

# Strategy Architect

Exclusively for



## P1 Strategy Architect User Guide

**Strategy Options**

Strategy Type: Day Trade

Trade Direction: Long & Short

Maximum Trade Risk: 650.00

Max Trades per Day: 2

Monday  
 Tuesday  
 Wednesday  
 Thursday  
 Friday

Intraday Start Time: 9:30  
Intraday End Time: 16:00

Start Search End Search Clear List

Search Complete

Test: 59,983 of 60,000  
All Net Profit: \$27,725.00 (\$56,087.50)  
Elapsed Time: 1 hour, 39 minutes, 11 seconds  
Maximum Time: 1 second  
Generation Count: 300 of 300

Save Results for WFO Analysis

Chart Analysis - @ES.D 15 min [CME] E-mini S&P 500 Continuous Contract [Dec24]

Symbol: @ES.D Timeframe: Drawing Studies Style Data Settings

Inputs: (8, 54, 4, 4, -184, 1.0, 5.0, 1, 575, 3, 1, 2, 1, 1, 1, 1, 1, 830, 1600)

Strategy Analysis

#	Net Profit	Profit Factor	Total Trades	Average Trade	Draw Down	IS Index	Expect	Risk RDRP	Perfect Profit	OOS Corr.	Inputs
386	\$54,612.50	1.70	318	\$203.18	\$6,125.00	1,822.35	30.00	0.59	\$4,074.17	118.28	(8, 6, 4, 4, -188, 1.0, 5.0, 0, 600, 3, 1, 2, 1, 1, 1, 1, 830, 1600)
387	\$54,425.00	1.59	320	\$201.33	\$6,125.00	1,588.27	30.08	0.59	\$3,853.65	110.87	(8, 6, 4, 4, -182, 1.0, 5.0, 1, 600, 3, 1, 2, 1, 1, 1, 1, 845, 1600)
388	\$53,950.00	1.69	318	\$201.10	\$6,125.00	1,566.12	29.63	0.58	\$3,317.85	119.77	(8, 6, 4, 4, -184, 1.0, 5.0, 0, 600, 3, 1, 2, 1, 1, 1, 1, 845, 1600)
389	\$53,775.00	1.58	367	\$173.77	\$10,175.00	\$65.24	31.89	0.57	\$9,482.89	113.96	(8, 6, 4, 4, -184, 0.0, 4.0, 0, 575, 3, 1, 2, 1, 1, 1, 1, 845, 1600)
390	\$53,287.50	1.68	322	\$196.55	\$6,125.00	1,570.56	29.65	0.58	\$2,684.91	106.32	(8, 6, 4, 4, -182, 1.0, 4.5, 1, 600, 3, 1, 2, 1, 1, 1, 1, 830, 1600)
391	\$53,225.00	1.68	319	\$198.20	\$6,437.50	1,463.38	29.47	0.58	\$2,669.28	121.89	(8, 6, 4, 4, -196, 1.0, 5.0, 0, 600, 3, 1, 2, 1, 1, 1, 1, 845, 1600)
392	\$53,137.50	1.84	266	\$237.36	\$6,837.50	1,163.48	30.15	0.57	\$2,521.07	97.43	(8, 10, 4, 52, -176, 1.0, 5.0, 0, 600, 3, 1, 2, 1, 1, 1, 1, 830, 1600)
393	\$52,812.50	1.67	320	\$196.29	\$6,125.00	1,548.52	29.26	0.57	\$2,137.81	115.16	(8, 6, 4, 4, -182, 1.0, 4.5, 0, 600, 3, 1, 2, 1, 1, 1, 1, 830, 1600)
394	\$52,787.50	2.01	236	\$266.05	\$4,725.00	1,541.45	31.21	0.57	\$1,512.12	199.10	(8, 54, 4, 4, -184, 1.0, 5.0, 1, 575, 3, 1, 2, 1, 1, 1, 1, 830, 1600)
395	\$52,625.00	1.67	322	\$184.48	\$6,125.00	1,533.67	29.31	0.57	\$1,936.68	115.88	(8, 6, 4, 4, -194, 1.0, 5.0, 1, 600, 3, 1, 2, 1, 1, 1, 1, 830, 1600)

Selected Performance

OOS Profit Correlation: 199.1%

General Info

Symbol: @ES.D  
Category: Future  
Starting Date: 08/28/2023  
Ending Date: 9/26/2024  
Interval: 15 Minute Bars  
Total Trading Days: 254  
Avg Trades/Day: 0.9  
Avg Days Between Trades: 0.0  
Date of Last Equity Peak: 9/24/2024  
Position Size for Testing: 1

Performance

Strategy Profit: \$62,212.50  
Benchmark Profit: \$58,125.00  
Total Trades: 237  
Profit Factor: 1.99  
Pct Winning Trades: 48.95%  
Avg Profit per Trade: \$262.50  
Maximum Drawdown: \$-4,725.00  
Commission/Slippage: \$0.00  
Max Consec Losing Trades: 7  
Max Consec Winning Trades: 8

