JAM Higher Timeframe Pack
(Free Edition)

User Documentation

September 2022

Contents

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1.0   Welcome

Thank you for downloading the JAM Higher Timeframe (HT) Pack (Free Edition).

This Pack contains a Simple Moving Average (SMA) indicator that displays the SMA of a higher bar interval chart/RadarScreen on a lower bar interval chart/RadarScreen. In TradeStation you can already do this by using multiple datastreams, third-party DLLs or by using estimated calculations. But these solutions all have drawbacks – some can't be used in RadarScreen, some can't be backtested, some are very complex, some can mess up the formatting of your charts and some calculations are just wild guesses. The JAM HT Pack resolves all these problems by doing all the complex calculations within a single, simple (but very clever) indicator.

If you like this free indicator then you can purchase further Higher Timeframe indicators. Go to the JAM Strategy Trading website and see the latest list of Higher Timeframe indicators that are available.

https://jamstrategytrading.com/products/indicators/higher-timeframe-pack

When you purchase any version of the JAM HT Pack you will receive an updated copy of this Higher Timeframe SMA indicator that has additional features, including being able to work with Second bars.

Those who like to write their own strategies can also use the Higher Timeframe functions to do their own Higher Timeframe calculations. Higher Timeframe functions are especially useful because they allow multiple tick intervals to be used, they do away with complex and slow DLLs, and they enable the use of IntrabarOrderGeneration (IOG) in multi-timeframe Strategies.

Good trading.

JAM Strategy Trading
September 2022

2.0   Installation

This free indicator can be downloaded from here

https://jamstrategytrading.com/JAM-downloads/JAM HT AVG SIMPLE - free.ELD

Once saved to your desktop, double click and it will automatically install in TradeStation.

The indicator is called 'JAM HT Avg Simple'.
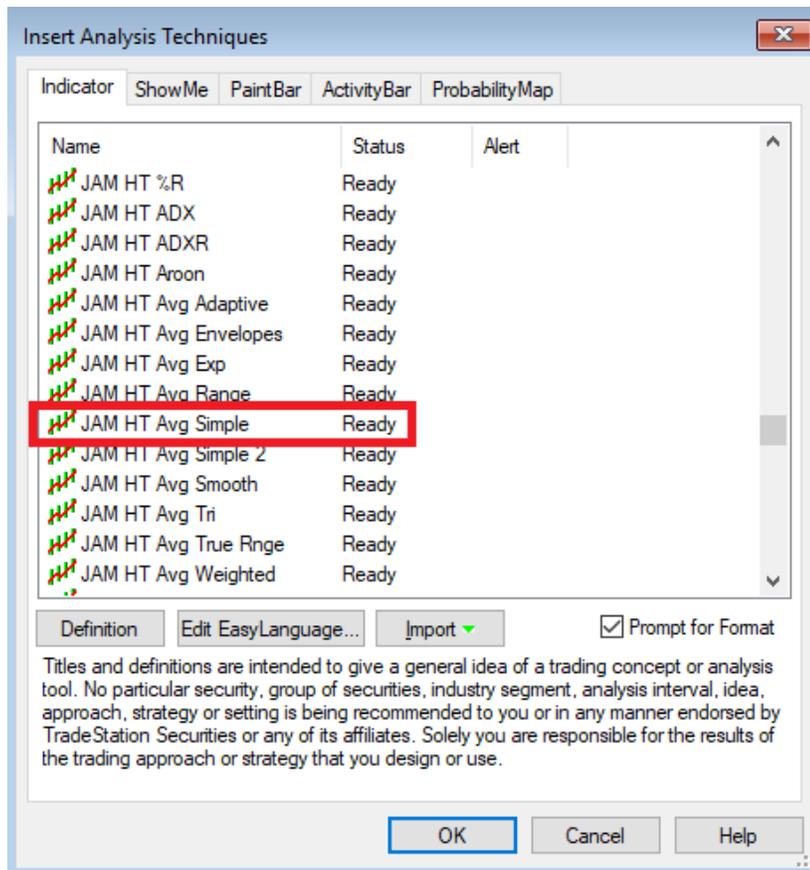
3.0   Using the Indicator

After you have installed the indicator you can apply it to a chart.

