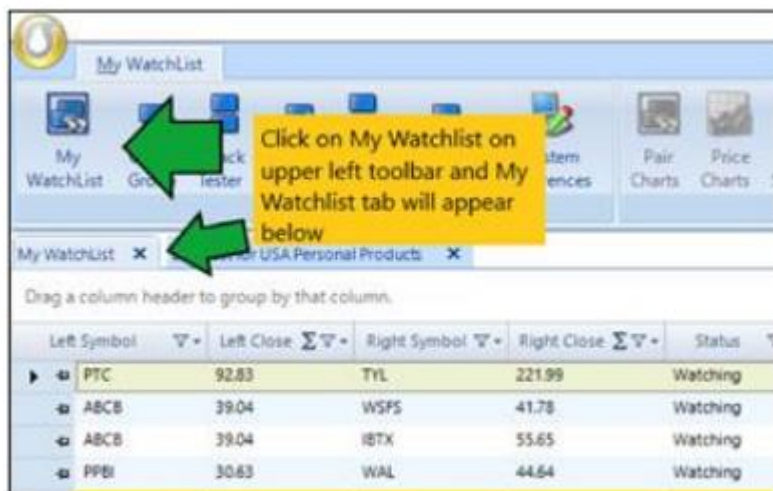
24. RSI Period for Charting

25. Whether the Pair is already in My Watchlist or not. Pairs in a backtest that are already in My Watchlist will also show up as highlighted in GOLD in the backtest results and will display the pair results of the original Group Settings for the backtest you used when you saved the pair to My Watchlist. This feature preserves database and trading signal integrity.

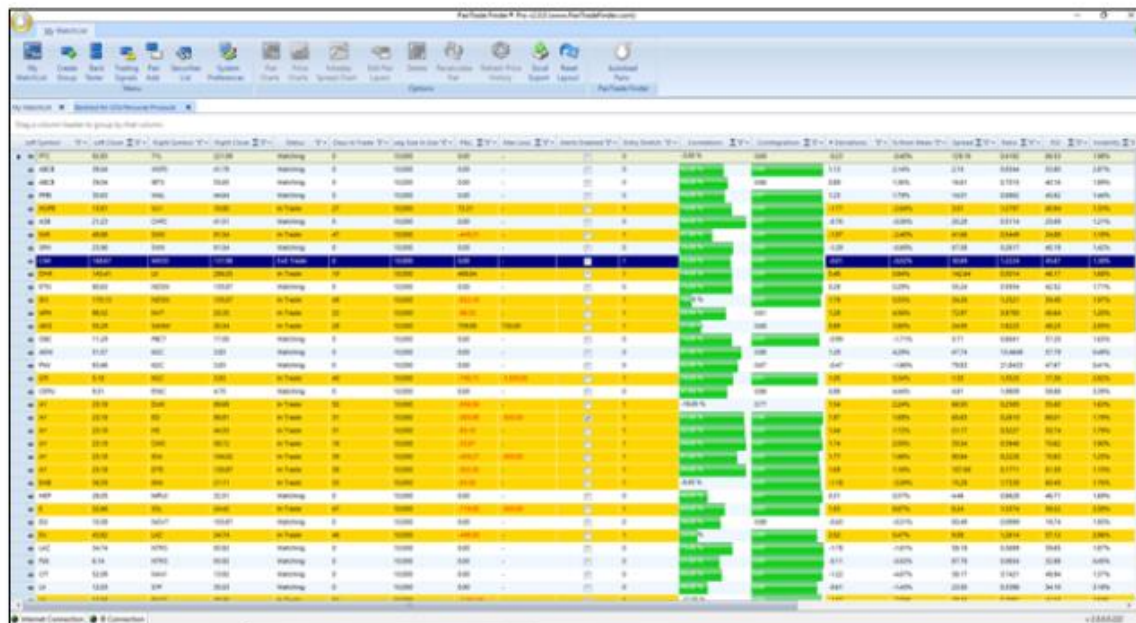
Please note the order of all output columns can be customised – just click on the column header and drag it to the position to which you wish to move it. Your customised layout will be saved.

2.3 Monitoring All Your Pairs at Once

Now that you have created your first stock group, found and saved a good pair via the backtester, you can now repeat the process to generate a portfolio of My Watchlist pairs and view all your pairs on one screen. Please click on the My Watchlist icon.



The below screen will appear with all your saved pairs populated (in this example we show a well populated Watchlist with many other pairs included).



In this My Watchlist page you can rank and filter for different values the same as the backtester:

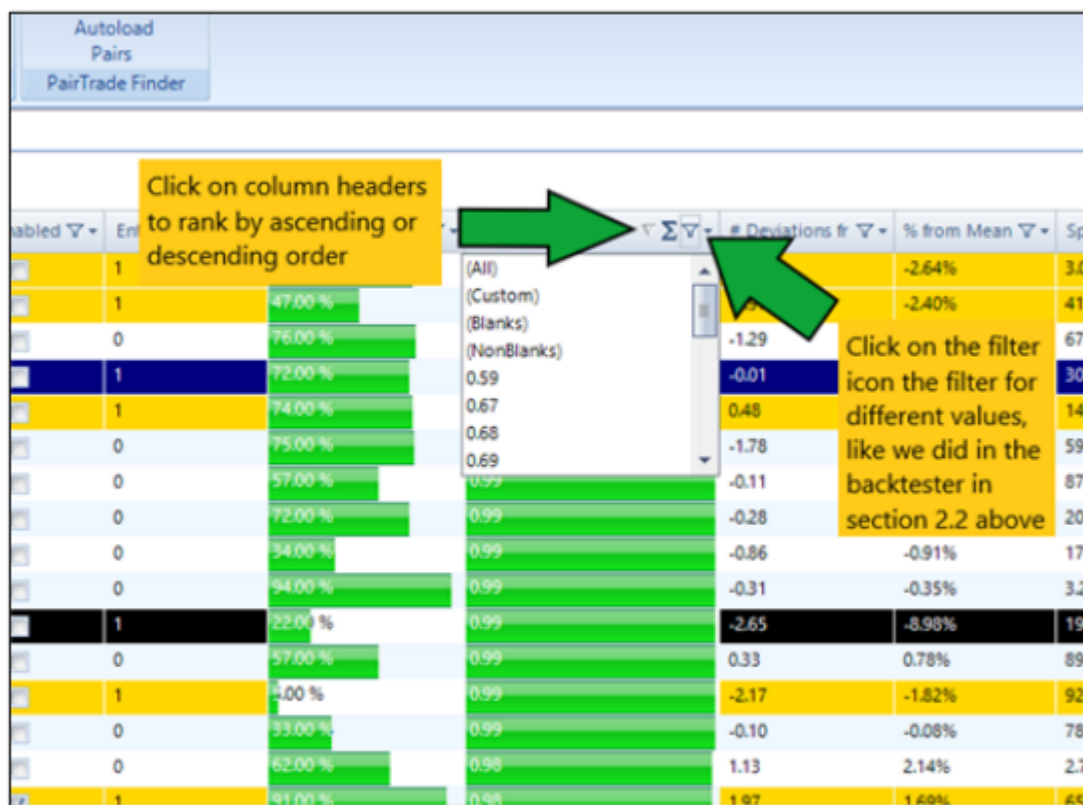
Autoload Pairs
PairTrade Finder

Click on column headers to rank by ascending or descending order

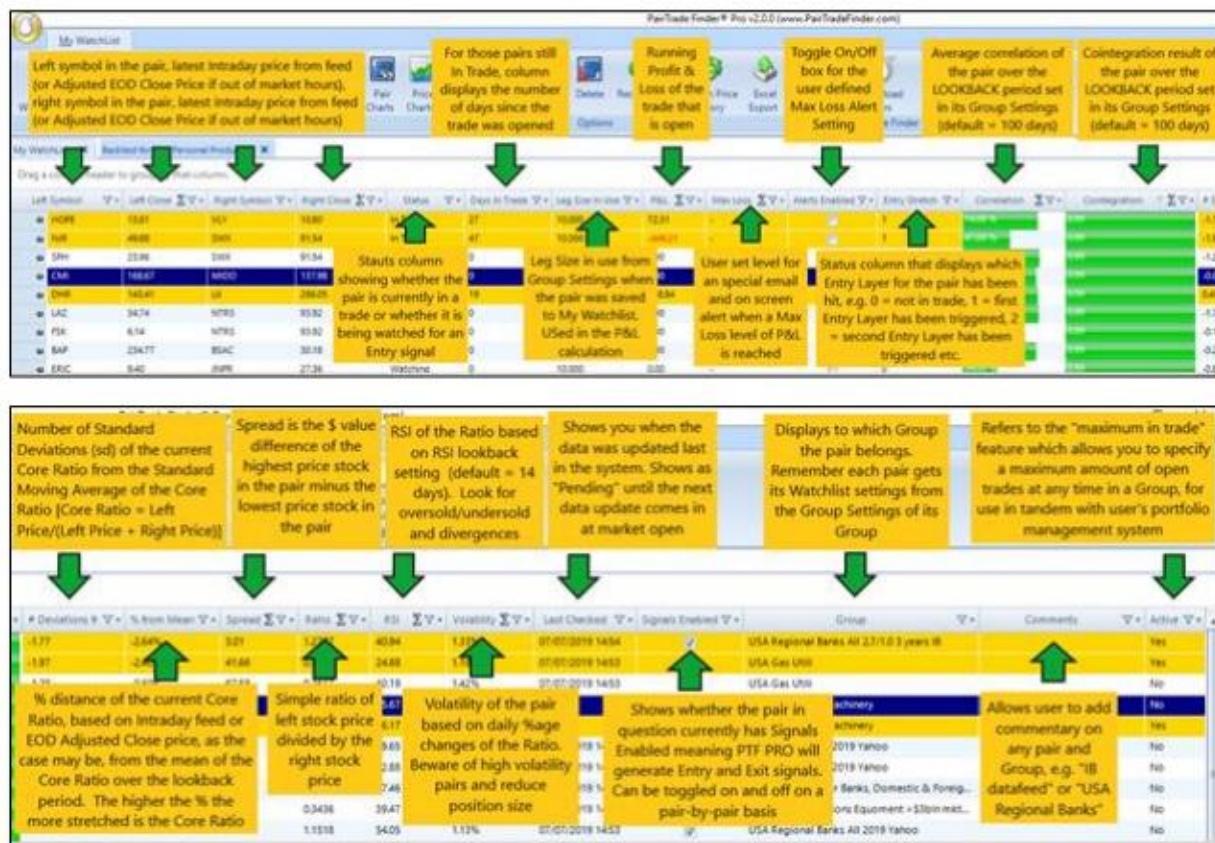
Click on the filter icon on the filter for different values, like we did in the backtester in section 2.2 above

Enabled	Entry	Exit	Profit %	Max Drawdown	Sharpe Ratio	# Deviations fr	% from Mean	Sp
<input checked="" type="checkbox"/>	1		47.00 %				-2.64%	3.0
<input checked="" type="checkbox"/>	1		76.00 %				-2.40%	41
<input checked="" type="checkbox"/>	0		76.00 %			-1.29		67
<input checked="" type="checkbox"/>	1		72.00 %		0.59	-0.01		30
<input checked="" type="checkbox"/>	1		74.00 %		0.67	0.48		14
<input checked="" type="checkbox"/>	0		75.00 %		0.68	-1.78		59
<input checked="" type="checkbox"/>	0		57.00 %		0.69	-0.11		87
<input checked="" type="checkbox"/>	0		72.00 %		0.99	-0.28		20
<input checked="" type="checkbox"/>	0		34.00 %		0.99	-0.86	-0.91%	17
<input checked="" type="checkbox"/>	0		94.00 %		0.99	-0.31	-0.35%	3.2
<input checked="" type="checkbox"/>	1		22.00 %		0.99	-2.65	-8.98%	19
<input checked="" type="checkbox"/>	0		57.00 %		0.99	0.33	0.78%	89
<input checked="" type="checkbox"/>	1		4.00 %		0.99	-2.17	-1.82%	92
<input checked="" type="checkbox"/>	0		33.00 %		0.99	-0.10	-0.08%	78
<input checked="" type="checkbox"/>	0		62.00 %		0.98	1.13	2.14%	2.7
<input checked="" type="checkbox"/>	1		91.00 %		0.98	1.07	1.60%	66

Below are two contiguous screenshots with definitions for each column contained on My Watchlist:



Shown below are the functions of most of the other buttons you will find on the My Watchlist home screen:



As you can see My Watchlist is your bird's eye view of your all pairs at once. From this screen you can rank them according to the different columns, filter to only show pairs currently in a trade, filter to show only a particular group, add Max Loss Alerts or Trailing Stops, etc.

Please continue onto section 2.4 for information on how to monitor for trading signals.

2.4 Receiving Entry and Exit Signals on Your Pairs

In 2.1, 2.2 and 2.3 above, you have now learned to create a securities group, find and save good pairs to My Watchlist and to use My Watchlist to monitor many aspects of your pairs all at once. This section will now show you how you can use the Trading Signals window to monitor for upcoming trading signals.

Trading signals will come in during market hours **or your specified time**. TangoTrade allows you, when you use Create Group, to define exactly **when** data for your Group will be updated.



So, for example, if you are trading the U.S. session from 9:30 a.m. to 4:00 p.m. EST, and you are in London, UK, on GMT you would set the Start Time and End Time as 2:30 p.m. and 9:00 p.m. respectively to cover the full U.S. session and provided your computer's clock is on GMT.

If the Intraday Update Schedule is not set, TangoTrade will pull data for your securities in the Group 24/7, including out-of-hours market prices. Be careful with out-of-hours updates as markets are very thinly traded and liquidity is often poor.

Monitoring Trading Signals

Please **click on the trading signals** button.



My WatchList

My WatchList Create Group Back Tester Trading Signals Add List Price Charts In Spread

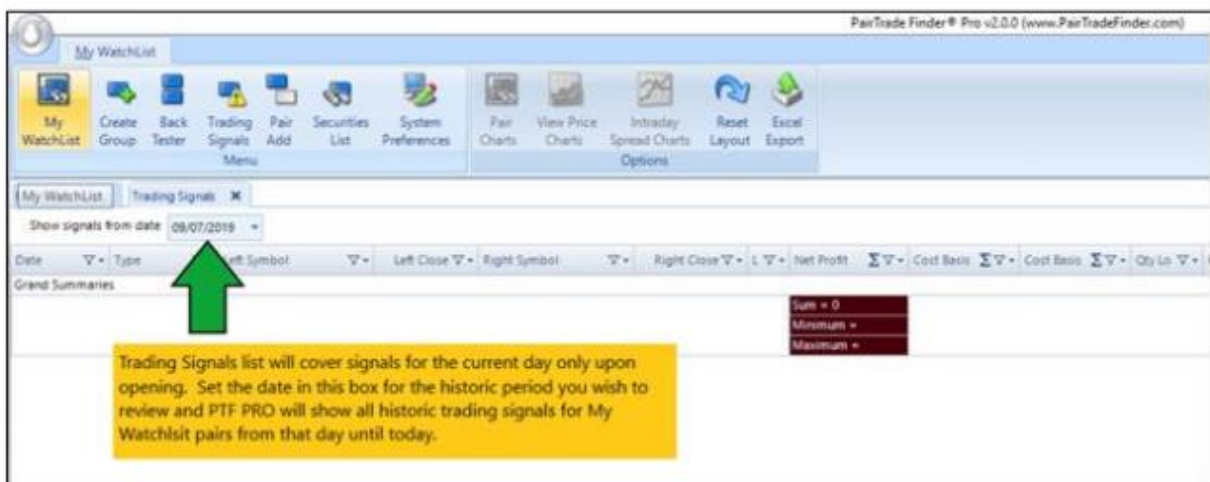
Hit this button to pull up the Trading Signals sheet

My WatchList x Pair Charts PPBI/WAL - USA Regional Banks All 2.7/1.0 3 years IB x

Drag a column header to group by that column.

Left Symbol ▾	Left Close Σ ▾	Right Symbol ▾	Right Close Σ ▾	Status ▾	Da
PTC	90.77	TYL	218.89	Watching	0
ABCB	39.04	WSFS	41.78	Watching	0
ABCB	39.04	IBTX	55.65	Watching	0
PPBI	30.63	WAL	44.64	Watching	0
HOPE	13.81	VLV	10.80	In Trade	29

It will be blank until new trading signals are generated by the software.



PairTrade Finder® Pro v2.0.0 (www.PairTradeFinder.com)

My WatchList Trading Signals x

Show signals from date 08/07/2019 ▾

Date ▾ Type ▾ Left Symbol ▾ Left Close ▾ Right Symbol ▾ Right Close ▾ L ▾ Net Profit Σ ▾ Cost Basis Σ ▾ Cost Basis Σ ▾ Qty Lb ▾

Grand Summaries

Trading Signals list will cover signals for the current day only upon opening. Set the date in this box for the historic period you wish to review and PTF PRO will show all historic trading signals for My Watchlist pairs from that day until today.

Sum = 0
Minimum =
Maximum =

Below is how your Trading Signals window will look once new trading signals come in, or you set a "from date" in the upper left box from which signals on My Watchlist pairs have been generated. You can sort the

signals using the same E, filter and triangle icons in the column headers, e.g. by Group, by Type (Entry or Exit), Net Profit, Layers, Days in Trade etc.



The screenshot displays the TangoTrade software interface, which is a trading signals management tool. The main window shows a table of trading signals with columns for Date of the Trading Signal, Type, Entry Layer, Cost Basis, Net Profit, and Days in Trade. The table is populated with data for various trading signals, including entries and exits. Annotations are provided for several columns:

- Date of the Trading Signal:** These four columns show the LTR and Right symbols in the signal, whether the Entry for each was long or short, at an Exit, and the closing ("BOO") or last price ("trades") that caused the signal to be triggered.
- Entry Layer:** Entry Layer the signal represents. All Exit Signals must all layers.
- Cost Basis:** Cost basis of the Long and Short positions included in the signal equals the respective Quantity multiplied by the respective Close price.
- Net Profit:** Indicates the number of shares Long and Short that must be traded to secure the signal.
- Days in Trade:** # of Days in Trade at which the Exit signal was triggered.
- Standard Deviations:** Number of Standard Deviations from its moving average at which the Core Ratio was trading when the signal was generated.
- Alerts:** Allow to integrated traders to create a new 10 Order Send Ticket at current market prices and quantities to the signal above initial history.

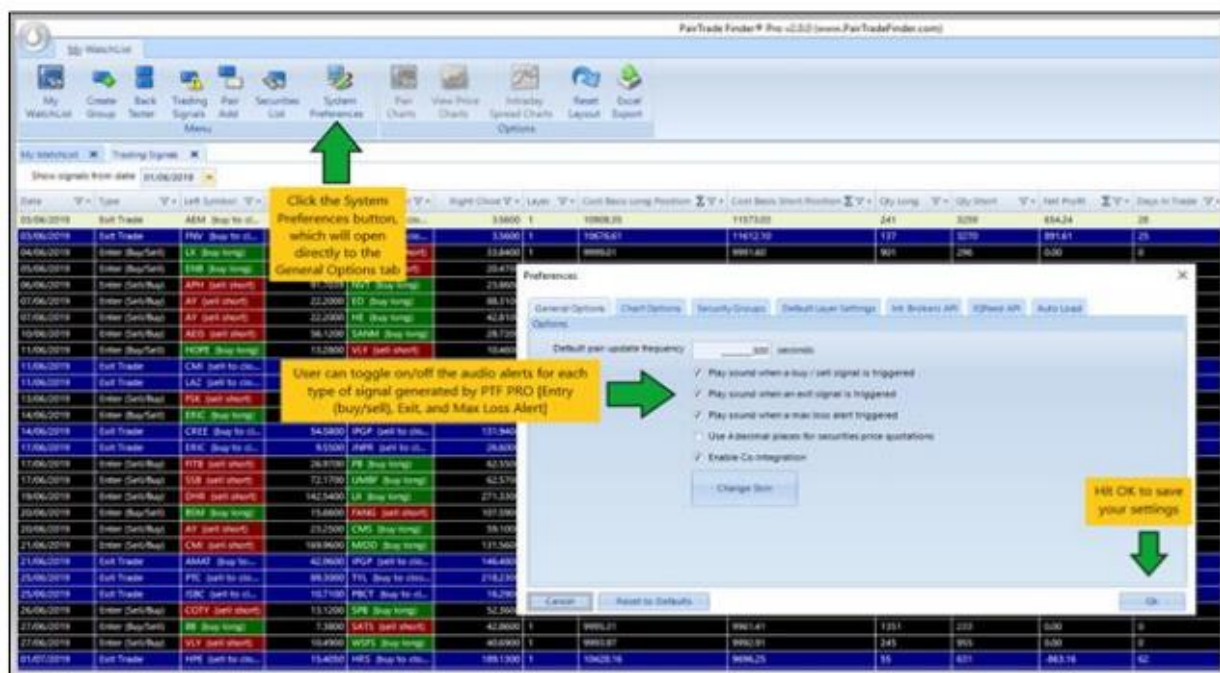
Additional annotations on the table include:

- Type of signals:** Type of signals generated is shown here, either a Enter (initially), an Exit (Stop/Loss) or an Exit.
- Net Profit:** Net Profit (used of the Exit signal based on the Long Size in Group Settings for this pair (default = \$10,000/leg) and less the Commissions/Slippage estimates in Group Settings for the pair.
- Ratio:** Ratio at which the Entry or Exit signal was triggered.
- Time:** The timestamp represents the date and time at which the signal was generated and generated the trading signal in question into the trading signals list, NOT the time of the Trading Signal itself.
- Description:** Description of the Group from which the trading signal originated.
- Green highlight:** Green highlight means a long entry signal was given on this symbol.
- Red highlight:** Red highlight means a short entry signal was given on this symbol.
- Sum of Net Profit:** Sum of the Net Profit results of all of the last Trading Signals displayed on the table. You can add this like Average Median as well.

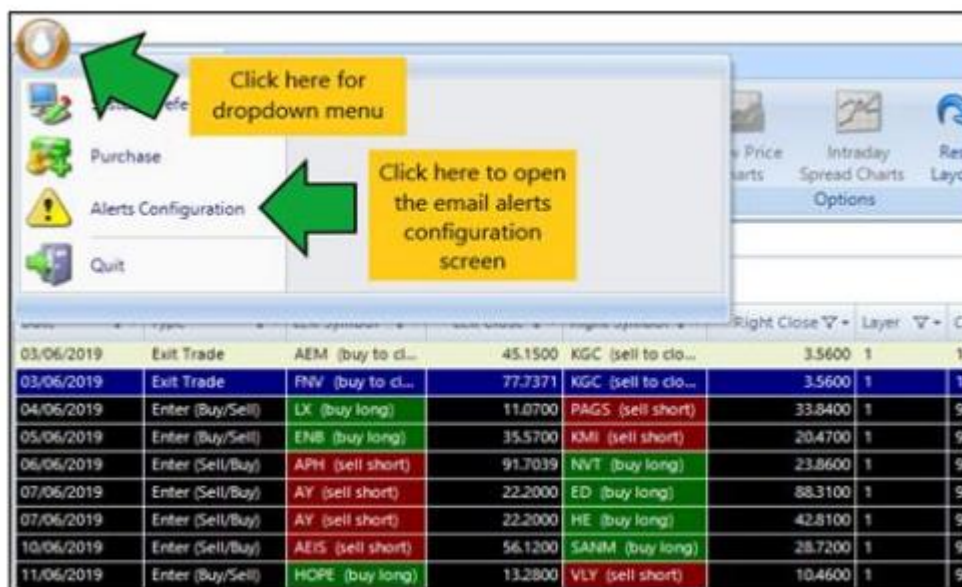
2.5 Setting Up Audio and Email Alerts

Trading signals for analysis and execution will come in during market hours (or during whichever period you have set the Intraday Update schedule). Instead of being glued to the trading signals window all session long, you can set TangoTrade to alert you to new trading signals via an audio beep and/or email.

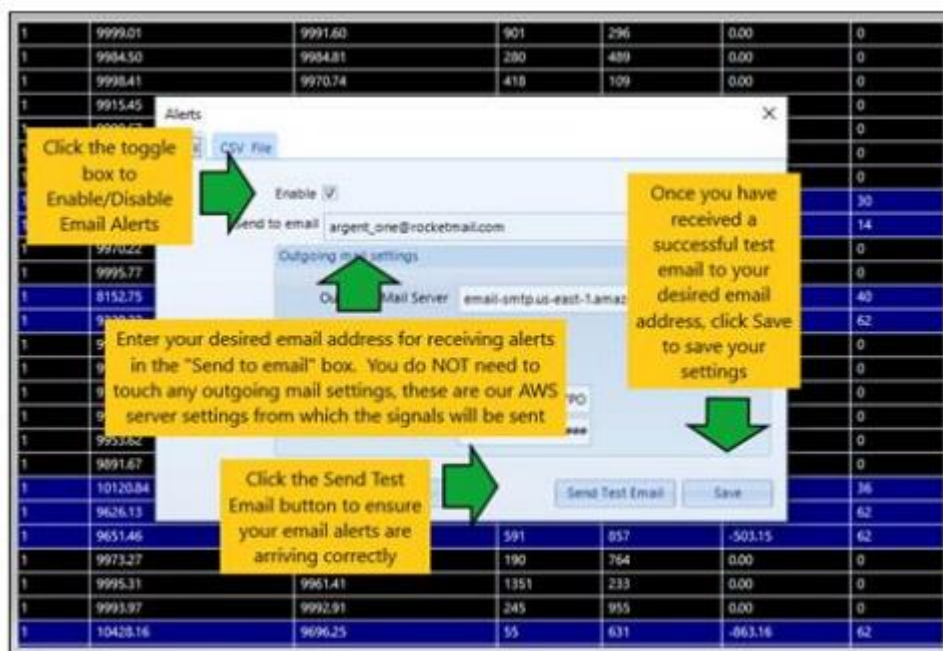
To setup audio alerts, which is a beeping sound when a new trading signal arrives, please **click on the System Preferences** button on the front screen, then **enable the play sound options, which can be customised for each type of signal, click ok.**



To setup email alerts, please **click on the pair logo** in the top left-hand corner of the software, then **click on Alerts Configuration**.