Write to File Update OOS Corr Clear Strategy Unclear Chart

Use Dropdown to Select File to Load

# P1 Strategy Architect User Guide

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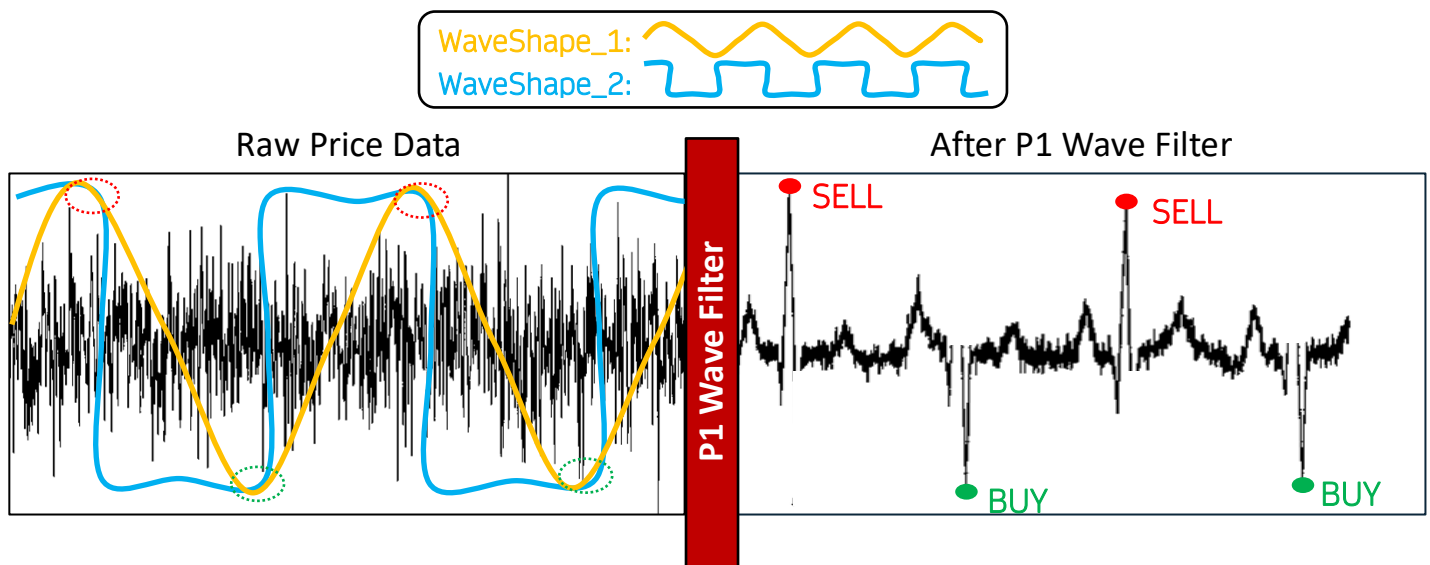
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*Updated 9-26-24*

**Welcome to the P1 Strategy Architect!** This high-performance suite of tools provides a quick and efficient method of generating robust trading strategies. The software utilizes the innovative P1 Strategy along with a genetic algorithm to create the ultimate trading system for any market. It works entirely within the TradeStation environment, so there is no need to export data or do any processing outside of your TradeStation workspace.

In trading, one size does not fit all. The P1 Strategy Architect enables you to develop unique strategies to fit your markets, trading style, and risk tolerances. Using a simple user interface and standard TradeStation charts, the P1 Strategy Architect employs artificial intelligence (AI) to search millions of combinations to find only the strategies that meet specific, user-defined criteria. You do not need to learn or develop any specific technical analysis or trade logic to use the software; the P1 Strategy Architect AI searches for ideal trade entries and money management, choosing the best combination of parameters to create profitable strategy models. To avoid *curve fitting* (creating a strategy that only works on a specific range of historical data), P1 strategies can be developed with varying amounts of out-of-sample data and easily saved to a format used in the Walk Forward Optimizer for further analysis.

The heart of this software is the **P1 Strategy**. This strategy combines a low latency waveform filter with several market-specific parameters designed to create realistic short-term trading systems. The strategy can be set for either *day trading* (all trades close at end of session) or *swing trading* (trades over multiple days or weeks) and works with all time-based or volume intervals, including intraday, daily, and weekly charts. The strategy creates trading signals by applying one of twenty different waveshapes (with varying wavelengths) to price and volume data, then combining two of these waveshapes together and filtering the results to create signals. The figure below illustrates how raw price data converts into trading signals.



The concepts involved in P1 wave filtering are analogous to audio processing where certain frequencies can be isolated or enhanced using high-pass, low-pass, or band-pass filtering. By combining two different waveshapes into the filter, the strategy isolates changes in price or volume that lead to high probability market moves. The software selects the optimal waveshapes and wavelengths for a given market and then applies the wave filter to cut out extraneous market noise, providing clear buy and sell signals.

It's important to understand the process for developing and evaluating systems with the P1 Strategy Architect. As the name "architect" implies, the goal is for the software to design trading strategies based on the desired performance outcome. For instance, instead of deciding which waveforms or wavelengths to use (the AI decides that), you can define a range of key performance metrics, such as profit factor, minimum average trade, and/or a maximum drawdown to describe the overall outcome of the strategy. As an example, imagine a Formula 1 Grand Prix where instead of competing, a race car driver simply decides what their final placement should be, then turns it over to a computerized car. The car creates a specific strategy for the race, considering vehicle setup, track layout, and weather conditions, then executes that race strategy (drives the race) to achieve the optimal result. This is how the P1 Strategy Architect approaches trading. To begin working with the P1 Strategy Architect, you define the WHAT, WHEN, WHY, and HOW the strategy should perform, then instruct the P1 Strategy Architect to search for that strategy. Setting up a search is generally a quick process involving the following steps:

**Step 1 – Decide WHAT to trade**

Load a TradeStation chart with the symbol, interval, and amount of historical data to build the strategy.

**Step 2 – Choose WHEN to trade**

Use the P1 App's checkboxes and dropdown menus to select the trade duration, time of day to trade, number of days to trade, and the maximum amount of risk per trade.

**Step 3 – Establish WHY to take trades**

Define the performance criteria for a strategy using the P1 App; this includes selecting the main fitness function for the strategy (such as Net Profit) and filtering out strategies that do not meet a user-defined profit factor, minimum trade number, maximum drawdown, or average trade amount.

**Step 4 – Define HOW the AI will search**

Control the genetic search operators or allow the app to specify a standard search algorithm.