Create a chart, then apply the indicator by right clicking on the chart and choosing 'Insert Analysis Technique…'.
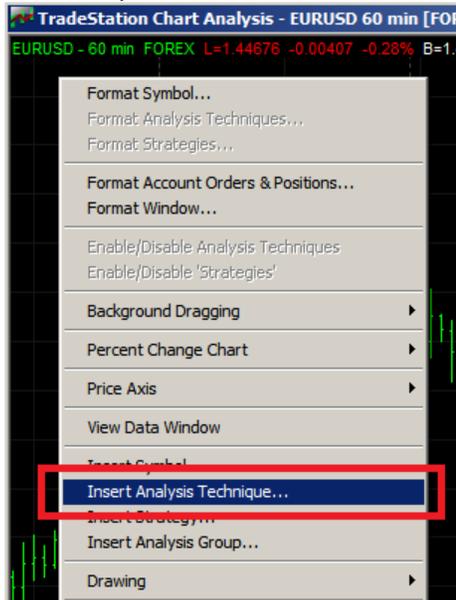
Then on the next page, make sure that you are on the 'Indicator' tab and select the 'JAM HT Avg Simple' indicator.
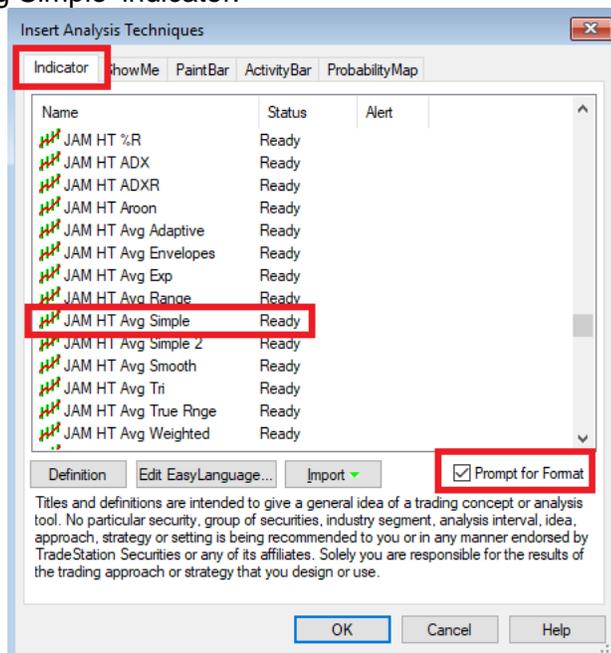
Make sure that the 'Prompt for Format' box is ticked, then click OK.

On the next page, make sure you are on the 'Inputs' tab. From here you can change the settings for the indicator.
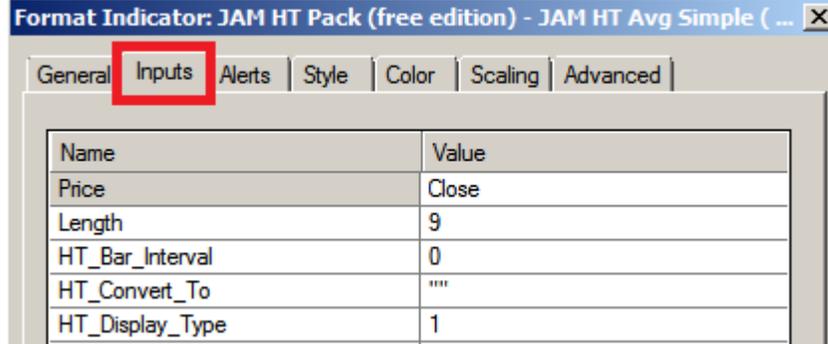
Price
The *Price* input is the same as standard TradeStation indicators, and would normally be set to 'Close'.

This Free Edition only accepts an input of Close (other inputs can be used but will produce incorrect results). If you purchase a copy of the HT Pack then all of the indicators accept multiple inputs other than just 'Close' e.g. (High+Low)/2.

Length
The *Length* input is the same as a standard SMA. It is setting the number of bars over which the SMA will calculate.