In the Alerts Configuration window, **click on the email tab** and follow instructions as shown in the screenshot below:



Below is an example of what an Entry trading signal sent to your inbox will look like:



Below is an example of what an Exit trading signal sent to your inbox will look like:



Below is an example of what a Max Loss Alert signal sent to your inbox will look like:



We highly recommend you setup at least audio alerts, and/or email alerts so you are notified in real- time when our software has generated a new trading signal for you to review, analyse and/or act upon.

2.6 Analysing Beyond the Trading Signals

In addition to TangoTrade's built-in trading signals, you can further analyse any pair that has generated a signal to select only those signals which i) meet your additional trading plan criteria; ii) which are not the result of news which impacts long-term fundamental value; and iii) have an historical average Days In Trade value that is less than the current number of days until the next earnings releases and ex-dividend dates of each symbol in the pair.

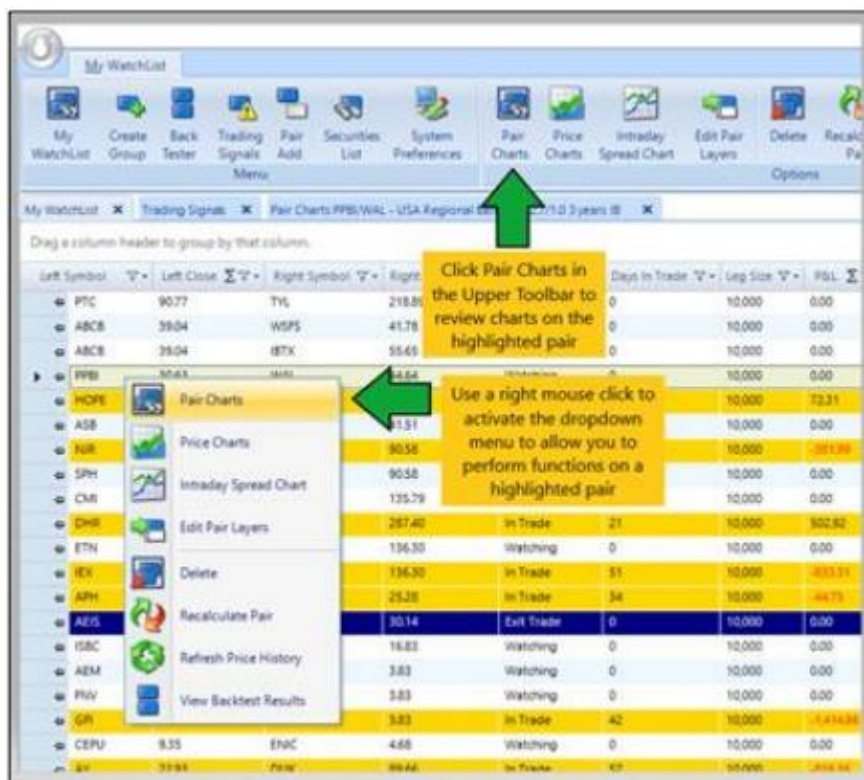
Alternatively, you could trade every signal that is generated from My Watchlist pairs.

Whichever your approach, it should be grounded in rigorous back-testing, position-sizing discipline, and be developed from paper trading (or very small position size live trading) of your system to the point of confidence in its profitability and robustness.

Using the current TangoTrade default signal settings, trading signals are generated at 2.00 standard deviations from the 100 day mean of the core ratio, an exit signal is generated when the pair goes past 0.00 standard deviations ("sd"); i.e. it reverts fully back to the mean. These settings represent the most common settings used in academic research on pair trading and will generate reasonable frequent entry signals (on average about 3-4 per year per pair). The current sd reading on each pair is shown in the "# of Deviations from Mean" column in My Watchlist. Feel free to experiment with other Entry and Exit settings. Many professional pair traders like to use a 2.70 Entry stretch and a 1.0 Exit stretch, or, use Layers for entry. The wider you set the Entry stretch, by definition the less frequently the Entry signals will occur.

To analyse each pair further, you can select a pair in My Watchlist then click on the Pair Charts button. You can also use a right mouse click on the pair in My Watchlist and select Pair Charts from the resulting dropdown menu:

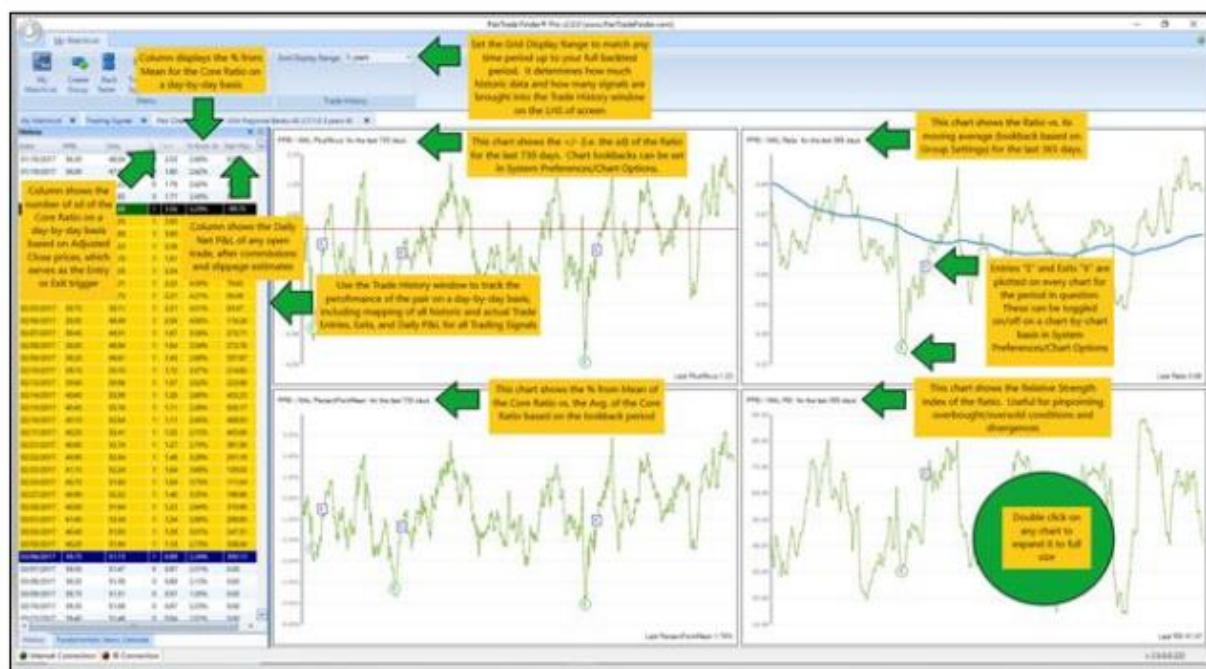
Below you can see the Pair Charts page and an explanation of the many elements contained



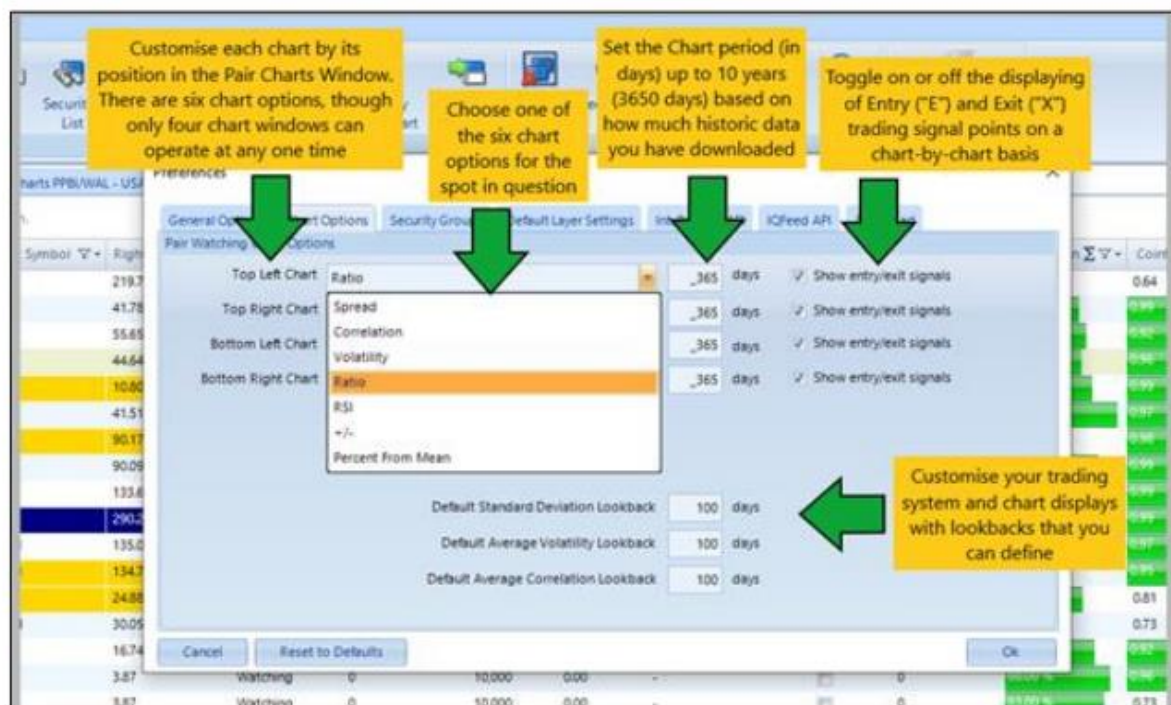
The screenshot displays the Tango Trade software interface. At the top, there is a 'My Watchlist' tab and a toolbar with various icons. A green arrow points to the 'Pair Charts' button in the toolbar, with a text box stating: 'Click Pair Charts in the Upper Toolbar to review charts on the highlighted pair'. Below the toolbar, there is a table of watchlist items. A right-click context menu is open over the 'RFB' item, with a green arrow pointing to the 'Pair Charts' option. A text box next to the menu states: 'Use a right mouse click to activate the dropdown menu to allow you to perform functions on a highlighted pair'. The table contains columns for 'Left Symbol', 'Left Close', 'Right Symbol', 'Right Close', 'Days In Trade', 'Leg Size', and 'P&L'. The 'RFB' item is highlighted in blue.

Left Symbol	Left Close	Right Symbol	Right Close	Days In Trade	Leg Size	P&L	
PTC	90.77	TVL	218.8	0	10,000	0.00	
ABC8	39.04	WSP	41.78	0	10,000	0.00	
ABC8	39.04	BTX	55.65	0	10,000	0.00	
RFB	30.64	WAL	54.64	0	10,000	0.00	
HOF	1.51	WAL	1.51	0	10,000	72.31	
ASB	90.58	WSP	90.58	0	10,000	0.00	
SPH	90.58	WSP	90.58	0	10,000	0.00	
CMR	135.79	WSP	135.79	0	10,000	0.00	
CHR	287.40	WSP	287.40	In Trade	21	10,000	302.82
ETN	136.30	WSP	136.30	Watching	0	10,000	0.00
REX	136.30	WSP	136.30	In Trade	31	10,000	-811.31
APH	25.28	WSP	25.28	In Trade	34	10,000	-44.75
ARS	30.14	WSP	30.14	Exit Trade	0	10,000	0.00
ISBC	16.83	WSP	16.83	Watching	0	10,000	0.00
AEM	3.83	WSP	3.83	Watching	0	10,000	0.00
PRV	3.83	WSP	3.83	Watching	0	10,000	0.00
GR	3.83	WSP	3.83	In Trade	42	10,000	-1,114.88
CEPU	8.33	ENH	4.68	Watching	0	10,000	0.00
AV	33.84	ENH	33.84	In Trade	67	10,000	-1,014.94

therein:



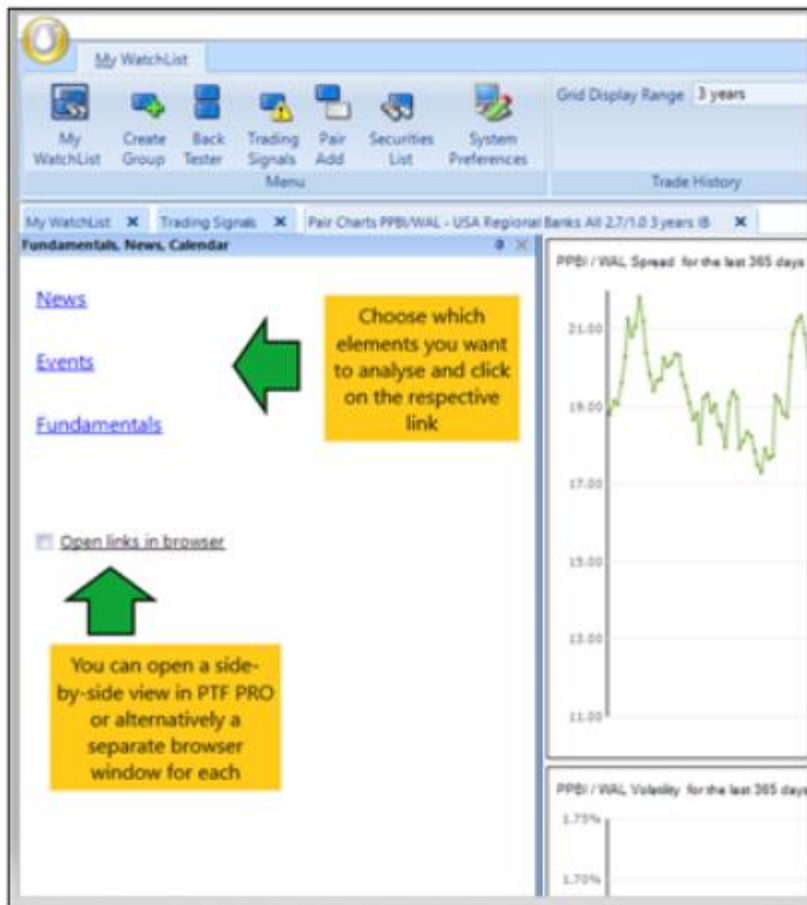
To customise your Pair Charts, go to System Preferences/Chart Options. There are six chart options for Pair Charts (though only four can be displayed concurrently): Spread, Correlation, Volatility, Ratio, RSI, +/-, and Percent from Mean. Chart periods on each can be set separately, and the display of Entry and Exit signal points on each chart can be toggled as well.



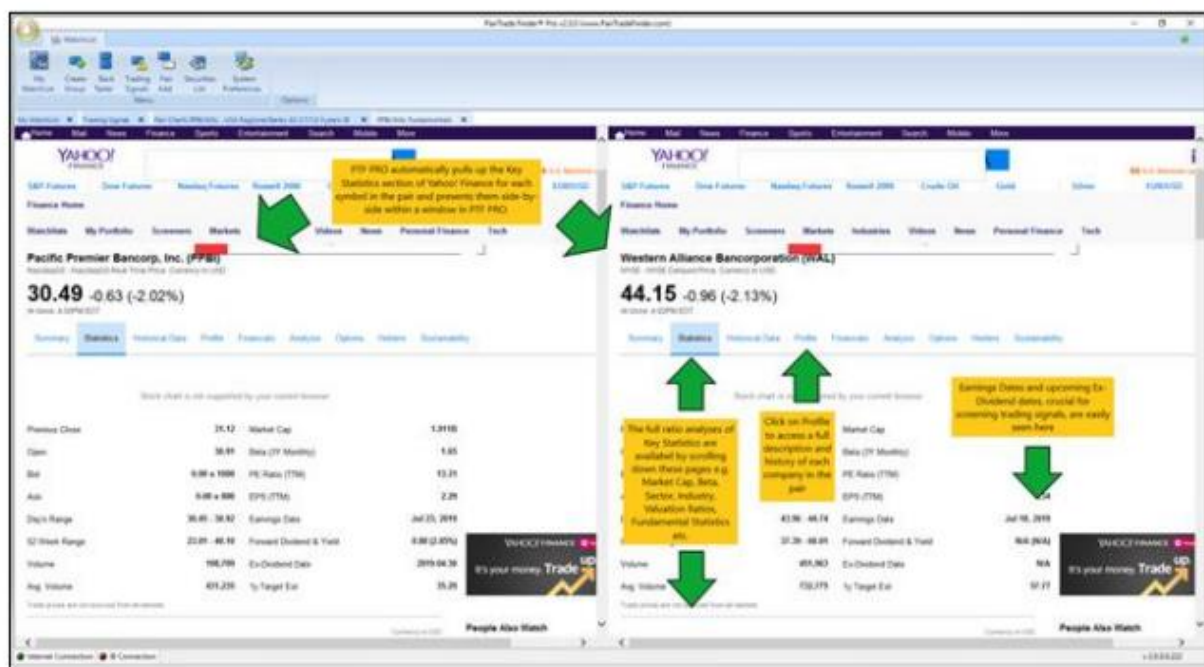
In the same Pair Charts window, you can easily compare the fundamentals of each stock against each other, **click on the Fundamentals, News and Calendar tab** at the bottom of the Trade History window:



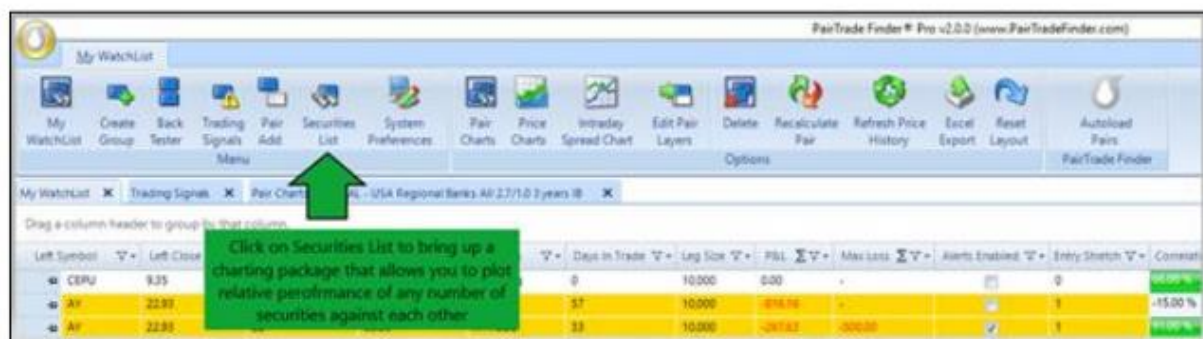
You can choose to review News Releases on each symbol in the pair, Calendar information from the Profile page in Yahoo! Finance and detailed Fundamentals information from Key Statistics:



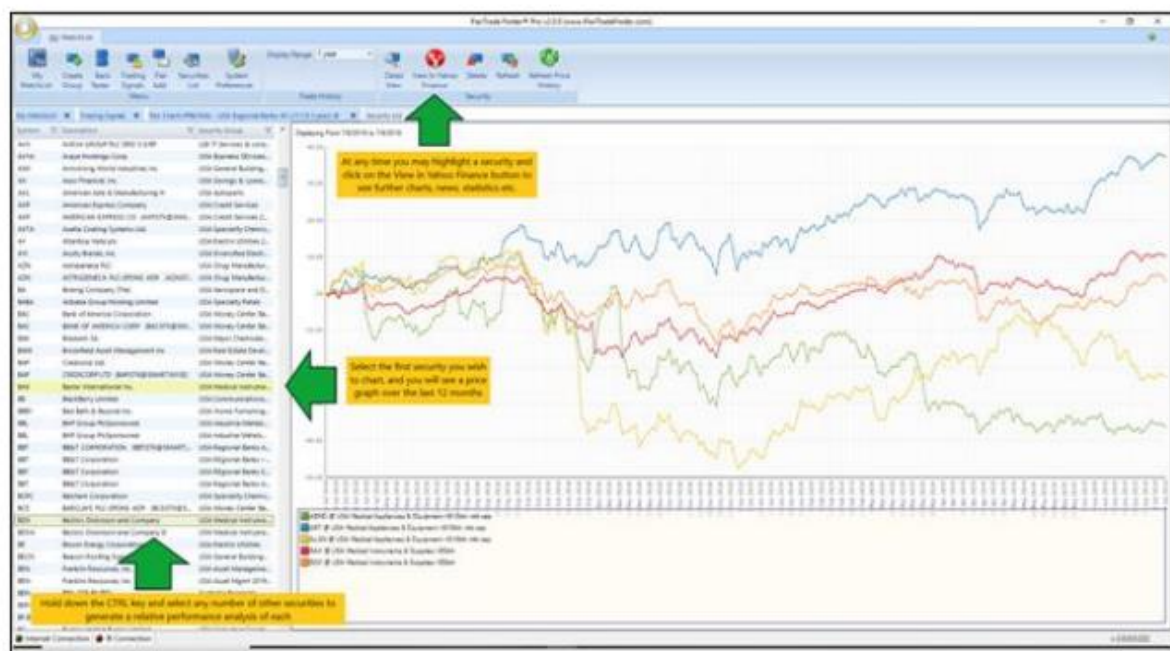
Side-by-side view of the Fundamentals link:



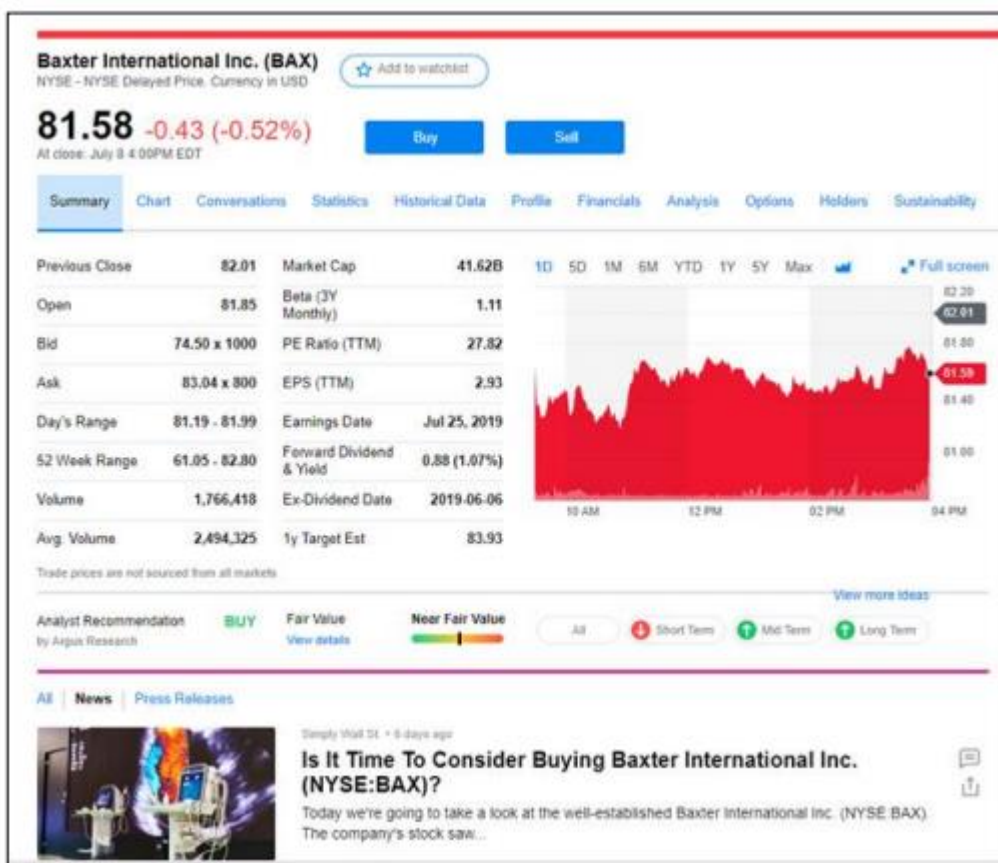
If you would like to compare any two or more securities relative performance against each other you can do so by clicking on the **Securities List** button on the main toolbar:



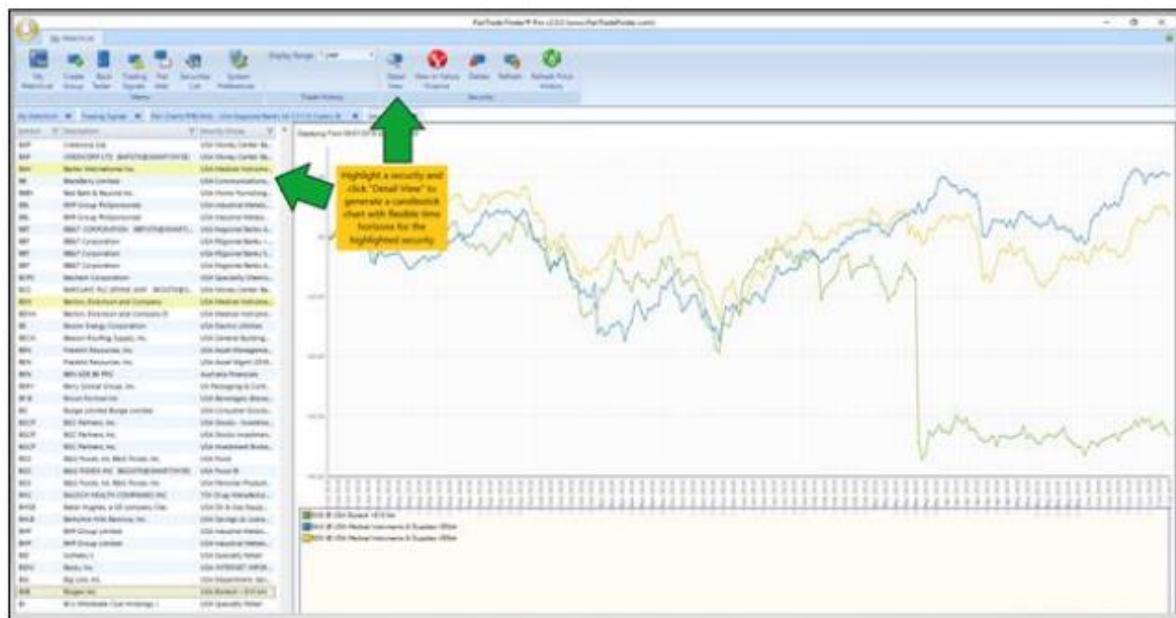
Next, select two or more securities using the CTRL key:



If you wish to see the latest news items released on a particular stock, click on it in the left-hand column, then **click on the View in Yahoo! Finance** button. Your browser will automatically load the selected security code in Yahoo! Finance, so you can quickly see charts, fundamentals, statistics, analyst opinions and any recent news items released on it:



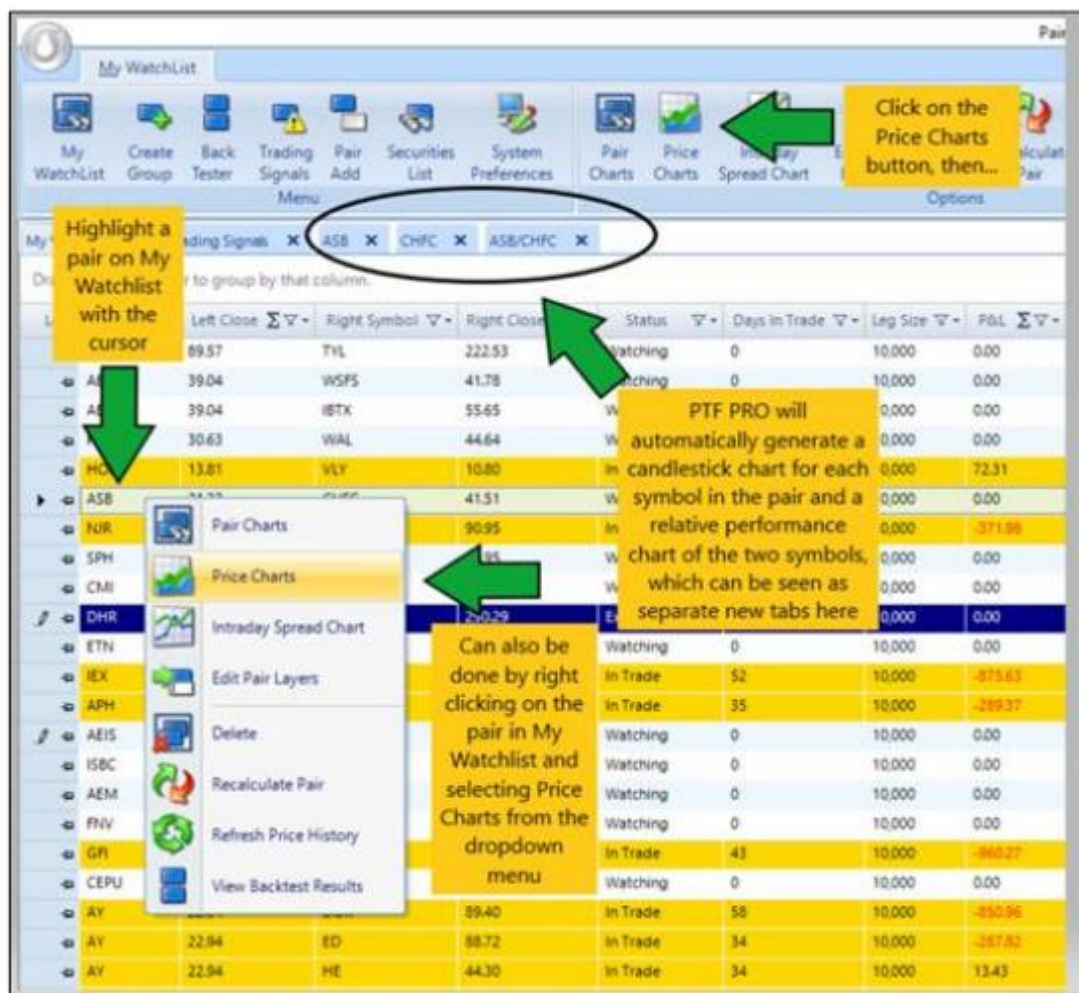
If you wish to view an individual candlestick chart for a stock, please select a stock in the left-hand column, then **click on Detail View**.



Next you will see the detailed view window, where you can analyse daily trading information, whether the stock is trending or ranging, view the most commonly used Exponential Moving Averages and look for key support/resistance levels:



You can also activate from My Watchlist an expedited set of charts – an individual candlestick chart for each symbol in the pair and a relative performance chart of the two symbols – by highlighting the pair on My Watchlist and clicking on the Price Charts button on the upper toolbar or right mouse clicking on the pair and selecting Price Charts from the dropdown menu:



Click on the Price Charts button, then...

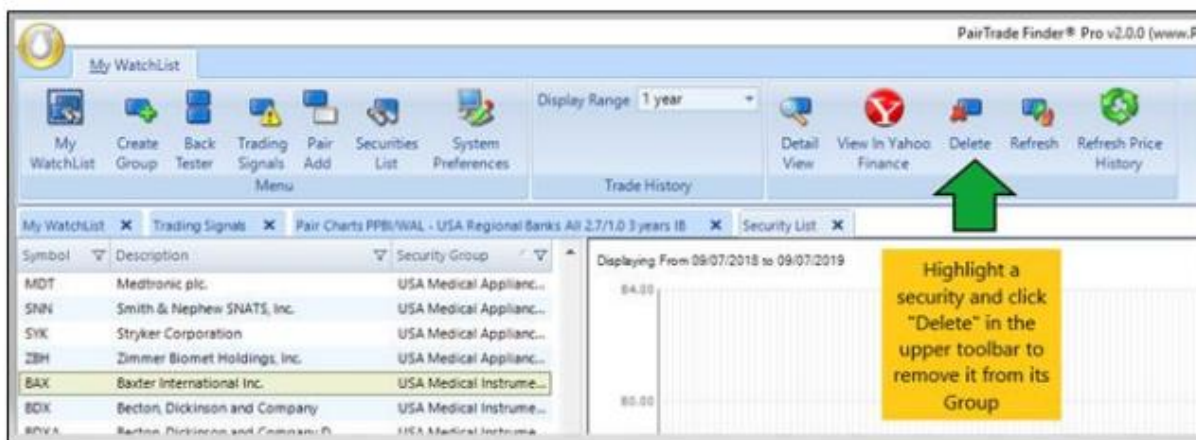
Highlight a pair on My Watchlist with the cursor

PTF PRO will automatically generate a candlestick chart for each symbol in the pair and a relative performance chart of the two symbols, which can be seen as separate new tabs here

Can also be done by right clicking on the pair in My Watchlist and selecting Price Charts from the dropdown menu

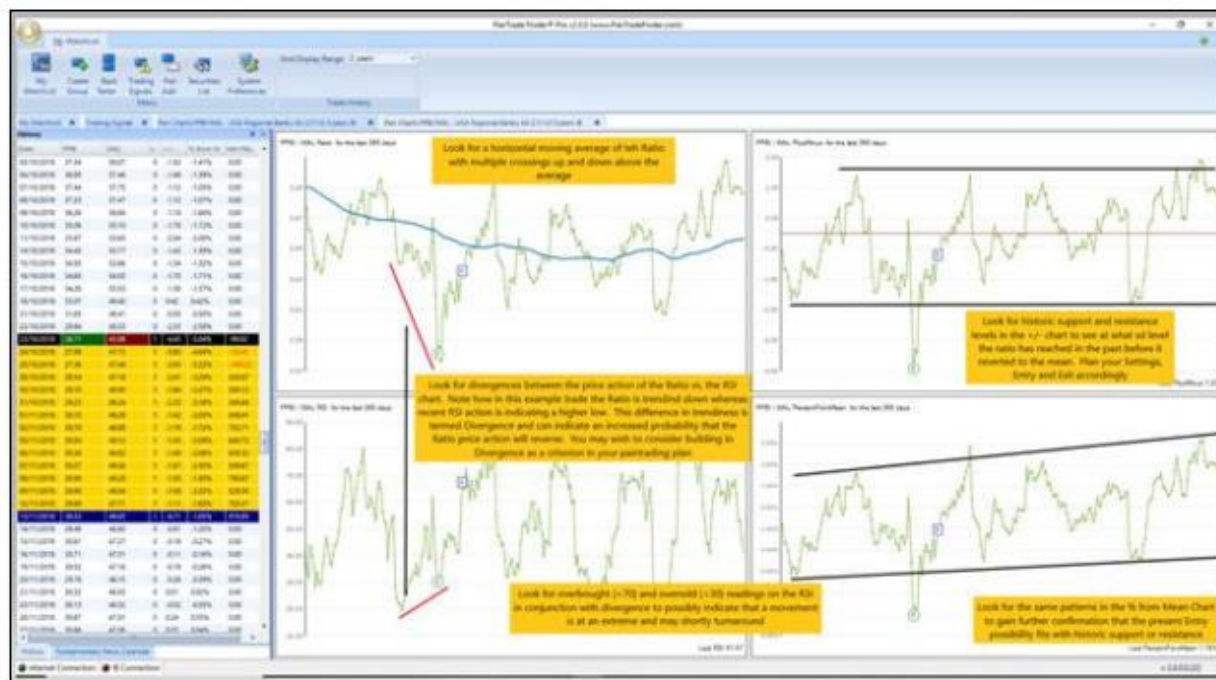
Left Close	Right Symbol	Right Close	Status	Days in Trade	Leg Size	P&L
89.57	TVL	222.53	Watching	0	10,000	0.00
39.04	WSFS	41.78	Watching	0	10,000	0.00
39.04	IBTX	55.65	Watching	0	0,000	0.00
30.63	WAL	44.64	Watching	0	0,000	0.00
13.81	VLY	10.80	In Trade	0	0,000	72.31
41.51	ASB	41.51	Watching	0	0,000	0.00
90.95	NUR	90.95	In Trade	0	0,000	-371.98
26.29	SPH	26.29	Watching	0	0,000	0.00
26.29	CMI	26.29	Watching	0	0,000	0.00
26.29	DHR	26.29	Watching	0	0,000	0.00
26.29	ETH	26.29	Watching	0	0,000	0.00
26.29	IEX	26.29	Watching	0	0,000	0.00
26.29	APH	26.29	Watching	0	0,000	0.00
26.29	AEIS	26.29	Watching	0	0,000	0.00
26.29	ISBC	26.29	Watching	0	0,000	0.00
26.29	AEM	26.29	Watching	0	0,000	0.00
26.29	FNV	26.29	Watching	0	0,000	0.00
26.29	GRI	26.29	In Trade	43	10,000	-860.27
26.29	CEPU	26.29	Watching	0	10,000	0.00
89.40	AY	89.40	In Trade	58	10,000	-850.96
22.94	ED	88.72	In Trade	34	10,000	-287.82
22.94	HE	44.30	In Trade	34	10,000	13.43

If you wish to delete a stock from a particular Group, select it in the left column in the Securities List tab and **click delete**:



Important Tips on Interpreting the Pair Charts

Below is a screenshot with some tips for what to look for when analysing the pair charts. We urge you to feel free to devise your own interpretations and create your own custom trading rules:



The Ratio chart is probably the most used chart in pair trading, shown in the top left-hand corner in the above screenshot, it is the left stock in a pair divided by the right stock. In the above example, the latest ratio is 0.69. When the +/- column is showing a negative number, the ratio is below its mean, vice versa when the +/- column is showing a positive number. When we are betting on a rising ratio, we are betting on



the left code outperforming the right code, i.e. long the left stock / short the right stock, and vice versa when we are betting on a falling ratio price.

In the above example of the RSI divergence between the ratio and the RSI price, you can see the ratio chart move lower but in the same period the RSI makes a higher low, indicating a divergence. We like to follow the direction of the RSI chart, so we would be bullish on the ratio, thus betting on the left code (PPBI) outperforming the right code (WAL).

Ideally the best trading signals occur on pairs with the best backtesting results and that are very stretched from their mean on no significant news items. For example, if the pair PPBI/WAL was 4.43 standard deviations and 5% away from its mean on no significant news items and with sufficient time before the next earnings releases and dividend dates, with the divergence as seen above, this

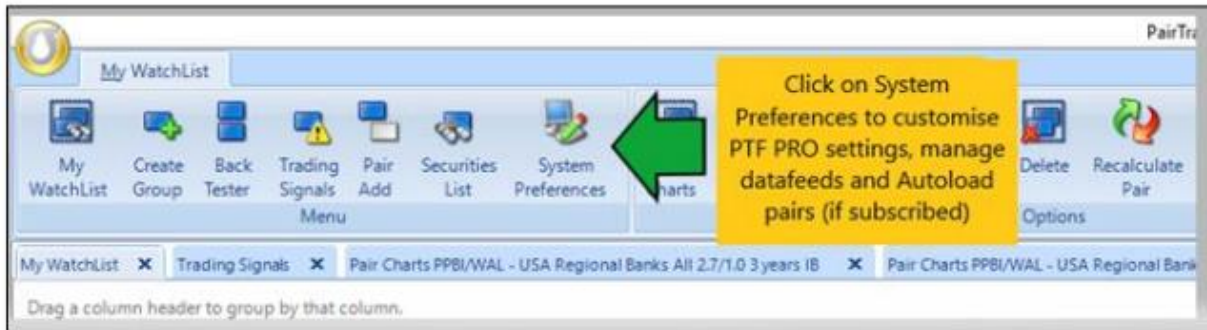
set up presents a very good trading opportunity. Not every trade with a great setup may win, but out of 10 or more of these trades, you will likely come out on top.

The best way to get good at pair trading is the same way to get good at anything else; read, learn, practice, persist, be patient, then practice some more. You will get better at identifying the highest probability setups and you will find your trading nirvana. Pair trading can be the vehicle that will get you there, as it has for many traders since the early 1900s. It is ultimately up to you, the trader, as to whether you will make it succeed for you or not.

2.7 Customizing Your Own Trading System

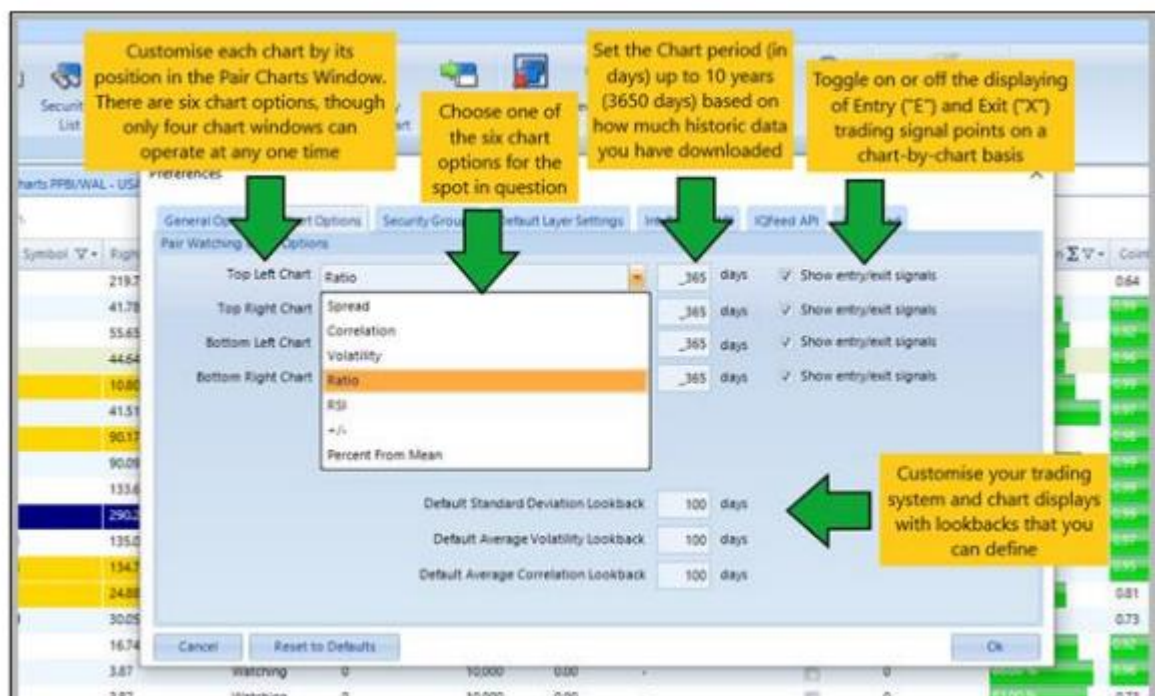
TangoTrade is designed to be highly customizable, flexible and appealing to a wide audience of traders. Accordingly, traders can customize how the charts are shown in the Pair Charts window, how trading signals are generated, how trading parameters are calculated, how semi-autotrade order types are sent and more.

To change the chart settings, go to My Watchlist, then please **click on System Preferences**:

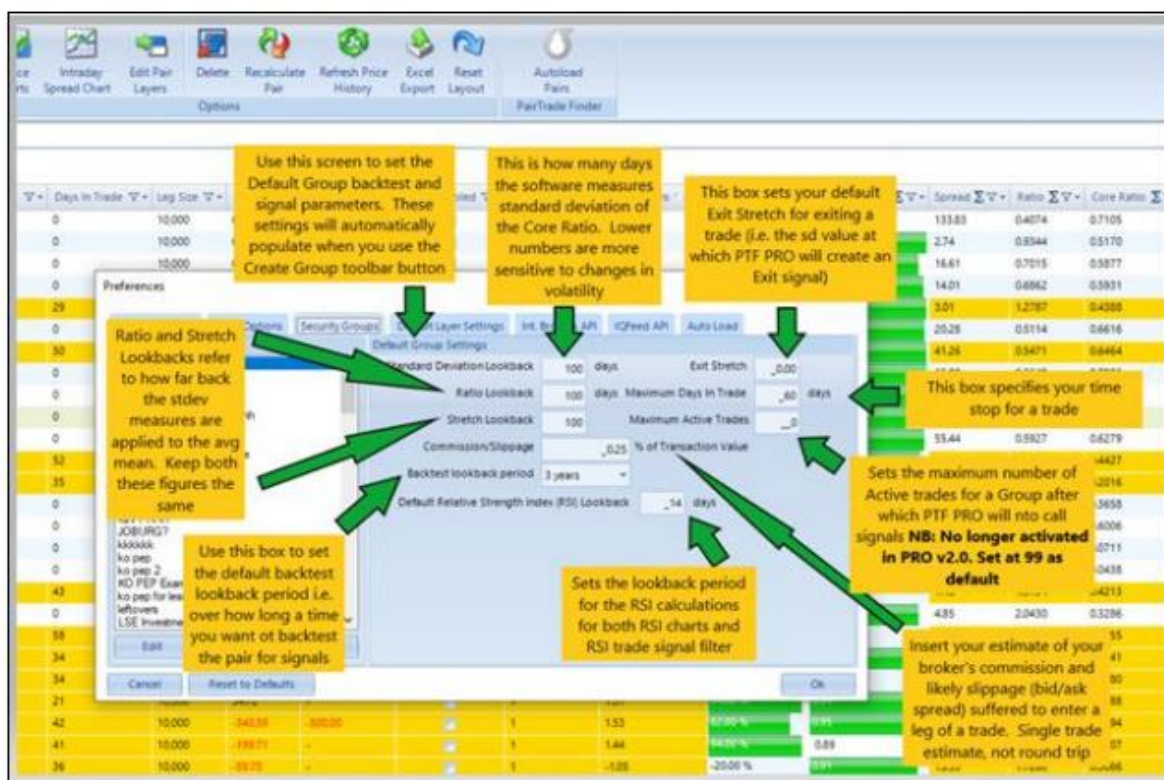


As we outlined above in Pair Charts, if you click on **the Chart Options tab under Systems Preferences**, you can choose:

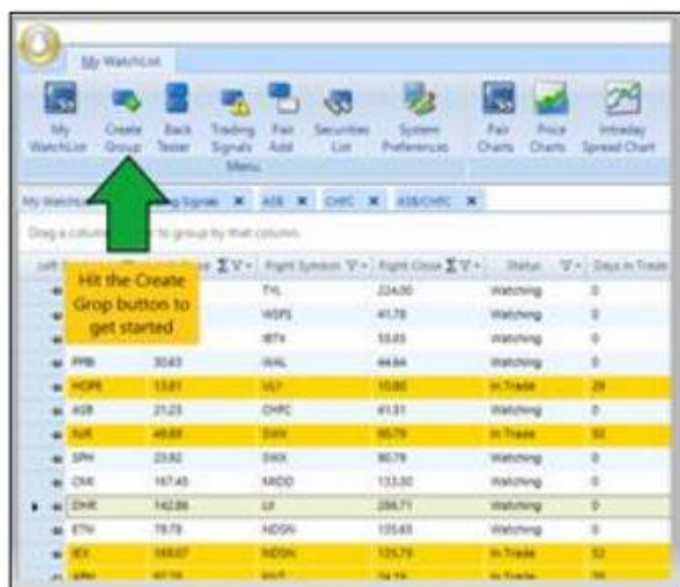
1. which charts are shown where (up to six different option, though only four can display concurrently), including Spread, Correlation, Volatility, Ratio, RSI, +/-, and Percent from Mean)
2. which lookback period to use for each of Correlation, Volatility and Standard Deviation (RSI Lookback is set in Group Settings for each Group)
3. the chart time period (up to 10 years, based on how much historic data you have retrieved)
4. and whether to show Entry and Exit trading signal points on a chart-by-chart basis



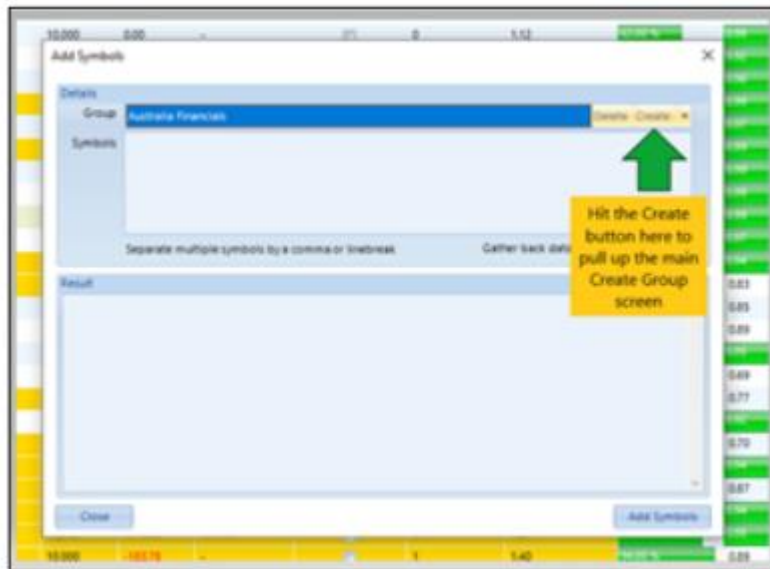
You can also fully customise how the signals are generated for each individual Group you create. To edit the default parameters that will automatically populate every time you click on "Create Group" on the main toolbar, **click on System Preferences**, then the **Securities Groups** tab. On the right-hand side of this box you will see the default Group settings. Please refer to the below screenshot for definitions of each parameter:



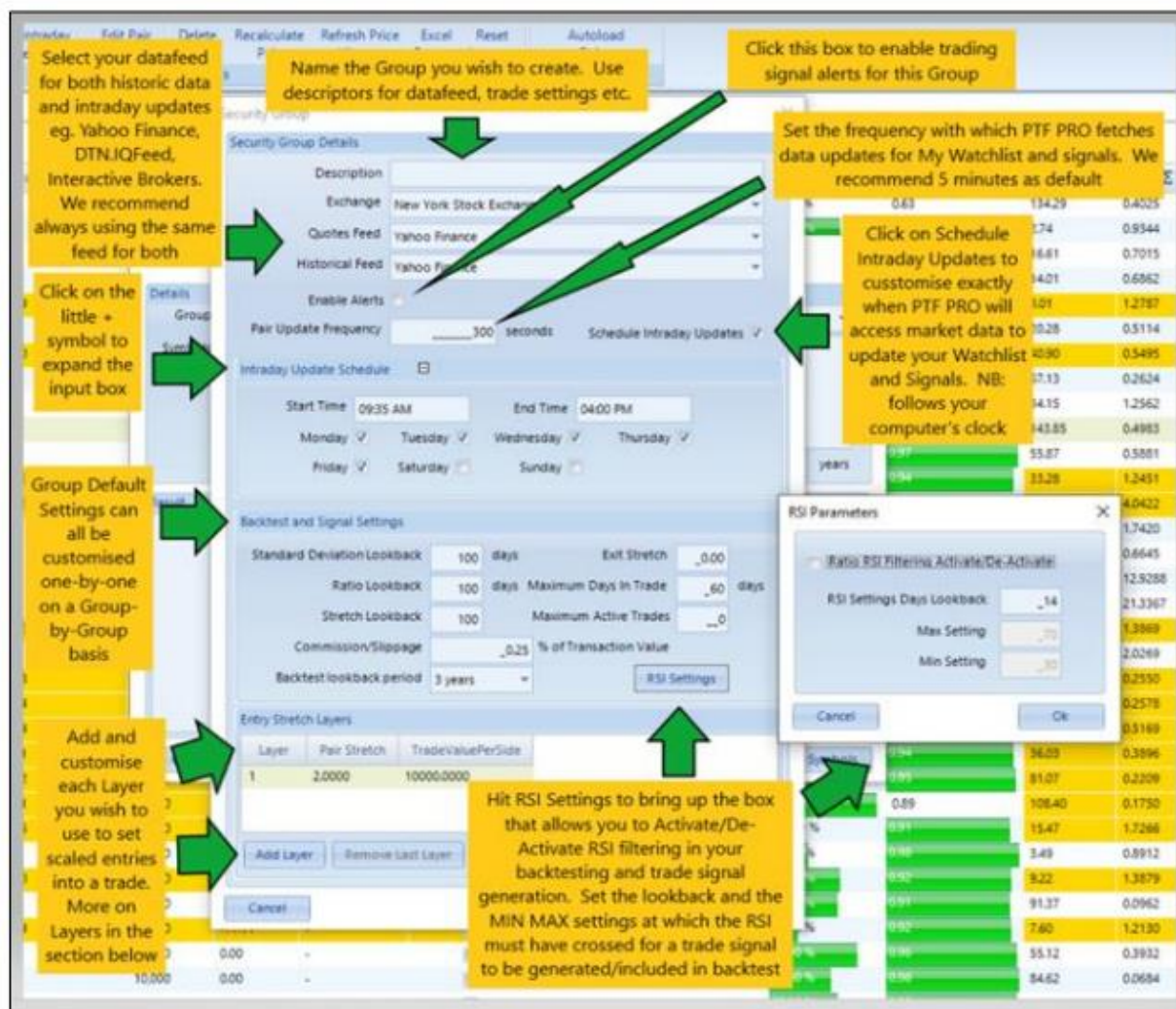
With these Default Group Settings in place, we can now show how to customise TangoTrade's settings and trading parameters further. Go to the main toolbar and click the Create Group button.