**Step 5 – Click the  button to build strategies based on steps 1 through 4.**

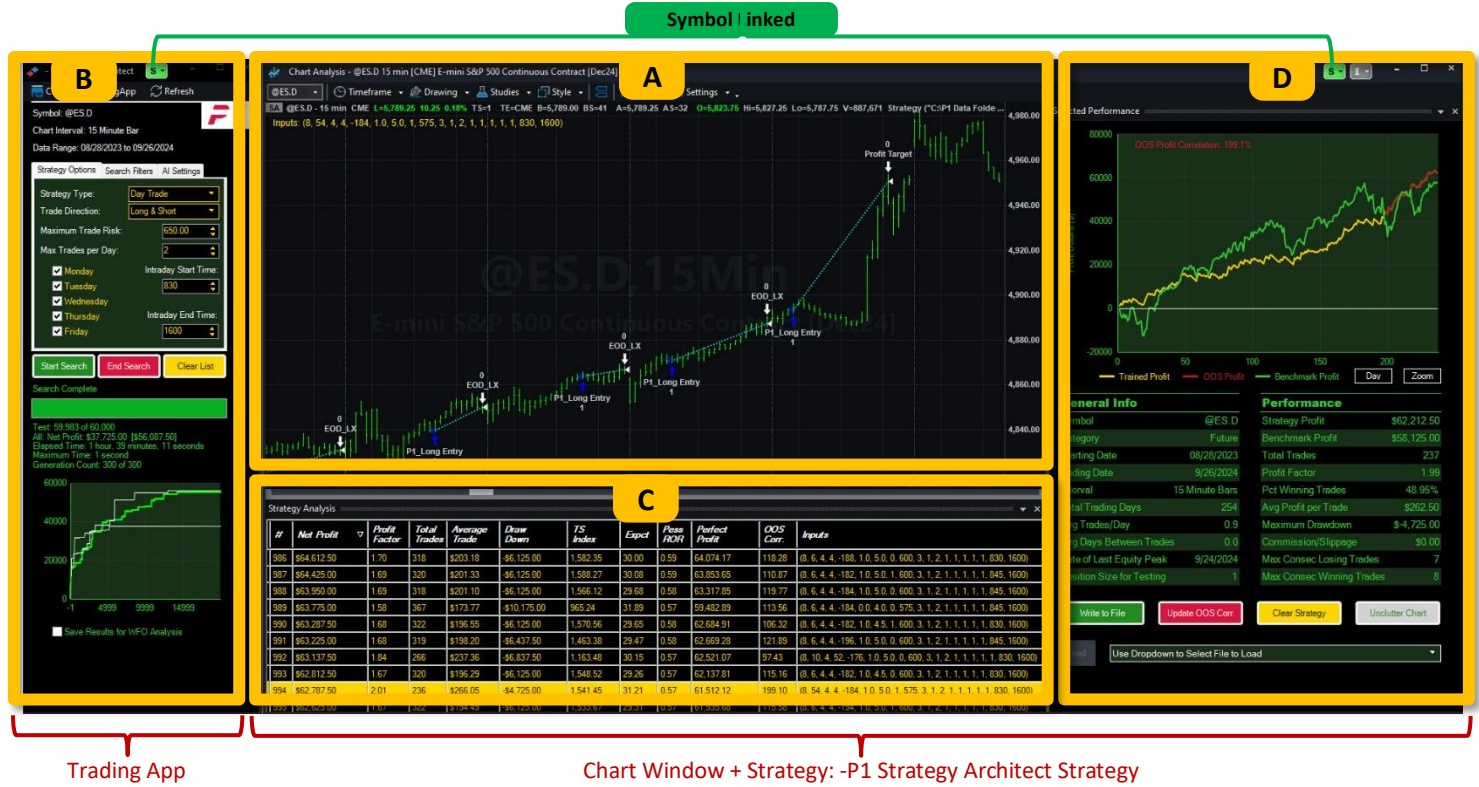
Once a search has begun, it may take some time to complete depending on the amount of data and your computer speed. These next steps outline the process of reviewing and selecting the best strategies following a successful search:

**Step 6 – Select the best strategy**

When the search is complete, a list of strategies meeting the performance criteria from step 3 appears. You can choose a particular strategy, save the complete list, or send the results to the TradeStation Walk Forward Optimizer for further review. The strategy is defined by the unique list of input parameters.

**Step 7 – Trade the strategy**

Simply click a couple checkboxes within the chart to enable automated trading of the P1 strategy that was created in the steps above. NOTE: it is always recommended to thoroughly evaluate a strategy before trading with a live account; please see read the Disclaimer at the end of this guide.



Trading App

Chart Window + Strategy: -P1 Strategy Architect Strategy

The P1 Strategy Architect Search engine is a combination of a TradeStation 10 Trading App and a Chart Analysis Window (with the strategy “-P1 Strategy Architect” added; a dash before the strategy name ensures it appears at the top of your program list). These windows are symbol linked together to pass data back and forth between each application. The overall workspace consists of four main parts or modules, each with a different functionality.

**A – Chart Analysis Window**

Use the Chart Analysis Window to select symbols, choose intervals, and load data, just as you would in a regular TradeStation Chart. The chart type and appearance can be customized within the chart settings menu. This is a standard TradeStation Chart Analysis Window; the strategy “-P1 Strategy Architect” adds the Strategy Analysis List (C) and Selected Performance Module (D) to the chart.

**B – Strategy Search App**

This module sets up the search criteria with a combination of dropdown menus and checkboxes. Once set up, the action buttons trigger the search and updates the search progress.

**C – Strategy Analysis List**

When a search has completed, this displays a list of all strategies that meet the search criteria and filters. The Chart Analysis Window (A) and Selected Performance Module (D) are both updated when you click the ‘#’ column to select a strategy. Strategies can also be sorted by any of the column headings to determine the best selection.

