

SIGNALPOP TRADING STUDIO

GETTING STARTED

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DISCLOSURE

The SignalPop Trading Studio is provided for informational purposes only and is not intended, nor should be construed or relied on, as investment advice in any way. SignalPop is an AI research company and provides this Software and related documentation solely to show the potential of using AI and visualizing option and stock price related information. SignalPop does not provide financial or investment advisers.

Trading has substantial risk where you may lose all or more than your initial investment and is not for every investor. Risk capital is money that can be lost without jeopardizing one's financial security or lifestyle. Only risk capital should be used when trading. Trading based on AI signals may also have substantial risk, for AI algorithms are based on probabilities that do not guarantee future outcomes. Past experience does not guarantee future results.

OVERVIEW

The SignalPop® Trading Studio is an application designed to help you better understand price movements in the equities markets, with particular interest in the SPI and QQQ indexes. By using the MyCaffe™ AI Platform [1] (a complete re-write of CAFFE [2]) the SignalPop Trading Studio analyzes over 40,000 data points in 200 milliseconds to determine the predicted near-term price movements across several time periods.

We will focus on several areas oriented around the common tasks of analyzing the target asset:

- **Context;** the option structure of the target assets gives context to the price movements in that many of option trades are also associated with large hedges that may move the underlying assets price. By knowing where large collections of options are within the price structure, a trader is alerted to potential areas of higher trading activity. Up to 200 strikes with expirations over the next 30 calendar days to determine the option structure.
- **Buy/Sell Pressure;** the anticipated hedging is derived from the real-time option volume data and gives a very near-term view on where the buying and selling is occurring within the underlying asset and more importantly a culmination of this information can give a very short-term indication on the pressure moving the market up or down.
- **AI Momentum;** price action across over 40,000 data points pulled from numerous asset classes and time frames are analyzed in real-time around every two hundred milliseconds to produce the predicted price movement across several time periods. The AI Momentum gives a short term, yet slightly longer indication on price moves than that of the Buy/Sell Pressure.

Combining the Context, Buy/Sell Pressure and AI Momentum, gives the trader a clearer view on what the market is doing at each point throughout the trading day.

Make sure that you are running on a system that meets the minimum requirements listed below.

PRODUCT MINIMUM SYSTEM REQUIREMENTS

The SignalPop Trading Studio was built to run on either Windows 10/11 PCs with the following minimum system requirements for the BASIC mode:

- An account at Tradier Brokerage (<https://brokerage.tradier.com/>)
- Operating System: **64-bit Windows 10/11**
- System Memory (PC side): **16 GB or more (32 GB recommended)**
- Hard Disk Space: **10 GB free disk space (SSD recommended)**
- Screen Resolution: **1920 x 1080 at 100%** recommended.
- Consistent internet connection with consistent 40Mbps+ throughput.
- (ADVANCED mode AI) GPU Model: **NVIDIA 1050TI or above** (must have CUDA support and the latest NVIDIA driver¹)
- (ADVANCED mode AI) GPU Memory: **4 GB** (or more)

¹ To get the latest NVIDIA driver, please see <https://www.geforce.com/drivers>.

LOGGING ON

When first starting the SignalPop Trading Studio, you will log into Tradier with your account login information.

Tradier Log-in - Trading Enabled

I already have a Tradier Account Create new BASIC account Create new ADVANCED account

Bit128 <https://brokerage.tradier.com/user/login> Use demo account

tradier brokerage

BROKERAGE ADVISORS EDUCATORS DEVELOPERS BLOG ABOUT

PRICING PLATFORMS SUPPORT LOGIN **OPEN AN ACCOUNT**

You need to sign in or sign up before continuing.

Investor login

Please login to your Tradier Brokerage investment account.

Password

[Forgot your password?](#)

Don't yet have an investment account?
[Signup here](#)

Check the background of this investment professional on [FINRA's BrokerCheck](#) »

Options carry a high level of risk and are not suitable for all investors. Please read the [Characteristics and Risks of Standardized Options](#) before trading in options.

Important Risk Information
Tradier Brokerage, Inc. investment products: Not FDIC Insured - No Bank Guarantee - May Lose Value. Refer to [Privacy/CIP Notification](#), [Business Continuity Plan](#), [Extended Hours Trading Disclosure](#), [Order Routing Disclosure](#), [Day-trading Risk Disclosure Statement](#), [Margin Disclosure](#) and [Fractional Share Disclosure](#). Systems response and account access times may vary due to a variety of factors, including trading volumes, market conditions and system performance. Past performance is no guarantee of future returns. Please consider your financial condition, investment objectives, time horizon and expenses before making any investment decision. ETFs involve unique risks and you should carefully consider the risk factors, which are outlined in the prospectus. Exchange trade products such as ETFs and ETNs involve unique risks that should carefully considered before investing. Please read the [Exchange Traded Products Risk Disclosure](#) and the SEC notice on [Exchange Trade Funds \(ETFs\)](#). Supporting documentation for comparisons, recommendations, statistics, or other technical data, will be supplied upon request.

Disclosures
* Tradier Brokerage Inc. charges for exchange, OCC and regulatory fees. Other fees and applicable minimums may apply see [Fee Schedule](#) for more details. Promotions are subject to change at any time. Please contact customer support for details regarding fees for Mutual Fund and Bond transactions. © 2022, Tradier Brokerage, Inc., an independent subsidiary of Tradier Inc. All rights reserved. Member [FINRA/SIPC](#). The TradeHawk platform is owned and operated independently by Tradier Inc, parent company of Tradier Brokerage. Third party research, analysis and other tools obtained from companies not affiliated with Tradier Brokerage, Inc. are for informational purposes only. Tradier Brokerage, Inc. does not guarantee its accuracy, completeness, or suitability. Accounts are carried and cleared with Apex Clearing Inc.

Figure 1 Tradier Logon Dialog

If you do not already have a Tradier account, select the '*Create new BASIC account*' or '*Create new ADVANCED account*' to get started.

Alternatively, you can log in with the time limited Demo account, or with a Sandbox key provided to you from Tradier by selecting the *Use demo account* button in the upper right corner of the login dialog.

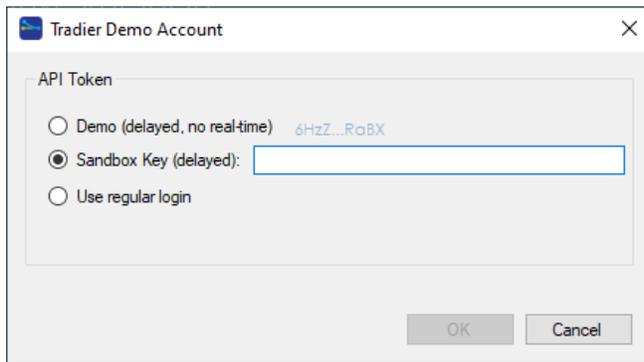


Figure 2 Tradier Demo Account Login Dialog

When using the demo account, or sandbox key, no real-time functionality is provided, yet gamma exposure analysis and static charts allow for quick analysis.

Optionally, when logging in with the *Use regular login* radio button checked you may check the *Use sandbox key for trading* check box for delayed quote paper trading in the sandbox. The regular login allows you to use the product with your regular login entered into the Tradier Logon Dialog, while only trading on the paper account associated with your sandbox key.

Upon logging in, you will be prompted to grant SignalPop Analytics access to access market data, streaming, place, modify and cancel trades, and read your account information for display in the application.

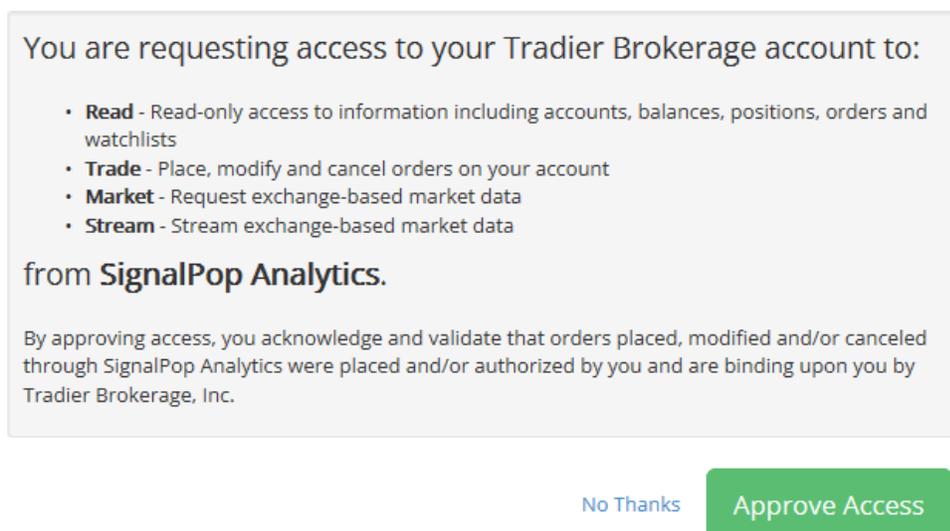


Figure 3 Granting SignalPop Trading Studio Access

Once access is granted, the SignalPop Trading Studio immediately starts loading your account information and all other data needed to run. The initial login can take a minute to query this data.

BASIC AND ADVANCED MODES

Depending on your account type, the SignalPop Trading Studio runs in either the BASIC mode which includes all gamma exposure analytics including the GEX Chart, and GEX overlays on the price charts, or the ADVANCED mode. The mode you are currently running in is displayed in the title bar of the application.

When logging in with a valid Tradier account, these features are offered with real-time data updates to show you how the price interacts with the various open interest levels throughout the day.

The BASIC level also includes the immediate Buy/Sell Analytics visualization that shows how much buying and/or selling pressure is occurring in real-time.

These features are offered on all symbols supported by Tradier as long as those symbols also have associated options.

ADVANCED MODE

If you have an ADVANCED mode Tradier account, the ADVANCED mode features are enabled which include:

- Short-term Buy/Sell Pressure History (BSPH) indicator enabled that shows the buy/sell pressure history of the current minute.
- Long-term Buy/Sell Pressure Accumulation indicator enabled that shows buy/sell pressure accumulation throughout the day.
- Long-term Buy/Sell Pressure Accumulation strength indicator enabled that shows how strong the buy/sell pressure accumulation is throughout the day.
- Long-term Buy/Sell Pressure Correlation indicator enabled that shows the real-time correlation between the buy/sell pressure and the short-term price action.
- Price %b indicator enabled which shows the price Bollinger Band %b.
- RSI %b indicator enabled which shows the RSI Bollinger Band %b.

In addition, if your computer has a CUDA enabled NVIDIA GPU (such as a 1050 TI, 1060, 3050 or above), the AI based analytics are enabled for a select set of symbols for which we have developed AI models. The AI analytics predict the direction of the price for 1-3 periods into the future over several different time periods, giving you an overall prediction on the price direction and momentum. Over 40,000 data points are processed (nearly eleven screens of data) in under 200 milliseconds to give you a better view on the current direction of the market. Using the AI Momentum along with the Buy/Sell Pressure indicators can be a highly effective way of determining what the market is currently doing.

UPGRADING FROM BASIC TO ADVANCED

All BASIC accounts are granted access to all ADVANCED mode features for 30 days which expires thereafter. If you have a BASIC account and would like to upgrade to advanced, [Contact Us](#) and we will upgrade you.

For more information on the BASIC mode, please see [BASIC Features](#).

For more information on the ADVANCED mode, please see [ADVANCED Features](#).

MAIN WINDOWS

There are five primary areas used to operate the SignalPop Trading Studio: 1. the main tool strip, 2. the *Solutions* window, 3. the sub-window area, 4. the real-time status area, and 5. the timing and status areas.

This section describes each of these areas and to use each to better use the SignalPop Trading Studio.

1. MAIN TOOL STRIP AREA

The main tool strip, located in the upper-left corner of the application is used to navigate between the main windows and initiate operations that impact the application.



Figure 4 Main Tool Strip

Each of the icons on this tool strip are described as follows:

 **Open**; open a set of trend lines previously saved to a trend-line file.

 **Save**; save a set of trend lines to a trend-line file.

 **Save All**; saves all trend-line sets from all windows to trend-line files.

 **Show solutions window**; shows the *Solutions* window with all symbols available to monitor.

 **Show analytics window**; shows the *Analytics* window that displays the GEX information and real-time Buy/Sell pressure.

 **Show extensions window**; shows the *Extensions* window that provides extensions for drawing trend lines, entering/exiting trades, and AI related real-time analytics (when purchased and run with a GPU)

 **Show property window**; shows the *Properties* window that allows color and transparency configuration across the charts and GEX windows.

 **Show output window**; shows the *Output* window with detailed status and/or error information.

 **Show product news**; shows the latest product news.

 **Set as top-most window**; sets the main window as the top-most window above others running in Windows.

 **Send verbose data to the Output Window**; sends more detailed information to the *Output* window. NOTE: This setting is only recommended while diagnosing issues as it may slow down the real-time price feed.

 **Start recording**; start a recording session. When recording, the GEX and price chart information are saved and later used to create an *.MP4 movie of your trading session.

 **Stop recording**; stop a recording session. Once recording is stopped, you can create a movie from the temporary data recorded and/or delete the recorded data.

 **Create video**; create an *.MP4 video that you can post on your social media feed or use for personal analysis.

 **Delete temporary video files**; delete all temporary video files collected during a recording session.

 **Show trading window**; show the trading window used for trade entry and exit.

 **Show trading provider window**; selecting this button brings up the website of the trading brokerage that actually places each trade. In the event you have problems executing a trade using the SignalPop Trading Studio, this button routes you to the brokerage so that you can execute trades directly using their interface.

2. SOLUTIONS WINDOW AREA

The SignalPop Trading Studio works with data received via your data provider (typically your trading brokerage, such as Tradier) to display the gamma exposure and price chart information for the symbol you have activated, with the intention of giving you meaningful information on the potential short-term directional price moves in the selected symbol.

After logging into your account, the SignalPop Trading Studio will automatically start loading the data for the primary symbol, which is set to the 'SPY' by default.

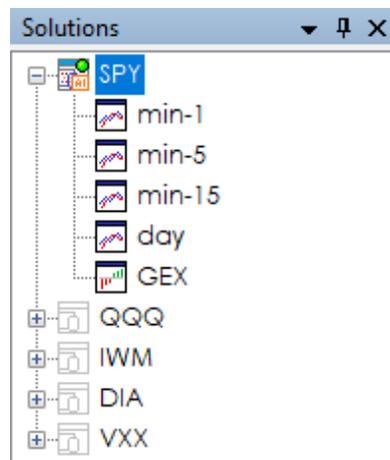


Figure 5 Solutions Window

The *Solutions Window* displays the symbols available. Symbols are activated by right clicking on the symbol and selecting the *Activate* and *Deactivate* buttons.

The following icons indicate the state of each symbol.

Icon	Description
	Gray - Deactivated symbol, not receiving data.
	Solid green with orange AI - Activated symbol, receiving data and with AI models available. NOTE: When running in BASIC mode, the AI models are not available, and the AI text will appear in light blue.
	Flashing green – Activating symbol is currently connecting to the data.
	Solid green with no orange AI – Activated symbol, receiving data with no AI models available.

Given the amount of data received by each symbol, the SignalPop Trading Studio can only activate one symbol at a time.

By default, the *Solutions* window populates with the symbols: SPY, QQQ, IWM, DIA and VXX as these are some of the main indices showing the movement of the market. New symbols are easily added by selecting the *Add symbol* (+) button at the bottom of the pane.

For example, to add TSLA, select the *Add symbol* (+) button, which will display the *Add Symbol* dialog.

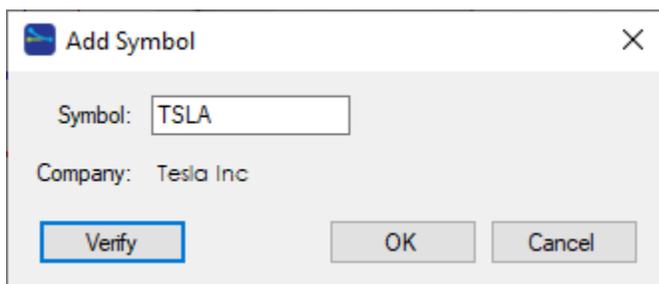
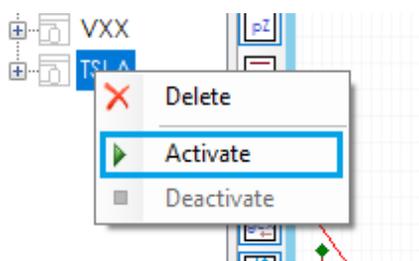


Figure 6 Add Symbol Dialog

Enter **TSLA** into the *Symbol* field, press *Verify* to verify the symbol and then press *OK* to add the new symbol to your list.

Once added, right click on the symbol, and select the *Activate* (▶) button to load the data from the symbol. Activating one symbol will deactivate the currently activated symbol, if any.



After all data is loaded, the sub-window area will populate with the GEX, 1-min, 5-min, 15-min, and daily chart data for the symbol. When running with a live account during market hours, these windows will update with real-time data. Setting up an account with the data provider (such as Tradier) is required to receive real-time data updates.

Right clicking on a user configured symbol and selecting the *Delete* (✗) menu or selecting the *Delete selected symbols* (✗) button at the bottom of the *Solutions* window deletes the selected user configured symbols.

Selecting the *Delete all symbols* (✗✗) deletes all user configured symbols. The default symbols are permanent and cannot be deleted.

3. SUB-WINDOW AREA

The sub-window area displays your current account details, the GEX, and each price chart for the currently activated symbol.



Figure 7 Sub-Window Area

A tab at the top of the sub-window area represents each of these windows.

Accounts – shows the current account information for your account.

GEX – shows the current gamma exposure chart for the activated symbol.

Min-1, Min-5, Min-15, Day – show the price chart for each of the time periods specified.

4. REAL-TIME STATUS AREA

The real-time status area has two main sub-areas: the *Analytics* window that shows real-time buy/sell pressures and gamma exposure measurements, and the *Extensions* window that populates with various extensions that allow trading operations, drawing trend-lines and show real-time AI analytics (if purchased and run with a qualified GPU).

ANALYTICS WINDOW

The *Analytics* window has two separate views. Selecting the *Show buy/sell pressure visualization* (**V**) button displays the real-time buy/sell pressure analytics shown on the left below. Selecting the *Show GEX statistics* (**S**) button shows the real-time gamma exposure statistics shown on the right.