Then hit the Create button in the upper right:



This button pulls up the main Create Group screen. The screenshot below shows you the meaning and customisability of each of the elements on this very important screen:



Select your datafeed for both historic data and intraday updates eg. Yahoo Finance, DTN IQFeed, Interactive Brokers. We recommend always using the same feed for both

Name the Group you wish to create. Use descriptors for datafeed, trade settings etc.

Click this box to enable trading signal alerts for this Group

Set the frequency with which PTF PRO fetches data updates for My Watchlist and signals. We recommend 5 minutes as default

Click on Schedule Intraday Updates to customise exactly when PTF PRO will access market data to update your Watchlist and Signals. NB: follows your computer's clock

Click on the little + symbol to expand the input box

Group Default Settings can all be customised one-by-one on a Group-by-Group basis

Add and customise each Layer you wish to use to set scaled entries into a trade. More on Layers in the section below

Hit RSI Settings to bring up the box that allows you to Activate/De-Activate RSI filtering in your backtesting and trade signal generation. Set the lookback and the MIN MAX settings at which the RSI must have crossed for a trade signal to be generated/included in backtest

RSI Parameters

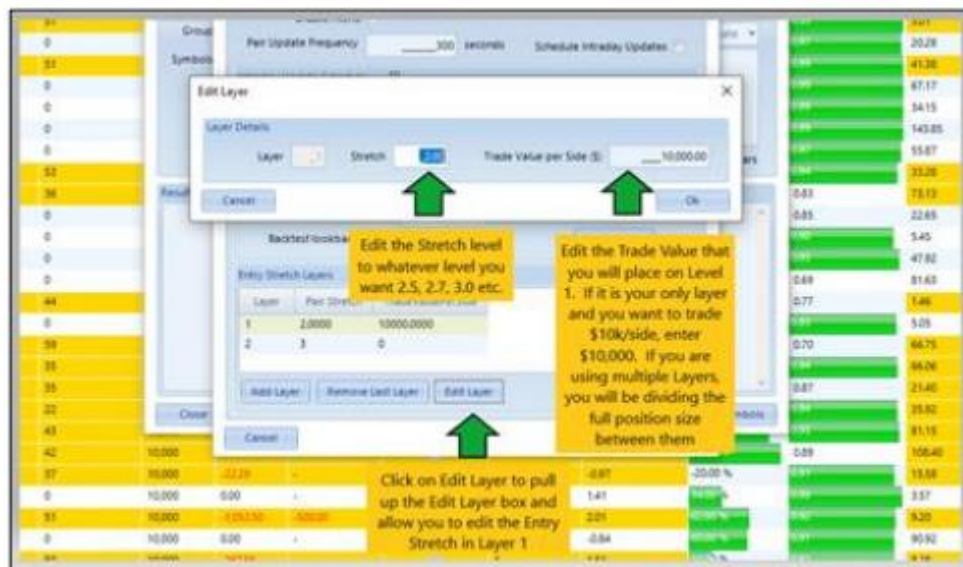
Ratio RSI Filtering Activate/De-Activate: ☐
 RSI Settings Days Lookback:
 Max Setting:
 Min Setting:

Layer	Pair Stretch	TradeValuePerSide
1	2,000	10000.0000

Pair	Price	Volume	Open	High	Low	Close
0.63	134.29	0.4025	127.4	0.9344	16.81	0.7015
14.01	0.6862	1.01	1.2787	10.28	0.5114	40.90
17.13	0.2624	14.15	1.2562	143.85	0.4983	55.87
13.28	1.2431	4.0422	1.7420	0.6645	12.9288	21.3367
1.3889	2.0269	0.2550	0.2578	0.5189	0.04	36.03
0.99	0.2209	81.07	0.2209	0.89	106.40	0.1750
0.91	1.7268	15.47	1.7268	0.99	3.49	0.8912
0.92	1.3879	9.22	1.3879	0.91	91.37	0.0962
0.92	1.2130	7.60	1.2130	0.92	55.12	0.3932
0.96	0.0684	84.62	0.0684			

2.8 Customizing and Using Entry Levels in TangoTrade

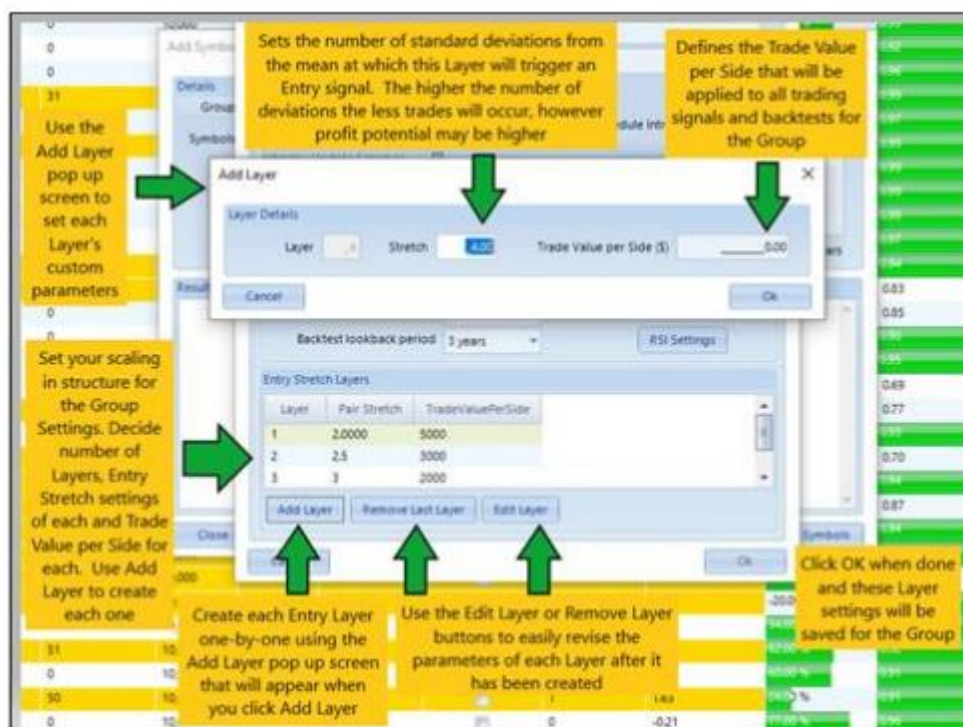
To modify the entry trigger level, that is, how many standard deviations a pair must be away from its mean before our software generates an Enter Trade signal, please click on Edit Layer as outlined in the screenshot below. You will see the Edit Layer screen appear:



If you are only using one entry layer, input this as Layer 1, assign it an entry stretch level, and input your preferred Trade Value per Side. By default, TangoTrade generates entry signals when the pair is 2.00 standard deviations (“sd”) from the mean. You can change this to 2.50 sd, 2.70 sd or whichever level you find most appropriate for your trading style.

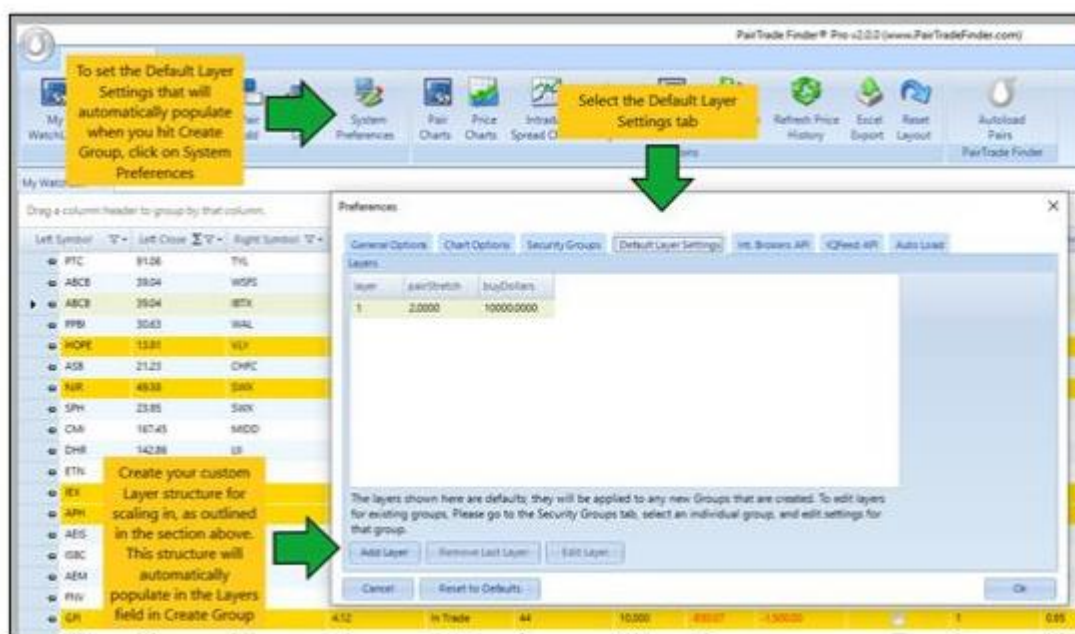
As a powerful customisation feature to allow you to scale-in to your pair trades, you can also add additional Entry Layers to the system, that is, have additional entry signals in the same pair if it keeps on moving away from the mean. For example, you could setup Layer 1 at 2.00 sd, Layer 2 at 2.50 sd, and a Layer 3 at 3.00 sd so you can scale-in to your trade to improve your Entry Stretch “cost” average. Layering is only recommended for experienced pair traders.

The screenshot below will show you how to add various layers to your Group Settings, with custom Trade Values per Side for each Layer:



You may wish to set individual entry layers for each pair, for e.g. for two highly correlated, liquid ETFs you may want to set a 2.00 sd layer. However, for a risky small cap NASDAQ biotechnology pair you want may to use 3.00 sd along with smaller position sizing. To edit individual layers for pairs, go to the My Watchlist screen, select a pair, and then **click on Edit Pair Layers**:

To set the Default Layer Settings so that you can input a custom scaling-in structure that will automatically populate in the Layers field every time you use Create Group, go to System Preferences/Default Layer Settings where this customisation can be created:

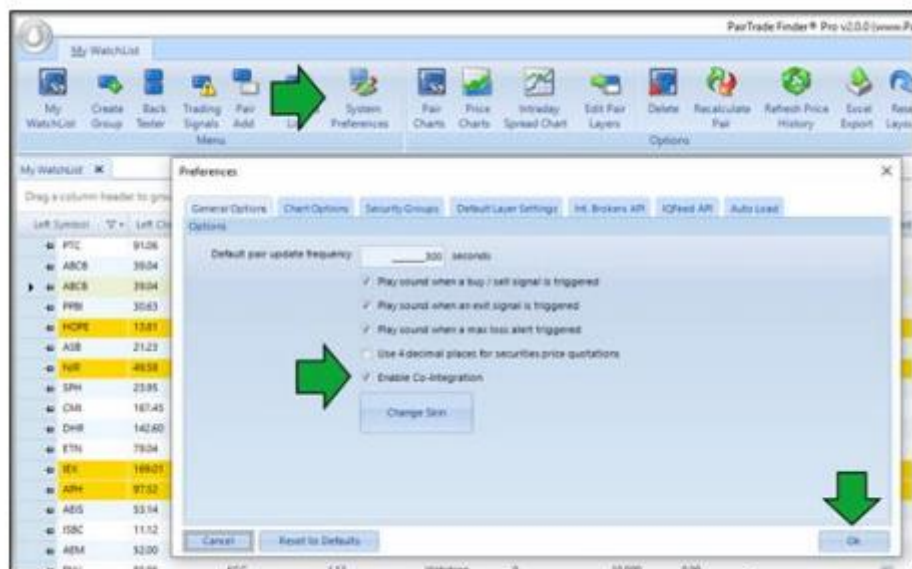


As you can see, TangoTrade is highly customisable and its unlikely two traders will execute exactly the same trades over time. You can use and customize TangoTrade in any way you can imagine. Some traders can get very creative with their trading rules and combinations, others swear by the RSI chart, others buy the dips in up-trending ratio charts backed with fundamentals, some will only trade pairs in a certain industry etc. It really is up to your imagination as to what you can devise and backtest for profitability and robustness.

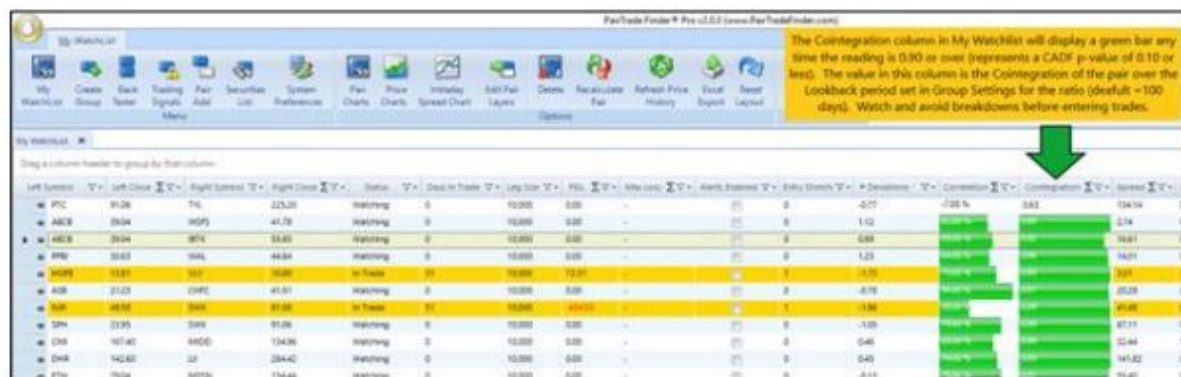
Pair trading is part science, part art. It is a skill that you can grow and develop over time. Before you know it, your trading will come naturally to you just like driving a car or riding a bicycle.

2.9 Using Co-integration with TangoTrade

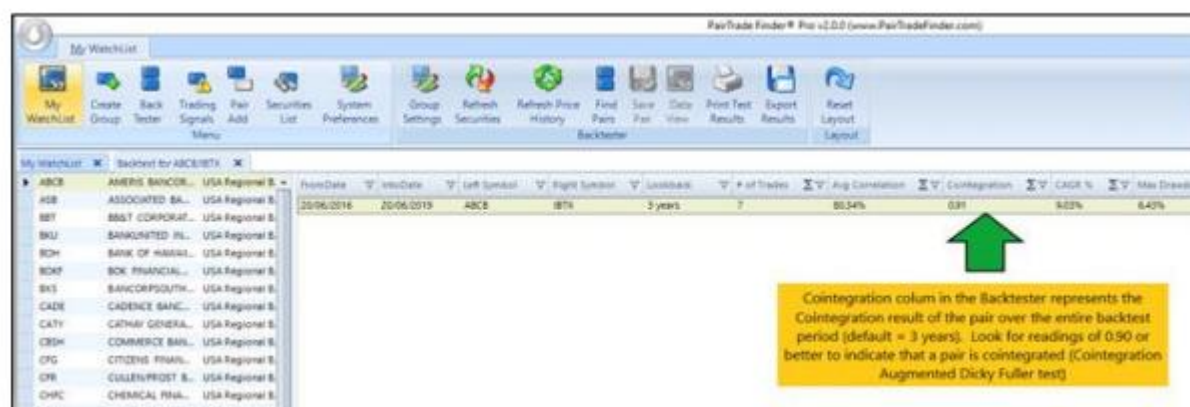
One of the most powerful features of TangoTrade is the ability to calculate and monitor Cointegration for backtested and My Watchlist pairs. You can enable the Cointegration function in System Preferences/General Options, just check the box:



Once you check the box there will be a column in My Watchlist titled Cointegration:



And in the Backtester for initial pair selection:



Below we will give you an explanation of Cointegration, why it's important in pair trading and how to use it with TangoTrade.

In essence, cointegration measures the tendency for a pair to revert back to its mean i.e. how often it will coverage back to its moving average after diverging. This metric is a superior measure of a relationship of two securities' prices for pair trading compared with correlation. Correlation only measures the similarity in movement between two stocks or other instruments, not whether their pair is mean-reverting. Mean reversion in pair trading means profits.

Cointegration measurement in TangoTrade is shown as a value between 0.01 – 0.99. We use the Cointegrated Augmented Dickey Fuller ("CADF") test for our trading purposes as we are trading the relationship of only two securities at any given time. More detail on this test can be found here:

<https://www.quantstart.com/articles/Cointegrated-Augmented-Dickey-Fuller-Test-for-Pairs- Trading-Evaluation-in-R>

Instead of getting too deeply into the statistical mathematics, all you need to know is this: with TangoTrade, ideally you want to trade pairs with a cointegration reading above 0.90. This reading means there is a greater chance the symbols' ratio will mean-revert and our trading signals will produce a profit.

NB: We take the p-value resulting from the CADF test and subtract it from 1 to produce our measurement. Hence a CADF p-value of 0.05 would display in TangoTrade as 0.95. Many of our users find this transposition intuitively helpful.

The amount of data you load when setting up a backtest for each instrument is what TangoTrade uses to calculate cointegration. We find measuring as much data as possible is optimal for finding true long-term, mean-reverting pairs.

Remember to rotate your pairs on My Watchlist so you are regularly deleting low cointegration pairs and looking for and adding high cointegration pairs.

This criterion is the most important measure for finding suitable pairs to trade.

As far as we are aware, TangoTrade is the only application available on the internet that accurately calculates cointegration in real-time on over 1,000,000 different trading instruments on 126 markets in 20 countries, with 1-click, semi-autotrading ability. This capacity of TangoTrade levels the playing field



between hedge funds and online traders by giving you access to the same type of information used by professional hedge fund managers.

2.10 Autoloading TangoTrade Top 30 US Equities Pairs

As of the date of writing of this Manual, Event Driven Investor Ltd., the publisher of TangoTrade software, also offers its own curated Top 30 US Equities Pairs as a separate subscription or as a promotional offer to new subscribers to our software.

These pairs, developed over thousands of hours by our team and updated every 2-3 months or so, are available to be Autoloaded into TangoTrade when you first open the program after signing up for a free trial or subscribing. Each stock pair we select for the Top 30 must meet stringent selection and return hurdles and pass a basic fundamental screening (using Yahoo! Finance historic data and Adjusted Close Price) as follows:

Sample Selection:

- NYSE/AMEX/NASDAQ > \$1 bln mkt cap (most greater than \$3bln), > \$2m/day of avg. daily traded volume(\$), easy-to-borrow
- Broadly similar fundamentals, same national market, same sector, usually same industry sub group. Preference for beta-neutral, market-cap-neutral pairs, though this neutrality is not always possible
- Backtested over TWO OR THREE YEARS with a 2.0 Entry Stretch, 0.0 Exit Stretch, \$10,000/leg, no RSI Filter applied. 0.25% Commissions/Slippage per trade. 60 days Max Days in Trade, 100-Day Lookbacks

Target Results:

- Target Cointegration of ≥ 0.90
- Target Compound Annual Growth Rate of Net Profits > 12.5% p.a. on a self-financing basis (i.e. before leverage), and in excess of Maximum Drawdown %
- Minimum Win Rate at least 67%, target of > 75%
- Target Correlation of > approx. 50%, lower can be tolerated if pair is highly cointegrated and meets all other criteria
- Total Commissions/Slippage < 20% of Gross Profit

Please Note: The example US Equities Pairs in PairTrade Finder® Pro are provided for informational and educational purposes only and the signals resulting therefrom should not be construed as personalized investment or trading advice. It should not be assumed that trading using the signals and parameters demonstrated by the Software will be profitable and will not result in losses. All signals are illustrative, based on a general portfolio size, and are provided solely for further user analysis. As markets evolve over time, we provide no warranty that the pairs provided will continue to meet the original selection criteria.

To Autoload the Top 30 US Equities Pairs on your initial bootup of TangoTrade, simply click on the Autoload Pairs button in the Upper Toolbar on My Watchlist page:

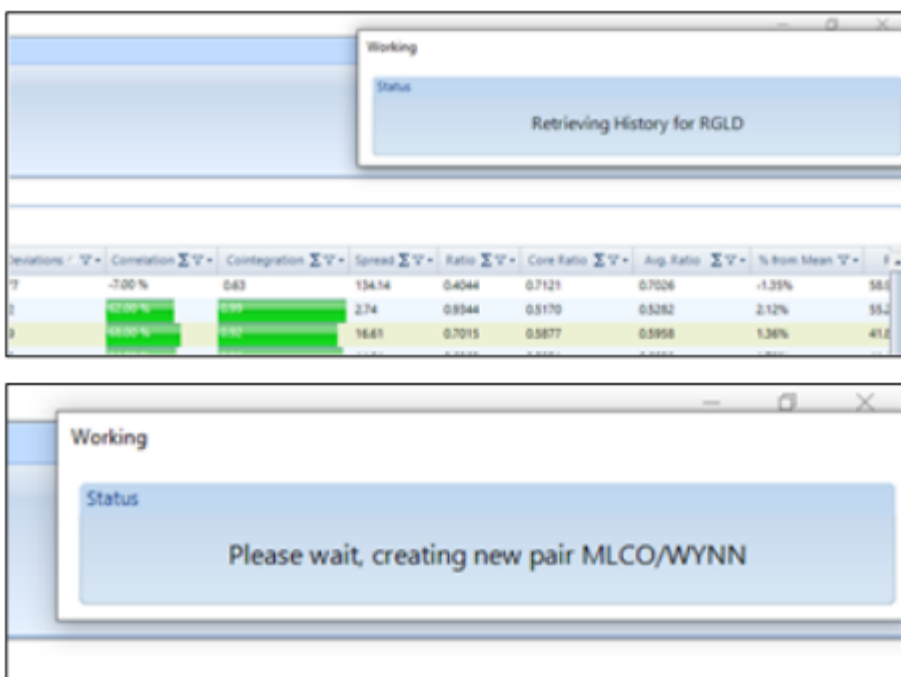


The Autoload tab can also be accessed at any time through System Preferences/Autoload.

You will then be prompted to select the datafeed with which you wish to Create the Top 30 Group in My Watchlist. NB: if you wish to use IQ Feed or Interactive Brokers data to create your Top 30 Group then these feeds must have been connected to TangoTrade previously (see relevant sections further on in this manual):



Once you have selected your datafeed, TangoTrade will then access the relevant API for the historical data and begin creating the Top 30 Pairs one-by-one. You will see these populate in My Watchlist as it occurs. Initially, they will show no data in the rows in My Watchlist until TangoTrade goes and fetches the latest data update, which takes a few minutes:



Partrade Trader 4 - Rq v2.0.0 - www.partrade-trader.com

My WatchList

WatchList Groups Back Tester Trading Signals Portfolio Security System Risk Risk Charts Technical Charts Risk Management Options Partrade Work Excel Export Report Layout

My WatchList

Drag a column header to group by. Sort columns.