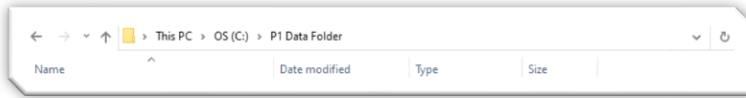
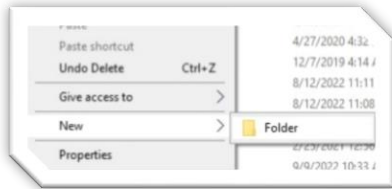
**D – Selected Performance Module**

This provides a concise performance analysis for the selected strategy from the Strategy Analysis Model (C) along with an equity chart that overlays the ‘Benchmark Profit’ of the trading period. Additional ‘Day’ and ‘Zoom’ buttons allow further analysis by comparing the equity chart to short and long averages or analyzing the individual performance by day. Control buttons at the bottom of this module let you reset or save all the data from the Strategy Analysis List (C) to a .csv file.

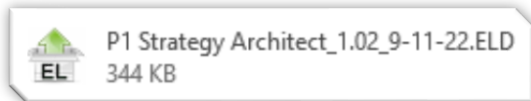
## Installation

The P1 Strategy Architect should install directly from the installation file you received. Additionally, you should manually create a folder to save your P1 Strategy search results. To install the P1 Strategy Architect, please follow the steps below:

1. Create a folder named “P1 Data Folder” on the C drive: C:\P1 Data Folder\

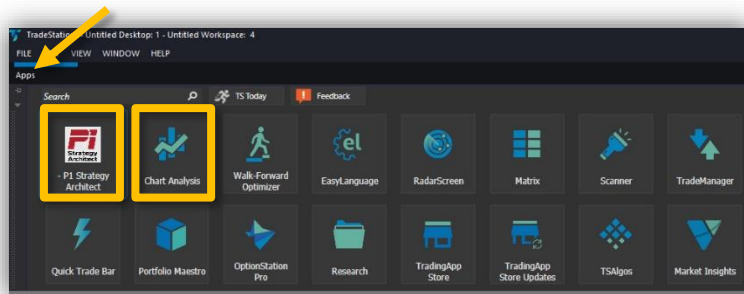


2. Open TradeStation and install the .ELD file “P1 Strategy Architect...” by double-clicking the EL icon. This should open the Import Wizard and autoload all the P1 functions, strategies, and trading app into TradeStation. Click “Select All” and “Finish” when prompted. The following P1 applications should now be installed:



- a. -P1 Strategy Architect [Trading App]
- b. -P1 Strategy Architect [Strategy]
- c. -P1 Strategy [Strategy]

3. Create a new workspace within TradeStation: *File > Workspaces > New Workspace*
4. Open the P1 Strategy Architect trading app by going to the App section and selecting the icon for P1 Strategy Architect. Note: the icons may appear in a different order.



5. Open a new Chart Analysis window by going to the App section and selecting the Chart Analysis icon.
6. Install “-P1 Strategy Architect” onto a chart. With the chart in focus, *go to Studies > Add Strategy > Select “-P1 Strategy Architect” > click “OK” > click “OK”*. A blank Selected Performance Module (SPM) should appear on the right-hand side of the chart. If the SPM does not appear initially, you might need to load more data onto your chart.
7. Symbol link the P1 App to the chart by clicking the symbol link button in the upper right corner of both the app and Chart Analysis Window. The color of both symbol link buttons should match.



The P1 Strategy Architect suite includes three separate components:

1. **-P1 Strategy Architect** [*Type of study: Trading App*]

Must be linked together; used in combination for strategy searches

2. **-P1 Strategy Architect** [*Type of study: Strategy*]

3. **-P1 Strategy** [*Type of study: Strategy*]

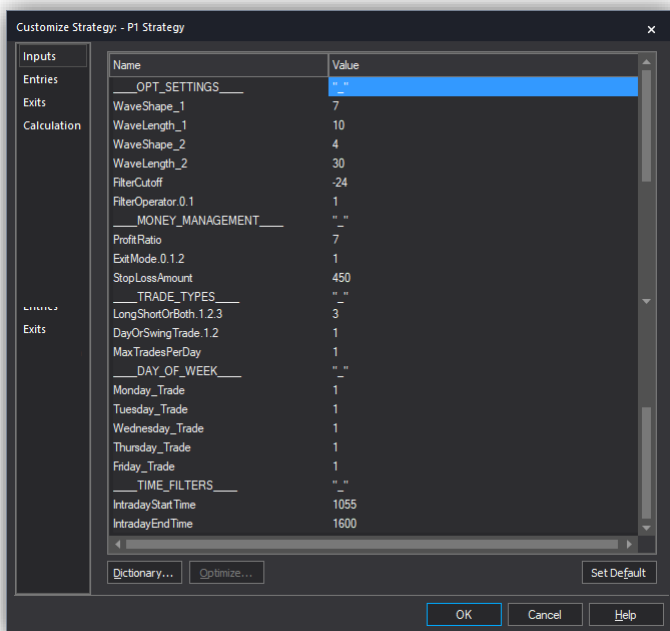
Stand-alone strategy; used for more simplified trading

The core is the stand-alone “-P1 Strategy” that works on any chart. It should be noted that this is different from the “-P1 Strategy Architect,” which is also a strategy but can only be used in combination with the P1 Trading App for strategy searches (described in the section *P1 Architect*). The stand-alone “-P1 Strategy” acts like a chameleon and changes its trade logic depending on 19 individual input parameters. Without the proper parameters, this strategy will not provide any type of trading advantage.

The intent of the “-P1 Strategy” is a simplified version of the strategy that can be used as follows:

- A P1 Architect Search identifies the optimal input parameters; and
- The inputs from the search go into the stand-alone strategy for additional testing and possible trade automation.
- The “P1 Strategy” solidifies the outcome of the P1 Strategy Architect searches and outputs a simplified strategy you can use for sim trading, live trading, or further analysis.