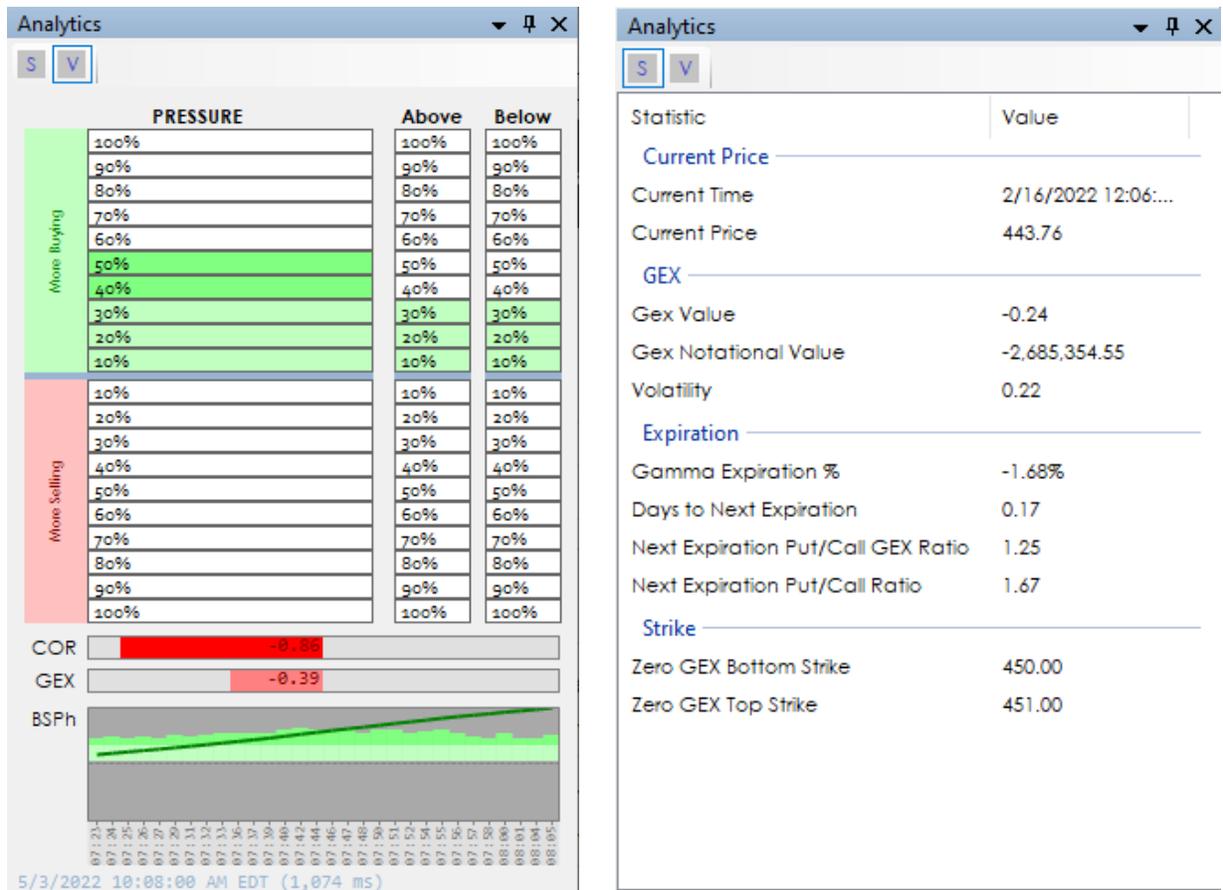


Figure 8 Analytics Window Views

For more information on the Buy/Sell Pressure, see [Buying and Selling Pressure](#) below. For more information on the Analytics Statistics, see [Statistics Window](#) below.

NOTE, the Buy/Sell Pressure short-term History (BSpH) indicator is only available in *ADVANCED* mode. [Recording your day](#) allows you to easily replay the Buy/Sell action that occurred during the day.

EXTENSIONS WINDOW - BASIC

The *Extensions* window populates with the extensions available in the basic version of the product and with add-on extensions purchased such as the AI analytics extensions. The basic product populates with the *Trading* and *Drawing* extensions. To view each extension, select the tab at the top of the *Extensions* window.

The screenshot displays two views of the 'Extensions' window. The left view shows the 'Trading' tab selected, displaying a table of options for SPY with a price of 414.36. The right view shows the 'Drawing' tab selected, displaying drawing tools for line style, including color, width, transparency, and snap-to settings.

Strike	5/4/2022	5/6/2022	5/9/2022	5/11/2022
			Calls	Puts
426			0.65	12.26
427			0.52	13.43
428			0.42	14.04
429			0.33	14.95
430			0.26	15.87
431			0.19	16.81
432			0.15	17.75
433			0.12	18.71

Trading controls: Equity Option CALL PUT
SPY 220504 C 00430000
Quantity: 1 Day Gtc
 Mkt Limit Stop StopLimit
Limit: Stop:
Buy to Open Sell to Close Sell All

Drawing Tools: Line Style
Line: Color
Width: 3
Transparency: 25%
 Snap to: 0.25

Figure 9 Extensions Window (basic options)

The *Trading* extension allows you to enter and exit long trades by buying equities, call options and/or put options. For more information on trading, see [Opening Positions](#) below.

The *Drawing* extension allows you to draw trend, support, and resistance lines on any of the price charts. For more information drawing trend lines, see [Drawing Trend Lines](#) below.

EXTENSION WINDOW – ADVANCED: INDICATORS

When run in ADVANCED mode, the *Extensions* window populates with the *Indicators* tab.

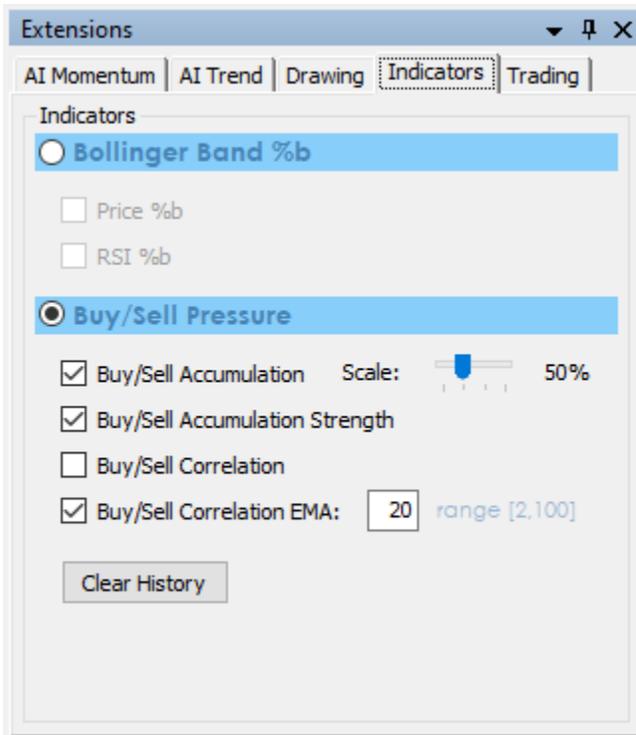


Figure 10 Indicators Extension

The *Indicators* display the accumulated Buy/Sell pressures over time which may reveal buying and/or selling trends. For more information on these indicators, see [Indicators](#) below.

EXTENSIONS WINDOW – ADVANCED: AI ANALYTICS

When run in ADVANCED mode and run with a qualified NVIDIA GPU installed, the *Extensions* window populates with the *AI Analytics* extensions.

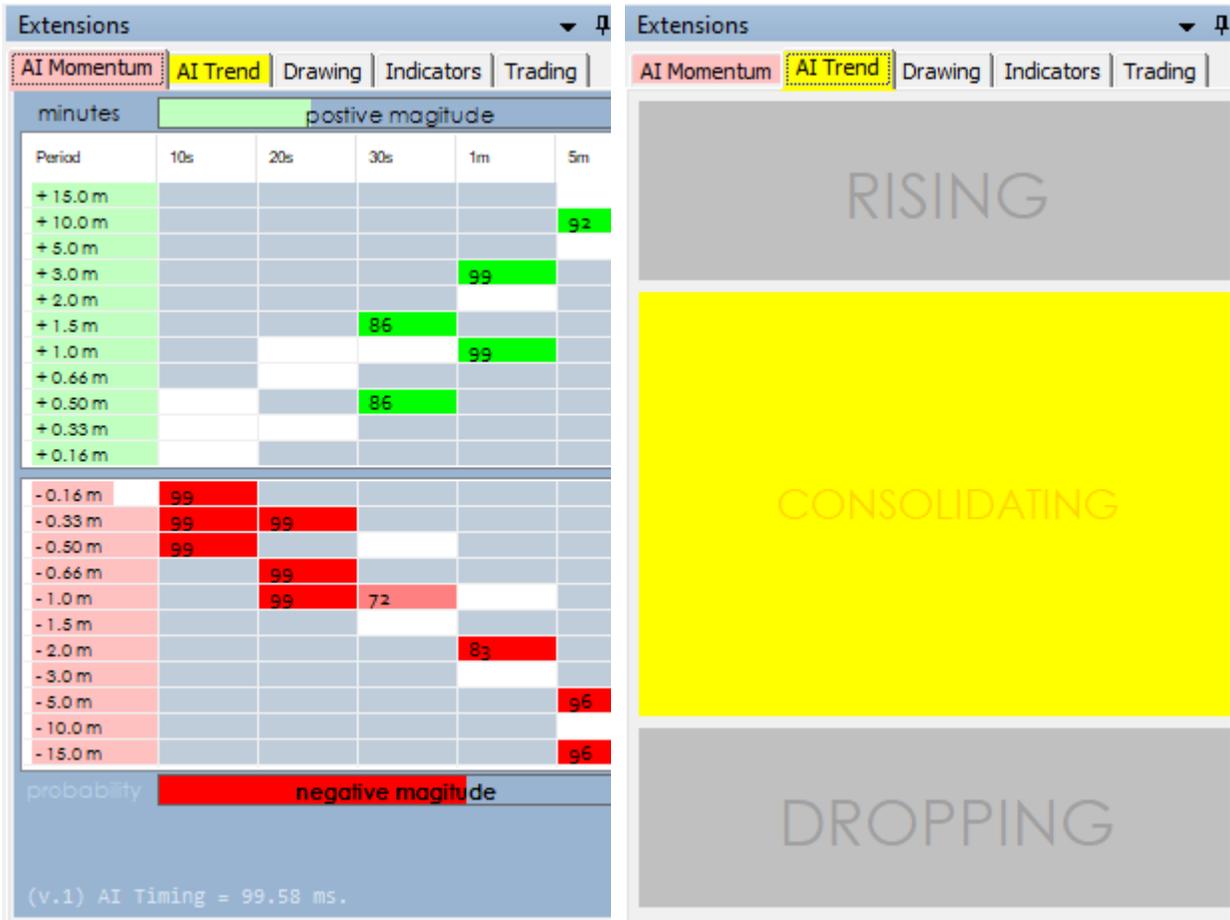


Figure 11 AI Analytics Extensions

The *AI Momentum* extension processes over 40,000 datapoints in two hundred milliseconds (depending on the NVIDIA GPU used) to predict the next directional move across various time periods. The AI momentum indicators are combined with other data to determine the current market state shown in the *AI Trend* extension. For more information on these extensions, see [AI Momentum](#) below.

NOTE: The AI related extensions are offered in *ADVANCED* mode only and require a qualifying NVIDIA GPU to run.

5. TIMING AND STATUS AREAS

When running a real-time trading platform, knowing the current timing and status of the application in relation to the market is important. During the development of the SignalPop Trading Studio, we continually make big efforts in optimizing and prioritizing the timely flow of data throughout the application.

During a typical day, the SignalPop Trading Studio may process over one hundred million quotes so as you can imagine, your internet connection and the hardware you run the SignalPop Trading Studio on can impact the data throughput provided by the application.

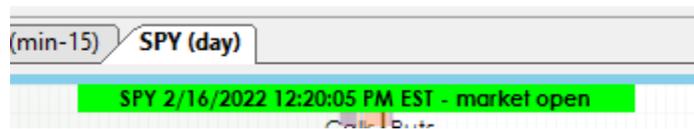
There are many factors that impact whether the application can keep up with the market data. Such factors include:

- 1.) The speed and throughput of your internet connection – we recommend a consistent 40MB/s
- 2.) The speed of your computer processor.
- 3.) The amount of RAM in your computer – we recommend 16GB plus.
- 4.) The speed of your NVIDIA GPU (only when using AI Add-ons)
- 5.) Whether or not you are running other software that heavily uses the Internet connection and/or processor (e.g., other trading or analytics software).

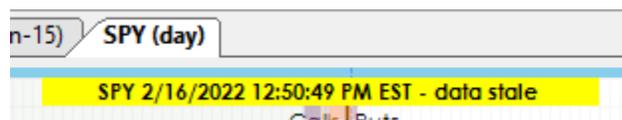
To monitor the data throughput, there are two timing and status areas used to monitor how fast data moves through your application. Each of these areas are important to monitor to ensure that the real-time prices you see in the application are as close to the actual market prices as possible.

GENERAL PRICE THROUGHPUT

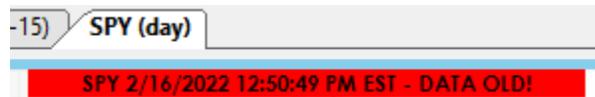
At the top of each price chart is displayed the current date, time, and market status. This status area is green when the data on the price chart is within a ten second window of the current market time.



If the data shown on the chart is older than ten seconds from the current market time, the status turns yellow and is marked as 'data stale.' This can occur if you have a slowdown in your internet connection or you are sending substantial amounts of data through your internet connection.

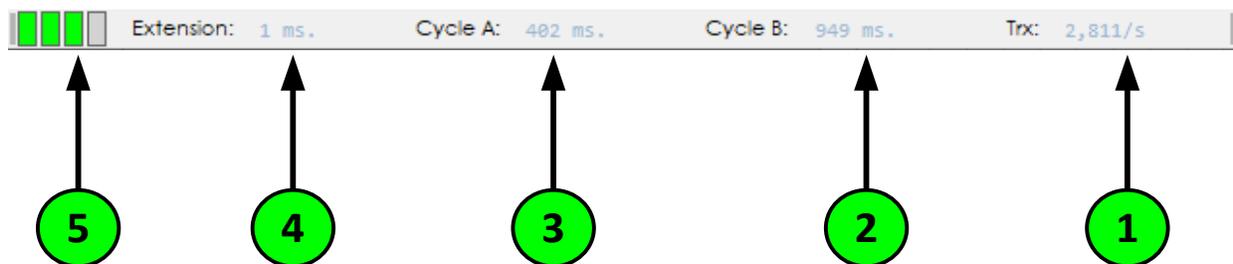


If the data shown in the chart is older than 30 seconds from the current market time, the status runs red and is marked as 'DATA OLD!'. This may mean that your connection to the data provider has been disrupted or broken.



SPECIFIC APPLICATION TIMING AND THROUGHPUT

A ten-second delay in price is a long time when using a real-time application. For that reason, at the bottom of the application we show more detailed timing information that shows where any bottleneck may be occurring, if one exists.



There are 5 timing areas on the timing bar that show how the data flows from the data provider on into and throughout the product. All timing values are shown in milliseconds (1000 ms = 1 second).

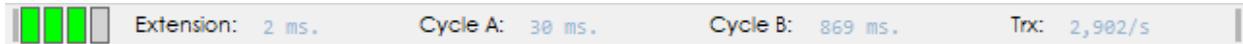
- 1.) On the far right of the timing window is displayed the **Trx** which represents the quotes (and trades) received per second from the data provider. This value can vary from under one thousand in slow markets to over five thousand in very heavy markets. A value of 5,000/s represents processing 117 million quotes in a day.
- 2.) The **Cycle B** reading shows the timing between when a quote is received by the SignalPop Trading Studio directly from the data provider – this timing compares the time of the application to that of the transaction itself. Your computer hardware and internet connection will directly impact the efficiency of this timing value. A value ranging between 1000 and 3000 is considered normal, however a faster hardware and internet connection will push this value to a consistent one thousand or lower, which is good.
- 3.) The **Cycle A** reading shows the timing of the data moving through the application itself. This timing value is typically under five hundred milliseconds on a fast computer setup.
- 4.) The **Extension** reading shows the timing of the data moving through the extensions and typically runs at one thousand or less, even when running AI related extensions.
- 5.) The four rectangles on the left side of the timing bar represent the Extensions, Cycle B and Cycle A readings. These first three rectangles are displayed in green when timings are within an expected range and yellow when they are experiencing slowdowns. The fourth rectangle on the right of the set displays when a garbage collection occurs within the system – during a garbage

collection (which is rare but can occur if you are running in a low-memory scenario) this rectangle will turn orange.

When first loading the application, we continue to load data in the background and during this process you will see the Cycle A and Cycle B display 'loading...' for up to a minute.



Once fully loaded, the timing status will show the timing of each status area.



IMPORTANT: It is always important to be aware of how close your pricing is to the actual market pricing. The SignalPop Trading Studio places the highest priority on delivering the most recent quotes as fast as possible. However, many things can disrupt the timing of the quotes your application receives. The speed and consistency of your internet connection is by far the most important aspect impacting how fast you receive data quotes. Selecting the *Help | Show Internet Status...* menu will test your current internet speed from the application. With the vast amount of data processed by the application (one some days over 100 million quotes), the application requires that you have consistent internet connection of 40Mbps. Values lower than this may impact the speed that you receive quotes, which will show up as a slow Cycle B reading. When you have a consistently fast internet speed, your Cycle B reading should consistently be under 2,000 milliseconds. However, even when your internet speed is fast, the underlying data provider (e.g., Tradier) may be having issues. Selecting the *Help | Show Data Provider Status...* menu displays the current status of the data provider. And lastly, in very fast and chaotic markets, the market itself may make it difficult for even the data provider to keep up, which invariably impact the time quotes are received by the application. For all these reasons, keeping an eye on the Cycle B reading is important to do throughout the trading day for it lets you know directly how far behind the market the quotes received by the application are.

When slowdowns occur, the SignalPop Trading Studio automatically slows down some of the application processing and visual updates so that the underlying data collection can be given a higher priority until it catches up with the data stream.

DIAGNOSING PROBLEMS

When problems do occur, with your connection, the speed of data flow or the connection with the data provider there are several steps you can take to diagnose the source of the problem.

- 1.) Check the status of the Data Provider.
- 2.) Check the status of your Internet Connection.

The following sections describe each of these in more detail.