Group	T+	Comments	T+	Left Symbol	Left Price	Right Symbol	Right Price	Status	T+	Vol	OI	P&L	Size	Delta	Gamma	Theta	Vega	Rho	Conv
PTT Top 50 US Equities Price Jun 10 2019		Gold & Copper Miners	NOU	4.12	NOU	108.12	Watching	0	10,000	0.00	-	0	0	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Excess & Receipts	NOU	23.04	WHA	139.34	Watching	0	10,000	0.00	-	0	0	0.01	0.01%	0.01%	0.01%	0.01%	0.01%
PTT Top 50 US Equities Price Jun 10 2019		Application Software > \$100m	NOU	308.86	AMS	208.05	Watching	0	10,000	0.00	-	0	0	0.10	0.22%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Major Chemicals and Agricultural Chemicals	NOU	18.71	CF	66.71	News Trade	10	10,000	0.00	-	0	0	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Major Chemicals and Agricultural Chemicals	NOU	22.81	CF	70.00	In Trade	25	10,000	-25.00	-	0	0	-1.71	-10.00%	-0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Chemical (Other) > \$100m net	NOU	45.49	WST	22.40	Left Trade	0	10,000	0.00	-	0	0	2.10	0.74%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		General Building Materials	NOU	28.18	WMC	124.32	Watching	0	10,000	0.00	-	0	0	-1.13	-1.00%	-0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Independent Oil & Gas	NOU	7.37	FANG	129.68	Watching	0	10,000	0.00	-	0	0	-1.48	-0.99%	-0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Asset Management	NOU	27.80	AM	17.41	Watching	0	10,000	0.00	-	0	0	-0.91	-2.40%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Natural Products, Processed & Prepared Foods	NOU	17.00	WFC	17.00	In Trade	10	10,000	1,000.00	-	0	0	0.72	1.12%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Medical Appliances & Equipment	NOU	36.00	WFC	120.78	In Trade	17	10,000	261.39	-	0	0	1.21	3.40%	0.00%	0.00%	0.00%	0.00%
PTT Top 50 US Equities Price Jun 10 2019		Biotech > \$10m	NOU	124.27	AMGN	160.27	Watching	0	10,000	0.00	-	0	0	-1.52	-1.80%	0.00%	0.00%	0.00%	0.00%

62

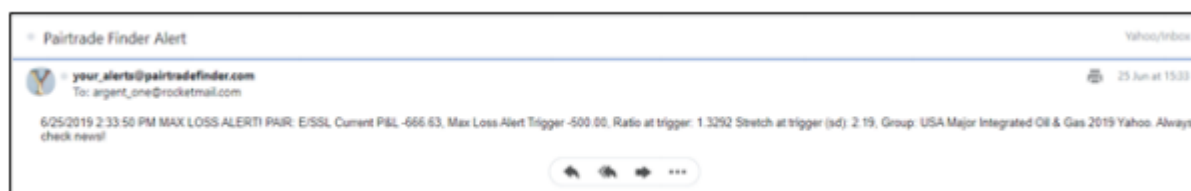
2.11 Using Max Loss Alert to Trigger Stops and Trailing Stops

The newest feature we have implemented in TangoTrade v2.0 is the Max Loss Alert function. This function allows you to set a maximum loss amount at which, when the EOD or Intraday Profit and Loss of any given pair reaches that amount, an audio and email alert will immediately be sent.

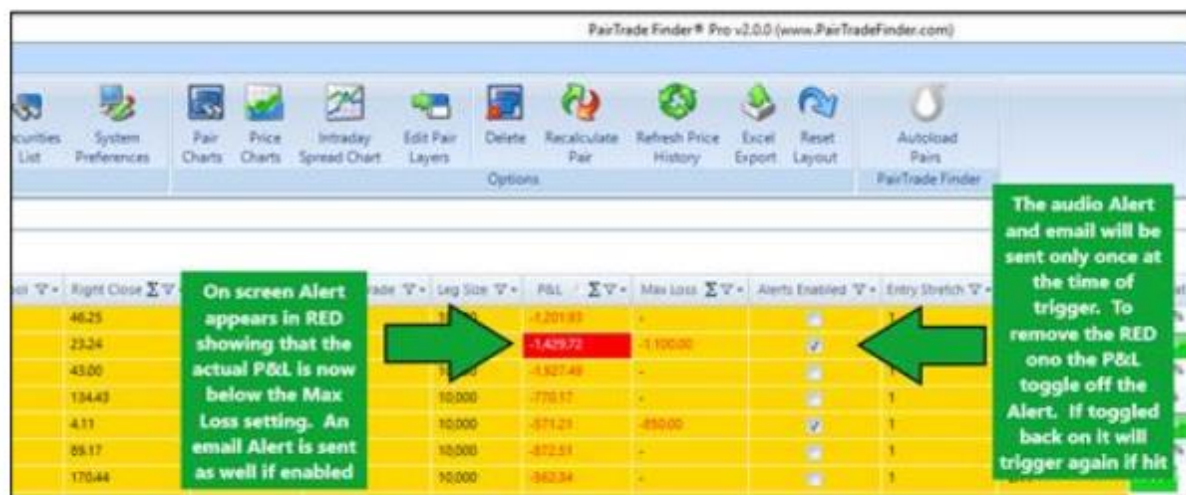
For example, if the pair E/SSL on My Watchlist is not performing well and has a running P&L of - \$1088 as in the screenshot below, you can click on the Max Loss column and input an amount of maximum loss at which you want TangoTrade to send you an Alert (say \$1,500 as in the example below) so that you can close the trade. The column next to the Max Loss column is headed Alerts Enabled and allows you to toggle on/off a Max Loss Alert on a pair-by-pair basis.



A Max Loss Alert will be delivered by email (when you have email alerts enabled) and will look something like this (different settings than example above):

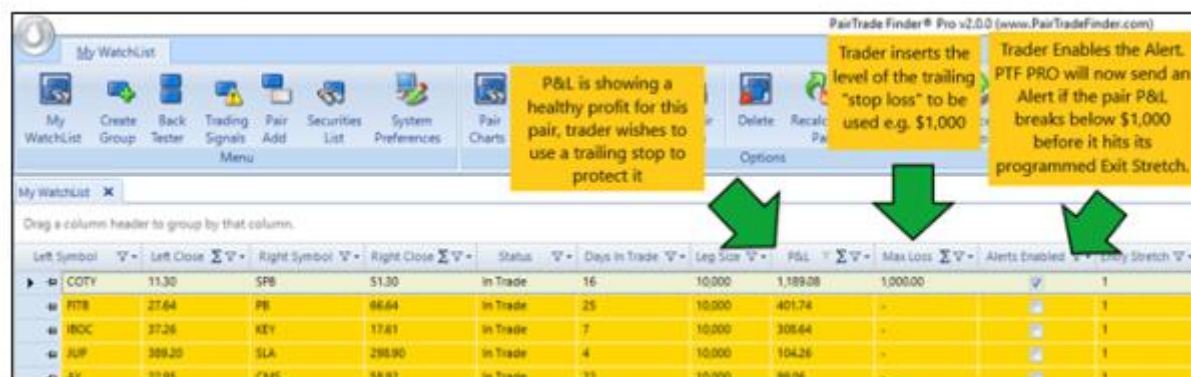


At the same time, the Max Loss column and box for the pair in question will highlight in RED, offering a visual alert, and an audio alert will sound as well (if enabled):



Whether you use max loss stop losses or not in your pair trading plan is up to you. Some traders do, others do not and rely on small position sizing and very large cap/low volatility shares to protect their downside risk. We will discuss this point further in section 4.7 below.

However, there is an excellent use of the Max Loss feature that we believe all pair traders may consider, and that is to employ it as a trailing stop alert. Say a pair you are trading has moved into a healthy profit position, in excess of the average net profit per trade historically. Let's take COTY/SPB below. The current EOD P&L is \$1,189. But the # of Dev is still 0.75, when the Exit Stretch is 0.00. Perhaps the trader got a very wide Entry Stretch on this pair. Perhaps it is now well over historic Average Net Profit per Trade and/or Average Net Profit of Winning Trades (in fact COTY/SPB shows over \$1,400 Avg Net Profit a Trade and 100% winners, but please follow our hypothetical example). The trader may elect to close their position and take the \$1,198 profit or they may elect to implement a trailing stop to protect the profit. To set a trailing stop at \$1,000 for example, the trader need only type in 1000.00 into the Max Loss column and enable the Alert:



Left Symbol	Left Close	Right Symbol	Right Close	Status	Days in Trade	Leg Size	P&L	Max Loss	Alerts Enabled	Entry Stretch
COTY	11.30	SPB	51.30	In Trade	16	10,000	1,189.08	1,000.00	<input checked="" type="checkbox"/>	1
FTT	27.64	PE	68.64	In Trade	25	10,000	401.74	-	<input type="checkbox"/>	1
IBOC	37.26	KEY	17.81	In Trade	7	10,000	306.64	-	<input type="checkbox"/>	1
ZUP	309.20	SLA	298.90	In Trade	4	10,000	104.26	-	<input type="checkbox"/>	1
AV	19.85	TRN	58.93	In Trade	33	10,000	88.96	-	<input type="checkbox"/>	1

TangoTrade will send an Alert if the P&L of COTY/SPB trades below \$1,000 at which point the trader can close the trade and protect that level of profit. However, if the P&L doesn't reverse, the trader can ride the pair for greater profit when it may hit 0.00 sd, and substantially higher profit, without reversing below \$1,000. In this example \$1,000 is perhaps too tight a trailing stop, perhaps \$500 or a volatility computed distance (say 1sd) may be more appropriate. Again, up to you as the trader. As you craft a trading plan that is not only profitable and robust, look to build in risk management settings that meets your personal risk tolerances and preferences.

2.12 Keeping Records and Position Sizing

As a pair trader, is it very important you keep detailed records of all trades - both simulated and live - as this record gives you a journal from which you can review your behaviour and learn. It also allows you to keep track of your ACCURATE profit and loss from your pair trading activity. In pair trading, as in all trading, it is also critical that you have the right position sizing formula based on your risk tolerance, investment objectives and available leverage. We cannot suggest a one-size-fits- all position sizing formula as every trader is different. They also use a multitude of brokers which offer different leverage. We can give you an outline on how to approach position sizing with the help of our position sizing spreadsheet.

In this spreadsheet you can record your trades, your entry and exit prices, and the sheet will automatically calculate the % PnL return for the pair trade as a whole. You can also use the spreadsheet to calculate how many shares to buy or sell.



You will also find in the Trading Signals window the quantity of shares to buy or sell for a trade which is calculated on your defined Trade Value per Side. The default is size \$10,000/side or leg. This quantity is automatically adjusted for the Trade Value per Side assigned to each Entry Layer.

If you are using TangoTrade's integration with Interactive Brokers for semi-autotrading, all Interactive Brokers' Order Send tickets also have these amounts adjusted accordingly to each Entry Layer and the Exit. If you have set your IB orders to be "Pair Trade" type orders, the long leg quantity is assigned an approximate value as it is a Market order.

When pair trading, our aim to trade dollar neutral, that is, equal dollar exposure on both the long and short legs. For example, if you had a \$10,000 trading account you may wish to place \$2,000 in each trade. Accordingly, you would take \$2,000 and divide it by the share price to work out the quantity to buy/sell: e.g. $\$2000 / \$35 \text{ a share} = 57 \text{ shares to buy or sell as the case may be.}$

Good pair trading is all about making MANY SMALL TRADES with an edge. We recommend that you DO NOT EVER PLACE A LARGE PERCENTAGE OF YOUR ACCOUNT IN ANY ONE TRADE, as in the rare case of a large overnight move (merger or acquisition, adverse or highly positive unsystematic event on one symbol) the resulting gap will negatively affect your whole account.

Spreading your risk is what will keep you in the pair trading game for the long term and is to be encouraged. We suggest trading a diversified portfolio of pairs from different sectors, industries, asset classes and avoiding focusing on the results of just one trade. Your attention should be focused on the performance of 50, 100 or more small position-size trades over time. This mindset and discipline is what separates the professional from the novice

3 Using TangoTrade with Other Markets

3.1 Real-Time Data into TangoTrade: DTN.IQFeed

To use TangoTrade with real-time data, a subscriber has two options: DTN IQFeed or Interactive Brokers.

DTN IQFeed is a paid third-party subscription service. It provides data on equities, futures, options, commodities and forex, et.al. Equity market coverage is US exchanges, London Stock Exchange and the Toronto Stock Exchange. Subscription packages can be on just FX, just equities, or other combinations. Use our link here: www.iqfeed.net/pairtraderfinder with our extension as we have an arrangement with IQfeed where the normally charged \$50 setup fee is waived for TangoTrade users. We are not compensated for this referral.

Whilst you may be used to getting free data, if you are a serious trader you will have realised there is nothing more important than getting quality, clean data. A bad tick on free data could cost you hundreds of dollars, which would have been saved with a simple monthly subscription to real time data. IQfeed isn't the cheapest provider, however we believe they offer the best value when it comes to markets covered and quality of data, hence they have over 80,000 clients.

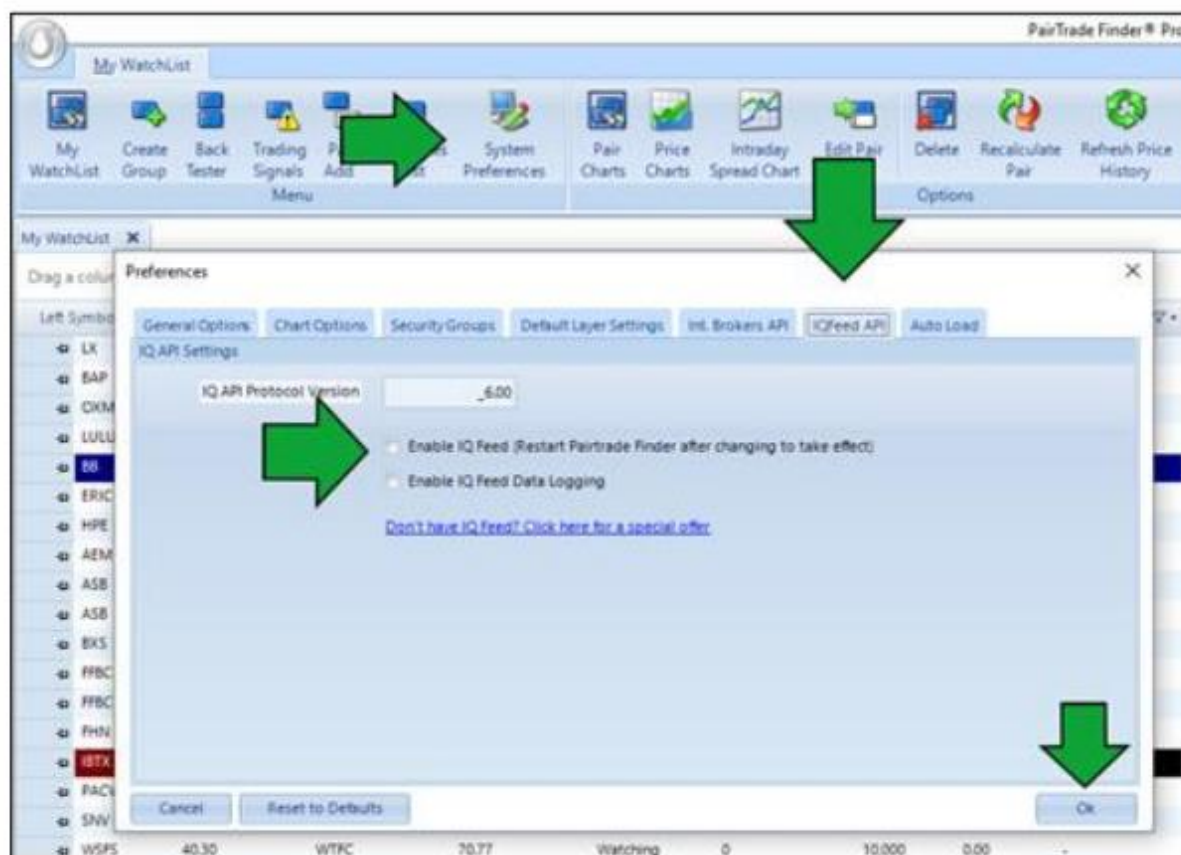
Signing up to IQfeed is a simple process. To get started, complete their online free trial registration form, then download their software:



The screenshot shows the IQFeed website with the following elements and annotations:

- Header:** iQFEED logo and navigation links: about, privacy, site map, fee calculator.
- Main Content Area:**
 - Text: "Join our other 80,000 customers who enjoy the fastest, most reliable, professional market data available. (Move your cursor to this window to pause scrolling)"
 - Section: "Welcome to DTH IQFeed!!" with a paragraph about the company's commitment to service and a note: "You won't find a company more committed to ensuring your success as a trader!"
- Left Sidebar:**
 - Section: "Need a Feed?" with links for "For Traders" and "For Developers".
 - Contact information: "Have a Question for Sales? Call 800-475-4755 or Email sales@iqfeed.net".
 - Follow us on Twitter button.
 - Support links: "Sales Support", "Technical Support", and "Billing Support", each with an "UNAVAILABLE" status.
- Central Navigation:**
 - Section: "About IQFeed" with links: Services, Fees, CME Exchange Fee Waiver, Software/Mentors/Brokers, Get Free Trial Now, Mobile App add-on, \$100 Referral Credit, Other Products.
 - Section: "Support" with links: Symbol Guide, Symbol Look-Up, Download Client, IQFeed FAQ, Support, Live Chat, Contact Us, Manage Account.
- Annotations:**
 - A yellow box "After signing up, download the IQFeed software" with a green arrow pointing to the "Download Client" link.
 - A yellow box "Start by signing up for a free trial" with a green arrow pointing to the "Get Free Trial Now" link.
 - A red link "Developer Login" and a red link "Developer Registration" are visible near the "Support" section.

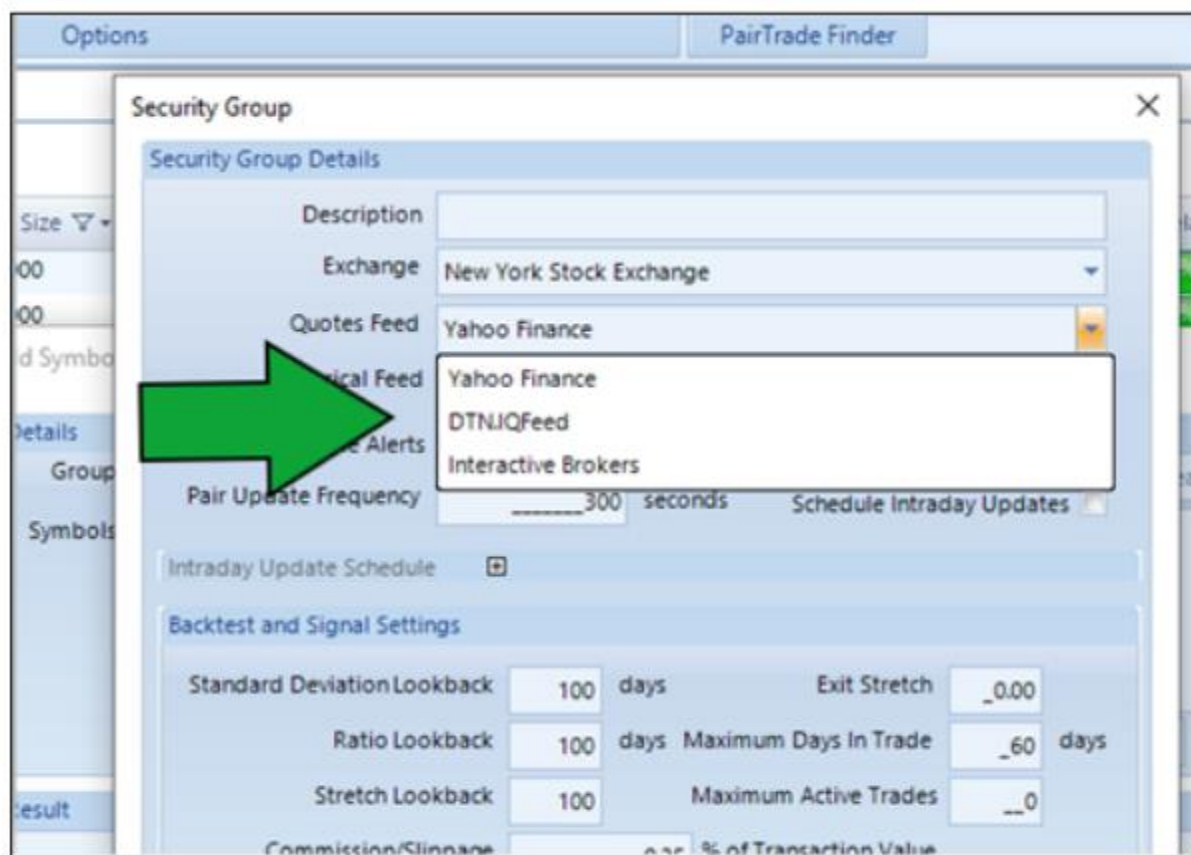
Once you have signed up to IQfeed, have successfully downloaded and engaged the IQFeed client on your desktop, then you will need to enable IQfeed in TangoTrade, please click on System Preferences/IQ Feed API tab, then enable IQfeed:



Then restart TangoTrade PRO for the change to take effect. If you are properly connected to IQFeed you will see a green light in the lower left corner of TangoTrade on the IQFeed Connection box:



You will not be able to change the datafeed selected for your existing groups. This precaution ensures database integrity. Therefore, to use IQFeed you will need to create new Groups and set the datafeed for both Historical Feed and Quote Feed to DTN.IQFeed:



3.2 Real-Time Data: Integrating Interactive Brokers' TWS

Your other option for getting real-time data into TangoTrade is to open a brokerage account with Interactive Brokers ("IB") and integrate TangoTrade with your local version of Trader Workstation ("TWS"). We believe Interactive Brokers represents the best value and best execution online discount broker for pair traders, offering commissions of as low as \$0.005 per share and margin rates well below their competition. They also cover 126 markets in 20 countries, making them the natural choice for any pair trader trading internationally.

If you are not yet a subscriber to TangoTrade and you have never had an Interactive Brokers' account, we offer you a \$99 rebate 30 days after you subscribe for TangoTrade if you open an Interactive Brokers' account through our referral invite. Just send us a request for a referral invite to info@tango-trade.co and we will send you an email with the link you need to use.

Once you have an IB account, you will need to ensure that you have real-time data permissions enabled in IB for the markets you wish to trade. IB's rates for these are among the lowest. Real-time data on all USA equity exchanges come out at about \$8-\$9/month for a non-professional, versus about \$85/month for IQFeed.

Integrating your TangoTrade with IB TWS is quick and easy. There is a tutorial video #11 here that can walk you through it real-time: tango-trade.co

In your Trader Workstation, which needs to be open on your desktop at all times for the integration to work, undertake the following steps. Go to Edit/Global Configuration/API/Settings and follow the instructions in the screenshot below:

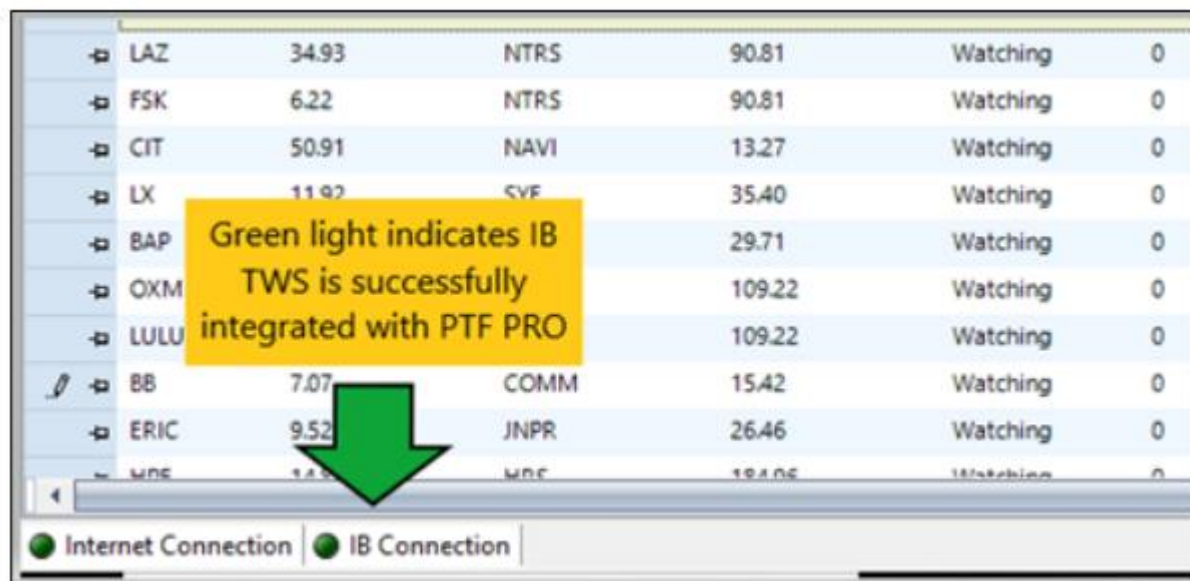


Then go to **System Preferences** and open the **Int. Brokers API** tab. Here you will also see a link directly to Tutorial #11 to help you get integrated as well. The screenshot below shows you the steps you need to

follow:



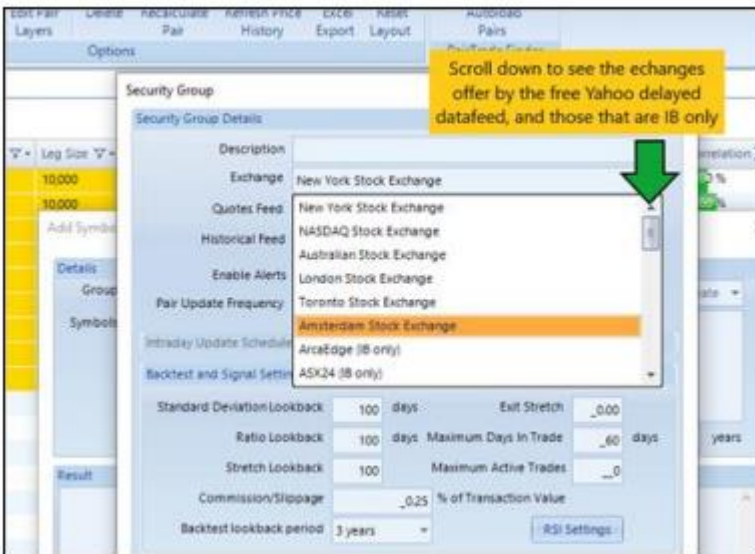
If you are properly connected to IB you will see a green light in the lower left corner of TangoTrade on the IB Connection box:



Enabling semi-autotrading with IB and configuring order types is handled in section 4.4 below.