All strategy searches with the P1 Strategy Architect use the same input parameters as the stand-alone strategy. In fact, the input parameters are the main output from a strategy search. These input parameters define exactly how the strategy will trade and interact with the market. Different input parameters allow the strategy to vary the entry logic, money management, and trade exits to maximize the overall fitness of the system. While you can open a fresh chart, add the stand-alone “-P1 Strategy,” and optimize the inputs independently, this may not provide the same level of analysis available through a P1 Strategy Architect search.



The “-P1 Strategy” can be added to a chart from a Chart Analysis Window: *go to Studies > Add Strategy > Select “-P1 Strategy” > click “OK” > click “OK”*.

The “-P1 Strategy” inputs can be viewed or changed within a Chart Analysis Window: *go to Studies > Edit Strategy > Click “Customize” button > Select “Inputs” tab on right*.

Opt Settings	Range	Description
WaveShape_1	1 to 20	Defines the shape of wave #1
WaveLength_1	2 to 256	Defines the wavelength of wave #1
WaveShape_2	1 to 20	Defines the shape of wave #2
WaveLength_2	2 to 256	Defines the wavelength of wave #2
FilterCutoff	-256 to 256	Sets the filter cutoff range
FilterOperator.0.1	0 or 1	0 = disables wave filter 1 = enables wave filter

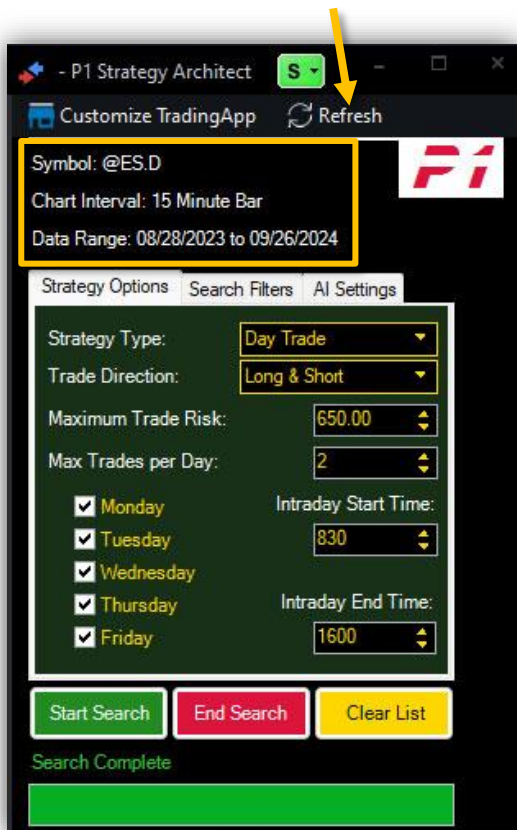
Money Management	Range	Description
ProfitRatio	1 to 20	Establishes a profit target multiple of StopLossAmount
ExitMode.0.1.2	0 to 2	0 = Exits only on stoploss or profit target 1 = Allows trades to stop and reverse (SAR) 2 = Allows trades to exit on opposite signal
StopLossAmount	0 to 99999	Dollar amount of Stoploss based on minimum trade unit; minimum trade unit = 1 contract for futures, or 100 shares for equities/EFTs

Additional Filters	Range	Description
LongShortOrBoth.1.2.3	1 to 3	1 = Trades are entered as either Long (Buy) or Short (Sell) 2 = Trades taken only in Long (Buy) direction 3 = Trades taken only in Short (Sell) direction
DayOrSwingTrade.1.2	1 to 2	1 = Day Trade Mode (all trades close by end of session) 2 = Swing Trade Mode (trades held over multiple days)
MaxTradesPerDay	1 to 20	Defines the maximum number of trades taken per day
Monday_Trade	0 or 1	0 = No trades on Mondays 1 = OK to trade on Mondays
Tuesday_Trade	0 or 1	0 = No trades on Tuesdays 1 = OK to trade on Tuesdays
Wednesday_Trade	0 or 1	0 = No trades on Wednesdays 1 = OK to trade on Wednesdays
Thursday_Trade	0 or 1	0 = No trades on Thursdays 1 = OK to trade on Thursdays
Friday_Trade	0 or 1	0 = No trades on Fridays 1 = OK to trade on Fridays
IntradayStartTime	0000 to 2359	Time of day to start trading in 24H format (0830 = 8:30am)
IntradayEndTime	0000 to 2359	Time of day to stop trading in 24H format (1600 = 4:00pm)





This section outlines the elements of a P1 Strategy Architect search. Please refer to the section: *Installation* to set up a workspace with the P1 Trading Architect Trading App and Strategy. The P1 Architect workspace should appear as in the diagram above. Notice that no data appears in the Selected Performance Module or sub charts because a search has not yet been completed. Also, note that the green symbol link buttons appear on both the Chart Analysis Window and the search app.



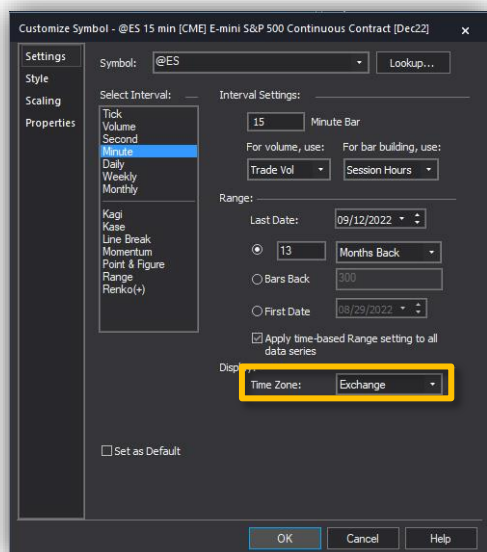
The next step is to make sure the P1 Architect strategy search app is reading the data from the chart correctly. Check the top left portion of the app to confirm the Symbol, Chart Interval, and Data Range match those of the chart. If these fields are not updating or are blank, click the “Refresh” button in the upper part of the form.

Click the Refresh button when restarting a search or changing the symbol data settings. In general, it’s good practice to click Refresh and check the data before starting any new search.