CHECK DATA PROVIDER STATUS

If you are experiencing errors related to an API error, or are having slow throughput, the first step is to check the status of the data provider. To do this, select the 'Help | Show Data Provider Status...' menu item which opens a web browser showing the status of the data provider. For example, the following status shows an example where the data provider Tradier is experiencing **Elevated API Errors**.

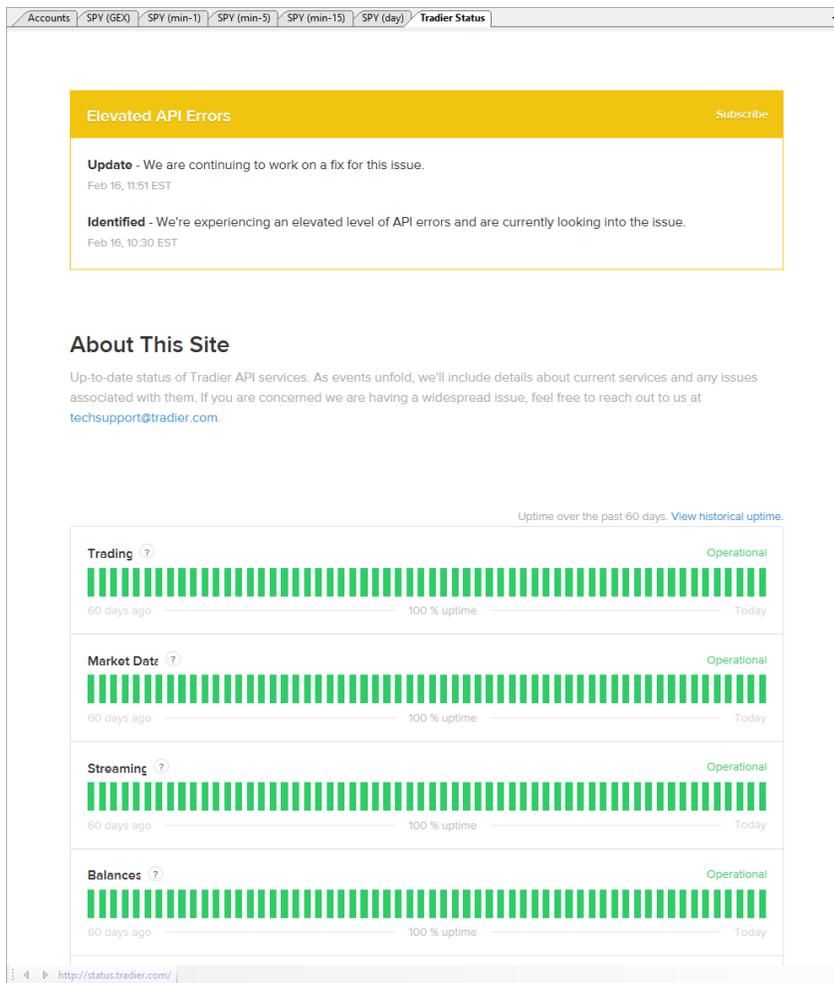


Figure 12 Data Provider Status

If the data status provider is having API related errors, you may have limited functionality with the application and you may receive errors such as the following:

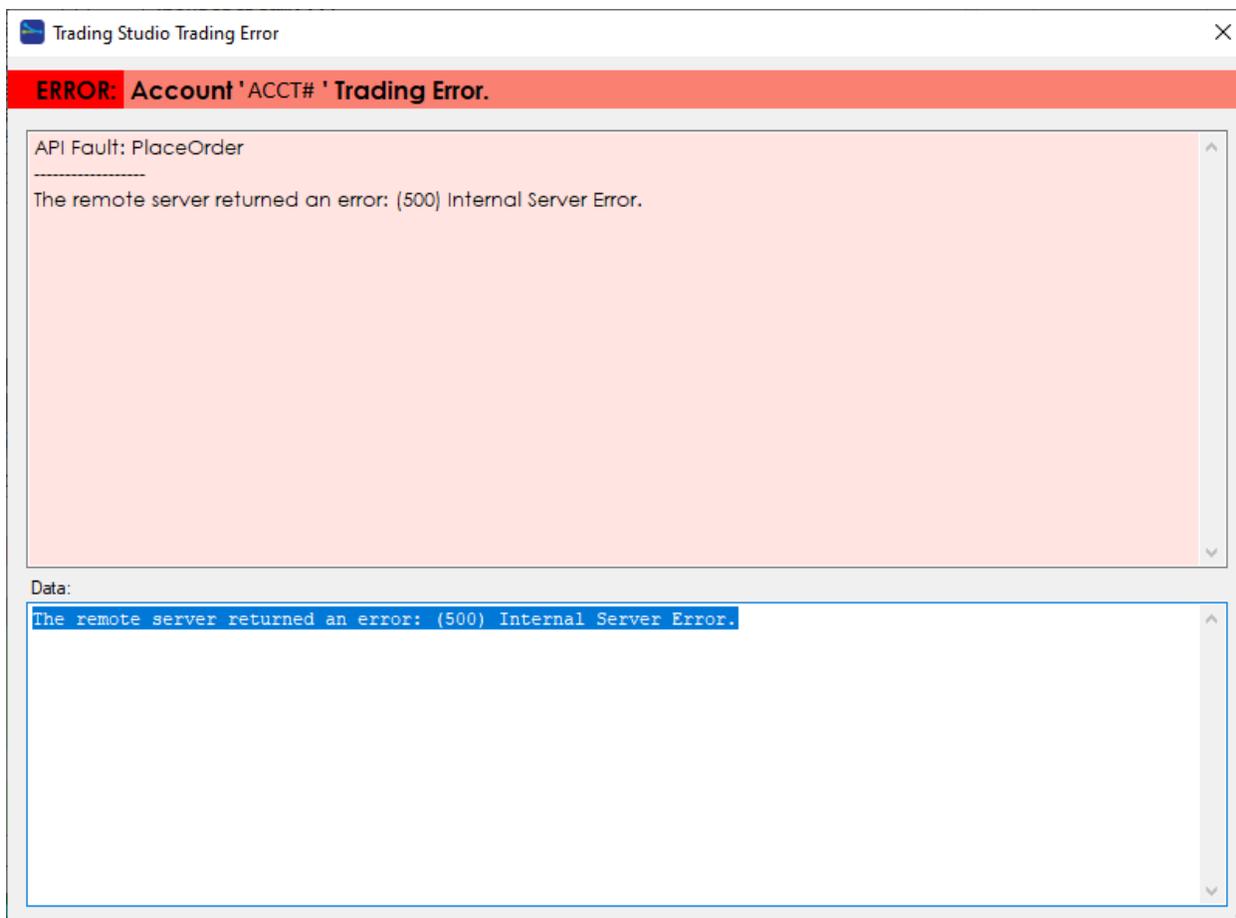


Figure 13 Example API Error Dialog

So, what do you do in such an event, especially if you have a trade on that you would like to exit? In these situations, select the *'Help | Go to Trading Provider Account...'* menu item which will bring you directly to the trading providers trading dashboard.

For example, selecting this menu item when using the product with Tradier will send you directly to the Tradier Dash web interface that allows you to directly manage your account.

The Tradier Dash web interface is available at:

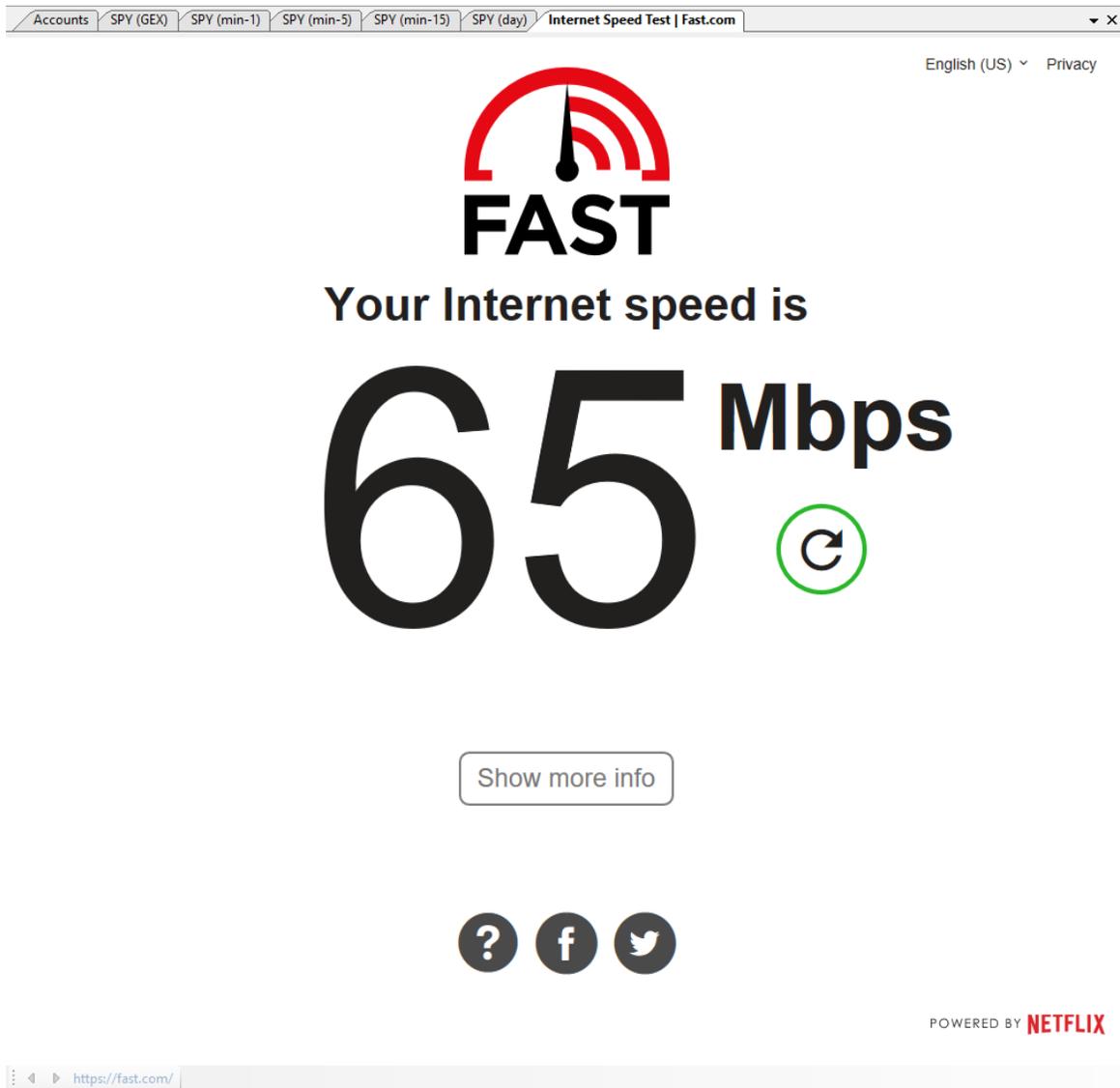
<https://dash.tradier.com/login>

This site uses the same log-in information used to log into Trader when first running the SignalPop Trading Studio. Selecting the  *Go directly to Trading Provider Account* button will take you there as well.

Once logged into the Tradier Dash site, selecting the 'Help | Go to Trading Provider Account...' menu item will bring you directly to your account on Dash.

CHECKING INTERNET STATUS

If you are experiencing slow data throughput, you may want to check the speed of your internet connection. You can do this from within the product by selecting the 'Help | Show Internet Status...' menu item which will send you to an internet speed testing site such as <https://fast.com> provided by Netflix.



The screenshot shows a web browser window with the following elements:

- Browser tabs: Accounts, SPY (GEX), SPY (min-1), SPY (min-5), SPY (min-15), SPY (day), Internet Speed Test | Fast.com
- Language: English (US) | Privacy
- FAST logo: A red speedometer icon above the word "FAST" in bold black letters.
- Text: "Your Internet speed is" followed by a large "65 Mbps" in black.
- Refresh icon: A green circular arrow icon.
- Button: "Show more info" in a rounded rectangle.
- Social media icons: Three circular icons for a question mark, Facebook, and Twitter.
- Footer: "POWERED BY NETFLIX" in red.
- Address bar: "https://fast.com/"

Figure 14 Internet Speed Test

As mentioned before, the SignalPop Trading Studio requires 40Mbps or more to process the data received from the data provider in a timely manner.

POSITIONING WINDOWS

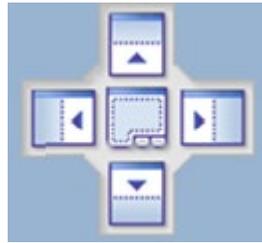
The SignalPop Trading Studio is very configurable and allows for numerous different window arrangements. To arrange windows, click on the title of the windows (e.g., 'Extensions') and drag the window over another.



Figure 15 Repositioning Windows

For example, to position the *Extensions* window below the *Analytics* window, first (1) click on the *Extensions* tab, and while holding the mouse down, drag it up...

...until you see a window positioning icon that looks like the following:



Next, drag the window and drop it onto the bottom positioning box as shown in #2 below.



Figure 16 Drag-n-Drop Window Positioning

Although currently only one extension tab is shown at a time, the tab itself is colored with the overall results of the extension when appropriate. For example, the AI Momentum and AI Trend extension tabs are colored with their cumulative results thus allowing you to quickly see the state of each while using other extensions.

Once dropped, the window will snap into place under the *Analytics* window as displayed below.

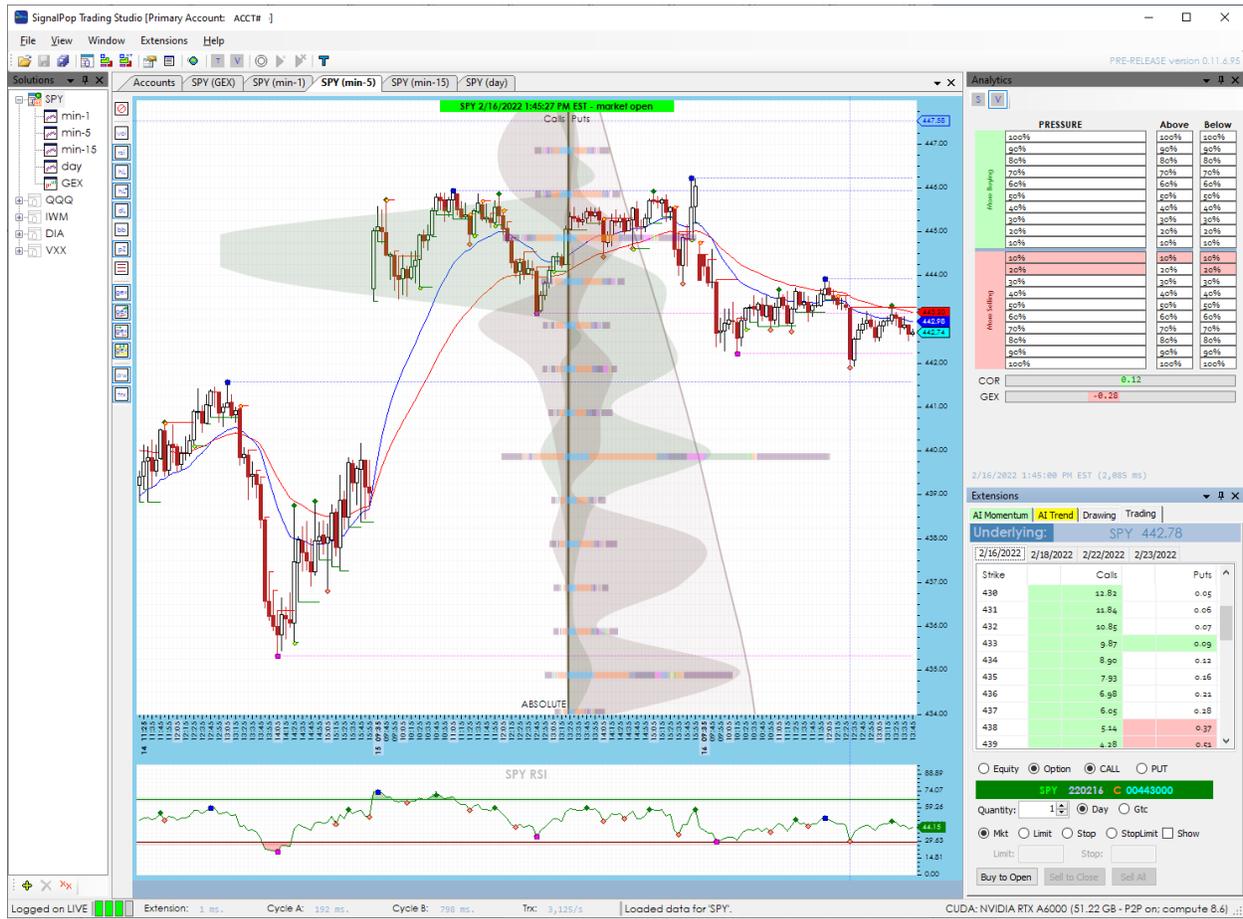


Figure 17 Newly Positioned Windows

Window positions are saved between application sessions allowing you to customize your application layout.

NOTE: Selecting the *Show extensions* (📊) icon shows the *Extensions* window. Also, selecting the *Show trading window* (📄) icon, shows the *Trading* extension window.

CONTEXT

According to Investopedia, "Gamma is the rate of change in an options 'delta' per 1-point move in the underlying asset's price." [3] And, "Delta is the ratio that compares the change in the price of an asset, usually marketable securities, to the corresponding change in price of its derivative." [4] The SignalPop Trading Studio shows the gamma impact on a given symbol with the GEX Window.

GEX WINDOW

The GEX (Gamma Exposure) Window gives the overall option open-interest profile for a given day on the underlying instrument. Using the option profile, you can quickly see the important strikes where the open interest has collected over night. The open interest is reported once a day and shown in the GEX Window, shown below.