HT_Bar_Interval
The *HT_Bar_Interval* input sets the bar interval of the higher timeframe calculation. So, if you are on a tick chart and set *HT_Bar_Interval* to '60' then it means calculate a 60 *tick* chart. If you are on a minute chart and set *HT_Bar_Interval* to '60' it means calculate for a 60 *minute* chart.

The default value of '0' means 'the same as the current chart'. Leaving the default values as they are makes the indicator behave the same as its equivalent TradeStation indicator.

HT_Bar_Interval must either be 0 (meaning 'the same') or higher than the bar interval of the current chart. If *HT_Bar_Interval* is set lower than the current chart's bar interval then it assumes '0'.

HT_Bar_Interval must also be a direct multiple of the current chart's bar interval. i.e. if the chart is a 5 minute chart then the *HT_Bar_Interval* must be 10, 15, 20 etc. If it is set to, say, 17 then it will be rounded down to the nearest direct multiple. In this example 17 will be rounded down to 15.

HT_Convert_To

The *HT_Convert_To* input converts the data from the current timeframe to a higher timeframe. "" (blank) means 'the same as the current chart'. So if the current chart is a tick chart, then setting *HT_Convert_To* to "" means you want to calculate for a higher timeframe *tick* chart. If the current chart is a minute chart, "" means you want to calculate for a higher timeframe *minute* chart. If you are currently working on a tick chart and want to calculate for a minute chart then you set *HT_Convert_To* to "Minute". *HT_Convert_To* can be set as follows:

""	the same as the current chart
"Minute"	convert to a minute chart
"Daily"	convert to a daily chart
"Weekly"	convert to a weekly chart
"Monthly"	convert to a monthly chart
"Yearly"	convert to a yearly chart

More information about the specifics of conversions is given in *Appendix A*.

Several examples are given in Section 4.

HT_Display_Type

The *HT_Display_Type* input can be set to '1', '2' or '3'.

An *HT_Display_Type* of '1' plots the values of the SMA every higher timeframe interval. This plots smoothly, and is the setting you would typically use.

'2' plots the SMA every single bar. This shows the value of the higher timeframe SMA at each point on the lower timeframe chart.

'3' is a 'stairstep' plot. It plots the value of the SMA every higher timeframe interval, but maintains the plot at that level until the next plot.

4.0   Examples

When using Higher Timeframe indicators it is **extremely important you have enough data in your chart**. If you're calculating a 21 period SMA then you will need at least 21 bars in your chart. But if you are on a 5 minute chart and you want to calculate a 21 period SMA for a 60 minute chart then you will need to have at least 252 (60/5*21) bars of data. Make sure you have enough bars in your chart and that 'Load Additional Bars' is set high enough in RadarScreen, or you will end up with the wrong results.

If using tick data this is even more important. The HT indicators use the start of the session as a reference point. If you do not have enough data in your chart/RadarScreen to cover the start of the session then the results may be incorrect.