### Steps to setting up a new search

1. Click **Clear List** button
2. Click **Clear Strategy** button
3. Load new data into the Chart Analysis Window
4. Click **Refresh** button

## Chart Analysis Window



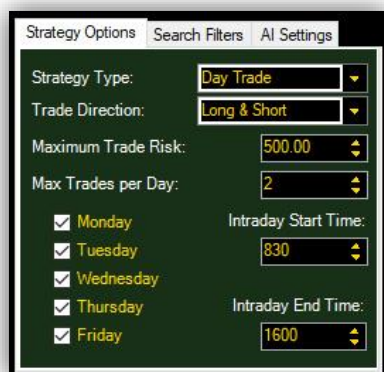
**Define WHAT to trade** – Begin by updating the Chart Analysis Window with the symbol, interval, and amount of historical data to build the strategy. Please note, it takes at least 600 bars of data for the P1 architect to process data correctly.

Important: It is recommended to set the Time Zone to “Exchange.” This allows the search to work over multiple international markets without needing to adjust for time shifts.

From within the Chart Analysis Window: *go to Data > Edit Symbol*, update the settings and *press “OK”* when done.

## Strategy Options

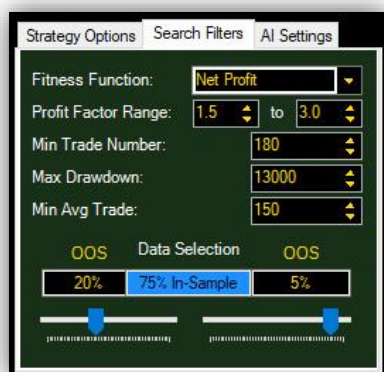
**Define WHEN to Trade** – The Strategy Options section of the P1 App provides several checkboxes and dropdown menus to define different styles of trading.



- Strategy Type: day trade, swing trade, or stop-and-reverse (always in a trade)
- Trade Direction: long, short, or long & short
- Maximum Trade Risk: specifies the maximum dollar risk for a minimum trade unit. A minimum trade unit is defined as 1 contract for futures, or 100 shares for equities/EFTs.
- Intraday Start and End Times: values are in 24-hour format (e.g., 1600 = 4:00pm) and are active only when in Day Trade mode.
- Day of week checkboxes: let you choose the days for trading. When unchecked, the strategy search skips that trading day in its algorithm.

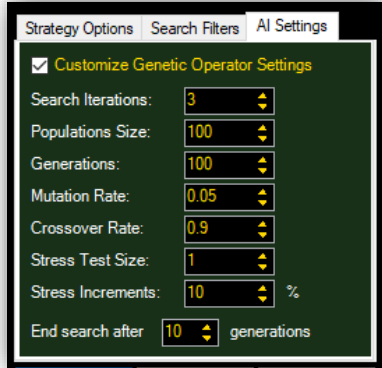
## Search Filters

**Define WHY take a Trade** – The Search Filters section defines the performance criteria for a strategy.



- Fitness Function: defines the primary metric the AI uses to search for strategy candidates. Options include net profit, TS index, expectancy, pessimistic rate of return, and perfect profit.
- Profit Factor, Min Trade Number, Max Drawdown, and Minimum Average Trade values let you drill down on the exact performance you want to see within a strategy.
- Data Selection: sliders let you choose how much out-of-sample data (OOS) to omit from the testing process. This can be a helpful tactic to avoid curve fitting. The location of the sliders represents OOS data either at the beginning or the end of the data collection.

**Define HOW to Search** – The AI section gives you control over the genetic search. When “Customize Genetic Operator Settings” is unchecked, the app will specify a standard search algorithm.

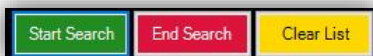


Checking the “*Customize Genetic Operator Settings*” checkbox allows access to all the operators for the genetic search algorithm. A full description of the genetic operators appears in the Appendix B at the end of this manual. Here is a synopsis of the most critical operators:

- **Search Iterations:** sets the number of times the search will run the entire algorithm.
- **Population Size:** defines the number of ‘random’ selections of input parameters used within each search generation.
- **Generations:** the successful pairing of a group of input parameters that maximizes the fitness function at the end of the Population Size run. At the end of each generation, those successful inputs remain constant throughout the remainder of the search.

Total Number of Search Tests = Search Iterations \* Population Size \* Generations

## Search Buttons

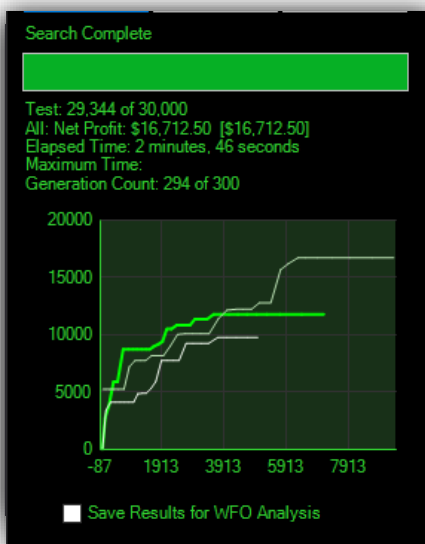


Once you establish the parameters for the search, the Search buttons allow the following actions:

- **Start Search:** begins a search and starts the AI algorithm.
- **End Search:** ends the current search and updates the chart with the best current results.
- **Clear List:** clears the list of search results from the Strategy Analysis List (click this button before starting a new search to clear the memory buffer).

Note: there may be a slight delay after you click the Start Search button. This is normal and depends on computer speed and the amount of data being analyzed.

## Search Progress



This section of the form shows the progress of the current search. The green horizontal progress bar provides a status display, while the chart at the bottom shows a graphical representation of the current search. The y-axis of the chart represents the currently selected fitness function (described in section: AI Settings). The chart should staircase upwards as the AI finds increasingly better strategy results. Once the chart plateaus, this is a sign that the strategy search may be coming to an end, as no better values are found.