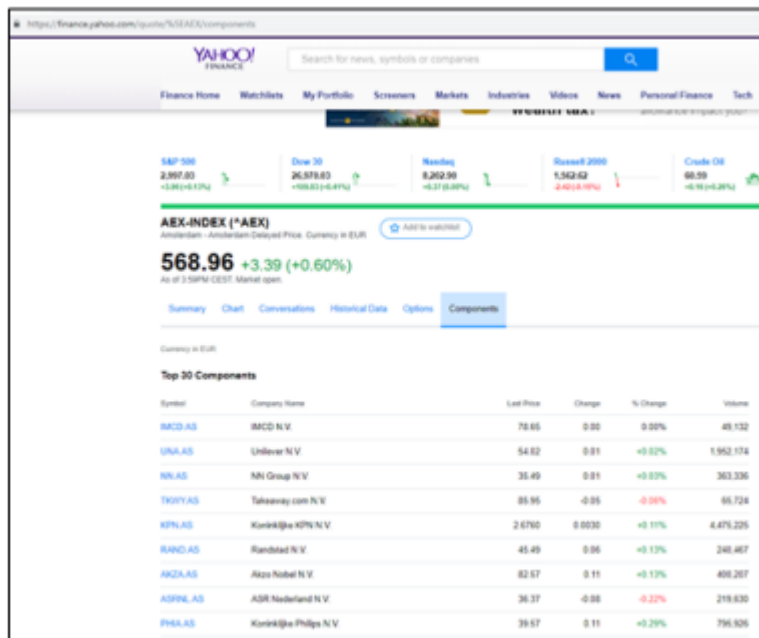
3.3 Using TangoTrade with International Stocks

TangoTrade sources its data from Yahoo! Finance by default. The Yahoo API provides free 5-15 min delayed stock data and this data is automatically imported into the software by TangoTrade's default settings. Yahoo! Finance supports many of the western international stock exchanges, and you can find a list of supported exchanges by clicking on the scroll down menu in TangoTrade when you look to Create a Group:

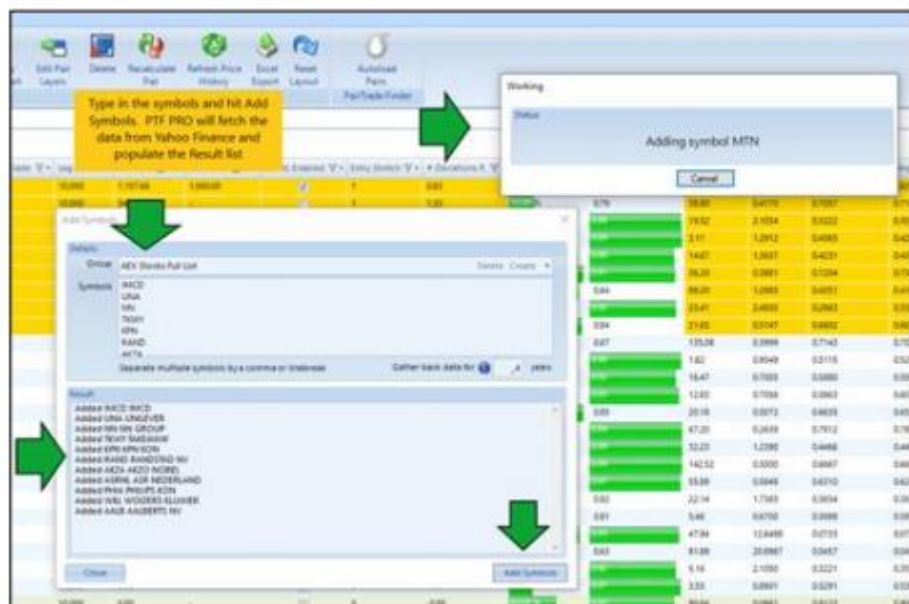


Select the exchange for which you wish to create a group of stocks for backtesting. In this example we are going to choose the Amsterdam Stock Exchange.

Next, you will want to add relevant codes for that exchange. Unless you know your local codes off- by-heart, go to your local Yahoo Finance page and look for the local index listing, in the AEX example this is the ^AEX. Click on this index, and then click on Components for stock codes as shown below:



We create a new group for AEX Full List, and you then type in the symbols to add them to the Group below:



Other indices you can type in the Yahoo! Finance quote box to find relevant codes are; **^DJI** (Dow Jones Industrial – Top 30 US stocks) **^SPX** (SP500 Index – Top 500 US Stocks) **^GSPTSE** (TSX – Canadian Index) **^AXJO** (ASX200 – Australian Index) **^HSI** (Hang Seng – Hong Kong Stocks) **^GDAXI** (DAX30 – Top German Stocks) **^FCHI** (CAC 40 – Top France Stocks) You can find an expanded list <https://www.tangotrade.co/support> Most of the codes you can find in Yahoo! Finance can be imported into TangoTrade (NSE and BSE of India are notable exceptions).

Additionally, with the 126 markets and 20 countries covered by Interactive Brokers, and IQFeed's 600,000+ importable instruments, it is possible to literally import over 1 million different instruments into TangoTrade. You can even import things like non-tradeable indices like advance/decline line, TICK, TRIN, etc. and compare them to indices, futures, options or anything you can think of with which to pair for some interesting results. The sky is the limit to possible combinations.

For example if you wanted to pair the French stock index against the German stock Index, you would create a group with NYSE as the exchange, and add codes **^FCHI** and **^GDAXI** (the same codes used in Yahoo! Finance) you could then backtest the performance of this pair for the past 10 years.

With over 1 million importable instruments, there are literally billions of possible pair combinations available to you at a click. Do not underestimate the power of this software to analyse everything! If it moves, we can pair it and trade it. As far as we are aware, we are the only platform available to retail traders that has the power and reach to do this analysis and trading.

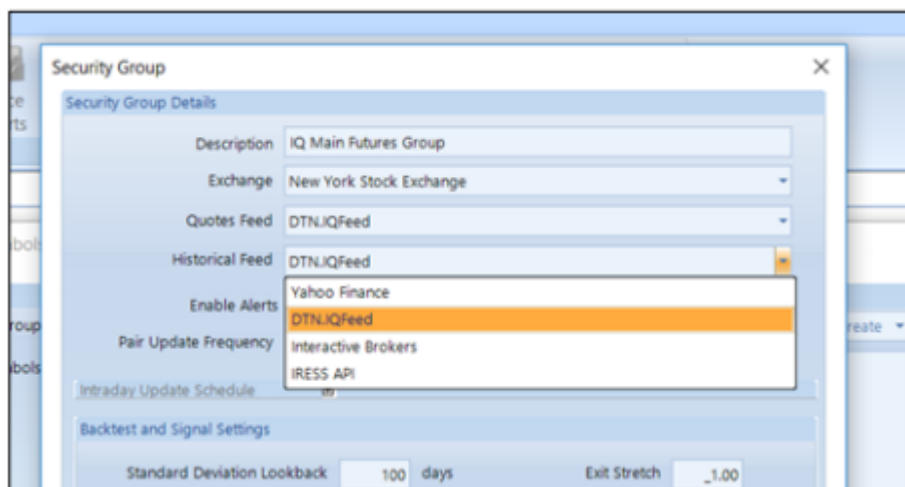
3.4 Using TangoTrade with Futures and Commodities

TangoTrade can be used to trade more exotic instruments as well. We only recommend trading futures, commodities, options and FX for more experienced traders. New traders should learn how to pair trade stocks to begin with before venturing into derivative products.

Futures & Commodities Data To use TangoTrade with futures and commodities requires a data subscription from <http://www.iqfeed.net/pairtraderfinder> as per section 3.1 of this manual, or an integration with Interactive Brokers. Once you have an IQfeed subscription or an integrated Interactive Brokers' account and hence their respective data feeds enabled in TangoTrade, you can now import futures contracts. Please note that some exchanges require different subscriptions with IQfeed. The basic subscription does cover most contracts, however some require additional exchange subscriptions. If using IB TWS, you will also have to enable your relevant trading permissions for futures in Interactive Brokers Account Management and ensure you have real-time data available.


We will begin with an example of some of the most popular futures contracts available with the basic data subscription from IQfeed.

To start, create a group with NYSE as the specified exchange:



And ensure you choose DTN.IQFeed as both the Historical Feed and Quotes Feed datasource.

Use the [IQfeed symbol look-up guide](#) on their webpage to locate the relevant contract codes for the instruments you wish to trade.



Support

- Symbol Guide
- Symbol Look-Up
- Download Client
- IQFeed FAQ
- IQFeed YouTube Channel
- Support Forums
- Live Chat
- Contact Us
- Manage Account

Have a Question for Sales?
Call 800-475-4755
or
Email sales@iqfeed.net

FOLLOW US ON [Twitter](#)

Sales Support
UNAVAILABLE

Technical Support
CLICK TO CHAT

Billing Support
UNAVAILABLE

SUPPORT: Symbol Lookup

You may **DOWNLOAD** a complete tab-delimited list of all symbols in a .txt format (file is .zip to provide a smaller download). File Updated: 07/11/2019 06:08:19 AM central time

[Click Here](#) for a short video on how to use our symbol lookup page.

Symbol Lookup

Search Text/String:
gold

Filter by:
Exchange:
ALL EXCHANGES

Security Type:
ALL SECURITY TYPES

Search Options:
☐ Show Front Mon. Only (Futures)
☐ Show Corn: Session Only (Futures)
☒ Show Continuous Contr. Only (Futures)

Output Options:
☒ HTML Table
☐ Symbols Only (for cut/paste)
☐ ASCII CSV (for import)

Search

Records to Display:
50 records

Search by:
☒ Name/Description
☐ Symbol
☐ SIC Code
☐ NAICS Code

Total Available Records: 1756564

Displaying records 1-22 out of 22 total

SYMBOL	DESCRIPTION	EXCHANGE	SECURITY TYPE	LISTED MARKET
QNGC*	E-MICRO GOLD AUGUST 2019	COMEX	FUTURE	COMEX_GBX
QNGT*	E-MICRO GOLD TAS AUGUST 2019	COMEX	FUTURE	COMEX_GBX
@QO*	E-MINI GOLD AUGUST 2019	COMEX	FUTURE	COMEX_GBX
GCT*	GOLD (TAS) AUGUST 2019	COMEX	FUTURE	COMEX_GBX
@ZG*	GOLD 100 OZ AUGUST 2019	ICEFU	FUTURE	ICEFU
BOZ1*	GOLD AUGUST 2019	BMF	FUTURE	BMF
IGC*	GOLD AUGUST	MCX	FUTURE	MCX

Below we reproduce for you some codes for continuous futures contracts - that is contracts that don't expire. You can trade front month contracts. However, you will need to remove and add fresh contracts with every expiry cycle. They also cannot be backtested effectively except over 90 day or less periods. We use continuous contracts as a result.

IQFeed Continuous Futures Contract Codes: Main Contracts @BO# (soybean oil), @C# (corn), @GF# (feeder cattle), @HE (lean hogs), @RB# (random length lumber), @LE@ (live cattle), @O# (oats), @PB# (pork bellies), @S# (soybeans), @W# (wheat), @ZG# (gold), @YI# (1,000 oz Mini Silver), LRC# (robusta coffee), QC# (cocoa), QW# (white sugar), @TY# (10- Year Treasury), SP# (S&P 500 Index), @YM# (E-Mini Dow Jones), @NQ# (NASDAQ 100), @RTY# (E- Mini Russell 2000), QHCL# (WTI Crude Oil), etc.

You can use these codes, as found in the IQfeed symbol look up guide, to add into TangoTrade. **NB: However, if the symbol contains an "@", then you need to input it with square brackets around it e.g. [@BO#] for soybean oil.**

Adding Futures Codes using Interactive Brokers Datafeed

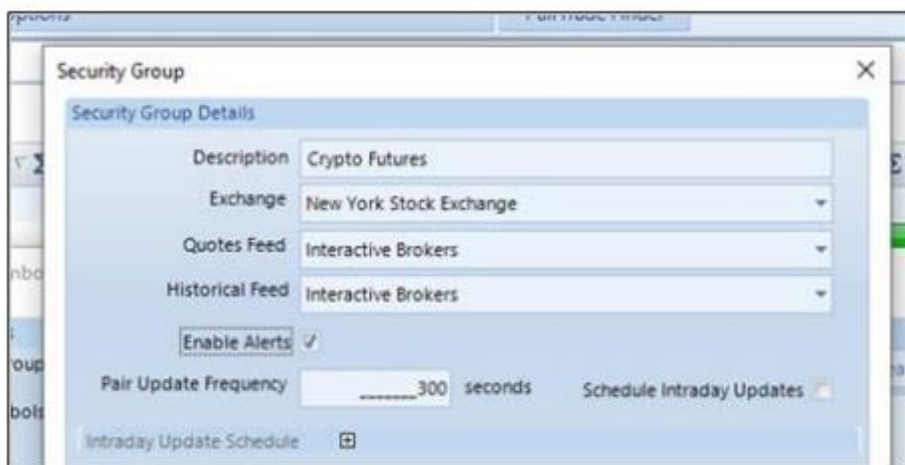
To input futures using Interactive Brokers' datafeed, use this syntax:

<Symbol>:FUT@<Exchange>

For example: VUK8:FUT@CFE or HOK8:FUT@NYMEX

It also works for cryptocurrencies e.g. XBTJ8:FUT@CMECRYPTO and BTCM8:FUT@CMECRYPTO

Go to Create Group, chose NYSE and select Interactive Brokers as the datafeed for both Historical Feed and Quotes Feed:



N.B. For contracts traded on CBOT the symbol should be in the following format:

<Root><Space><Space><Space><3-letters month code><Space><2-digit year>:FUT@ECBOT

For example: 'ZW JUL 18:FUT@ECBOT' works.

Cross Asset Pairings You could also pair stocks against futures, for example you could compare gold stocks NEM, KGC, GG, and ABX against the gold futures @ZG# for some interesting trading opportunities. Just add your desired stocks into the same group as your futures contract then use the backtester as already shown.

3.5 Using TangoTrade with Options

Just as above, you will need a DTN IQFeed subscription to import options into TangoTrade. Please read instructions in section 3.1 of this user manual on how to install this datafeed.

Please specify the NYSE as the exchange when creating a new group to house your option contracts. Then use the [IQfeed symbol look-up guide](#) to locate relevant option codes to import into TangoTrade. As with stocks and futures, we highly recommend you only trade the most liquid contracts, with the case of options, this is mostly comprised of the S&P100, that is the top 100 liquid stocks. You may wish to trade other stocks in the S&P500; however, the more liquid the option, the tighter the spread and lower your trading costs.

When searching for options in IQFeed, specify OPRA as the exchange in the lookup window. Then specify index/equity options in the product field and type the stock code of the options you want displayed:



Annotations:

- Type in the Ticker or the Name of the Company
- You can search by Symbol, Name, SIC Code etc.
- Specify OPRA as the exchange for options
- Select Index/Equity Options
- Calls/Puts with various strikes and maturities will appear here for selection

Search Parameters:

- Search Text String: AAPL
- Records to Display: 50 records
- Filter by: Exchange: OPRA (950814)
- Security Type: Index/Equity Option
- Search Options:
 - Show Front Mon. Only (Futures)
 - Show Comb. Session Only (Futures)
 - Show Continuous Contr. Only (Futures)
 - Show E-mini
 - Don't Show Op
 - Don't Show Spreads (Futures)
- Output Options:
 - HTML Table
 - Symbols Only (for cut/paste)
 - ASCII CSV (for Import)

Results:

Total Available Records: 1756564

Displaying records 1-50 out of 1396 total

Next >>

SYMBOL	DESCRIPTION	EXCHANGE	SECURITY TYPE	LISTED MARKET
AAPL1916H100	AAPL AUG 2019 C 100.00	OPRA	IEOPTION	OPRA
AAPL1916H105	AAPL AUG 2019 C 105.00	OPRA	IEOPTION	OPRA
AAPL1916H110	AAPL AUG 2019 C 110.00	OPRA	IEOPTION	OPRA
AAPL1916H115	AAPL AUG 2019 C 115.00	OPRA	IEOPTION	OPRA

You can compare the underlying stock to the options too, by adding the stock code into the same group as the options, e.g. you could add all the call options for AAPL into a group then add stock code AAPL as well to backtest pairs of stock vs options. You could get even more creative by comparing the call options of

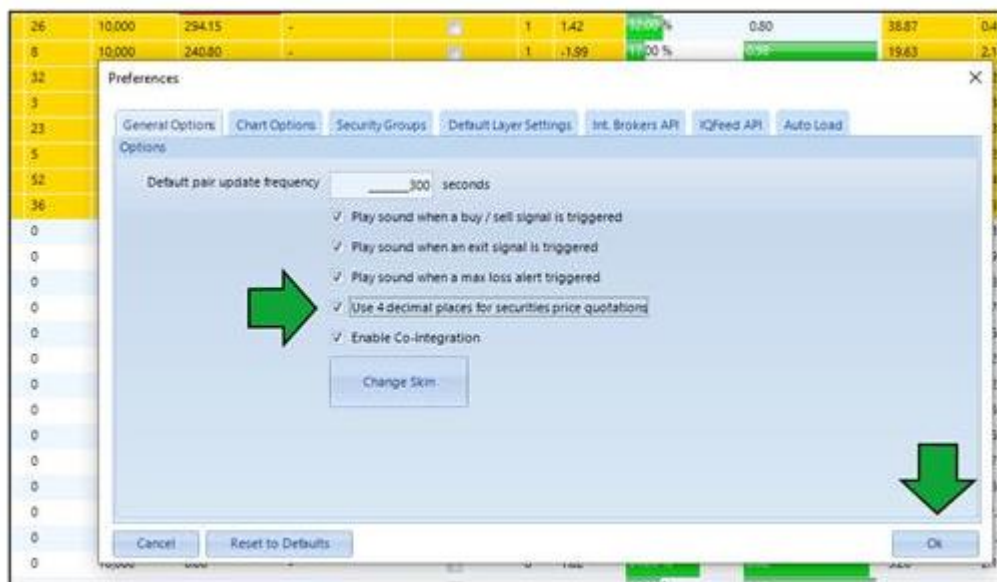
AAPL against a similar business like HPQ, SNE or SSNLF, or compare AAPL call options against the stock of SSNLF or HPQ. The combinations are endless and only limited by your imagination.

Options and Interactive Brokers For Interactive Brokers, unfortunately as of the date of writing of this manual, IB does not offer daily historical close data for options through their API. Accordingly, to backtest and trade options in TangoTrade, a subscription to DTN IQFeed is the only solution at this point.

3.6 Using TangoTrade with Forex and Cryptocurrencies

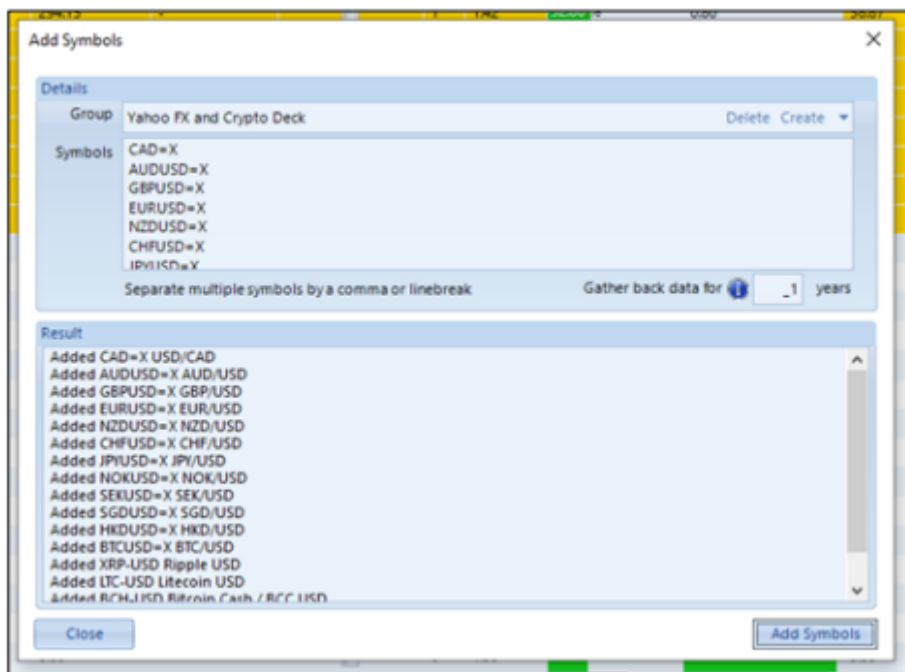
You can import foreign currency including cryptocurrency into TangoTrade. FX contracts are the spot instruments traded over the counter between large banks and with access offered via online brokers. There are many benefits to trading forex, including 24-hour deep liquidity, steady movements with limited price shocks, cheap access and high leverage. These features of the market can make trading forex very appealing to the online trader. For cryptocurrency instruments you will have to find a venue to trade if your regular broker does not offer them. Many brokers now do offer them and some offer 2:1 leverage CFDs for trading the major cryptos.

First, if you are trading FX or crypto with TangoTrade you will want symbols to be displayed to four decimal places so you can get high accuracy prices on your FX contracts. Go to **System Preferences/General Options** and click on the “Use 4 Decimal places for securities price quotations” option. Click OK.



Delayed FX data with Yahoo! Finance You can get any currency pair that appear in Yahoo! Finance into TangoTrade for analysis. The data is delayed. However, for swing trading, it may still be adequate for your needs, this determination is up-to-you.

Yahoo! Finance datafeed currency and cryptocurrency symbols syntax can be gleaned from Yahoo! Finance by looking for the pairs you need. Here are some examples:



Real-Time FX & Cryptocurrency Data As with futures and options, you need an IQfeed subscription or an Interactive Brokers' integration to import **real-time forex and cryptocurrency data** into TangoTrade. Please refer to section 3.1 of this user manual for relevant instructions. In addition to the basic IQFeed subscription you will need to subscribe to forex data in their premium services section.





However, with Interactive Brokers, real-time FX data is FREE. As with futures and options, please select NYSE in the exchange field when creating a new group to house your currency crosses. IQFeed FXCM contracts have simple format:

[BASE CURRENCY][SECOND
CURRENCY].FXCM

Shown below are the most liquid currency crosses and in the same format you would use to add them into TangoTrade if you are using IQFeed:

USDJPY.FXCM, EURUSD.FXCM, GBPUSD.FXCM, USDCHF.FXCM, AUDUSD.FXCM,
NZDUSD.FXCM

For a full list of FX crosses you can add, please use the IQfeed symbol lookup guide and select FXCM as the exchange, eg:

SUPPORT: Symbol Lookup

You may **DOWNLOAD** a complete tab-delimited list of all symbols in a .txt format (file is .zip to provide a smaller download). File Updated: 07/11/2019 00:08:19 AM central time.

[Click Here](#) for a short video on how to use our symbol lookup page.

Symbol Lookup

Search Text String: Records to Display: 100 records

Search by:
☐ Name/Description
☒ Symbol
☐ SIC Code
☐ NAICS Code

Filter by:
 Exchange: FXCM (44)
 Security Type: Foreign Monetary Exchange

Search Options:
☐ Show Front Mon. Only (Futures) ☐ Show E-minis Only (Futures)
☐ Show Cont. Session Only (Futures) ☐ Don't Show Options
☐ Show Continuous Cont. Only (Futures) ☐ Don't Show Spreads (Futures)

Output Options:
☒ HTML Table
☐ Symbols Only (for out/paste)
☐ ASCII CSV (for import)

Total Available Records: 1750504

Displaying records 1-17 out of 17 total

SYMBOL	DESCRIPTION	EXCHANGE	SECURITY TYPE	LISTED MARKET
AUDUSD FXCM	FXCM AUD USD SPO	FXCM	FOREX	FXCM
EURUSD FXCM	FXCM EUR USD SPO	FXCM	FOREX	FXCM
GBPUSD FXCM	FXCM GBP USD SPO	FXCM	FOREX	FXCM
NZDUSD FXCM	FXCM NZD USD SPO	FXCM	FOREX	FXCM
USDCAD FXCM	FXCM USD CAD SPO	FXCM	FOREX	FXCM
USDCHF FXCM	FXCM USD CHF SPO	FXCM	FOREX	FXCM
USDCNH FXCM	FXCM USD CNH SPO	FXCM	FOREX	FXCM
USDHKD FXCM	FXCM USD HKD SPO	FXCM	FOREX	FXCM
USDHUF FXCM	FXCM USD HUF SPO	FXCM	FOREX	FXCM
USDJPY FXCM	FXCM USD JPY SPO	FXCM	FOREX	FXCM
USDAON FXCM	FXCM USD AON SPO	FXCM	FOREX	FXCM
USDNOK FXCM	FXCM USD NOK SPO	FXCM	FOREX	FXCM
USDSEK FXCM	FXCM USD SEK SPO	FXCM	FOREX	FXCM
USDTRY FXCM	FXCM USD TRY SPO	FXCM	FOREX	FXCM
USDZAR FXCM	FXCM USD ZAR SPO	FXCM	FOREX	FXCM
XAGUSD FXCM	FXCM XAG USD SPO	FXCM	FOREX	FXCM
XAUUSD FXCM	FXCM XAU USD SPO	FXCM	FOREX	FXCM

With Interactive Brokers, the FX symbol format you need to use is:

<Currency1><Currency2>:CASH (w/o exchange) - for example AUDCAD:CASH

Simply input these symbols in the Ticker Add screen of Create Group process once you have selected IB as the datafeed for Quotes and Historic:

TangoTrade uses the MIDPOINT datastream option from the IB TWS API for Forex data.