Example 1
In this first example, the 'JAM HT Avg Simple' indicator has been applied to a 5 minute chart of Google. The *Price* input is set to 'Close', the *Length* '9', the *HT_Bar_Interval* '15' and *HT_Convert_To* "". This means calculate the SMA for a 15 minute chart. So if we look at a 15 minute chart with the standard TradeStation 'Mov Avg 1 Line' indicator applied we can see we are getting the same moving average values.
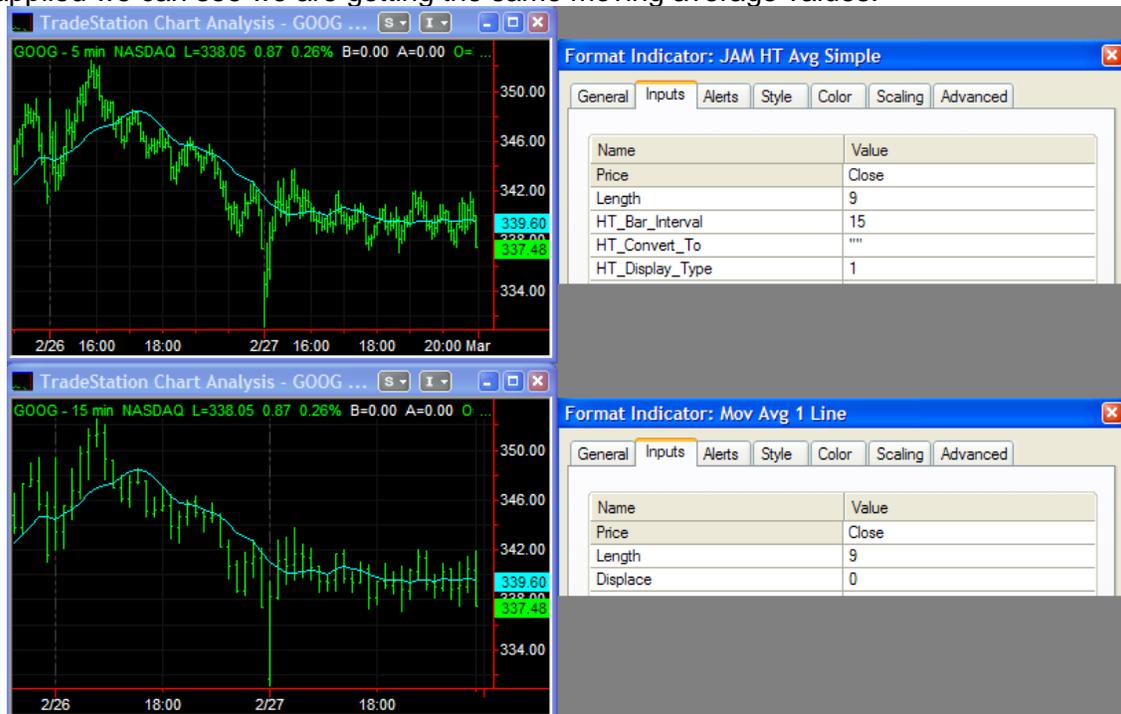
Example 2

This second example uses a chart of EURUSD. The Higher Timeframe indicator has been applied to a 40 tick chart. The *Length* is set to '30', the *HT_Bar_Interval* '400' and the *HT_Convert_To* "" (blank). These settings mean calculate the SMA for a 400 tick chart. So if we look at a 400 tick chart with the standard TradeStation 'Mov Avg 1 Line' indicator applied with the same length we can see we are getting the same moving average values.
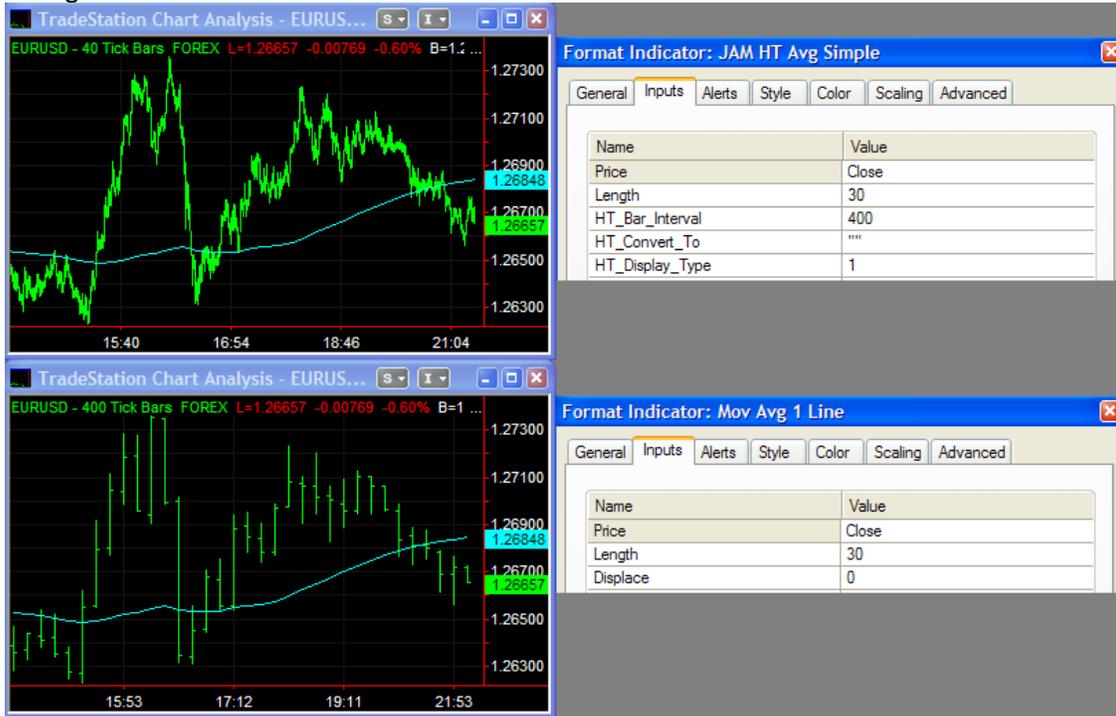
Example 3