When using *AI Settings: Search Iteration* values setting greater than 1, multiple lines will appear noting the results of each individual search iteration. With multiple iterations, the bracketed fitness function value in the text above the chart displays the best fitness for all iterations.

Below the chart is the textbox “Save Results for WFO Analysis.” When checked, it saves the entire search file, which the TradeStation Walk Forward Optimizer can access. This is recommended as an additional method of avoiding curve fitting when developing a system.



Once a search has completed, the data from the best strategies are sent to the Chart Analysis Window, where the Strategy Analysis List and Selected Performance Module become populated (as shown above). Not all searches yield results, however. A search may not return any strategies if it didn't meet the criteria. In this case, an info box appears notifying you of the bad news. When this happens, you can change the data interval or adjust the search filters to allow for a more inclusive search.

## Strategy Analysis List

[Click Here to Update Chart](#)

The Strategy Analysis List is the first place to review strategies generated by the search. Click on any of the column headings to sort strategies by that field. For instance, if you want to sort by highest profit factor, click the "Profit Factor" heading.

#	Net Profit	Profit Factor	Total Trades	Average Trade	Draw Down	TS Index	Expectancy	Pass ROR	Perfect Profit	Inputs
1	\$395,137.50	1.65	437	\$217.71	\$12,062.50	1,088.41	45.83	0.83	93,856.25	(7, 4, 7, 150, -48, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 830, 1600)
2	\$82,850.00	1.66	430	\$215.93	\$8,525.00	1,535.70	45.17	0.82	91,841.04	(6, 4, 7, 150, -48, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 845, 1600)
3	\$90,450.00	1.61	438	\$206.51	\$12,062.50	1,019.79	43.30	0.79	89,181.71	(7, 4, 7, 110, -200, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 830, 1600)
4	\$88,912.50	1.63	430	\$206.77	\$8,525.00	1,449.72	43.03	0.78	87,731.81	(6, 4, 7, 124, 168, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 845, 1600)
5	\$86,937.50	1.61	432	\$201.24	\$8,525.00	1,417.51	42.06	0.76	85,759.67	(6, 4, 7, 110, -200, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 845, 1600)
6	\$84,050.00	1.59	434	\$193.66	\$11,700.00	1,012.91	40.67	0.73	82,067.87	(7, 4, 7, 150, -48, 0.0, 0.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 845, 1600)
7	\$81,825.00	1.94	267	\$306.46	\$7,750.00	971.34	38.33	0.71	79,724.90	(7, 4, 7, 150, -48, 0.0, 0.0, 0.500, 3, 1, 1, 1, 1, 1, 1, 1, 830, 1600)
8	\$81,175.00	1.57	449	\$180.79	\$8,575.00	1,366.69	41.32	0.71	80,422.15	(6, 4, 7, 150, -52, 0.0, 7.0, 0.500, 3, 1, 2, 1, 1, 1, 1, 1, 845, 1600)
9	\$81,162.50	1.97	268	\$302.85	\$6,575.00	1,209.72	40.48	0.71	80,475.67	(6, 4, 7, 150, 152, 0.0, 7.0, 0.500, 3, 1, 1, 1, 1, 1, 1, 1, 845, 1600)
10	\$80,175.00	1.55	499	\$174.67	\$12,312.50	957.22	42.17	0.70	78,311.34	(7, 4, 7, 148, 56, 0.0, 7.0, 0.475, 3, 1, 2, 1, 1, 1, 1, 1, 830, 1600)

After sorting the columns, clicking the # column allows the Chart Analysis Window and the Selected Performance Module to update with the selected strategy. The row highlighted in yellow indicates which strategy is currently selected. Once you select a row, you can review individual trades on the Chart Analysis Window.

[Click Here to Save List](#)

**Note:** This list will not automatically save when closing and reopening a TradeStation workspace. To save this list, click the "Write to File" button on the Select Performance Module to output it to a .csv file.

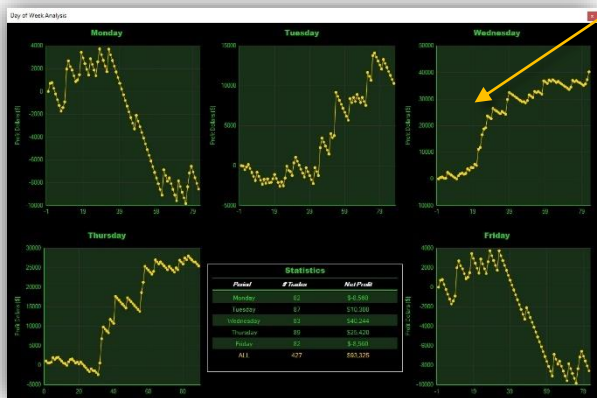
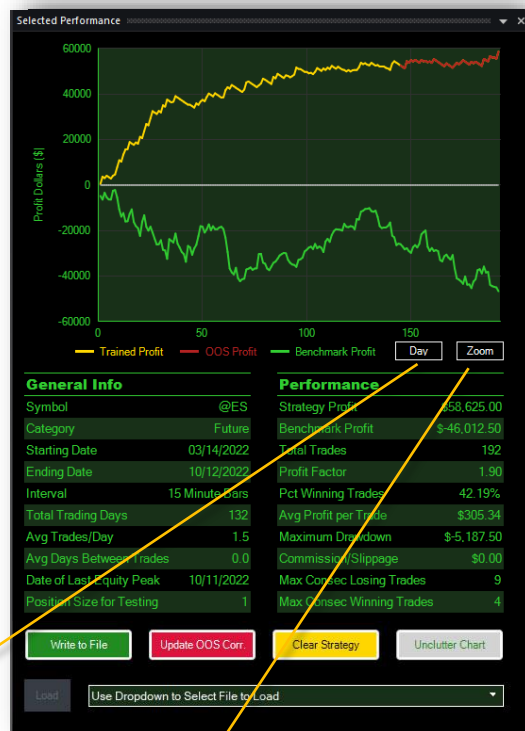