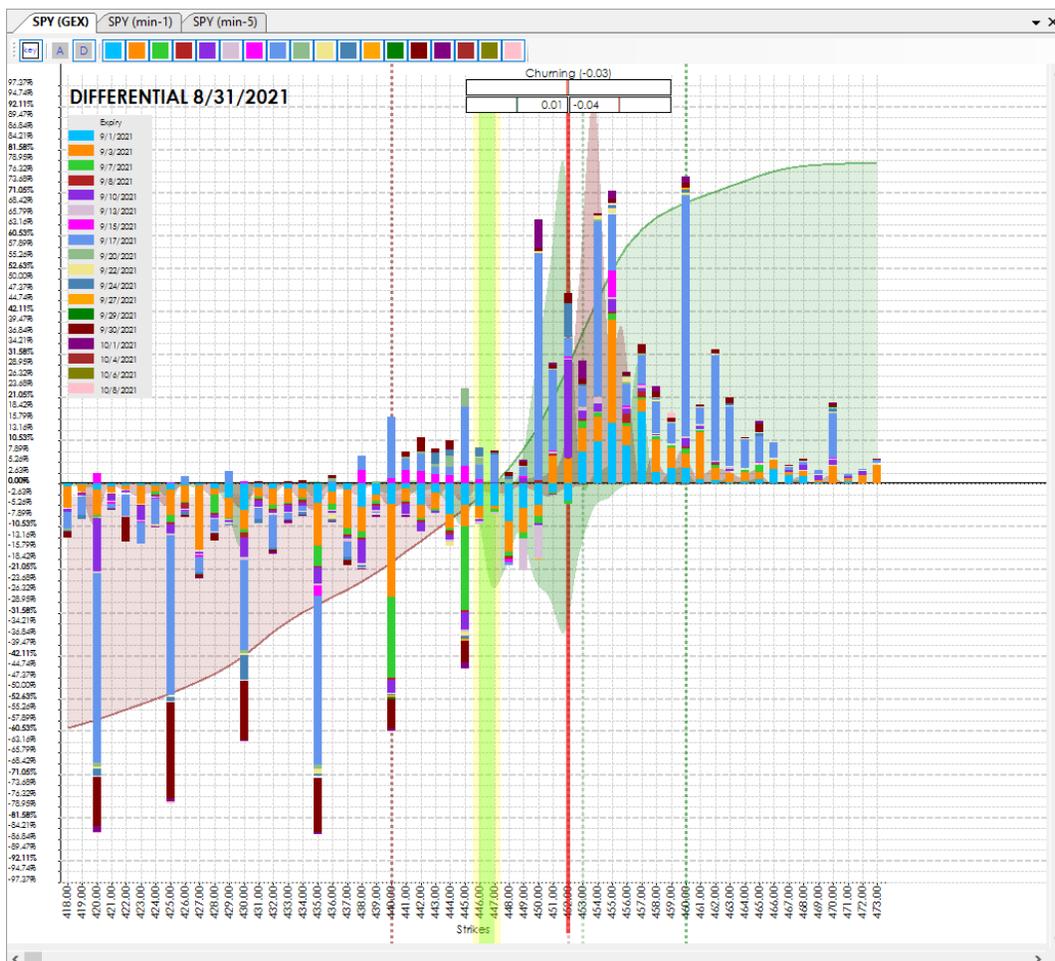


Figure 18 GEX Window

NOTE: The GEX window can be placed side by side with other windows by dragging the window tab and dragging it to the left or right box that appears in the center of the screen.

Selecting the *Absolute* (A) button or *Difference* (D) button at the top of the GEX Window, toggles between the open interest shown with all values (e.g., absolute view) and a difference between the put and call open interest (e.g., difference view). The absolute view can be helpful in seeing where the options have collected, indicating where there may be more price action and the difference view is helpful in showing the potential bias at each strike.

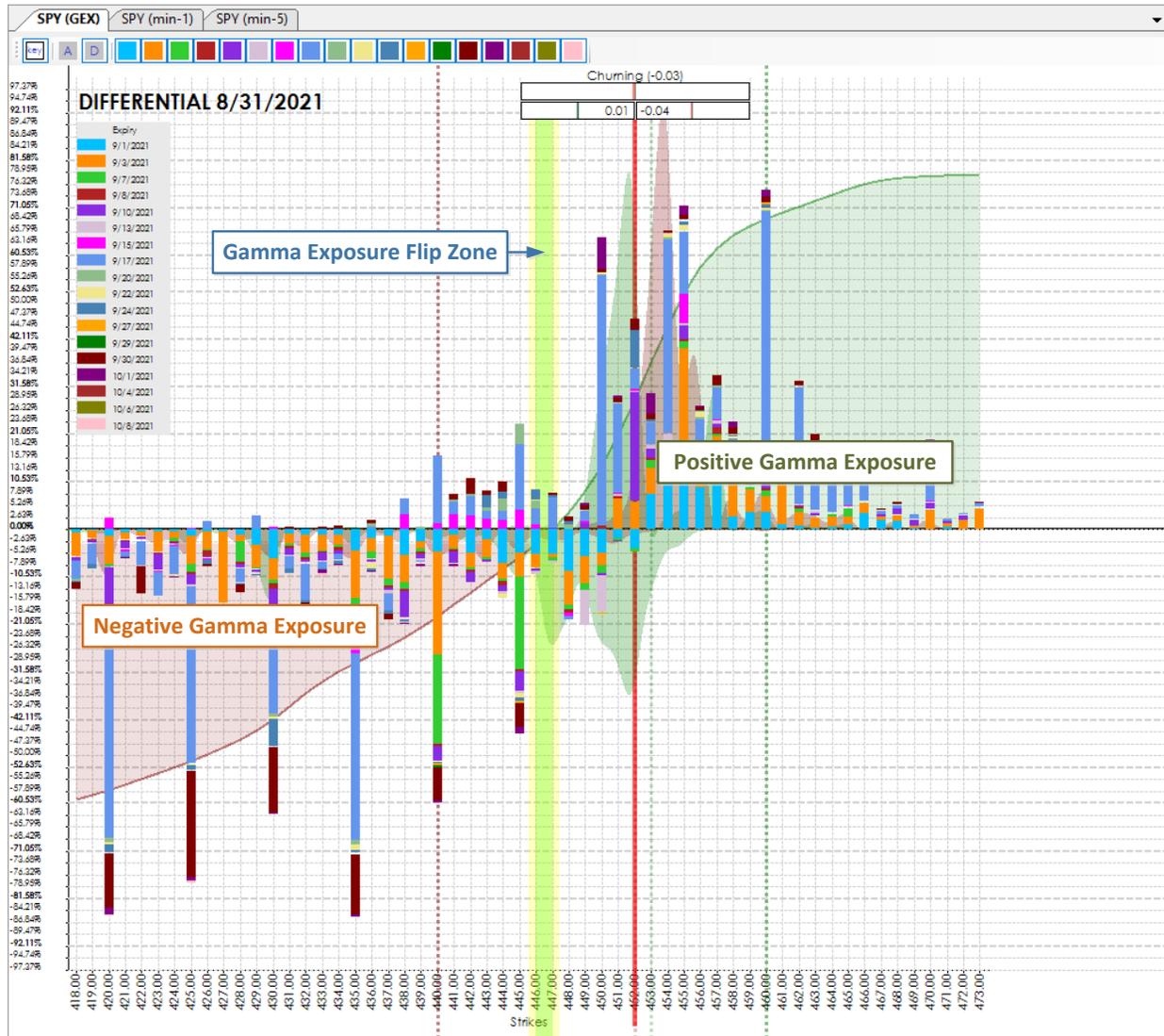


Figure 19 GEX Window - Gamma Exposure Profile

Behind each strike, is drawn the gamma exposure profile which shows the gamma level calculated at each strike in the set of options.

To the left, you will see the Negative Gamma Exposure, which is weighted toward the puts, and to the right, the Positive Gamma Exposure which is weighted to the calls. Statistically, volatility has been shown [5] to increase as price moves into a negative gamma exposure and decrease as the price moves into a

positive gamma exposure. Knowing where the price is within the gamma structure may help shape your daily trading strategy.

To the right of the *Absolute* and *Difference* buttons are a set of colored buttons, each corresponding to a given expiration date.



The colors of these buttons correspond to the expiration dates shown in the key.

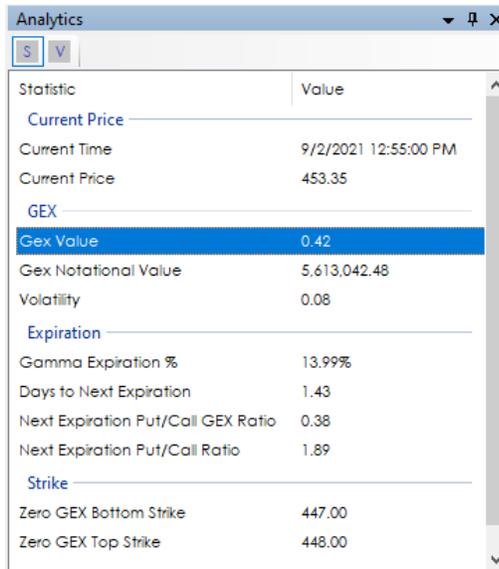
Expiry
9/1/2021
9/3/2021
9/7/2021
9/8/2021
9/10/2021
9/13/2021
9/15/2021
9/17/2021
9/20/2021
9/22/2021
9/24/2021
9/27/2021
9/29/2021
9/30/2021
10/1/2021
10/4/2021
10/6/2021
10/8/2021

By default, all expirations are selected and shown in the GEX Window. Deselecting any of the expirations, removes that expiration from the GEX Window visualization thus giving you an idea of the Gamma Exposure impact without a given expiration.

NOTE: *The GEX Window profile and buy/sell pressures are updated in real-time throughout the day when running in BASIC or ADVANCED mode. However, the OI values are updated only as they are released by the CME Group among other exchanges. According to the [CME Group](#), the "Open Interest Report is released at the end of each trading day and is a preliminary report. CME Group releases official data in the Daily Bulletin the following morning. **Preliminary reports may be different from the final report.**" (Emphasis added)*

STATISTICS WINDOW

When displaying the *GEX Window*, the *Analytics* window displays the gamma exposure statistics.



The screenshot shows the Analytics window with a table of statistics. The 'Gex Value' row is highlighted in blue. The table includes sections for Current Price, GEX, Expiration, and Strike.

Statistic	Value
Current Price	
Current Time	9/2/2021 12:55:00 PM
Current Price	453.35
GEX	
Gex Value	0.42
Gex Notational Value	5,613,042.48
Volatility	0.08
Expiration	
Gamma Expiration %	13.99%
Days to Next Expiration	1.43
Next Expiration Put/Call GEX Ratio	0.38
Next Expiration Put/Call Ratio	1.89
Strike	
Zero GEX Bottom Strike	447.00
Zero GEX Top Strike	448.00

Figure 20 Analytics Window - Statistics View

The gamma exposure statistics are calculated in real-time based on the *GEX Window* settings and selected expiration values.

Current Time; specifies the current time of the data in Eastern Time.

Current Price; specifies the current price at the time of the data.

Gex Value; specifies the current gamma exposure value on the gamma exposure curve.

Gex Notational Value; specifies the current gamma exposure notational value.

Volatility; specifies the annualized volatility calculation.

Gamma Expiration %; specifies the % of gamma expiring in the current expiration.

Days to Next Expiration; specifies the number of days until the next expiration.

Next Expiration Put/Call GEX Ratio; specifies the put/call ratio of the gamma exposure weighted options.

Next Put/Call Ratio; specifies the put/call ratio of the options (non-gamma exposure weighted).

Zero GEX Bottom Strike; specifies the bottom strike forming the gamma exposure flip zone where the gamma exposure flips from positive to negative.

Zero GEX Top Strike; specifies the top strike forming the gamma exposure flip zone where the gamma exposure flips from positive to negative.

PRICE CHART WINDOW

5-minute and 1-minute charts show the real-time price action of the underlying instrument (e.g., SPY). Overlaid on top of the price chart is the same option structure previously shown in the GEX Window but rotated to match up with the pricing. All strikes and expirations within the current price range are shown to give a better idea on how the price interacts with each stack of option open interest.

Changes within the GEX Window (i.e., changing from Absolute to Differential, or disabling given expirations) is also reflected on the price chart view.



Figure 21 Price Chart 5-minute.

As shown above, the GEX flip zone and gamma exposure profile are drawn on the chart showing that the current price is clearly in the positive gamma exposure zone.

BUYING/SELLING PRESSURE

The real-time Buying/Selling pressure indicators shown on the GEX Window can be helpful in determining where within the option structure, the buying and selling is occurring.

GEX WINDOW

Buying and selling pressure is drawn in real-time on the GEX window to show the strikes where the buying and selling is occurring.

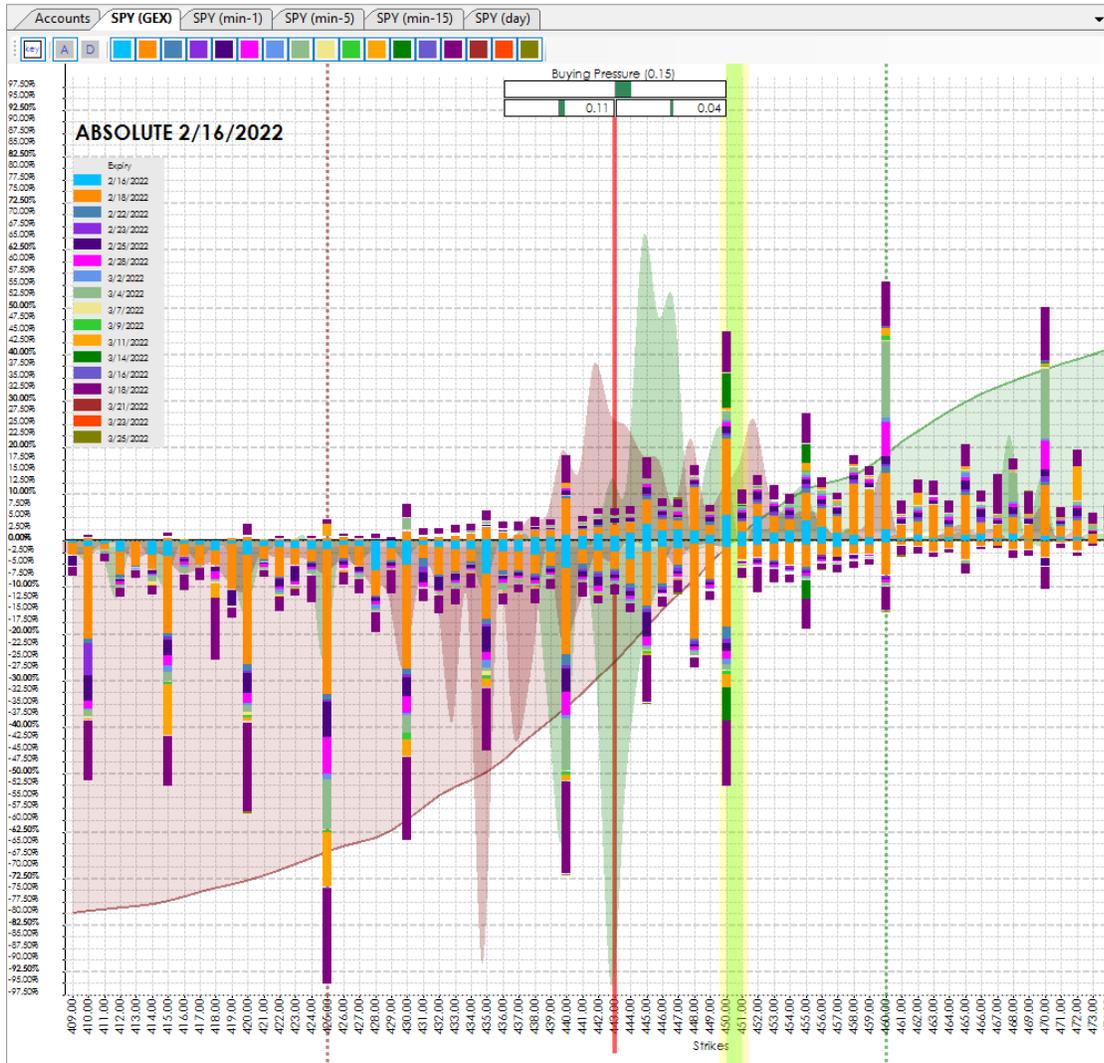
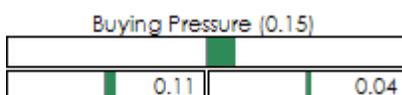


Figure 22 GEX Window - Buying/Selling Pressure

At the top of the GEX Window is displayed a total of all buying and selling pressure across all strikes analyzed.



PRICE CHART WINDOW

The buying and selling pressure at each strike is also shown on each price chart in real-time giving a better idea on which strikes are seeing more price action than others.



Figure 23 Price Chart Buying and Selling Pressure

In theory, the following delta-zero hedging occurs when options are bought and sold.

Dealer	Trader	Dealer Hedge
Buy Calls	Sells Calls	Sell Stock
Sell Calls	Buys Calls	Buy Stock

Buy Puts	Sells Puts	Buy Stock
Sell Puts	Buys Puts	Sell Stock

By totaling up all buying and selling pressure across all strikes and expirations analyzed, then show the total buying and selling pressure which is displayed in the *Analytics Window*.

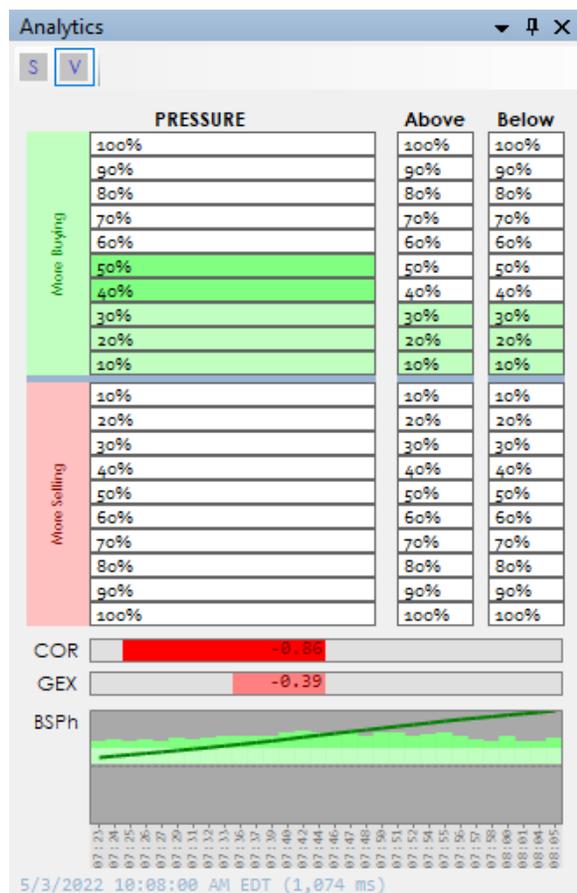


Figure 24 Analytics Window

The total buying and selling pressure give a very near-term indicator on what is occurring within the market and where the overall bias is at that moment in time.