In this example, the Higher Timeframe indicator has been applied to a 3 minute RadarScreen of ESM08 . The *Price* input is set to 'Close', the Length '22', *HT_Bar_Interval* is '15' and *HT_Convert_To* is "". So if we look at a line set to 15 minutes with the standard TradeStation 'Mov Avg 1 Line' indicator applied we can see we are getting the same moving average values.
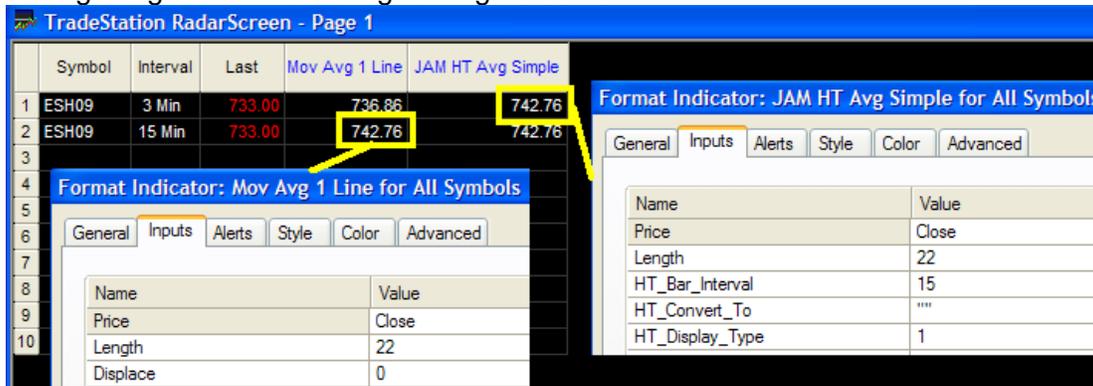
Example 4

In this example, we will plot a minute based SMA on a tick chart. When plotting minute data on tick charts we can only estimate the value of the SMA. The accuracy of the calculation is dependent on the size of the tick bars on the current chart (the smaller the tick bars, the more accurate the calculation) and the size of the minute bars we are converting to (the higher the minute value, the more accurate the calculation).

To convert tick data to minute data we set *HT_Convert_To* to "Minute". Then *HT_Bar_Interval* is set to '3'. So we are saying 'convert from a tick chart to a 3 minute chart'.

So if we look at a 3 minute chart with the standard TradeStation 'Mov Avg 1 Line' indicator applied we can see we are getting approximately the same moving average values.

Note that his is just a single point in time and the accuracy can vary significantly.

