PnL Calculator User's Guide

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1. Introduction

Using the PnL Calculator is an easy way to chart the profit and loss potential of your trades before you place them, or even to evaluate your existing positions.

Enter as many options legs as you wish using the integrated options chains and the line graph will automatically be calculated and displayed in the main window. A summary table of profit and loss above and below the breakeven point will appear to the left of the graph.

By sliding the pointer over the line graph, you see how the profits or losses change with the underlying price. The corresponding tables display the risk parameters and analytics for the entire position.

Change Volatility or the number of Days to Expiration using the horizontal slides to simulate alternative assumptions and see how the changes affect the profitability and price targets.

2. Getting Started

Enter an underlying stock, index or ETF symbol and click on the "Find Chain" button or just press enter. (If you don't know the symbol, click on the "Symbol Lookup" then enter the company name.)

Symbol SPY [Find Chain]

Upon entering the underlying symbol, the Options Chains listing all options on this underlying will pop up in a separate window. If you don't see the option chain window check to make sure your pop-up blocker is set to allow pop-up windows from this page.

You add a position to the PnL Calculator from the Options Chains as follows:

To add the underlying stock or ETF you can simply click the "Add Stock To Calculator" link next the bottom of the Options Chains window. Note: you will not be able to add the underlying if the underlying is an index such as the S&P 500 (SPX) as this index is not tradable. In this situation, use the SPY, which is the tradable ETF for the S&P 500 Index.

To add option legs, click on the bid price link to sell, or the ask price link to enter a buy.

Option Chain			Click bid or ask to add short or long option position, click 'add stock' at the bottom to add stock position							
SPY	Last:	275.01	Chg:	-1.24	Bid:	274.94	Ask:	274.95		
		Calls						Puts		
Volume	IV	TmVal	Last	Bid	Ask	Series	Bid	Ask	Last	TmVal	IV	Volume
						Oct 22, 2018 (W) [Days to expiration:0]						
0	55.7	0.00	0.00	39.53	40.34	22 Oct 18 235.0	0.00	0.01	0.00	0.00	52.8	10
0	55.7	0.00	0.00	34.53	35.34	22 Oct 18 240.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	33.53	34.34	22 Oct 18 241.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	32.53	33.34	22 Oct 18 242.0	0.00	0.01	0.00	0.00	52.8	20
0	55.7	0.00	0.00	31.53	32.34	22 Oct 18 243.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	30.53	31.34	22 Oct 18 244.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	29.53	30.34	22 Oct 18 245.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	28.53	29.34	22 Oct 18 246.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	27.53	28.34	22 Oct 18 247.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	26.53	27.34	22 Oct 18 248.0	0.00	0.01	0.00	0.00	52.8	0
0	55.7	0.00	0.00	25.55	26.34	22 Oct 18 249.0	0.00	0.01	0.00	0.00	52.8	0
249	55.7	0.00	0.00	24.63	25.34	22 Oct 18 250.0	0.00	0.01	0.00	0.00	52.8	0
0	55.3	0.00	0.00	23.53	24.34	22 Oct 18 251.0	0.00	0.01	0.00	0.00	50.9	0

Add Stock to Calculator

3. Working with Positions

3.1 Position Legs Details

Once the legs and stock have been entered check the details of each leg and make the necessary corrections.

All the changes are made in the Position Details window.

	Action	Expiry	Strike	Type	Quantity	Price	IV	Delta	Gamma	Theta	Vega
⊗	Buy	Jan 15 2021 ▼	165.0 ▼	Put	1	3.63	26.33	-3.04	0.06	-0.42	33.12
⊗	Buy	Jan 15 2021 ▼	185.0 ▼	Call	1	101.35	26.08	94.47	0.10	-2.08	52.71

To change the price of your option/stock manually you can type in your preferred price in the "Price" column. By default, this column shows a 20-minute delayed price from the time the leg was added. Bid/Ask is chosen according the strategy (Bid for Sell and Ask for Buy). You can flip a leg (i.e. switch from sell to buy and vice-versa) by selecting the other value in the "Buy/Sell" column.