At the bottom of the Buy/Sell pressure is shown the short-term correlation between the buy/sell pressure reading and the recent price movement. The correlation shows when the buy/sell pressure reading 'agrees with' the current price movement or not over a few minutes. For example, a high correlation reading of +0.8 shows that the short term buy/sell pressure reading has an 80% correlation with the current price movement thus indicating that the buy/sell pressure may be moving the price.

Below the correlation reading is the current gamma exposure reading displayed on the GEX Chart.

NOTE: The 'Above' Buy/Sell pressure shows all buy/sell pressure above the current price, whereas the 'Below' Buy/Sell pressure shows all buy/sell pressure below the current price.

Below the current gamma exposure reading is the short-term Buy/Sell Pressure reading over the past minute.

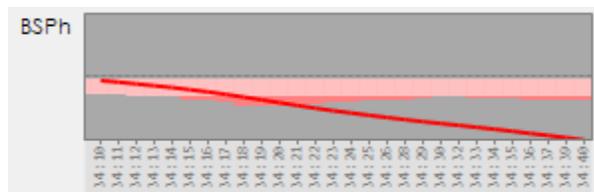


Figure 25 Buy/Sell Pressure Short-Term History

The Buy/Sell Pressure short-term history shows the near-term direction and change in the buy/sell pressure.

Each current buy/sell pressure reading is added to the right of the indicator and a 100 period (around 1.5 minutes) slope line is overlaid on the indicator. The level of the slope line is arbitrary, however the slope of the line itself shows the magnitude and direction of the current change in buy/sell pressures. When the slope is falling (as shown above) the slope line is red and when the slope line is rising it is drawn in green.

NOTE: When using the buy/sell pressure for an individual equity, keep in mind that the buy/sell pressure for the broader market (e.g., for the SPY) can have more impact on all other equities and can tend to mute the impact of the buy/sell pressure of an individual equity. The ideal situation is to be in sync with the direction of the buy/sell pressure for the individual equity AND direction of the buy/sell pressure of the overall market. In other words, make sure the individual equity buy/sell pressure direction agrees with the overall markets buy/sell pressure direction. It is important to use the buy/sell pressure along with other indicators such as price action at standard trend-lines and/or support and resistance lines.

The *Indicators* extension allows you to enable the indicators portion of the price chart. When enabled, the indicators are displayed below, and time aligned with the price chart.

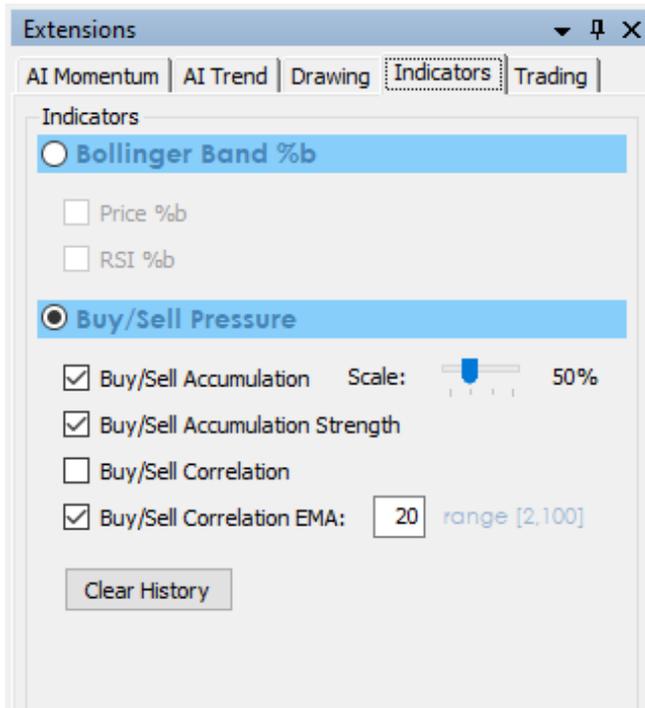


Figure 26 Indicators Extension

The following indicators are available from the indicators tab.

Price %b; displays the Bollinger Band %b calculated on the price.

RSI %b; displays the Bollinger Band %b calculated on the RSI of the price.

Buy/Sell Accumulation; displays the buy/sell pressure accumulation over time which can reveal trends in the buying and/or selling. The Scale settings allows you to zoom in or out of the accumulation indicator.

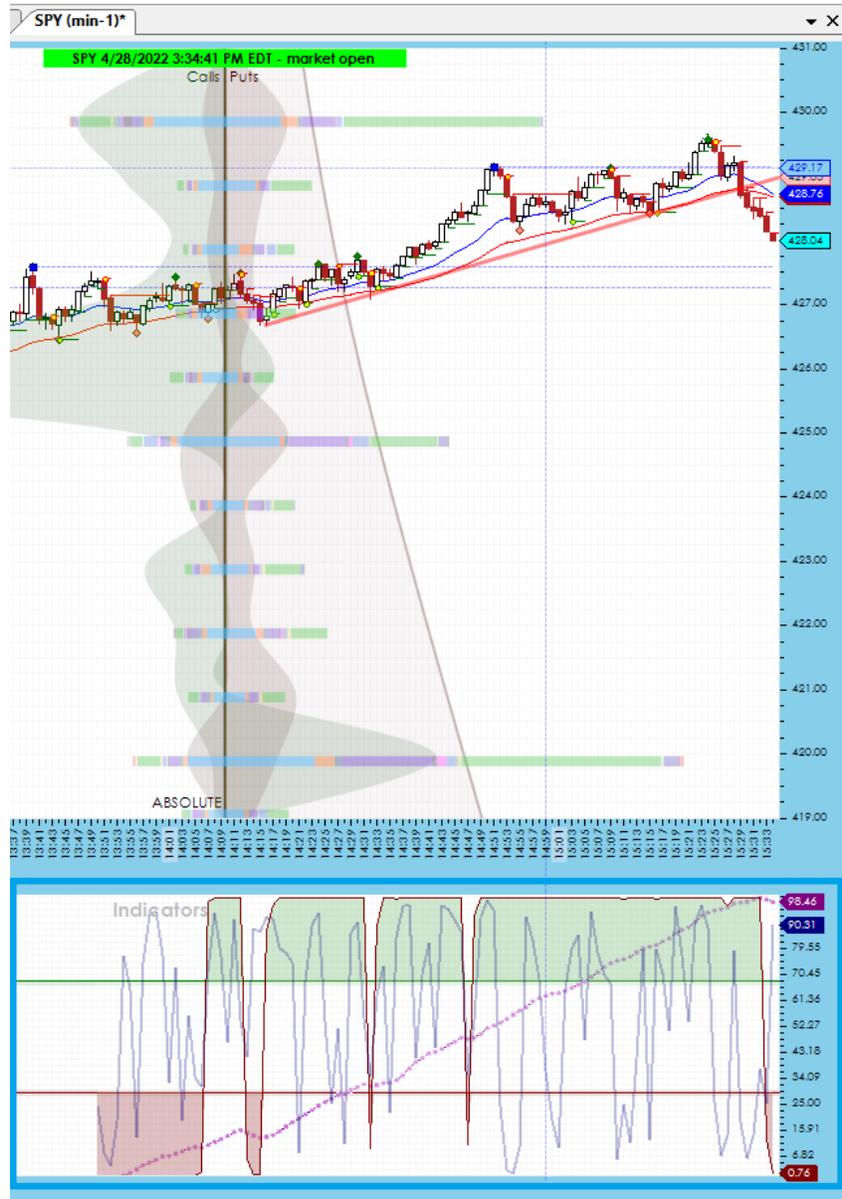
Buy/Sell Accumulation Strength; displays the strength of the buy/sell pressure accumulation line which can be helpful when determining a change in the buy/sell pressure trend.

Buy/Sell Correlation; displays the short-term correlation between the buy/sell pressure history and the short-term price history. A reading of 1 = 100% positive correlation and a reading of 0 = 100% negative correlation. A reading of 0.5 means there is no correlation between the two histories.

Buy/Sell Correlation EMA; displays the exponential moving average of the buy/sell correlation using the interval specified (default = 20, range = [2,100]).

Clear History Button; selecting this button permanently deletes the buy/sell history.

NOTE: When using the indicators, either the %b readings are displayed, or the buy/sell pressure readings are displayed; not both. Below is an example of the indicator readings shown along with the price chart.



NOTE: The AI related extensions are offered in **ADVANCED** mode only and require a qualifying NVIDIA GPU to run

IMPORTANT: Indicator data is only created while you are connected to a symbol and receiving real-time data. For example, if you disconnect from the SPY and connect to AMD, you will no longer receive indicator data for the SPY, and will instead receive indicator data for AMD.

AI MOMENTUM

Nearly every second, the proprietary SignalPop AI Momentum indicator processes over 40,000 data-points across several time periods to predict the next short-term move in price.



Figure 27 AI Momentum Indicator

Using this indicator may help place better trades as it shows where the market is moving from a momentum perspective. To the left are shown very short-term predicted moves from 10-seconds up to 1-minute, and to the right are shown more long-term directional moves from 5-minutes up to 15-minutes.

At the top and bottom of the indicator are shown a summation indicating the potential positive or negative magnitude of the move.

The SignalPop AI Momentum indicator uses the MyCaffe AI Platform for all AI operations performed in real-time.

This indicator does require an NVIDIA CUDA enabled GPU with at least 4GB of video memory such as the NVIDIA 1050 TI or higher.

NOTE: The AI Momentum extension is currently planned for a future release as a purchased add-on, purchased in addition to the base product.

PRICE CHART WINDOWS

The price chart windows show the real-time price as it changes throughout the day and are displayed in both a 5-minute and 1-minute period.



Figure 28 Price Chart Window

Each price chart window has a set of visualizations on the left and the current price status at the top. When price data is up to date, the status will display bright green and show that the market is open, afterhours or closed. If the current price becomes delayed by more than 10 seconds, the status will first turn yellow and say 'stale' and then turn red and state 'data old'. Stale and Data Old states can occur when the connection to the data provider data source is interrupted. All visualizations are optional and saved between application sessions.

PRICE CHART SCALING

When using each price chart, there are several ways to scale the prices using the mouse wheel on your mouse.

Selecting the Left SHIFT key and moving the Mouse Wheel Up or Down – resets the scaling to the default.

Selecting the Left CTRL key and moving Mouse Wheel Down (towards you) – shrinks the price range down to a few points around the current point.

Selecting the Left CTRL key and moving Mouse Wheel Up (away from you) – expands the price range up to ten points above and below the current price.

Selecting the Left ALT key and moving the Mouse Wheel Down (towards you) – moves the price range up and expands as needed.

Selecting the Left ALT key and moving the Mouse Wheel Up (away from you) – moves the price range down and expands as needed.

PRICE CHART VISUALIZATIONS

Several price chart visualizations are optionally available for display on each chart. The visualizations are described in this section.

VOLUME

Selecting the *Show volume* button displays the volume at the bottom of the chart.



Figure 29 Volume Visualization

RSI

Selecting the Show RSI button displays the 14-period price RSI at the bottom of the chart.



Figure 30 14-period Price RSI Visualization

HIGH/LOW LINES AND POINTS

Selecting the Show High/Low Points and Show High/Low Lines display the high/low price points and lines drawn horizontally from those points, respectively.



Figure 31 High/Low Points and Lines Visualizations

The diamond shaped high/low points are second order and are calculated from the first order pivot points which are not shown on the chart. Square shaped high/low points are third order pivot points calculated from the second order, diamond shaped points.

Our first order pivot points (not shown on chart) are calculated from the price bars themselves.

NOTE: These same high/low points are also shown on the RSI chart.

DIRECTION LINES

Selecting the *Show direction lines* button displays the direction lines which show consecutive highs or lows on the chart.



Figure 32 Direction Lines Visualization

BOLLINGER BANDS

Selecting the *Show Bollinger bands* button displays the Bollinger bands on the chart.



Figure 33 Bollinger Band Visualization

The Bollinger band uses a standard 20-period interval for its calculations.

PRICE ZONES

Selecting the *Show price zones* button displays the support and resistance areas where the price has concentrated over the past day of data.



Figure 34 Price Zone Visualization

The price zones use the following time periods to calculate the price collection areas:

MIN-1 Chart: Calculates the price zones over a 6-trading day period.

MIN-5 Chart: Calculates the price zones over a 12-trading day period.

MIN-15 Chart: Calculates the price zones over a 28-trading day period.

DAY Chart: Calculates the price zones over a 3-year period.

OPTION STRIKE PRICES

Selecting the *Show option price strikes* button displays the option strikes within the price range.



Figure 35 Option Price Strikes Visualization

GAMMA EXPOSURE VISUALIZATIONS

Selecting the *Show gamma exposure* button displays and enables the gamma exposure visualizations which overlays the option strikes at each expiration within the price range, on top of the price chart.

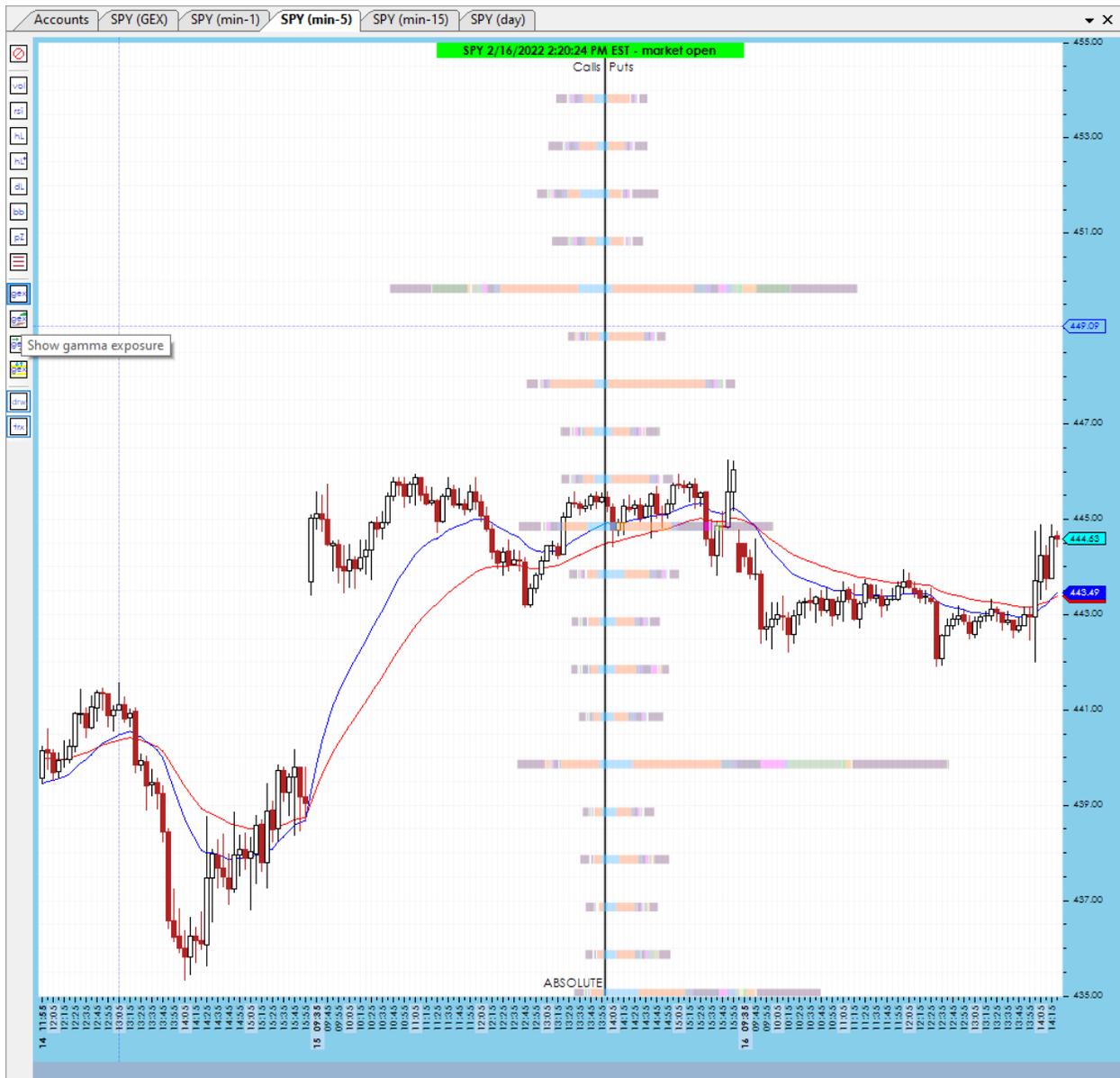


Figure 36 Gamma Exposure Visualization

The gamma exposure visualization is synchronized with the settings made from within the *GEX Window*. For example, selecting the *Absolute* view from the *GEX Window* also displays the absolute view on the price chart. Note, the *Absolute* or *Differential* view type is noted at the bottom center of the price chart. Also, note that the calls are shown on the left and puts on the right of the overlay.

GAMMA EXPOSURE – GEX PROFILE

Selecting the *Show gamma exposure* button also enables the *Show GEX profile* button, which when selected, displays the GEX profile on the price chart. For example, the chart below shows the price in the negative portion of the GEX profile.



Figure 37 GEX Profile Visualization

When in the positive GEX area, the gamma exposure is weighted more with CALL options and when in the negative GEX area, the gamma exposure is weighted more with PUT options. Studies have shown that price volatility can increase when in the negative GEX area and decrease when in the positive GEX area.

GAMMA EXPOSURE – GEX FLIP ZONE

Selecting the *Show gamma exposure* button also enables the *Show GEX flip zone* button, which when selected, displays the GEX flip zone on the price chart, where the gamma exposure switches from positive to negative.