Example 5

In this example, we are using a 60 minute chart of GBPUSD. The 'JAM HT Avg Exp' indicator has had its *HT_Convert_To* input set to "Daily", and the *HT_Bar_Interval* set to '1'. This tells the indicator to calculate the moving average for a one day chart. If we look at a Daily chart of GBPUSD with the standard TradeStation 'Mov Avg 1 Line' indicator applied we can see we are getting the same moving average values.
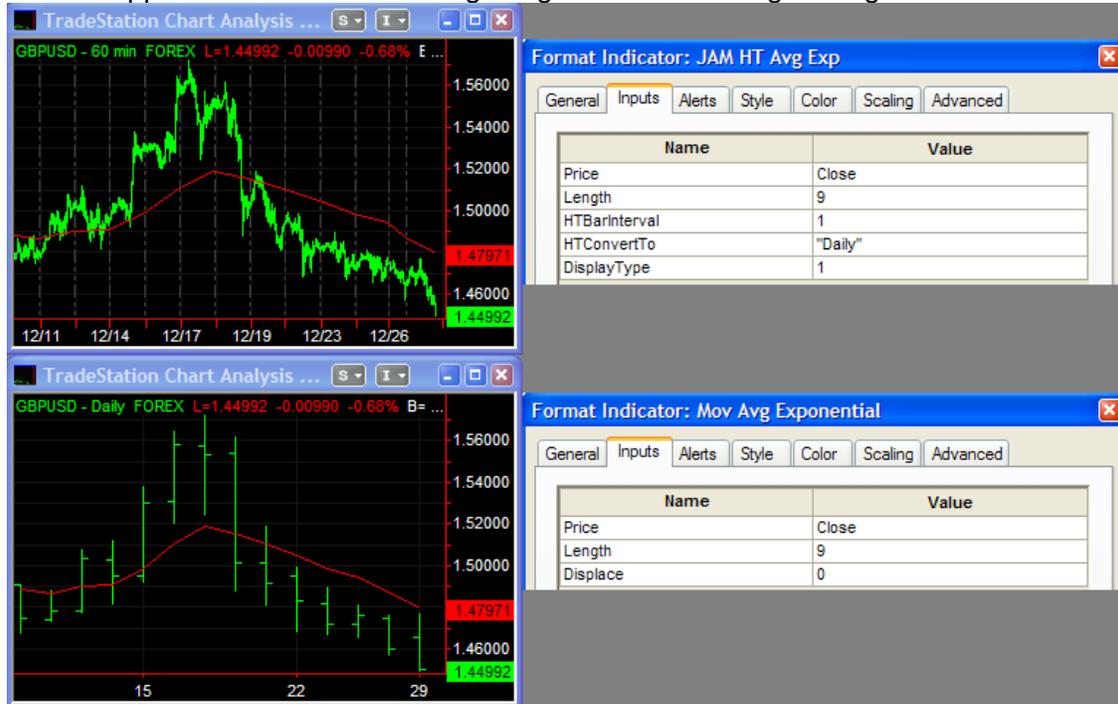
Note that whilst the conversion of tick/minute data to daily data is accurate on FX it will be less accurate on stocks and futures. This is because for stocks and futures their intraday data is different from their daily data. So whilst the indicator is calculating accurately it is using a different set of data.

Example 6

This example shows how to display the moving average of a 2-day chart. Multi-day charts are not normally available in TradeStation, but the HT Pack has the ability to show multi-day charts and to apply indicators to them. In this example we are displaying 2-day bars, and applying the *JAM HT Avg Simple* indicator to those bars.

You can see at the top of the chart this is actually a normal Daily chart of the ES. We can then apply HT Pack indicators to this chart to create multi-day charts.

Using the same method as above you can also create multi-week, multi-month, yearly and multi-year charts.

Note that the ability to display HT price bars is only available by purchasing the full HT Pack.

5.0   Questions & Answers

The following are the most common questions asked about HT Pack indicators.