You could add some interesting pairs with FX, like the EURUSD against the EUR futures, or against the euro ETF code FXE, to create riskless arbitrage opportunities. Also oil tends to move in line with the euro, as Europe is a major importer of oil and central banks consider it a high factor in their inflation models



which affect interest rates. Accordingly, you could pair the EURUSD against the crude oil futures contract or against oil ETFs like codes USO, OIL, or XLE.

Use the backtester as much as possible to find pairs which have performed the best over 1, 3 and 5 year periods. Make sure you only save the best performing pairs to My Watchlist for monitoring.

Once again, the possibilities of pairs that you can create is endless - you can find unique and exotic trading opportunities that only large hedge funds are used to enjoying. TangoTrade is the market-leading, and perhaps only, software platform available to retail traders that can allow you this flexibility and reach.

3.7 Using TangoTrade with Contracts for Difference (CFDs)

TangoTrade can be used for analysing and trading contracts for difference ("CFDs"). CFDs present the trader with direct electronic access to OTC products that let you trade the difference between current and future pricing of a share, index or a currency-pair. When used with proper risk management and a reputable broker offering true direct market access ("DMA"), CFDs represent a powerful tool for the smaller retail trader to access significant leverage at low cost. These are available to non-USA and non-Canadian residents only.

Interactive Brokers and CFDs Interactive Brokers has a highly competitive CFD offering. IBKR currently offers approximately 7,100 Share CFDs covering the principal markets in the US, Europe and Asia. The constituents of the major indexes listed below are currently available as IBKR Share CFDs. In many countries IBKR also offers trading in liquid small cap shares. These are shares with free float adjusted market capitalization of at least USD 500 million and median daily trading value of at least USD 600 thousand. IB states that more countries will be added in the near future.

United States	S&P 500, DJIA, Nasdaq 100, S&P 400 (Mid Cap), Liquid Small Cap
United Kingdom	FTSE 350 + Liquid Small Cap (incl. 10B)
Germany	Dax, MDax, TecDax + Liquid Small Cap
Switzerland	Swiss portion of STOXX Europe 600 (4B shares) + Liquid Small Cap
France	CAC Large Cap, CAC Mid Cap + Liquid Small Cap
Netherlands	AEX, AMS Mid Cap + Liquid Small Cap
Belgium	BEL 20, BEL Mid Cap + Liquid Small Cap
Spain	IBEX 35 + Liquid Small Cap
Portugal	PSI 20
Sweden	OMX Stockholm 30 + Liquid Small Cap
Finland	OMX Helsinki 25 + Liquid Small Cap
Denmark	OMX Copenhagen 30 + Liquid Small Cap
Norway	OBX
Czech	FX
Japan	Nikkei 225 + Liquid Small Cap
Hong Kong	HSI + Liquid Small Cap
Australia	ASX 200 + Liquid Small Cap
Singapore*	STI + Liquid Small Cap
South Africa	Top 40 + Liquid Small Cap

*not available to Singapore residents

IB CFD margin efficiency can be superior to share-dealing margin. Commissions and margin interest are very low relative to other brokers. Pricing data comes directly from the underlying share on the exchanges and you can have the CFD and share next to each other on a line-by-line basis in Trader Workstation. Current leverage offered by Interactive Brokers to regular online accounts for trading equity CFDs is 5:1. If you are able to demonstrate to IB that you are an experienced trader, available CFD leverage can be increased to 10:1 for equities. Below is a Pros and Cons analysis of CFDs vs. Shares prepared by IB as of 19 July 2019:

BENEFITS of IBKR CFDs		DRAWBACKS of IBKR CFDs	
No stamp duty or financial transaction tax (UK, France, Belgium)		No ownership rights	
Generally lower commission and margin rates than shares		Complex corporate actions may not always be exactly replicable	
Tax treaty rates for dividends without need for reclaim		Taxation of gains may differ from shares (please consult your tax advisor)	
Exemption from day trading rules			

III. Cost and Margin Considerations

IBKR CFDs can be an even more efficient way to trade the European stock markets than IBKR's highly competitive stock offering.

Firstly, IBKR CFDs have low commissions compared to stocks, and the same low financing spreads:

EUROPE		CFD	STOCK
Commission	GBP	0.05%	GBP 6.00 + 0.05%*
	EUR	0.05%	0.10%
Financing**	Benchmark +/-	1.50%	1.50%

*per order + 0.05% of excess over GBP 50,000
 **CFD financing on total position value, stock financing on borrowed amount

When you trade more, CFD commissions become even lower, as low as 0.02%. Financing rates are reduced for larger positions, to as low as 0.5%. Please see [CFD Commissions](#) and [CFD Financing Rates](#) for more details.

Secondly, CFDs have lower margin requirements than stocks. Retail clients are subject to additional margin requirements mandated by ESMA, the European regulator. Please see [ESMA CFD Rules Implementation at IBKR](#) for details.

	CFD	STOCK	
	All	Standard	Portfolio Margin
Maintenance Margin Requirement*	10%	25% - 50%	15%

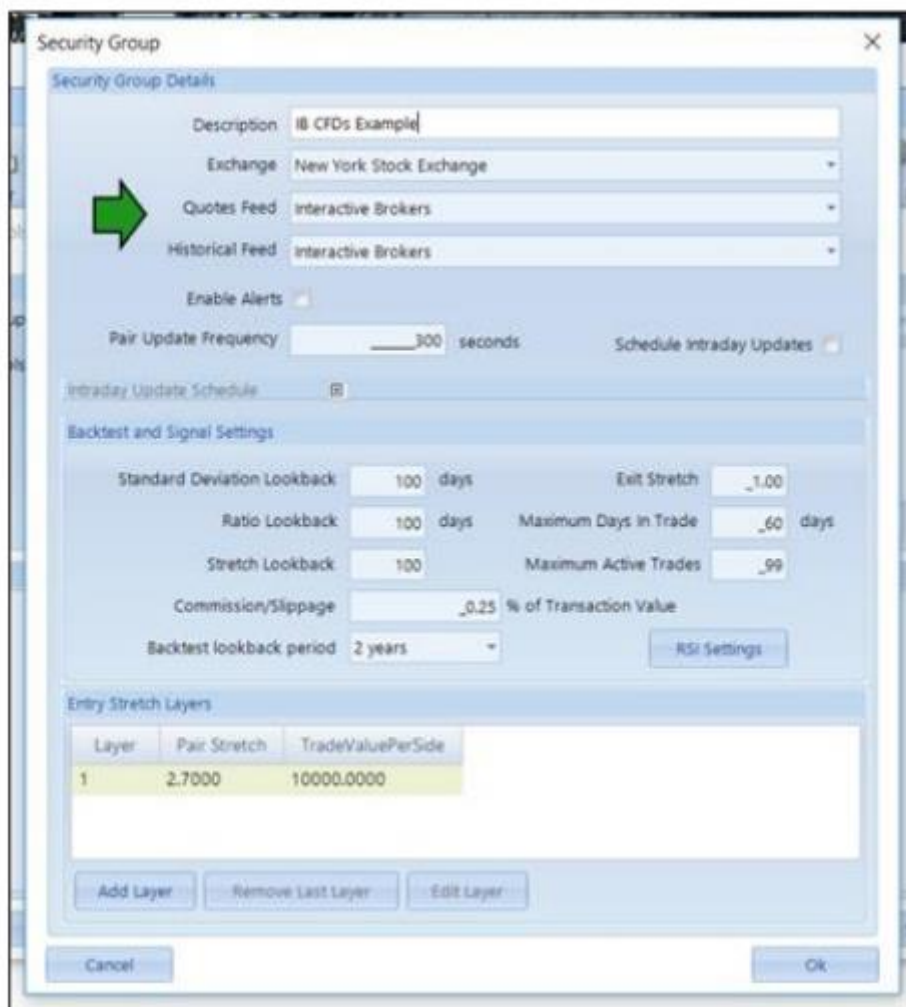
*Typical margin for blue-chips. Retail Clients are subject to a minimum Initial Margin of 20%. Standard 25% intraday maintenance margin for stocks, 50% overnight. Portfolio Margin shown is maintenance margin (incl. overnight). More volatile issues are subject to higher requirements

Please refer to [CFD Margin Requirements](#) and for more detail.

NB: CFDs are complex instruments and come with a high risk of losing money rapidly due to leverage. We recommend that you ensure you understand and are comfortable with the risks, and that you have robust risk management in place on your portfolio before considering using CFDs.

Adding CFDs to Create Group in TangoTrade for Analysis and Semi-Autotrading CFDs can be added to TangoTrade like any other type of security by ensuring you have TangoTrade integrated with IB TWS for datafeed and semi-autotrading. See sections 3.2 and 4.2 above.

Once you have done so, hit the Create Group button on the upper toolbar to bring up the Create Group screen. Ensure IB is selected as the datafeed for both Quotes Feed and Historic Feed:



Security Group

Security Group Details

Description: IB CFDs Example

Exchange: New York Stock Exchange

Quotes Feed: Interactive Brokers

Historical Feed: Interactive Brokers

Enable Alerts: ☐

Pair Update Frequency: 300 seconds

Schedule Intraday Updates: ☐

Backtest and Signal Settings

Standard Deviation Lookback: 100 days

Ratio Lookback: 100 days

Stretch Lookback: 100

Commission/Slippage: 0.25 % of Transaction Value

Backtest lookback period: 2 years

Exit Stretch: 1.00

Maximum Days in Trade: 60 days

Maximum Active Trades: 99

RSI Settings

Entry Stretch Layers

Layer	Pair Stretch	TradeValuePerSide
1	2.7000	10000.0000

Add Layer Remove Last Layer Edit Layer

Cancel Ok

To add CFDs directly into the Group for analysis and semi-autotrading, you need to add the suffix :CFD@SMART to the ticker. For example:

<Underlying>:CFD@SMART

So for IBDE30 index, you would input IBDE30:CFD@SMART, for Eni SPA (symbol "E") CFD you would input E:CFD@SMART etc.:

86

4 How to Get the Most Out of TangoTrade

4.1 Optimum Performance

TangoTrade is a powerful program. As far as we are aware, no other online pair trading software available crunches the same amount of data on-the-fly as TangoTrade. The latest programming technologies have been used to allow this crunching to happen in reasonable time. However, there are limits on the amount of data you can import and back test at any given time. The latest build of PRO v2.0 has significantly increased the speed and capacity of TangoTrade by a factor of 3X-5X over v1.38. This increase largely depends on your computer RAM, chip speed, hard drive speed, internet connection and how many other programs you have running on your computer.

TangoTrade can store and analyse more data than most trading software programs available. That is because we use separate a separate third-party software, Microsoft SQL, as a database for our data. TangoTrade connects to your SQL database automatically and updates it minute-by-minute, and quickly retrieves historical data from you database for backtesting. Due the volume of data TangoTrade crunches on-the-fly, you should be aware that there are some limitations involved.

Typically speaking, with TangoTrade v2.0 upgraded capabilities you should be able to easily store 500 pairs in your home page and backtest at least 60 symbols at once, perhaps up to 100. Note each symbol increase adds exponentially to the number of pair combinations. This expanded capacity of PRO v2.0 we believe is more than sufficient for a retail pair trader because you should be initially creating groups with 50 or less instruments to make sure there are of high fundamental correlation e.g. similar or same industry subsector, country and exchange, market cap, etc. To reduce the need for infinite processing power, we suggest you create a new group for each industry, instrument type, market capitalisation band (e.g. nano, micro, small, mid, large mega), country etc. With default 2.0 Entry/0.0 Exit settings, each pair will produce on average 3-4 trades per year, so with say 300 pairs, that is 900-1,200 Entry trading signals per year to be reviewed for action. Some users have powerful PCs and can comfortably store over 1,000 pairs on their home page and back test 100 or more stocks at once. However, if you find the program crashing during start up or during a back test, it is likely you have loaded too much data into the software. You will get an “out of memory” error pop up when this happens.

We have found the **optimum minimum system requirements** to be a brand name PC with: Operating system - Windows 7 or higher RAM - 8GB, with 2GB available solely for Trader Workstation if integrating with Interactive Brokers Processor - minimum Intel i5 or higher, minimum QUAD CORE Separate or External video card with at least 2GB of memory Screen resolution 1280x1024 Solid-state disk (SSD) Broadband internet connection - minimum 5 MB/sec.

A note of caution: When setting the Intraday update frequency in Group Settings, be careful using a high frequency like 5 seconds when having more than 200 pairs. By default, the update frequency is 300 seconds, meaning TangoTrade will fetch new data every 5 minutes. You might safely decrease this frequency to 60 seconds with 200 pairs on your home page. However, we do not recommend decreasing the Intraday Update Frequency below 60 seconds in any case.

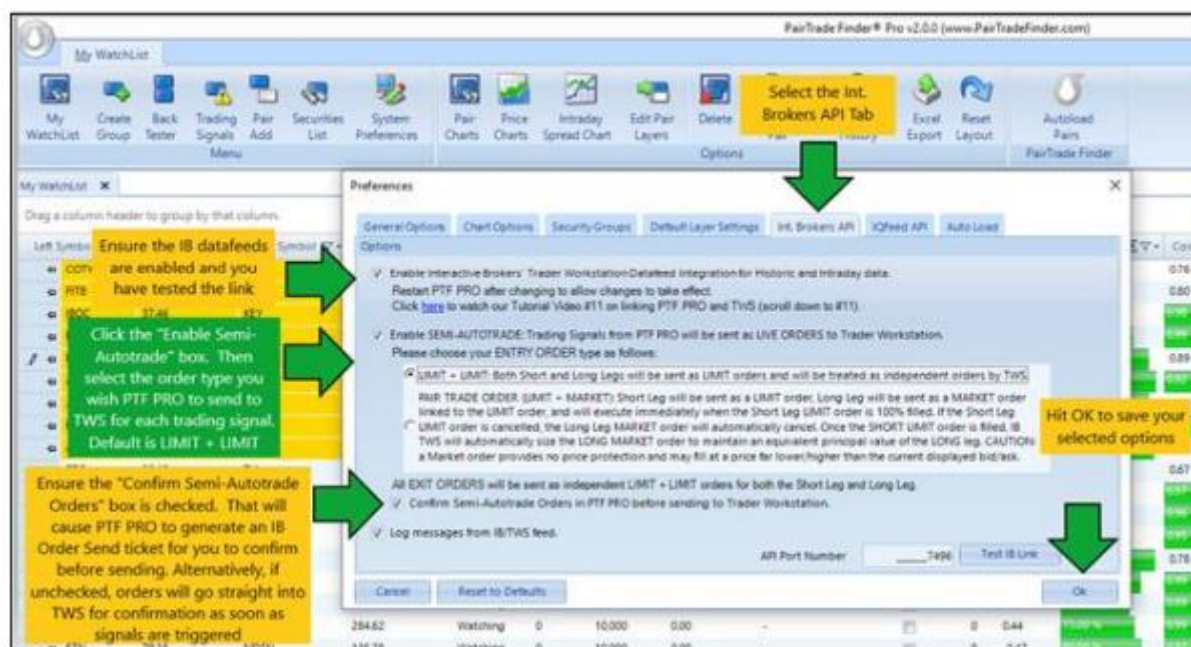
4.2 Semi-autotrading with TangoTrade & IB TWS

One of the most powerful features of TangoTrade PRO is its ability to integrate with Interactive Brokers for semi-autotrading (“Greybox trading”). To get the most out of your TangoTrade subscription, we highly recommend that you open an Interactive Brokers’ account and activate this functionality, which will considerably improve your execution ease and speed.

For a video tutorial on IB data integration and semi-autotrading please click the link here:

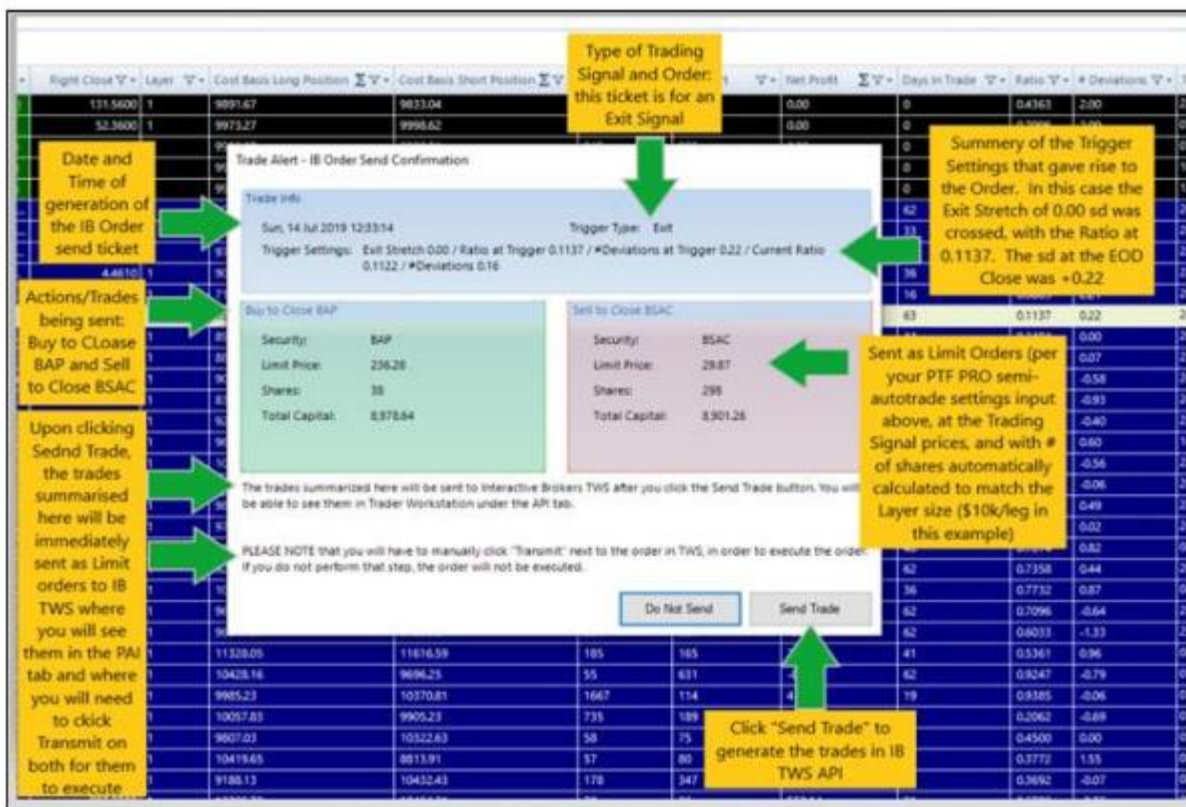
<https://www.tangotrade.co/tango-school>

Once you have integrated TangoTrade to IB TWS for datafeeds (see section 3.2 above) you can now activate the semi-autotrade function. Go to System Preferences/Int. Brokers API tab. The screenshot below indicates the steps required:



There are two important elements to decide when enabling the semi-autotrade function i) the Order Type to be sent to IB TWS and ii) whether to toggle on or off the “Confirm Semi-Autotrade Orders in TangoTrade” box.

For i), please see section 4.3 below.



Type of Trading Signal and Order: this ticket is for an Exit Signal

Summary of the Trigger Settings that gave rise to the Order. In this case the Exit Stretch of 0.00 sd was crossed, with the Ratio at 0.1137. The sd at the EOD Close was +0.22

Date and Time of generation of the IB Order send ticket

Actions/Trades being sent: Buy to Close BAP and Sell to Close BSAC

Upon clicking Send Trade, the trades summarised here will be immediately sent as Limit orders to IB TWS where you will see them in the PAI tab and where you will need to click Transmit on both for them to execute.

Trade Info
Sun, 14 Jul 2019 12:53:54
Trigger Type: Exit
Trigger Settings: Exit Stretch 0.00 / Ratio at Trigger 0.1137 / #Deviations at Trigger 0.22 / Current Ratio 0.1122 / #Deviations 0.16

Buy to Close BAP
Security: BAP
Limit Price: 236.28
Shares: 38
Total Capital: 8,978.84

Sell to Close BSAC
Security: BSAC
Limit Price: 29.87
Shares: 295
Total Capital: 8,901.28

The trades summarized here will be sent to Interactive Brokers TWS after you click the Send Trade buttons. You will be able to see them in Trader Workstation under the API tab.

PLEASE NOTE that you will have to manually click "Transmit" next to the order in TWS, in order to execute the order. If you do not perform that step, the order will not be executed.

Do Not Send Send Trade

Click "Send Trade" to generate the trades in IB TWS API

Sent as Limit Orders (per your PTF PRO semi-autotrade settings input above, at the Trading Signal prices, and with # of shares automatically calculated to match the Layer size (\$10k/leg in this example)

For ii), the decision is whether you wish to confirm each trade order to be sent by TangoTrade to TWS in TangoTrade before they show up in TWS. If you leave the box checked (Default is with box checked), for every trading signal generated TangoTrade will create an IB Order Send ticket as follows:

Once you then click on Send Trade, the trades will appear in the IB TWS API tab with exactly the parameters shown in the IB Order Send ticket:



Look for the API tab in your IB TWS. All semi-autotrading trades will be sent here for confirmation.

Symbols from IB Order Send and Exit Signal

Both sent as Limit Orders with number of shares as defined in the Exit Signal and IB Order Ticket. Order type determined by your semi-autotrade settings in the Int. Brokers API tab in System Preferences.

Price per Exit Signal and resulting IB Order Ticket

Both trades must be individually reconfirmed in IB by hitting "Transmit"

Sell/Buy automatically determined based on the Exit Signal and as confirmed in the IB Order Send ticket

On Entry Trade IB Order tickets, if either of the shares in the Entry Signal are returned as "Hard to Borrow" from the IB API, this status will be highlighted in the ticket.



If you decide to uncheck the “Confirm Semi-Autotrade Orders in TangoTrade” box then you will NOT see the IB Order Send ticket in TangoTrade for confirmation. **Instead, TangoTrade will directly send the orders to IB TWS for confirmation there ONLY.** You will see the orders there as they are shown in the screenshot directly above. This option to leave the box unchecked bring TangoTrade as close as possible to autotrading, while still leaving the final decision on every order up to you in your brokerage account. We believe that the human element - which undertakes “sanity-checks” and news checks - should not be removed from systematic pair trading.

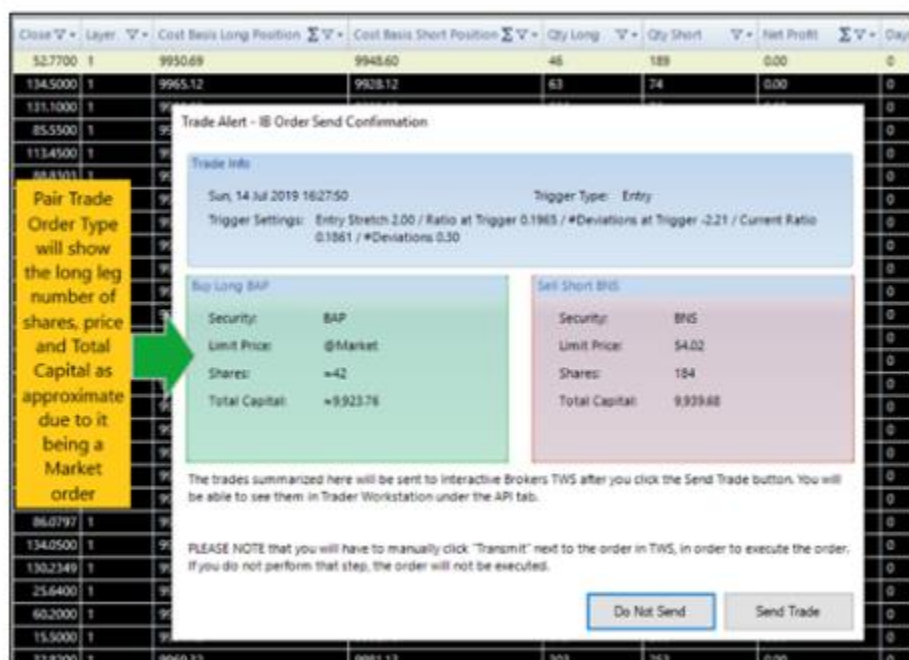
4.3 “Pair Trade” Order Type Activation in IB TWS

Another powerful new feature of TangoTrade v2.0 is the addition of the “Pair Trade” order type to its semi-autotrade capability. To engage this feature go to **System Preferences/Int. Brokers API**. Under the ENTRY ORDER TYPE section, click on the empty circle next to the paragraph on PAIR TRADE ORDER TYPE:

What is a Pair Trade Order type? Essentially, this order type allows you the quickest execution of a set of pair entry orders. The functionality is:

PAIR TRADE ORDER (LIMIT + MARKET): Short Leg will be sent as a LIMIT order, Long Leg will be sent as a MARKET order linked to the LIMIT order, and will execute immediately when the Short Leg LIMIT order is 100% filled. If the Short Leg LIMIT order is cancelled, the Long Leg MARKET order will automatically cancel. Once the SHORT LIMIT order is filled, IB TWS will automatically size the LONG MARKET order to maintain an equivalent principal value of the LONG leg. CAUTION: a Market order provides no price protection and may fill at a price far lower/higher than the current displayed bid/ask.