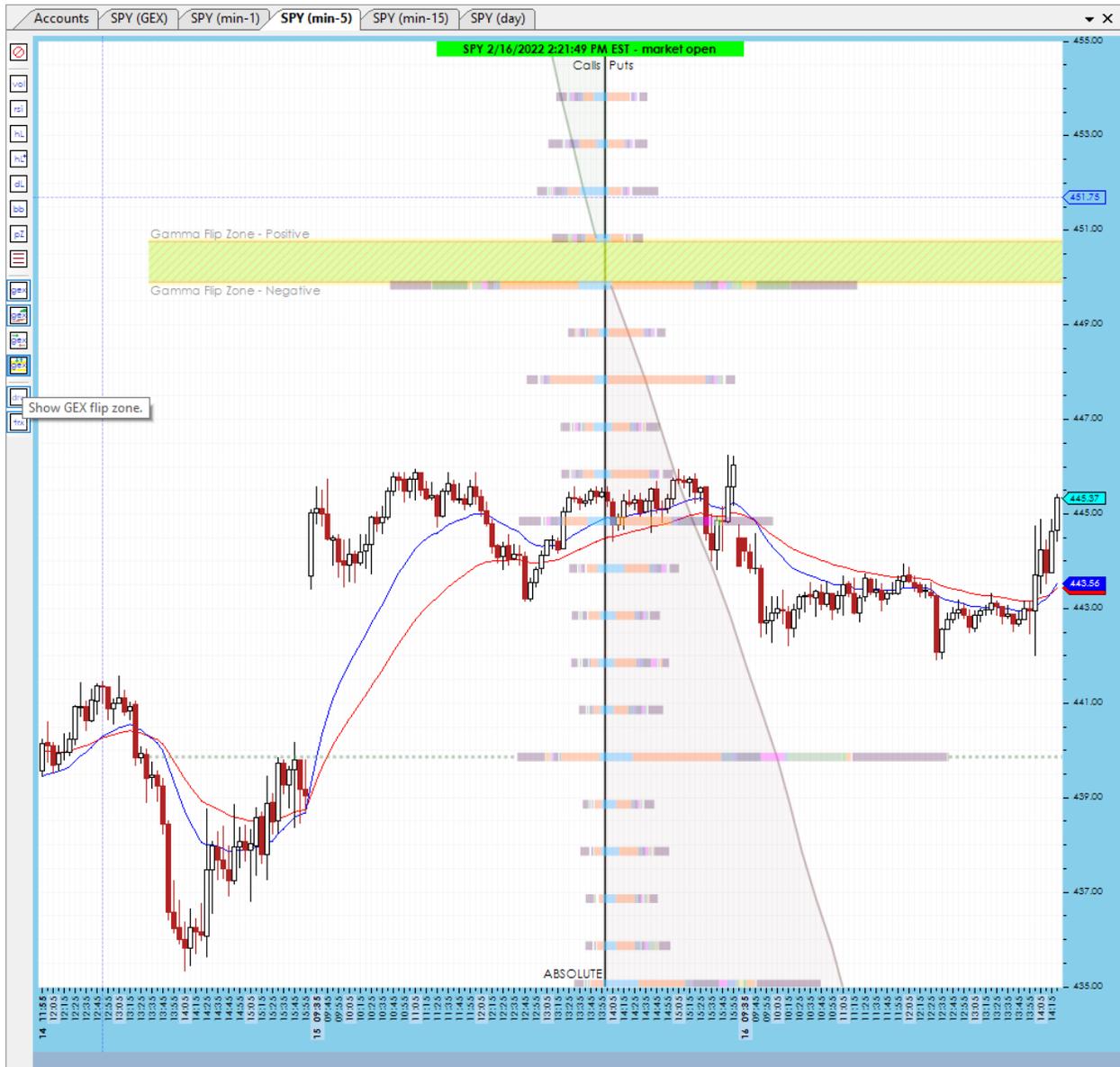


Figure 38 Gamma Exposure Flip Zone Visualization

GAMMA EXPOSURE BUY/SELL PRESSURE

Selecting the *Show gamma exposure* button also enables the *Show GEX buy/sell pressures* button, which when selected, displays buy/sell pressure at each strike in real-time.

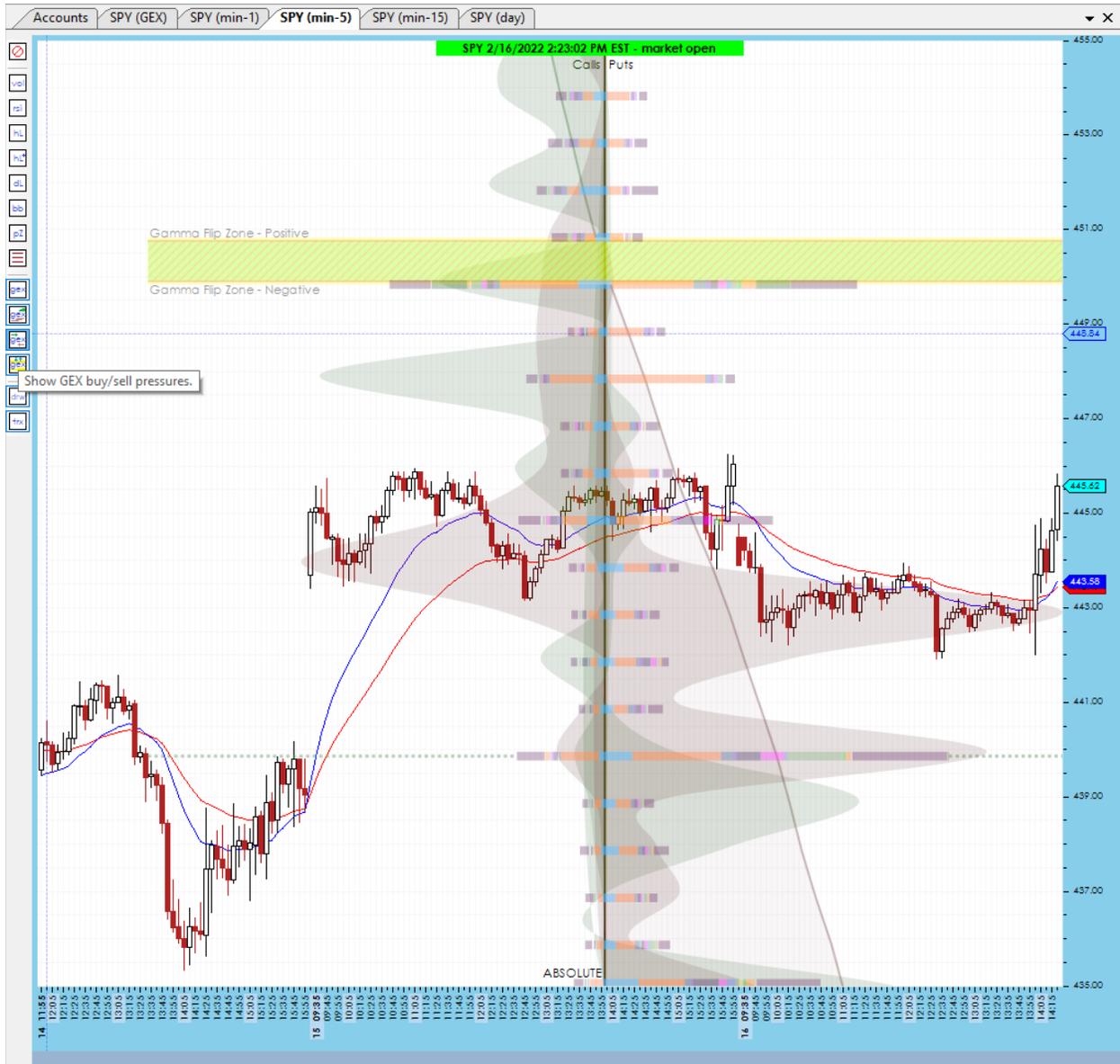


Figure 39 Gamma Exposure Buy/Sell Pressure Visualization

DRAWING TREND LINES

In addition to the visualizations previously discussed, using the *Drawing* extension, you can draw your own trend-lines and support/resistance lines on the chart.

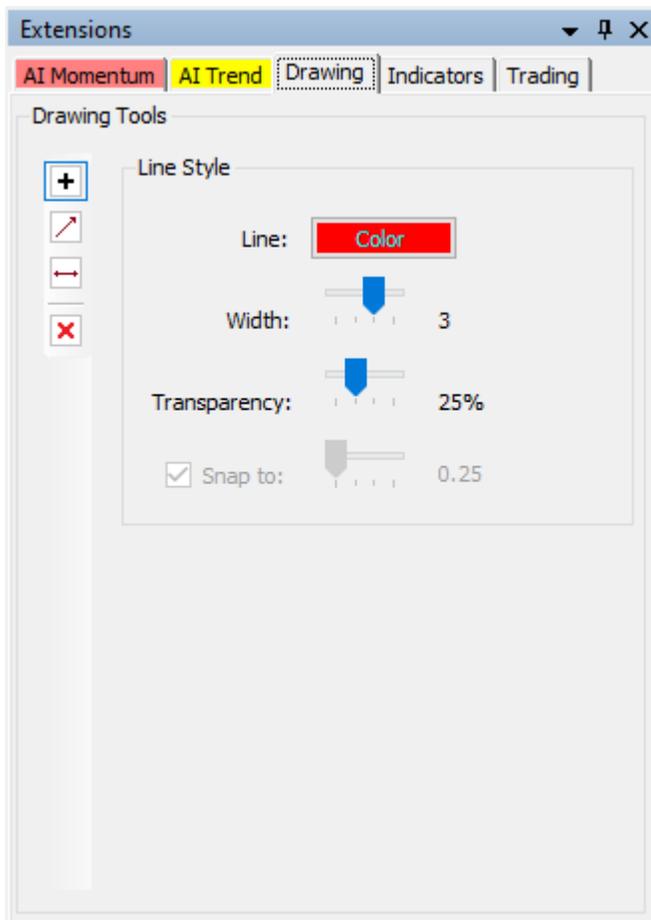


Figure 40 Drawing Extension

To draw trend lines, first select one of the trend drawing tools on the left of the *Drawing* extension.

-  **Cursor**; selecting this button takes you out of drawing mode.
-  **Draw Trend Line**; selecting this button allows you to draw diagonal trend-lines. When selected, mouse down and drag the mouse (while down) in the chart to draw the trend-line.
-  **Draw Support/Resistance Line**; selecting this button allows you to draw horizontal support and resistance lines. When selected, click on the chart where you would like to place your horizontal support/resistance line.
-  **Delete All**; selecting this button deletes all trend and support/resistance lines.

To the right of the drawing tools are the line styles used when drawing the next trend or support/resistance line.

The example below shows a horizontal support/resistance line and a downward angled trend-line.



Figure 41 Show Trend and Support/Resistance Lines

Selecting the *Show Lines*  button shows or hides the user drawn lines on the chart. Mousing over each line will show its position blocks.

Clicking and dragging an inverted position block allows you to reposition the line.



Figure 42 Line Position Blocks

Right clicking a selected line shows the line edit menu with the following items.

-  **Delete**; deletes the selected line.
-  **Set Description**; allows you to label the line with a text description.
- Clear Description**; clears the text description if one exists.
-  **Format Paint**; paints the line style with the current Line Style settings in the *Drawing* extension.
-  **Copy to Other Charts**; Copies the line to other time period charts (only available with support/resistance lines).

TRADE STATUS

When selected the *Transaction* () button shows the status of trades made on the chart. For example, in the chart below, an open CALL position is shown near the underlying price where the CALL was position was opened. In addition, on the right side of the chart is displayed the time at which the position was opened.

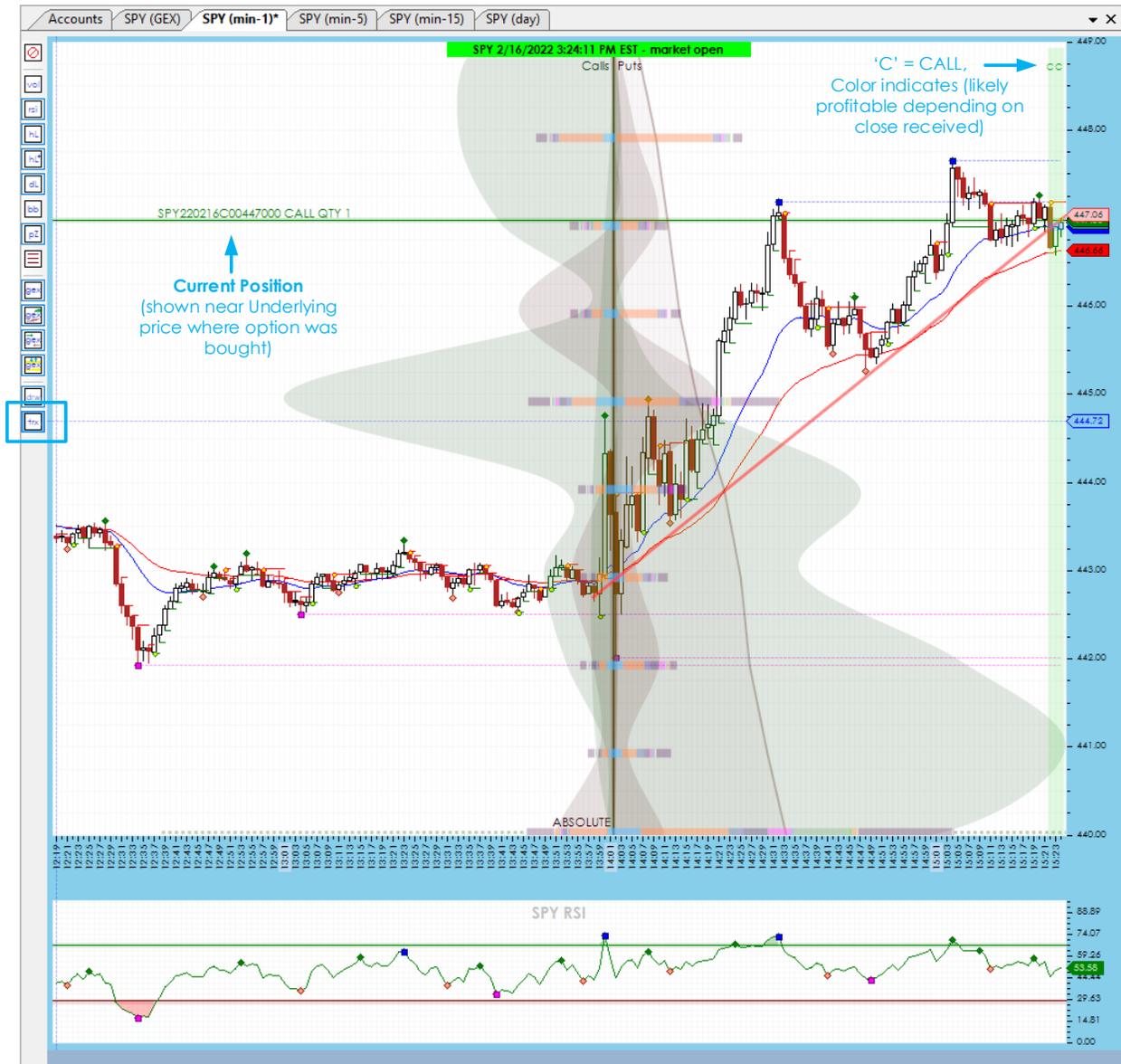


Figure 43 Showing Trade Status on Charts

Deselecting the *Transaction* () button hides the vertical coloring showing where each trade was placed throughout the day.

TRADING

When enabled, the *Trading Accounts* extension adds the ability to manage trades by placing, modifying, and cancelling orders. Selecting the *Extensions | Trading Accounts* menu displays the *Accounts* window.

The screenshot shows the 'Accounts' window with the following sections:

- Account Information:**
 - Account ID: Demo Account #1
 - Account Classification: individual
 - Account Type: margin
 - Status: active
 - Creation Date: 7/9/2019 6:33:06 AM
 - Last Updated: 7/9/2019 6:33:07 AM
 - Daytrader: False
 - Option Level: 6
- P/L:**
 - Profit/Loss Closed: -73.08
 - Profit/Loss Open: 0.00
- Market Value:**
 - Market Value Long: 0.00
 - Market Value Short: 0.00
 - Option Long: 0.00
 - Option Short: 0.00
- Balance Information:**
 - Totals:**
 - Total Cash: 99,894.36
 - Total Equity: 99,894.36
 - Cash:**
 - Cash Pending: 0.00
 - Uncleared Funds: 0.00
 - Requirements:**
 - Current Requirement: 0.00
 - Option Requirement: 0.00
 - Orders:**
 - Pending Orders: 0
- Open Positions:** (Empty table)
- Order History:**

Order History	Status	Side	Class	Symbol	Option	Qty	Type	Limit	Stop	Dur	Fill Price	Executed
9/27/2021 7:22:32 AM	FILLED	SELL_TO_CLOSE	OPTION	SPY	SPY210927C00444000	1	MARKET			DAY	0.52	1
9/27/2021 7:18:07 AM	FILLED	BUY_TO_OPEN	OPTION	SPY	SPY210927C00444000	1	MARKET			DAY	0.42	1
9/27/2021 7:06:06 AM	FILLED	SELL_TO_CLOSE	OPTION	SPY	SPY210927C00444000	1	MARKET			DAY	0.40	1
9/27/2021 7:00:45 AM	FILLED	SELL	EQUITY	SPY		2	MARKET			DAY	442.74	2
9/27/2021 6:30:17 AM	FILLED	BUY	EQUITY	SPY		1	MARKET			DAY	442.93	1

Figure 44 Trading Accounts Window

Trades are always placed in the *Primary* account which is designated by a green bubble next to the account name as shown below.

● Demo Account #1 (individual)

From the *Accounts* window, you can cancel pending orders, change existing orders, and view your overall account status and balance.

OPENING POSITIONS

All trades are opened from the *Trading* side bar within the *Extensions* window.

Strike	5/4/2022	5/6/2022	5/9/2022	5/11/2022	Calls	Puts
416					4.43	4.04
417					3.94	4.49
418					3.47	5.00
419					3.01	5.56
420					2.61	6.12
421					2.23	6.77
422					1.89	7.43
423					1.58	8.12

Equity Option CALL PUT

Quantity: 1 Day Gtc

Mkt Limit Stop StopLimit

Limit: Stop:

Buy Sell Sell All

Figure 45 Trading Extension Sidebar - Equity

To open an equity trade in the underlying (e.g., SPY shown above), select the *Equity* radio button, enter the quantity of shares, select the duration (e.g., Day or Gtc), and enter the order type (e.g., Mkt for Market, Limit, Stop or Stop Limit). Next, press the *Buy* button to place the trade.

NOTE: All trades are placed by the underlying trading provider, which in this case is the Tradier Brokerage for which you logged in when first running the product.