1. **The value of a moving average on a 700 tick RadarScreen doesn't match the value being produced by the JAM HT indicator on a 100 tick RadarScreen with the *HT_Bar_Interval* input set to 700.**
   99% of differences are down to there being a lack of data available for the JAM HT indicator. Right click on the JAM HT indicator column in RadarScreen and choose 'Format JAM HT Avg Simple for All Symbols…' and make sure the 'Additional bars to load:' box is set high enough. If it doesn't make the average correct, then set this box higher!
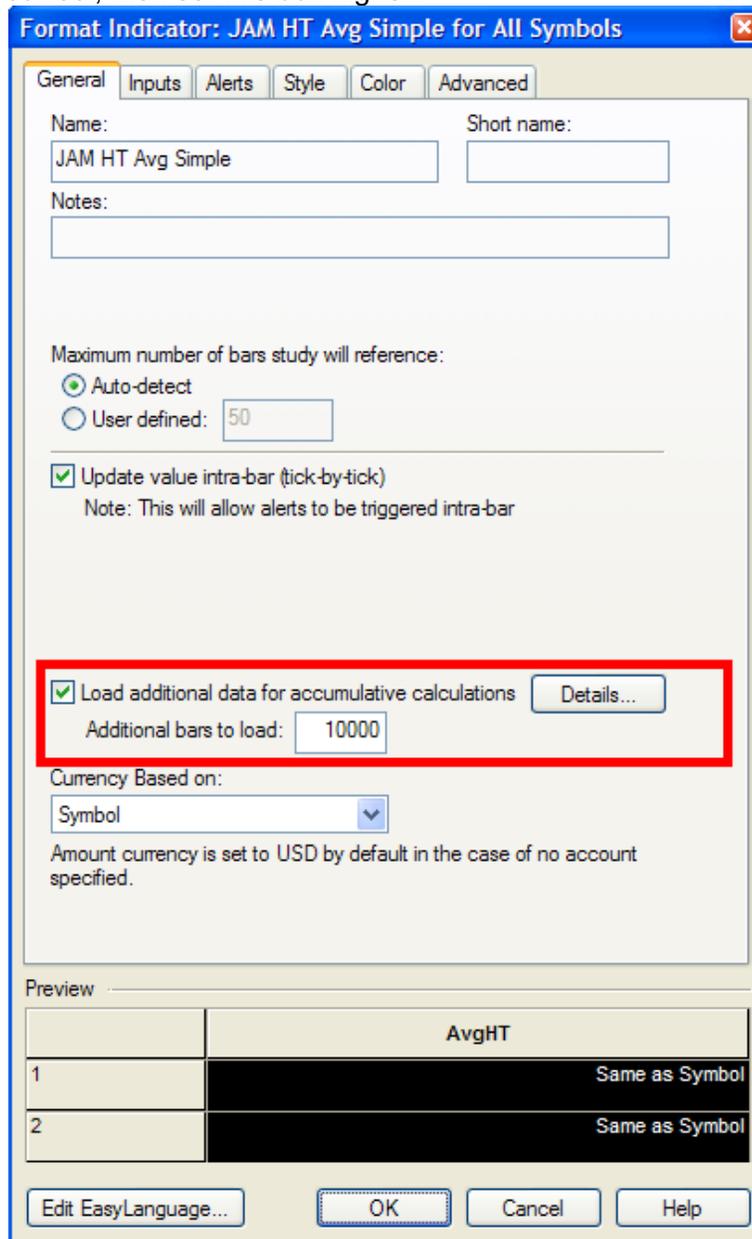
2. **The value of a moving average on a 100 minute chart doesn't match the value being produced by the JAM HT indicator on a 1 minute chart with the *HT_Bar_Interval* input set to 100.**
    99% of differences are down to there being a lack of data available for the JAM HT indicator. Right click on the chart and choose 'Format Symbol…' and under the settings tab increase the amount of data. If it doesn't make the average correct, then increase the amount of data further!
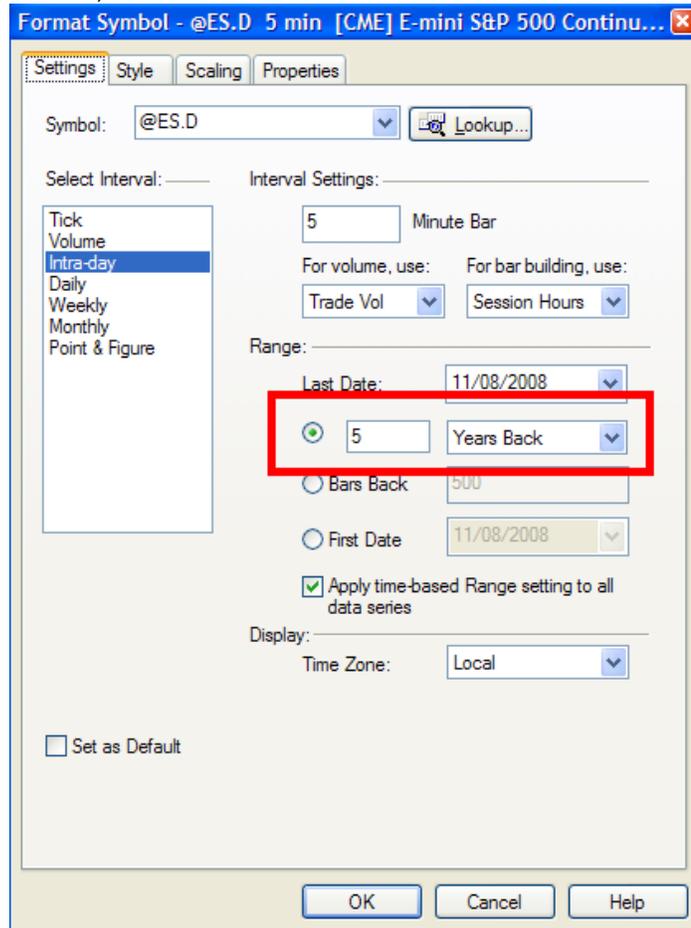
3. **I've tried increasing the amount of data in my Chart/RadarScreen but I'm still getting incorrect results.**
    The first thing to try is to increase the amount of data! If that doesn't work then try pressing 'Ctrl-R' on your Charts/RadarScreens. This reloads the data from TradeStation and fixes any errors you may have in your local data cache.