The Quantity column is where you edit the desired quantity for each leg. Also you can choose expiry, strike and type of the each leg.

You can always delete any leg by clicking on the icon in the first column.

The other values in this table are calculated and are not available for editing.

IV(Implied Volatility) – this is the calculated option implied volatility obtained by plugging the current option price into the option pricing model.

Delta – is the sensitivity of the option price to changes in the price of the underlying.
Gamma – is the rate of change of delta or how rapidly delta changes (the second derivative).
Theta – is the daily option price decay with time.
Vega – is sensitivity of the option price to changes in Implied Volatility.

The Greeks are represented in shares equivalent. The absolute values of the Greeks are multiplied by the standard contract size and the quantity of options selected in the QTY column.

3.2 Total Position

The Total Position window shows the position Greeks (sum of the Greeks the legs), the Bid/Ask/and Mid price of all options in the position.

Price 307.95	Bid	Mid	Ask	Delta	Gamma	Theta	Vega
	94.12	99.55	104.98	91.43	0.16	-2.49	85.84

Underlying Price

With this parameter you can view how price changes will influence on the Net Greeks and PnL.

Price

The Bid/Ask prices will be used according the strategy (Bid for Sell and Ask for Buy).

◉ Price   ⚪ Mid-Price   ☑ Invert chart

Mid-price

The mid price will be used for all position legs.

Invert Chart

The legs will be switched from buy to sell and vice-versa.

4. Simulation Panel

4.1 Expiration/Volatility change simulation

To change the volatility assumption, use the horizontal slider on the first window of the Simulation Panel. You can either enter the number in the text-entry field, or drag on the slider with your mouse.

Volatility % Change [0.00]   [Absolute ▼]

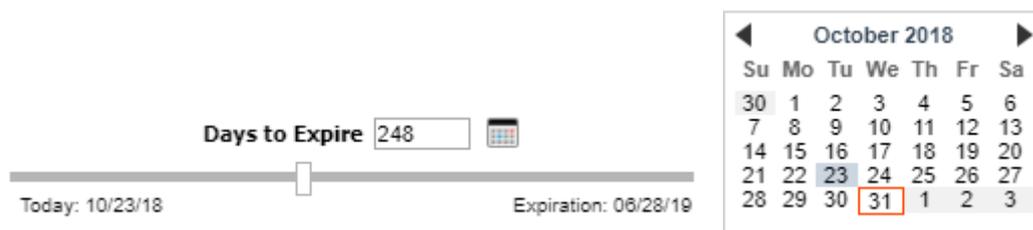-100%   100%

To simulate changes in volatility in relative terms, choose "Relative" from the dropdown menu on the volatility slider. In this example, if current implied volatility is 20.25%, a 10% relative move would translate to 22.275% (20.25% x 0.10 is added to the original implied volatility, because the relative move is positive).

To simulate changes in volatility in absolute terms, choose "Absolute" from the dropdown menu. After a 10% absolute change, for example, volatility would equal 30.25% (10 + 20.25).

To see how time-to-expiration affects the potential profitability, use the horizontal slider located above the volatility slider. You can change this value in one of three ways:

- Type the number in the text-entry field

- Drag the horizontal slider with your mouse, or

- Click on the calendar icon and choose a date. (Expiration dates are highlighted.)

Days to Expire [248]   ▦

Today: 10/23/18   Expiration: 06/28/19

◄	October 2018					►
Su	Mo	Tu	We	Th	Fr	Sa
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

The Days to Expiration slider populates automatically with today's date.