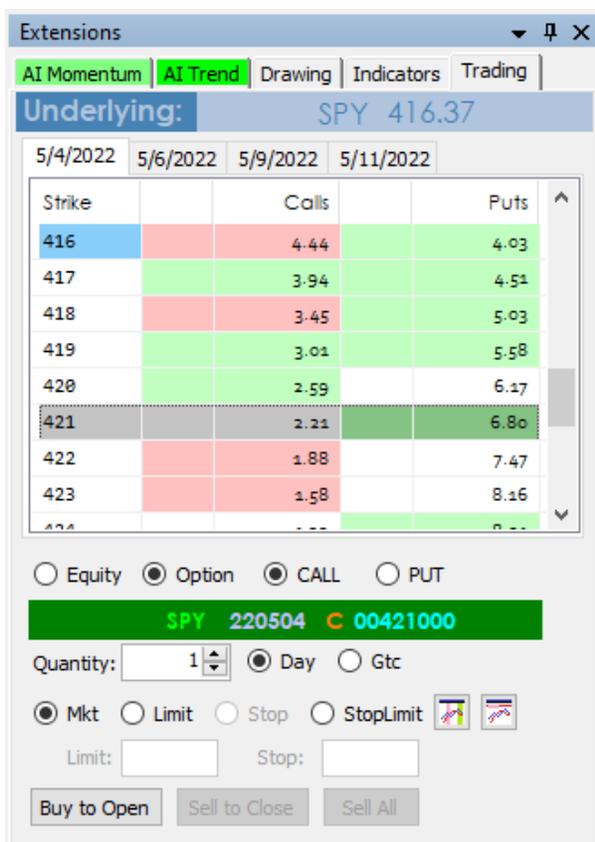


Figure 46 Trading Extension Sidebar - Options

To open an option trade (e.g., SPY220216C00446000 shown above), either click on the price of the 446 CALL (e.g., 1.21), or select the *Option* radio button, enter the quantity of contracts, select the duration (e.g., Day or Gtc), and enter the order type (e.g., Mkt for Market, Limit, Stop or Stop Limit. Next, press the *Buy to Open* button to place the trade.

NOTE: All trades are placed by the underlying trading provider, which in this case is the Tradier Brokerage for which you logged into when first running the product.

Buttons

 **Show trade history on chart;** when enabled, your trades for the day are drawn on each price chart with the color indicating whether the trade was profitable or not.

 **Expand price range to show all active trades;** when enabled, the price chart price range displayed is expanded to include the price (or strike with options) of each active position or open order.

Buy to Open; selecting this button purchases the specified equity, call, or put option.

Sell to Close; selecting this button with an open option or equity position sells the given position.

Sell All; selecting this button closes all open positions.

After pressing the *Buy to Open*, *Sell to Close*, or *Sell All* button, the Order Verification dialog will display.

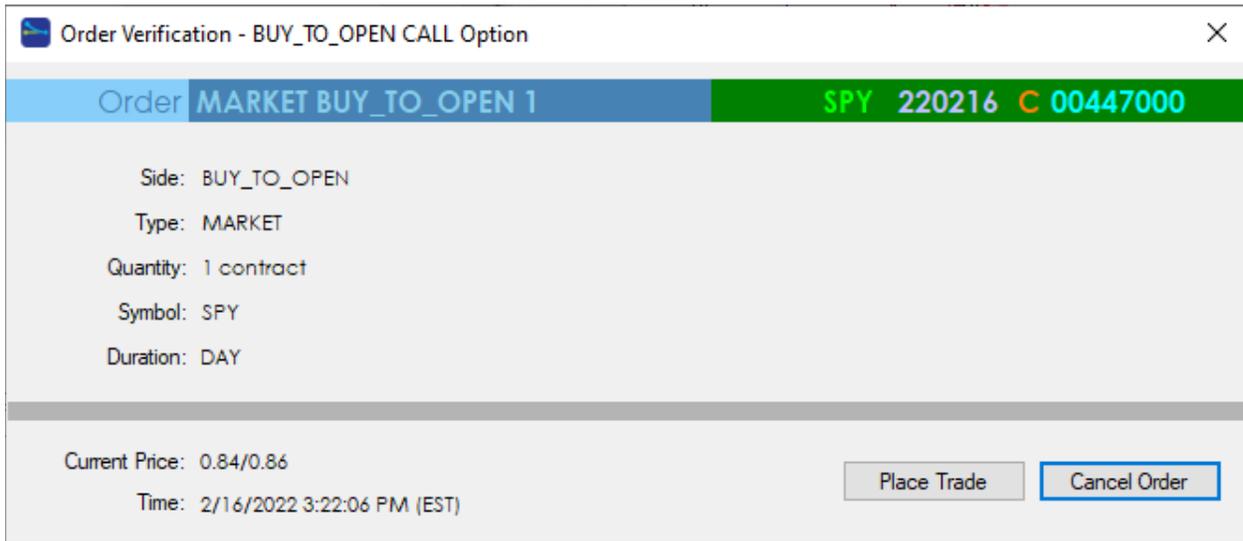


Figure 47 Order Verification

The order will not be placed until you press the *Place Trade* button.

Once placed the position is placed on the chart near the underlying price where the trade was opened.



Figure 48 Showing Positions on the Chart

Right clicking on the position shows a menu item that allows for closing the position.

VIEWING OPTION PRICE HISTORIES

To view option price histories, right click on the option strike in the nearest expiration that you would like to view and when enough data exists the *View Charts* menu will display.

Clicking on the *View Charts* | *1-min* menu displays the option price history for both the call and put option at the strike selected.



Figure 49 Option Price History Window

Option charts are available for both the 1-minute and 5-minute time periods.

CLOSING TRADES

To close an existing trade, you can either sell the same quantity of shares (or contracts) making up your position or close the entire position from either the *Accounts* window or close the trade by right clicking on the position displayed within the *Chart* window.



Figure 50 Closing a trade from Chart Window

Double clicking on the price chart, displays the price data in the *Trading* extension sidebar.

Alternatively, any position can be closed by selecting the position from within the *Accounts* window and selecting the *Close* button.

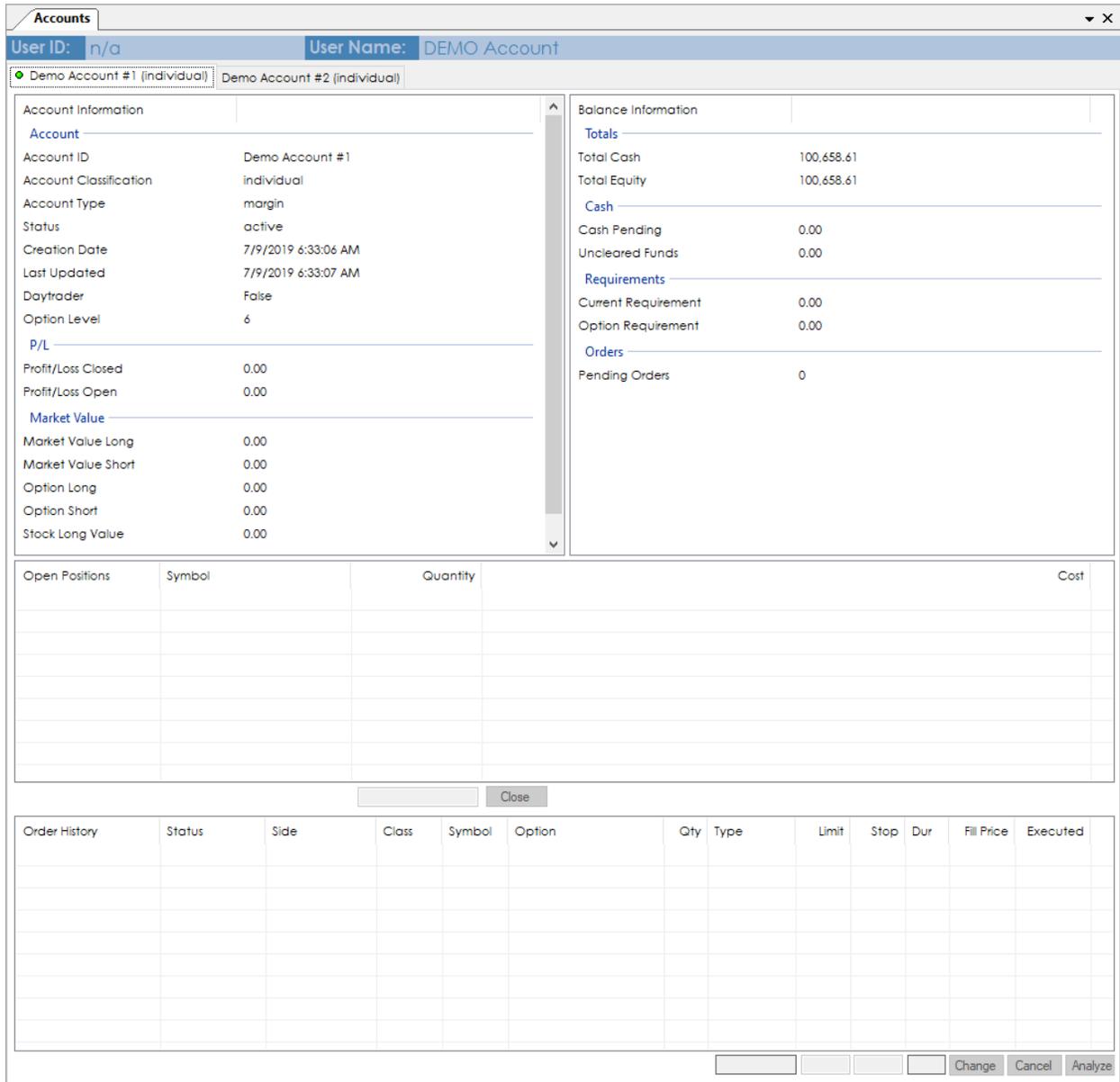


Figure 51 Closing a trade from Accounts Window

At the bottom of the Accounts window are the following buttons.

Change button; used to change an open order, such as the price on a limit order.

Cancel button; used to cancel an open order.

Analyze button; displays the trading analytics window allowing you to visualize your performance.

Refresh button; causes the accounts window to refresh with your latest balances, orders, and positions.

RECORDING SESSIONS

During a given trading session, you may want to record all trades and price movements throughout the day for later, off-line analysis. The SignalPop Trading Studio allows you to easily record sessions by selecting the *Start recording* (📹) button.

Selecting this button displays the Start Recording dialog that allows you to enter the name of the trader that is stamped on the video.

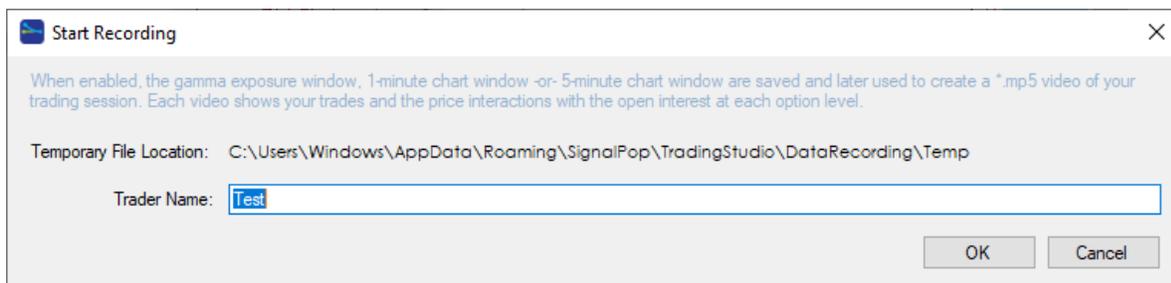


Figure 52 Start Recording Dialog

When a recording session is on, the *Stop recording* (🛑) button will be displayed in the main toolbar and behind the scenes the application will periodically save an image of the GEX window and chart window later used to create the recorded *.MP4 video.

Selecting the *Stop recording* (🛑) button stops the recording session at which time *Create video* (🎬) and *Delete temporary video files* (🗑️) buttons are enabled.

Selecting the *Create video* (🎬) button displays the *Create Movie* dialog.

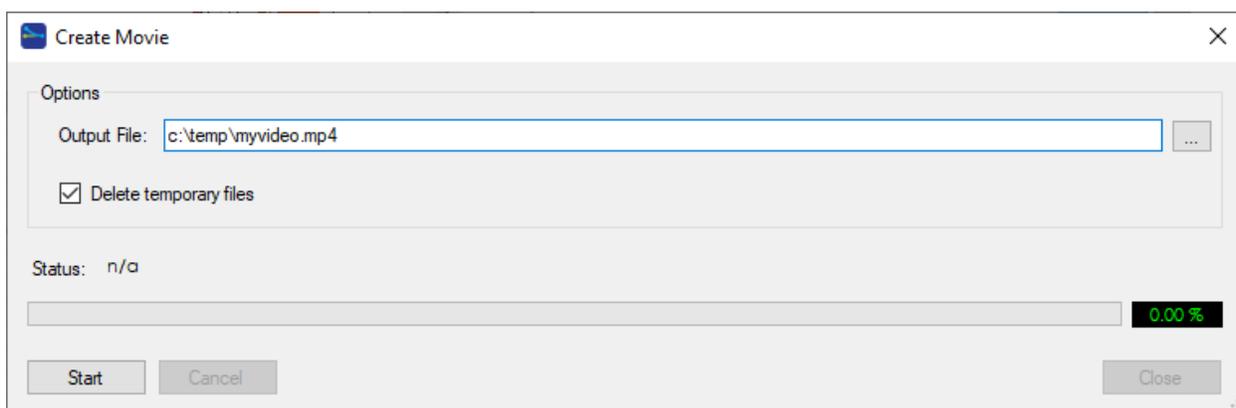


Figure 53 Create Video Dialog

From this dialog, enter the path of the *.mp4 you would like to create and select the *Start* button to create the video.

Upon creating the video, all temporary files used to create the video are deleted when the *Delete temporary files* checkbox is checked. Alternatively, you may delete the temporary files any time by selecting the *Delete temporary video files* ).

CONFIGURATION AND SETTINGS

The *Settings* and *Properties* windows are used to configure the application. *Settings* are used to change background settings, whereas the *Properties* are used to change visualization properties.

SETTINGS WINDOW

Select the '*File | Settings*' menu to display the *Application Settings* window. Most settings only take effect after reconnecting to a symbol.

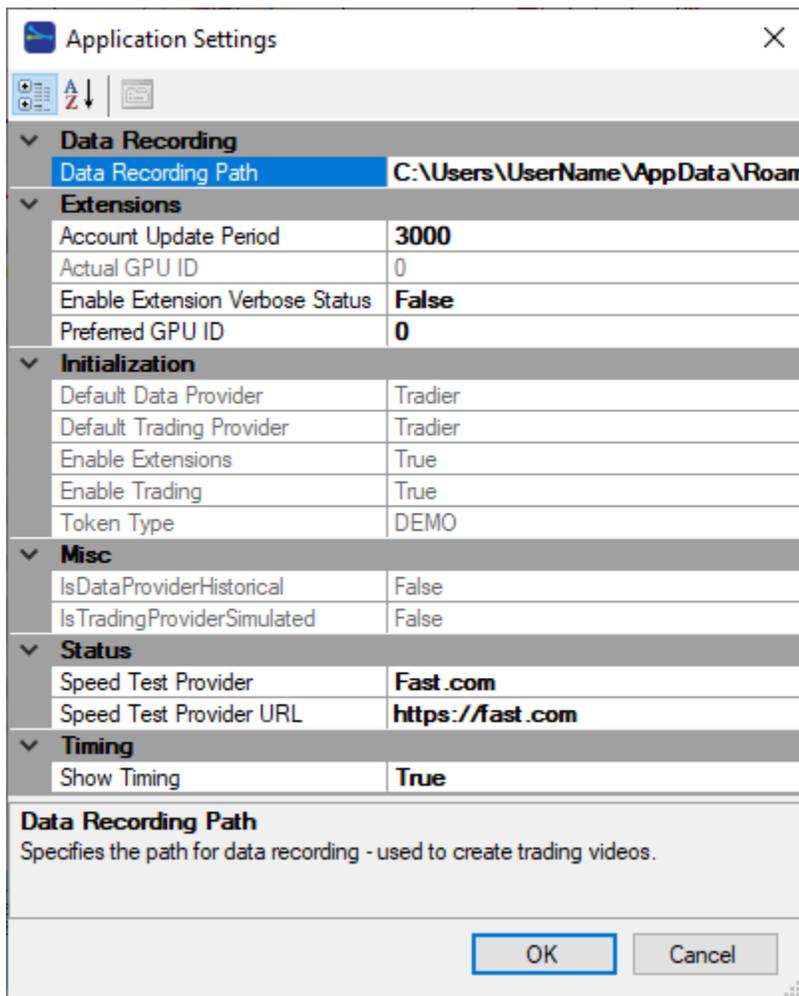


Figure 54 Application Settings Window

The application settings are described as follows:

Data Recording Path; shows the path where temporary data is stored during each recording session.

Active GPU ID (read-only); displays the active GPU used for all AI operations.

Enable Extension Verbose Status; when enabled, verbose timing information is sent to the Output window. This is only recommended when diagnosing timing issues.

Preferred GPU ID; specifies the preferred GPU to use for all AI operations.

Default Data Provider; displays the active data provider used for all data. Currently, 'Tradier' is the data provider, but over time and based on user demand, other data providers may be added such as OEX Cloud.

Default Trading Provider; displays the active trading provider used to place all trades and provide account management. Currently, 'Tradier' is the trading provider but over time and based on user demand other trading providers may be added.

Enable Extensions (read-only); shows when the extensions are enabled, such as the SignalPop AI Momentum extension.

Enable Trading (read-only); this setting is true when using trading is available from the data and/or trading provider.

Speed Test Provider; specifies the URL of the speed test to use when selecting the '*Help | Check Internet Status...*' menu item.

Speed Test Provider Name; specifies the name of the speed test provider used.

Show Timing; specifies whether to display the timing of data.

PROPERTIES WINDOW

Selecting the 'View | *Properties Window*' menu displays the properties window on the right of the application.

Properties	
Chart	
Show Time Below Indicators	False
Chart Colors	
Candle Fill Down Color	0, 0, 0
Candle Fill Down Previous Color	178, 34, 34
Candle Fill Up Color	255, 255, 255
Candle Line Down Color	178, 34, 34
Candle Line Up Color	0, 0, 0
Chart Axis Label Color	0, 0, 0
Chart Background Color	255, 255, 255
Chart Boundary Color	135, 206, 235
Chart Cross Hair Color	64, 0, 0, 255
Chart Grid Color	128, 244, 244, 244
Chart Grid Separator Color	230, 230, 250
Color Theme	DEFAULT
Colors	
Bollinger Band Fill Color	0, 255, 255
Bollinger Band Line Color	0, 139, 139
Buy Color	0, 128, 0
Enable Buy/Sell Pressure Colors	False
Sell Color	128, 0, 0
Indicators	
Buy/Sell Pressure Accumulator Line Color	128, 0, 128
Buy/Sell Pressure Accumulator Plot Fill Color	218, 112, 214
Buy/Sell Pressure Accumulator Plot Line Color	230, 230, 250
Buy/Sell Pressure Accumulator Plot Line Width	1
Misc	
Reset Defaults ->	
Opacity	
Bollinger Band Bottom Opacity	32
Bollinger Band Top Opacity	16
Buy/Sell Opacity	128
General Opacity	255
GEX Flip Zone Opacity	128
GEX Profile Opacity	128
Strikes Opacity	128

Figure 55 Properties Window

The *Properties Window* contains settings that impact many of the visualizations and chart windows such as the price charts and GEX chart. In addition, the properties can impact the buy/sell colors used on the buy/sell price chart overlays and buy/sell pressure indicator. The properties are described as follows.