## Selected Performance Module

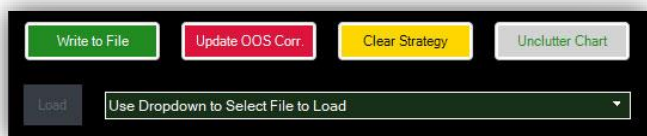
The Selected Performance Module provides a consolidated performance report with key metrics, along with an equity curve that includes a benchmark comparison. The benchmark equity curve displays the hypothetical buy-and-hold performance for the same symbol and time period. When out of sample data (OOS) is selected from the Search Filter, the equity curve will color the Trained Profit (data that was optimized by the search) and OOS Profit (unseen data from the search) differently.

This module has two additional analysis buttons (located just under the equity curve) that allow for more detailed system analysis:

- The “Day” button displays a sub-chart of the strategy broken down by day.
- The “Zoom” button displays a larger version of the equity curve with fast and slow averages applied. This can be a helpful way of determining how close a strategy is to a major drawdown period.



The action buttons at the bottom of the chart allow for the following functions:



- **Write to File:** saves the current strategy list from the Strategy Analysis List to a .csv file in a folder named “P1 Data Folder” on your computer’s C drive.
- **Update OOS Corr:** Updates the top 10 out-of-sample correlation values withing the Strategy Analysis List. This is recommended to be done before using the “Write to File” button.
- **Clear Strategy:** removes the current strategy from the chart (click when setting up a new search).
- **Unclutter Chart:** removes the Strategy Analysis List and the Selected Performance Module to make the chart more readable. Once these modules have been removed, they can easily be returned by clicking the upper left corner of the chart.
- **Load:** This allows you to review and load strategies that have been saved from previous searches (when they had been saved using “Write to File” button). All previous searches can be seen from the dropdown list. Clicking on the desired file will enable the button.



The Chart Analysis Window displays all the trades from the currently selected strategy. The Input parameters for the current strategy are displayed in the upper left corner of the chart. Clicking this list displays a more detailed view of P1 Strategy Input Values along with their names. A second click in the upper left corner of the chart makes the larger list disappear.

You may find it easier to view the chart without the other modules. You can use the "Chart Unclutter" button to remove these; clicking the upper left corner of the chart brings them back.

Once a strategy has been screened and selected on the chart, you can save it within a workspace (.tsw file). To save a workspace: go to *File > Workspace > Save Workspace as...* then give it a recognizable name (e.g., *P1\_ES\_15min\_DT\_9-30-22*). Upon reopening the workspace, the previously selected strategy will remain. However, the list will not be saved within the workspace (this can be saved to a separate file using the "Write to File" button).

Fitness Function	Description
Net Profit	How much the strategy made or lost.
TS Index	A fitness function that maximizes the Net Profit and Winners while minimizing Intraday Drawdown. It calculates the Net Profit * NumWinTrades / AbsValue (Max. Intraday Drawdown).
Expectancy	<p>A fitness function that measures Expectancy x Opportunity. Based on a calculation by Van K. Tharp.</p> <p>Expectancy = <math>(AW \times PW + AL \times PL) /  AL </math>            (expected profit per amount risked)</p> <p>AW = average winning trade (excluding largest win)            PW = probability of winning: <math>PW = (\text{Winning trades} - 1) / NST</math>            AL = average losing trade (negative, excluding scratch losses)             AL  = absolute value of AL            PL = probability of losing (<math>PL = \{\text{non-scratch losses}\} / NST</math>)</p> <p>Opportunity = <math>NST / \text{StudyDays}</math>  <math>NST = \{\text{total trades}\} - \{\text{scratch trades}\} - 1</math>            *In other words, NST = non-scratch trades during the period under test (a scratch trade loses commission+slippage or less) minus 1            StudyDays = calendar days of history being tested</p>
Pessimistic ROR	<p>A fitness function that represents a very conservative value for Return on Capital (ROC). It calculates the <math>\text{AvgWin} * (\text{NumWinTrades}) - \text{SquareRoot}(\text{NumWinTrades}) + \text{AvgLoss} * (\text{NumLossTrades} + \text{SquareRoot}(\text{NumLossTrades})) / \text{Capital}</math>.</p> <p>NumWinTrades = number of winning trades, NumLossTrades = number of losing trades, AvgWin = <math>\text{GrossProf} / \text{NumWinTrades}</math>, and AvgLoss = <math>\text{GrossLoss} / \text{NumLossTrades}</math>.</p>
Perfect Profit	Calculates the correlation of the actual equity curve vs. a "perfect" curve as if the strategy were able to buy every bottom and sell every top. The genetic optimizer targets an equity curve that closely matches a "perfect" equity curve.

Genetic Operator	Description
Search iterations	The number of total searches that will be completed to create the final Strategy Analysis List. Each iteration is a separate search subroutine that will not have any knowledge of the previous searches.
Population size	The number of input parameter combinations that will be subject to the genetic selection process. After the specified generations, the outstanding population group is understood as being of improved fitness due to the natural selection of the genetic algorithm.
Generations	The number of iterations the genetic algorithm will run until it arrives at the strongest outcome.
Mutation rate	The random rate of modification of single inputs within the overall input group after each generation. Mutation is used to find a new group of input parameters to replace the 'weak' ones.
Crossover rate	The rate that specifies how close the replacement input parameters in the overall parameter group are picked after each generation. Crossover is used to find new input values to replace the 'weak' ones.
Stress Test Size	
Stress increment	The percentage that the parameters will be stressed either upwards or downwards.
End Search	This will define the number of unchanged search generations that are required to end a search. In other words, if the population fitness of a search does not improve for x number of generations, the search will terminate.



## Disclaimer

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