4.2 Interest rates

By default, we use the LIBOR rates in our PnL calculations. However, you can input your own rates on the first window of Advanced Settings Panel to view how different interest rate assumptions will influence the results.
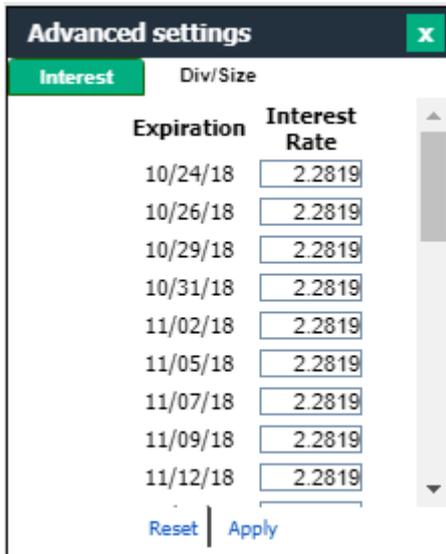
4.3 Dividends/Size of Contract

We provide the dividends and yield numbers from our database. You can check these values and edit them at the third simulation window "Divs/Size". This window also allows editing the Contract Size – the deliverable quantity of stocks. By default, the Contract Size is set at 100.
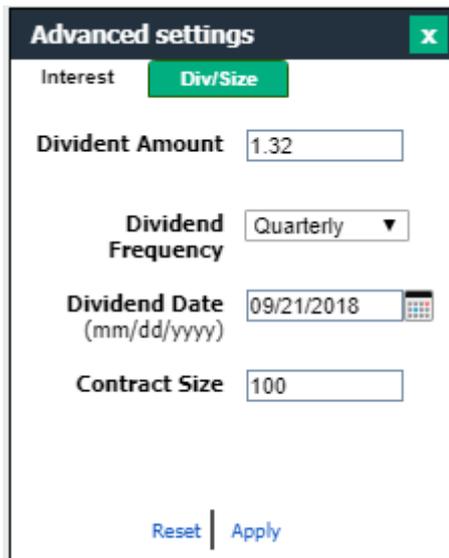
5. PnL Scenario and Interactive Chart

5.1 Stock Price/PnL Scenario

A table summary of profits or losses above and below your breakeven point (profit is equal to zero) will appear after the position is created. This table uses today's date and will change as variables inside the calculator are changed, for example, the number of days to expiration or volatility. If you want to simulate your breakeven (s) at expiration, just move the days to expiration slider all the way to the right or type "0" in the "Days to Expire" field.

Stock Price	Profit/Loss ($)
150.00	-$3,689.11
180.00	-$3,586.51
210.00	-$3,150.01
240.00	-$2,106.52
270.00	-$375.34
275.38	$0.00
300.00	$1,914.32
330.00	$4,561.92
360.00	$7,402.89
390.00	$10,336.15

The PnL calculations are as follows:

Stock_PnL (P & L) = Position*(Adjusted_Price-Current_Price);

Position is the number of shares. If the trade is to "Sell" then the position will have a minus sign otherwise it will be positive.

For example:
We sell 100 shares and the current price is $10. Then, at $11 we will have a $100 loss because our cost basis is $10.

Therefore:

Position = -100

Current_Price = 10

Adjusted_Price = 11

Then, according to the formula:

Stock_PnL = (-100)*(11-10) = -100;

To calculate the PnL for options positions we use the theoretical option price according the simulated stock price. The Black-Scholes model is used for European Options and for American early exercise of the underlying without dividends and for all others we use Cox-Ross-Rubinstein binomial tree model.

The other calculations are the same as described above for the stocks but the calculated theoretical option value is the adjusted price and the position and multiplied by the contract size.

Then we summarize the PnL for all of legs and show the total values.

The PnL table displays a zero PnL for the current stock price.

5.2 Interactive PnL chart

Once the strategy is entered into the calculator the line graph will be drawn in the main window automatically. The chart will display the profit and loss as of the day the trade was entered.

The blue horizontal bold line on the graph shows your breakeven point, i.e. where your profit would equal zero.

Slide the pointer over the line graph and a cross hair will appear. Use this feature to pinpoint your exact profits at a given price-level for the underlying. If you click on the chart, it will fix the crosshair and display your profit or loss at that specific underlying price. Click the mouse again to release the crosshair.

To zoom in or zoom out on the graph, use the "+" and "-" icons.

You can also drag the graph up or down, left or right, to see any portion of the picture.

Should you require any further details regarding PnL calculator service, please, don't hesitate to contact us. Customer Service e-mail: support@ivolatility.com