The IB Order Send ticket on a Pair Trade Order type will show the “Number of Shares”, “Price”, and “Total Capital” sections as being approximate as these are the subject of the price achieved in the Market order for the long leg:



Once you Send Trade to TWS, the trade setup on the TWS API will have the Long order linked as a conditional Market Order to the Short Limit Order and will look like this:



We find that using the Pair Trade Order type leads to lightning fast, one-click execution and represents an important enhancement of TANGO-TRADE as a trading platform.

4.4 “Resend at Market” Function

Another important enhancement introduced recently into TANGO-TRADE is the ability to access historic Trading Signals in the Trading Signals tab, see if they are still relevant to you to trade, and then hit “Resend at Market” in order to do so. The chart below shows you how:



Once you hit “Resend at Market” TANGO-TRADE will generate an IB Order Send confirmation ticket with the current parameters of the pair based on the latest available market price data. You can review these parameters in real-time against the original parameters that created the Entry or Exit signal, to allow you to quickly and easily decide whether to send the trade to IB for execution:



Importantly, TANGO-TRADE will automatically recalculate the number of shares for each leg (and each layer) based on your current leg and layer settings. This feature allows you to still undertake 1-click trade execution for historic trade signals, even possibly gaining better entry and exit points:



Please note this feature is only available for Trading Signals that were generated by pairs that use Interactive Brokers' data in Group Settings.

4.5 Trading Mentality Required

The personal attitude required to succeed in pair trading is the same attitude required to succeed in any other style of trading or anything else in life for that matter. Every trading system or style will have drawdowns and soft patches, that's the nature of the trading beast. There is not one trading system we are aware of (except Virtu's ultra-high-frequency, co-located at exchange algorithms at the time of their IPO) that will produce profit, day in day out all the time. There will be times when market conditions aren't favourable for a particular trading style. A trader can and should seek to recognise and adapt their systems and styles to match the conditions on offer

Anyone can handle winning trades. It's how you handle losing trades that matters. You can't control what happens, you can only control how you respond to what happens. The good thing with pair trading is naturally it has a high win rate around 70%, meaning 7 out of 10 trades will produce a profit. Having a high win rate makes it easier to stick to a strategy. That doesn't mean you can't have 3 losing trades in a row, and these losers can be significantly larger than the average winner. You inevitably will have this situation at some stage if you trade long enough. What matters is your performance after 50, 100 or more trades. Successful pair trading is a game of numbers. You need to treat your trading like a business where your losses are your business costs, are your wins are your business revenue. So long as you collect more revenue than costs after the quarter ends, you have a profitable trading business.

By default, many of us have been raised and educated to believe that if you do something and it is wrong, then you must change something. This reaction is a natural human reflex that is deeply ingrained in our psyche. It can also be detrimental to successful trading. Often in trading one ought to continue to use the same method even if it isn't working at the moment. This disconnect and its resulting cognitive dissonance is where most traders fail with trading systems. You can find a trading system with an excellent back test report and equity curve; however when the inevitable drawdown comes, the traders starts chopping and changing things or - even worse - completely abandons the method.

What you need to continue trading through a drawdown is confidence in your trading method. The advantage with pair trading is that it is designed around a very robust strategy with sound logic. Pair trading is not a fly-by-night strategy like many of the EAs and other junk that many online traders employ. It has been around since at least the 19th century and will continue to exist as long as liquid markets exist. It is not based on some voodoo combination of the MACD, RSI, chart pattern and day of the week filters. These technical indicator systems may sometimes produce good results. However, such trading systems aren't based on sound logic and when the inevitable drawdowns come, you will have no conviction to allow you mentally to continue trading them.

Successful pair trading, like anything else in life, requires planning, persistence and patience. You can't expect to become a millionaire overnight - it takes work and time to achieve. Plenty of practice and record keeping will help you get better at your craft. Try and learn as much as possible. Ask other successful pair traders questions and look for new ways to improve your trading. Pair trading is a method you can use to generate a consistent income and capital growth after you have mastered the basics.

If you are tired of chopping and changing your trading method, or looking for the non-existent holy grail, or sick of being promoted the latest "hot stock", then make it your objective to learn the pair trading method to the best of your ability. Be guided by our software and ongoing support. If you do, we believe you are significantly increasing your chances of becoming a successful trader and living a lifestyle about which most people can only dream.

Pair trading does work over time, as evidenced by the results in the backtester and in robust academic research. If you stick to it, you will succeed. The impatient and greedy will not.

4.6 Risk Management & Diversification

Paying attention to risk is of upmost importance in trading. You must ensure you won't take a drawdown below your psychological "uncle" point, for most traders this is 30%. After a 30% drawdown it becomes mentally hard to continue with the same method. Also, smart risk management ensures your account won't take a big hit if any one trade goes sour (M&A or other corporate action, scandal, fraud, other unsystematic risk on any one symbol). Every now and then you will take a large loss, this fact is part-and-parcel of trading, and something with which every trader must eventually contend.

Position Sizing

The first thing you want to decide is how much of your account you want to place in each trade. This is a function of your risk tolerance and the maximum amount of positions you will allow. Ideally you will place between 5%-10% of your account in each trade. For example, if you had a \$10,000

account, you may wish to buy \$1,000 stock and short \$1,000 at a time. With 2:1 overnight margin, this will allow you to have a maximum of 10 pair trades open ($10 \times 2,000 = \$20,000$). You will want some leverage headroom to allow for new excellent trades or unforeseen drawdowns. Ideally, try and measure the maximum loss a position could historically have generated (look at largest loss in backtest results), add a cushion, and then position size to ensure that that loss is not more than 1%- 2% of your account equity.

For example, if on \$10k/leg a pair once had a \$1,600 loss, how much should we trade if our account is \$10,000? Well, let's say a possible maximum loss at \$10k/leg would be \$2,000 (cushion added). Our account is \$10,000 and we want to keep maximum risk (R) at max 2%. 2% of \$10,000 is \$200. So we would position size at \$1,000 leg (i.e. 10% of the leg size that has a max loss of \$2000 => max loss of \$200) and set a Max Loss Alert at \$200.

You may or may not want to use Max Loss Stop Losses. These are further discussed in section 4.7 below.

Pairs Volatility

Before entering any Entry Trading Signal generated by TANGO-TRADE we recommend you always revisit the Volatility chart and current Average Volatility reading (in last point of chart plot and in column on My Watchlist). The more volatile a pair, the smaller a position size you will need to assign to it in order to maintain your maximum risk exposure parameter at 1%-2% of account equity. The inverse is true will very stable (low volatility) pairs with a long track record – an increased position size may be warranted. As a rule of thumb with US mid and large cap stock pairs typical volatility is 1.0%- 2.0%. Anything above 2.5% is an invitation to reducing position sizing, anything below 1.0% may warrant an increase.

Derivatives Trading

When trading derivatives, use a small % of your account position sizing rule (to ensure total risk exposure 1%-2% for the possible loss). Don't over-leverage your account, the volatility in your trading account will become unbearable and dangerous. Remember the first rule of making money: DON'T LOSE MONEY. You must avoid large drawdowns. The first goal of any investment program is to preserve your capital, next is to reduce account volatility, then your aim is to grow your capital above the risk-free rate offered by bonds. Focus on not exposing your account to great risks and the growth will come naturally. Good trading is all about being defensive, conservative and taking calculated risks. After a 50% drawdown an account needs 100% return just to recover. Avoid this situation.

Trading Cost

Pair trading has high trading costs: margin cost for leverage, buy/sell order for each leg of a trade, stock borrow fees, swing trading time horizons. With the small account size many new traders possess, keeping commissions and slippage at an absolute minimum is key – hence we look to Interactive Brokers as the best solution for helping get a new pair trader successfully into the game. Their minimum commission for a trade is only \$0.50 vs. over \$10 for many competitors. Margin rates and stock borrow fees are also much cheaper than most. For a small account, broker selection and trading costs can be the difference between success or failure.

Diversification

Next, you want a diversified portfolio of pairs. We recommend you look for opportunities in as many markets and countries as possible and, if you are just trading stocks, trade companies from a

variety of industries. Even better would be to trade multiple asset classes; stocks, futures, options and forex. You will need more trading capital and trading experience to trade multiple markets. If you are just beginning and have a small account, this expansion is something towards which you can work and prepare.

You have to be careful with what stocks you trade, unlike with futures and forex which are large, liquid instruments, some smaller cap stocks present much greater risks. For example, a large bluechip company like Walmart (WMT) has significantly less risk (volatility) inherent in it than say a small cap biotechnology company traded on the NASDAQ which doesn't have any revenue and trades only 50,000 shares per day. You shouldn't short stocks like the second type. Where possible, stick to the largest and most liquid stocks only.

We also recommend that you don't have any symbol repeated in your live pair trade portfolio. Some symbols form multiple attractive pairs for trading and you may add a few of them onto My Watchlist together. They may all trigger at once. Select the best setup and trade that one only. Otherwise you have doubled your position size and risk (R) for that symbol.

Diversify across industry sub-sectors. As a rule of thumb, we don't like to have open more than two to three trades in any one industry-subsector at any one time.

Finally, be careful of the news surrounding stocks when trading. Don't place a trade several weeks before an earnings announcement, or make sure you don't have a position during the announcement, because if a company surprises on delivered earnings compared to what analysts and market expected, the stock price can and often does move large amounts. Use Yahoo! Finance and earnings.com to check for stock news and upcoming earnings announcement dates.

4.7 Whether to Use Max Loss Alerts & Stop Losses

Max Loss Alerts are a new feature of TANGO-TRADE. For detail on how these alerts work and how to use them as stop losses and trailing stops, please see section 2.11.

The question of whether and what stop loss to use for reversion to mean trading is one that has been extensively debated. Possibilities suggested by traders over the years have been for:

1. dollar-based stop losses (i.e a Max Loss Stop Loss)
2. technically based stop losses (i.e. based on breach of a technical support or resistance level e.g. on the %age from Mean or absolute Ratio level)
3. volatility-based stop losses (i.e. based on the ratio widening out past x.xx sd, e.g. you enter a pair trade at -2.50 sd and set a stop at -3.50 sd. If the Ratio trades at greater than -3.50 sd you close the trade and take the loss)
4. time stops (i.e. Max Days in Trade)
5. many others, but these are the main ones.

In the end, your choice of stop loss(es) or not will depend on the instruments you trade, your risk tolerance as a trader, your style, your trading results and your analyses thereof.

Leveraged Trading & Stop Losses

With any leveraged trading, we strongly suggest that traders use a stop loss from 1-3 above, even if it is wide and almost never hit. Unsystematic news risk on an equity (e.g. fraud, major lawsuit or scandal) or corporate actions (e.g. takeover bid) can cause a pair trade to blow out - often in an overnight gap - and not re-converge. You need to have a plan in place beforehand of how you will react to this event. With FX, an FX cross can trend for a very long time without reference to any underlying fundamental correlations, and leverage rates are higher. A failsafe stop loss to protect from a disastrous drawdown is, we believe, a prudent capital preservation strategy. We also believe these risks can and should be mitigated first and foremost through small position sizing in your portfolio.

Dollar-Based Stop Loss

With the Max Loss Alert function in TANGO-TRADE, you can easily set and directly follow a dollar-based stop-loss strategy, closing a trade any time the Alert is triggered. You can also use it as a trailing stop to protect profits, again closing any trade that retraces to your trailing level.

Technically Based Stop Loss

If you wish to use a technically based stop loss, it is up to you to define, backtest and follow backwards on the Pair Charts to see how it would have performed. You can use the Max Loss Alert to give you a heads up when a pair is going badly wrong so that you can then perform this analysis on your charts to see if your technical levels have been breached.

Volatility-Based Stop Loss

If you wish to use a volatility-based stop loss strategy, TANGO-TRADE also provides you with real-time recalculation of the # of deviations of the Ratio (Core Ratio actually) from its Mean at any time. With it, you can easily see if the pair is about to cross, or has crossed, a volatility-based stop loss based on standard deviation. Again, the Max Loss Alert can be used to flag your attention when losses that are outside of your comfort zone have been reached. You can then review the sd level at the time of alert and compare it to your volatility stop trading rules. The Max Loss Alert (on screen and by email) contains the # of Deviations of the Ratio at the time of trigger.

Time Stop

For pair trading in general, we also believe traders should set a time stop, e.g. Max Days in Trade that is in comfortably in excess of the Average Days in Trade for a pair (or in excess on Max Days in Trade over the backtest period) as any pair that is not reverting to mean over a long enough period is tying up capital in an unproductive fashion that can be reallocated to another more promising pair.

Conclusions

As you can read, there are many possible stop loss rules you can devise for a trading system. We suggest paper trading with TANGO-TRADE first for the first 10-20 trades at least, and then trading with small position sizes (0.5% of account equity at risk based on your Max Loss Stop Loss for example). As you get familiar with this style of trading, the markets and instruments that you trade, and the unforeseen corporate events and earnings surprises that can hit your portfolio, you will naturally gravitate towards a mental stop loss level. Then, based on 1-4 above, you can more easily define that level where you will say to yourself "any pair that trades past that point has violated my hypothesis that the Ratio will revert to its mean in a relatively short period of time and



still at a profit". If a trader can make that statement with a high degree of confidence, the trade likely should be closed. At the end of the day, you need to be able to sleep comfortably at night, not worry about any single position, and be in the game for the long haul with capital preservation first and foremost in your mind.

5 Troubleshooting

5.1 Troubleshooting Installation Issues

Sometimes getting TANGO-TRADE installed for the first time can be tricky. This difficulty isn't usually due to our software but rather the strict system requirements set by Microsoft SQL, the database program into which TANGO-TRADE integrates. SQL is very strict because it is mostly used by companies which house sensitive data to which they do not want their employees to have access. Accordingly, one has to be the computer administrator for full rights to be able to install SQL correctly.

The current TANGO-TRADE Installer will automatically install Microsoft SQL Server 2012 Express LocalDB on your machine before installing TANGO-TRADE if it does not detect that you have it already installed. It will also ensure that you have the latest version of Microsoft Visual C++ 2015 x64, which is required for TANGO-TRADE to perform correctly. If for any reason the TANGO-TRADE Installer does not install Microsoft Visual C++ 2015 x64 correctly, you can download and install it manually.

If you experience any problems in installing TANGO-TRADE on older versions of Windows, then please make sure you have the latest version of Microsoft .NET framework 4.5 installed on your machine. This .NET framework can be manually installed.

Please note only one license per computer is allowed, each machine's IP address is recorded to prevent transfer to another machine. To use TANGO-TRADE on more than one machine, you will need to purchase additional License Keys. Please email us at info@tango-trade.co should you need to do so. If you wish to migrate your License Key because you have upgraded or replaced your computer, email us at info@tango-trade.co and we will arrange for the migration.

Using TANGO-TRADE with your Mac and Parallels Hypervisor or Using TANGO-TRADE on a Virtual Machine

By default TANGO-TRADE License Keys come with activation on hypervisors and virtual machines prohibited. Many users, however, run TANGO-TRADE on Mac using the Parallels hypervisor (www.parallels.com) and many subscribers like to put TANGO-TRADE on a standalone virtual machine instance to run 24/7. In either of these cases send us an email at info@tango-trade.co and we can enable your License Key for hypervisor and virtual machine activation by switching it to a "floating mode" of authentication.

If you are having any other installation issues, please don't hesitate to contact us at info@tango-trade.co and we will respond to you quickly with a possible solution to your issue. If you require, we also offer remote installation of our software on your computer free of charge.

5.2 Troubleshooting Running Issues in TANGO-TRADE

TANGO-TRADE is a stable software program which has been used for over ten years amongst thousands of traders. Our latest build of PRO v2.0 is the most stable, fastest and most powerful version ever released.

Most user issues are due to local computer settings, datafeed connectivity, trading permissions or something the user has done out of the ordinary.

For many issues that may arise, you can find answers in our Knowledge Database at <https://www.tangotrade.co/support>

Here is a preliminary list:

Stock Code Imports and Date Formats

The most common issue with users from European or other non-US countries is not being able to add stock codes when using Create Group. This error may be due to your computer date format not being compatible with TANGO-TRADE date format. To fix this issue, open your control panel, click on global and regional settings, then change your date format to MM/DD/YYYY and re-start TANGO-TRADE and try again. If that doesn't work, try changing your date settings to DD/MM/YYYY and re-start again. Also, you may wish to change your default currency to \$ and use 2 decimal (.) places.

TANGO-TRADE Freezes or Crashes During Start Up or Backtest

If you find your software crashing during start up or a backtest, or gives you an "Out of Memory Exception Error", you most likely have too many pairs saved in your home page or are back testing too many stocks at once. Due to the large amounts of data TANGO-TRADE crunches, you need to be aware of your computer's and the software's respective limitations. See section 4.1 Optimum Performance above.

If you have any other issues running TANGO-TRADE properly, please don't hesitate to contact us at info@tango-trade.co and we will endeavour to help you at the earliest convenience. Online support is available 24/6 and we endeavour to answer all requests in 24 hours, or a maximum of 48 hours. Usually, response time is much faster

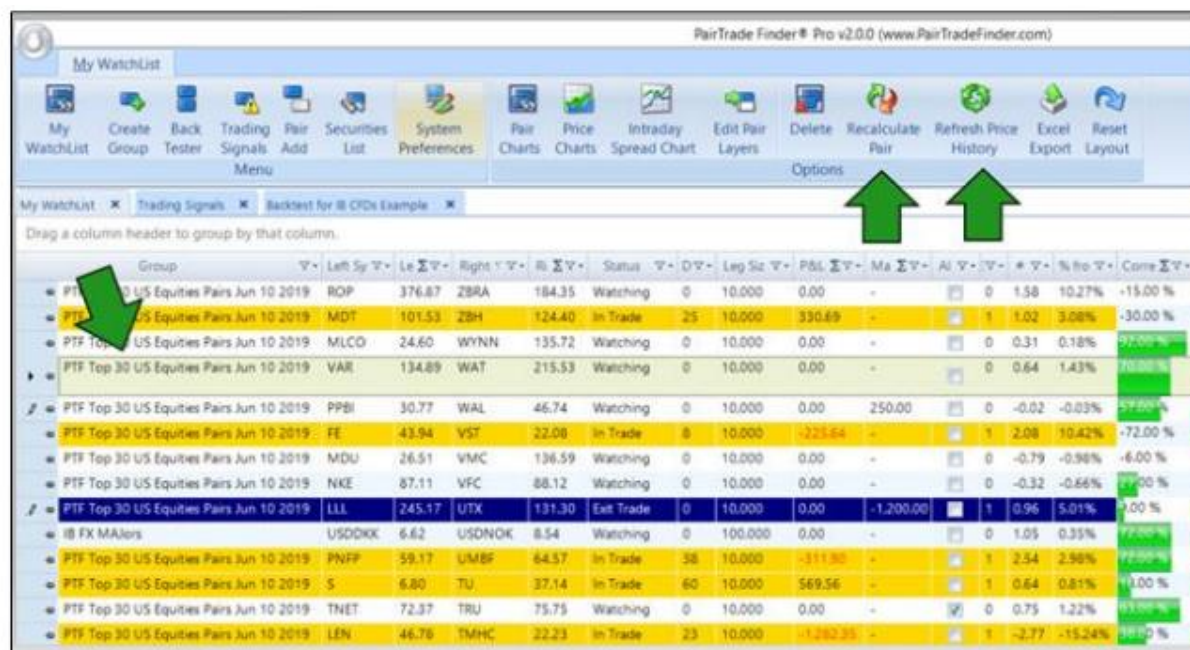
5.3 Troubleshooting Data Issues

By default TANGO-TRADE uses free data automatically imported from Yahoo! Finance's Historic datafeed API. Data from Yahoo! Finance comes from CSI Data, a large, reputable data company. 99% of the time their data it is reliable, and even more so with large, liquid stocks. With smaller capitalisation stocks the data quality isn't as high - this degraded quality is real cost of free data.

If you want 100% reliable, clean data, we suggest you subscribe to a data subscription from IQfeed as per section 3.1 of this user manual, or open an Interactive Brokers' account and integrate TANGO-TRADE to IB Trader Workstation per section 3.2.

If you see large spikes in your price charts, one or more of your stocks may have become corrupted. This corruption normally doesn't affect the trading signals, only the price chart. To fix this issue, go to My Watchlist, highlight the pair(s) and hit the "Refresh Data" button in the upper toolbar. If the problem persists, hit "Recalculate Pair" on the upper toolbar. "Recalculate Pair" will cause TANGO-TRADE to reload the data for both symbols in the pair going back 10 years, and it will then replace all Trading Signals on that pair using the updated EOD Adjusted Close data that results from the update.

NB: BE CAREFUL as any Trading Signals you may have been following from Intraday triggers will be removed. If, after undertaking both of the above steps, the problem persists you will need to delete the pairs and the related stocks, then re-add the stocks back into the system.



Group	Left Sy	Le	Right Sy	R	Status	D	Leg Siz	P&L	Ma	AI	%	%	Com
PTF Top 30 US Equities Pairs Jun 10 2019	ROP	376.87	ZBRA	184.35	Watching	0	10,000	0.00	-	0	1.58	10.27%	+15.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	MDT	101.53	ZBH	124.40	In Trade	25	10,000	330.89	-	1	1.02	3.08%	-30.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	MLCO	24.60	WYNN	135.72	Watching	0	10,000	0.00	-	0	0.31	0.18%	97.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	VAR	134.89	WAT	215.53	Watching	0	10,000	0.00	-	0	0.64	1.43%	97.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	PPBI	30.77	WAL	46.74	Watching	0	10,000	0.00	250.00	0	-0.02	-0.03%	57.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	FE	43.94	VST	22.08	In Trade	8	10,000	-225.64	-	1	2.08	10.42%	-72.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	MDU	26.51	VMC	136.59	Watching	0	10,000	0.00	-	0	-0.79	-0.96%	-6.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	NKE	87.11	VFC	88.12	Watching	0	10,000	0.00	-	0	-0.32	-0.66%	77.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	LLL	245.17	UTX	131.30	Exit Trade	0	10,000	0.00	-1,200.00	1	0.96	5.01%	-1.00 %
IB FX Majors	USDDKK	6.62	USDNOK	8.54	Watching	0	100,000	0.00	-	0	1.05	0.35%	77.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	PNFP	59.17	UMBF	64.57	In Trade	38	10,000	-311.80	-	1	2.34	2.98%	77.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	S	6.80	TU	37.14	In Trade	60	10,000	569.56	-	1	0.64	0.81%	97.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	TNET	72.37	TRU	75.75	Watching	0	10,000	0.00	-	0	0.75	1.22%	97.00 %
PTF Top 30 US Equities Pairs Jun 10 2019	LEN	46.76	TMHC	22.23	In Trade	23	10,000	-1,262.95	-	1	-2.77	-15.24%	97.00 %

Apart from the above, data is usually quite reliable and stable in TANGO-TRADE. If you have a quality datasource, our software runs smoothly and efficiently. If you have any other data issues, please don't hesitate to contact us at info@tango-trade.co and we will endeavour to help you at the earliest convenience.

6 Other Information

6.1 Useful Links to Aide Your Pair Trading

www.iqfeed.net/pairtradefinder - Quality, reliable and clean data you can import into TANGO-TRADE.

www.mechtrading.com/qcollector/dtn/index.htm - A cheap and simple program you can use with your IQfeed subscription to be able to download historical data into MSCII or CSV format, so you can import into other software programs or a spread sheet. You can download data in any time interval (1min, 18min, 1day, etc..) and going back 10 years for some instruments.



www.yahoo.com/finance - Possibly the best free finance website on the net, you can type in just about any code for any instrument around the world and pull up charts and conduct extensive analysis. Use Yahoo! Finance to check for any stock related news that may be affecting the price, upgrades/downgrades, earnings, takeovers, won/lost contracts, litigation, earnings guidance, CEO appearances etc.

www.earnings.com – A free service for traders to look up earnings announcement dates for US stocks. Remember, a pair trader does not want to place trades right before an earnings announcement...this website is a great place to check for the earnings calendar.

www.interactivebrokers.com – Possibly the best online broker in the world. Available to traders all over the world, you can trade over 126 different markets in 20 countries, all from one platform. IB has the cheapest overnight financing rates and commission fees versus all other online brokers.

This concludes the TANGO-TRADE v2.0 User Manual.

If you have any questions or suggestions for us please don't hesitate to email us at info@tangotrade.co and we would be happy to help you.

We look forward to you becoming part of the large and growing online pair trading community.

Happy Trading!