Show Time Below Indicators; specifies whether to show the time below the indicators (if available).

Candle Fill Down Color; specifies the candle fill (down) color used on each chart.

Candle Fill Down Previous Color; specifies the candle fill (down previous) used on each chart.

Candle Fill Up Color; specifies the candle fill (up) color used on each chart.

Candle Line Down Color; specifies the candle line (down) color used on each chart.

Candle Line Up Color; specifies the candle line (up) color used on each chart.

Chart Axis Label Color; specifies the color used when drawing the axis label values on the X and Y axes.

Chart Background Color; specifies the background color used on each chart.

Chart Boundary Color; specifies the color used around the charts.

Chart Cross Hair Color; specifies the color used for the crosshair displayed at the current mouse position.

Chart Grid Color; specifies the grid color used on each chart.

Chart Grid Separator Color; specifies the grid separator color used on each chart.

Color Theme; Specifies the color theme, where the DEFAULT theme sets all colors to the default coloring and the DARK theme sets the colors to a darker night coloring.

Bollinger Band Fill Color; specifies the color used to fill the Bollinger bands.

Bollinger Band Line Color; specifies the color used on the Bollinger band lines.

Buy/Sell Color; these colors define the colors used when showing the buy/sell pressures on the GEX and Price Windows.

Enable Buy/Sell Pressure Colors; when enabled, the same buy/sell color settings are also used on the buy/sell and AI momentum indicators.

Buy/Sell Pressure Accumulator Line Color; specifies the color used to draw the buy/sell pressure accumulation line in the indicators window.

Buy/Sell Pressure Accumulator Plot Fill Color; specifies the color used in the plot of the buy/sell pressure accumulation line in the indicators window.

Buy/Sell Pressure Accumulator Plot Line Color; specifies the color used in the plot line of the buy/sell pressure accumulation line in the indicators window.

Buy/Sell Pressure Accumulator Plot Line Width; specifies the width of the buy/sell pressure accumulation line shown in the indicators window.

Reset Defaults ->; selecting this setting resets all settings back to their defaults.

Bollinger Band Bottom Opacity; specifies the opacity of the Bollinger band bottom fill.

Bollinger Band Top Opacity; specifies the opacity of the Bollinger band top fill.

Buy/Sell Opacity; specifies the opacity to use on the buy/sell colors used in the GEX and Price chart windows.

General Opacity; specifies the opacity used to draw general items in the GEX and Price chart windows.

GEX Flip Zone Opacity; specifies the opacity of the GEX flip zone drawn in the GEX and Price chart windows.

GEX Profile Opacity; specifies the opacity of the GEX profile drawn in the GEX and Price chart windows.

Strikes Opacity; specifies the opacity of the option open interest drawn in the GEX and Price chart windows.

EXTENSIONS

The SignalPop Trading Studio supports a rich extension model that allows to easily expand the features of the product. Selecting the *Extensions | Configure...* menu displays the *Extension Dialog* that shows all available extensions.

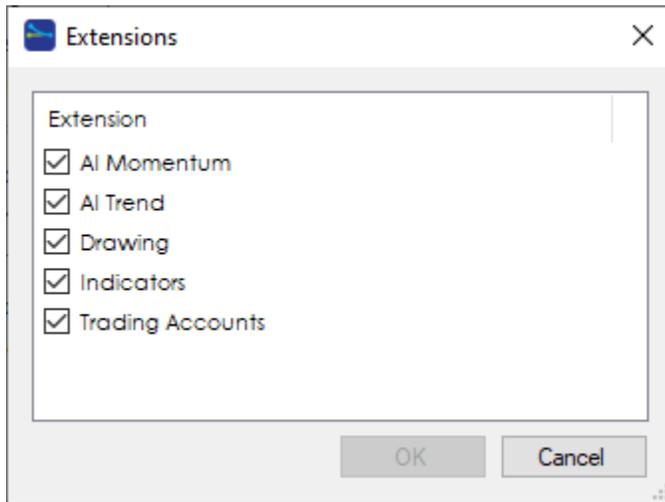


Figure 56 Extension Dialog

The full featured product includes the following extensions.

AI Momentum; the AI Momentum extension displays the real-time AI predictions for price direction and momentum. This extension requires ADVANCED mode and a qualifying NVIDIA GPU.

AI Trend; the AI Trend extension is an experimental extension that displays the AI derived trend. This extension requires ADVANCED mode and a qualifying NVIDIA GPU.

Drawing; the Drawing extension allows users to draw trend, support, and resistance lines on price charts. This extension is available in all modes of the product.

Indicators; the Indicators extension displays advanced indicators such as the Buy/Sell Pressure Accumulation, Buy/Sell Pressure Accumulation Strength, Buy/Sell Pressure Correlation, Price %b and RSI %b indicators. This extension requires ADVANCED mode but does NOT require a GPU.

Trading Accounts; the Trading Accounts extension enables option and equity trading. This extension is available in all modes of the product, however an account at the trading provider (such as Tradier) is required to place trades.

SUMMARY

As you use the SignalPop Trading Studio, make sure to check the following resources for helpful hints and updates related to the product.

SignalPop Trading Studio Product – see <https://www.signalpop.com/trading-studio> for updated news on the product, new models that we support and general product information.

SignalPop Trading Studio Issues – see <https://github.com/SignalPop/TradingStudio/issues> for providing product feedback and reporting issues.

Whether you are interested in mining the cryptocurrency Ethereum or just want to monitor your GPU temperatures and fan speeds, check out the free SignalPop Universal Miner™.

Free Download² <https://signalpop.blob.core.windows.net/wpeupdate/wpe.net.app.setup.exe>

OVERVIEW

Easily see the status of your mining from the overview window.

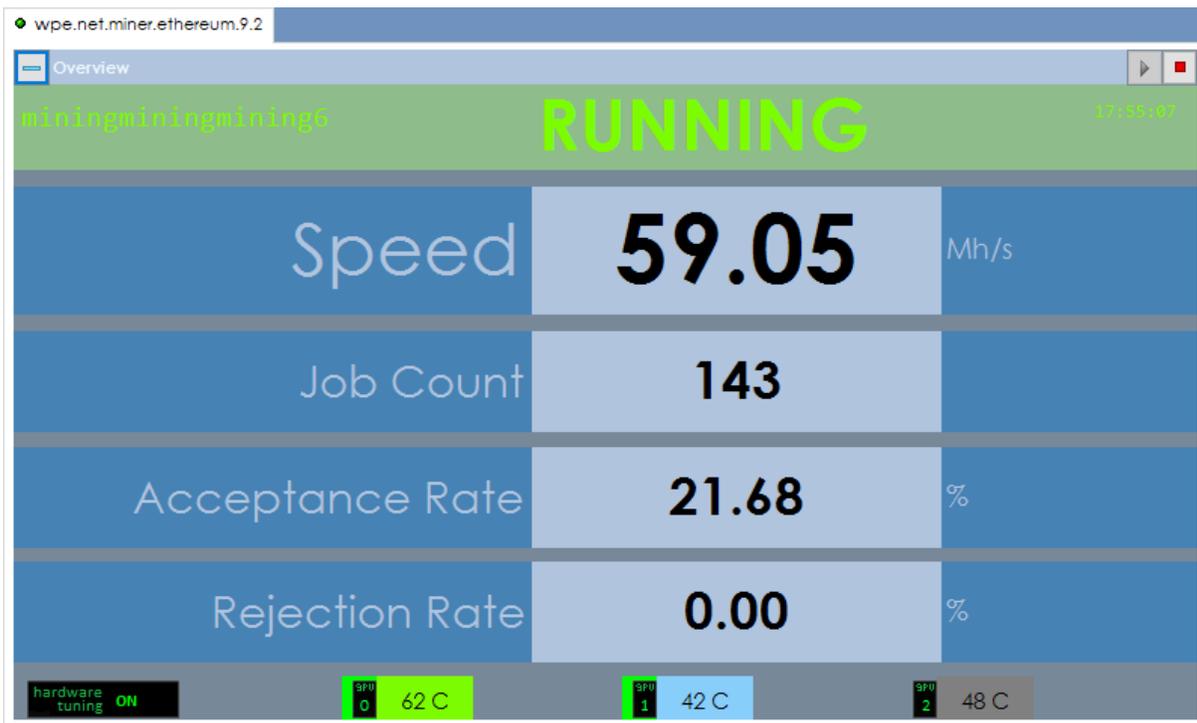


Figure 57 Overview Window

Using a simple menu system, you can easily monitor your current hardware stats, view a history of your hardware temperature and fan speeds, and even donate a portion of your mining to other worthy causes.

² A small portion of daily mining time is run using our mining address to help pay for maintaining the SignalPop Universal Miner – this is otherwise known as the 'dev fee.'

HARDWARE MONITORING

Monitor current GPU temperatures, usage, fan speeds and clock settings with the *Hardware Window*.

The screenshot shows a window titled "Hardware" with a blue header. Below the header, there are several summary rows:

- Machine:** BASE8
- Host:** BASE8
- Address:** 192.168.200.1
- Memory:** 68.60 GB total/36.17 GB free
- GPU Watts:** 481.25W (4.01 amp)
- Operating System:** Microsoft Windows NT 6.2.9200.0 (64-bit)

Below these rows is a checkbox labeled "Enable hardware tuning" which is checked. Underneath is a table with columns for "target", "actual", "usage", and "overclock". Each of these columns has sub-columns for "Temp", "GPU", "Memory", and "Fan".

		target	actual	usage		overclock		
		Temp	Temp	GPU	Memory	GPU	Memory	Fan
<input type="checkbox"/>	GPU #0 Quadro RTX 8000 (51.14 GB - P2P on)...	60 C	35 C	0 %	51.1 GB	300	405	n/a
<input type="checkbox"/>	GPU #1 GeForce RTX 2080 Ti (11.81 GB - P2P...	60 C	44 C	1 %	11.8 GB	300	405	n/a
<input checked="" type="checkbox"/>	GPU #2 TITAN Xp (12.80 GB - P2P on) sn = #9...	60 C	67 C	100 %	12.8 GB	1873	5508	100 %

Figure 58 Hardware Window

Monitor hardware changes over time (such as fan speeds and temperatures) with the *History Window*.

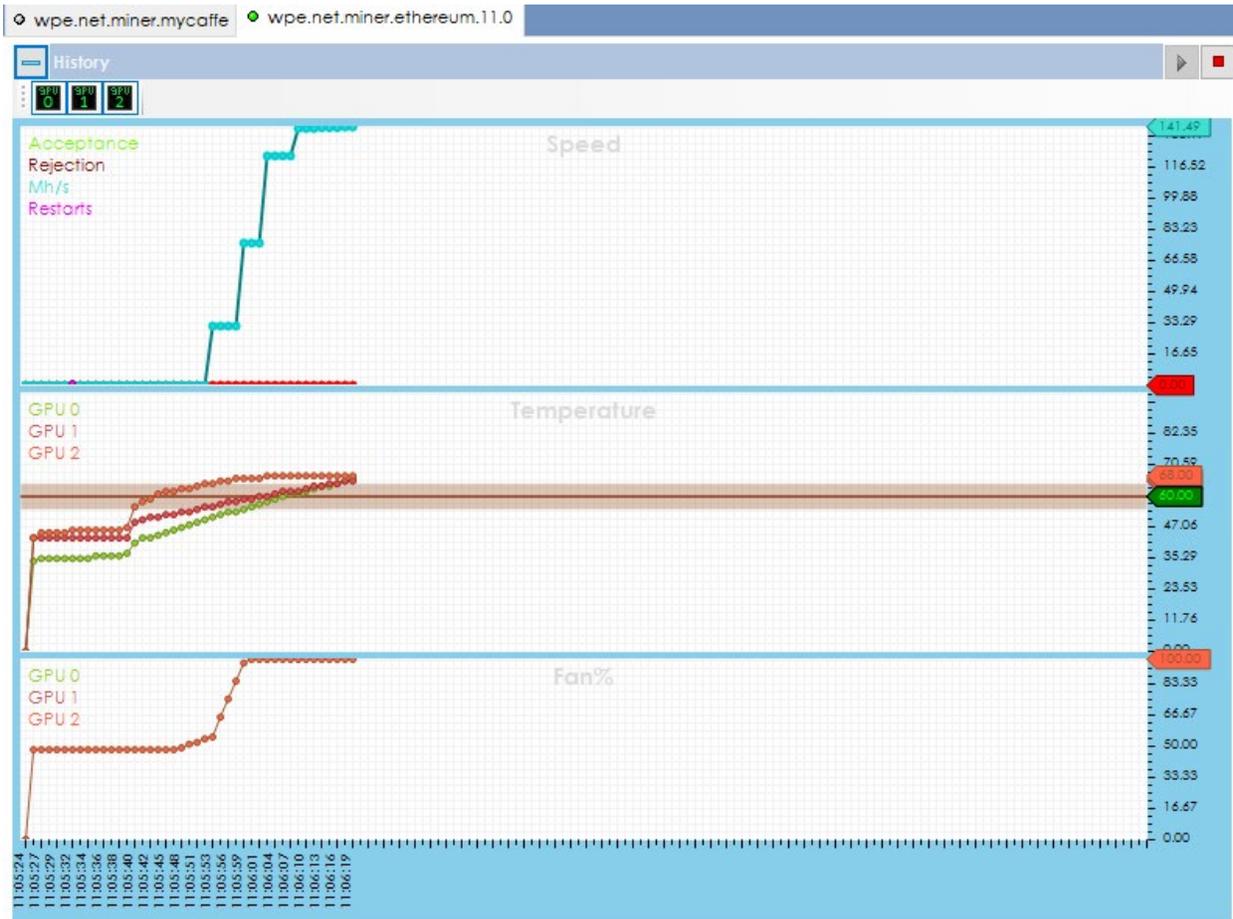


Figure 59 History Window

GETTING STARTED MINING

To get started, just enter your Ethereum address as the *Primary Address* in the *Settings* Window, save, and start mining by pressing the *Start mining* () button in the upper right-hand corner.

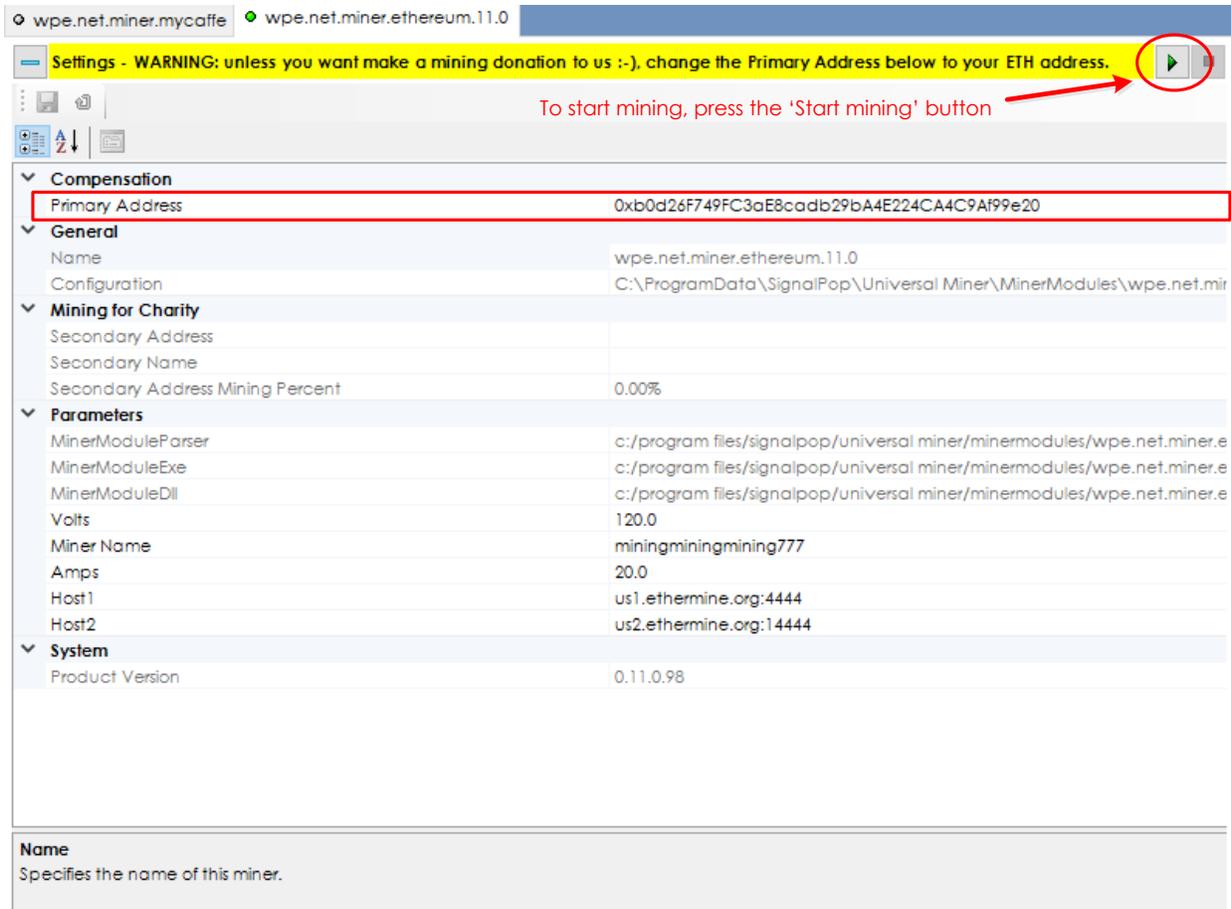


Figure 6o Settings Window

For more information on the SignalPop Universal Miner™ see the [SignalPop Universal Miner Getting Started Guide](#).

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- [2] Y. Jia, E. Shelhamer, J. Donahue, S. Karayev, J. Long, R. Girshick, S. Guadarrama and T. Darrell, "Caffe: Convolutional Architecture for Fast Feature Embedding," *arXiv*, vol. arXiv:1408.5093, 20 June 2014.
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