4. **The indicator on a volume chart doesn't match the higher volume bar chart.**
    TradeStation has a strange way of calculating Volume/Share bars. Sometimes 1+1=2, sometimes 1+1=2.5, sometimes 1+1=3. There's just no way to know. So you can't accurately calculate higher volume bars (though they should be fairly close).

5. **When plotting a Daily/Weekly/Monthly/Yearly SMA on a tick/minute chart the SMA doesn't match that of an SMA on the higher timeframe chart.**
    Stocks and Futures Daily data provided by TradeStation doesn't match their intraday data. Daily data is 'adjusted' after the close by the Exchange so that the OHLCV data can be different from what was actually traded during the day. The indicator values are different because you are calculating them with different OHLC data. Forex data has the same Daily and Intraday data, so should not have this problem. See *Appendix A* for more information on data conversions.

6. **I'm using a *Price* input of 'High' in the HT indicator but it is producing incorrect results.**
    Price inputs other than 'Close' are not available in this Free Edition. If you purchase the full HT Pack then you will be able to use other price inputs.

7. **I am getting a 'Max bars forward error'. How do I fix this?**
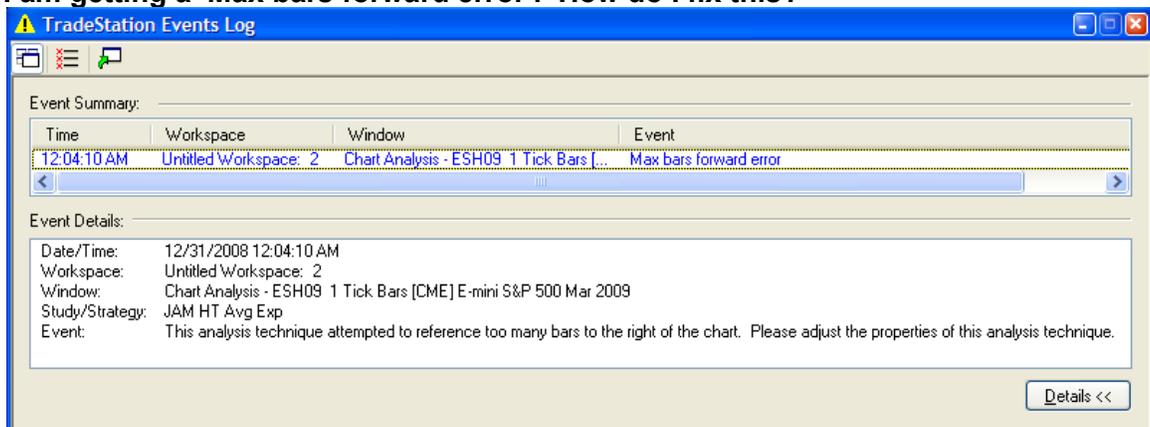
All HT indicators need to plot one bar into the future. Therefore, the 'Space to the Right' setting needs to be '1' or greater.
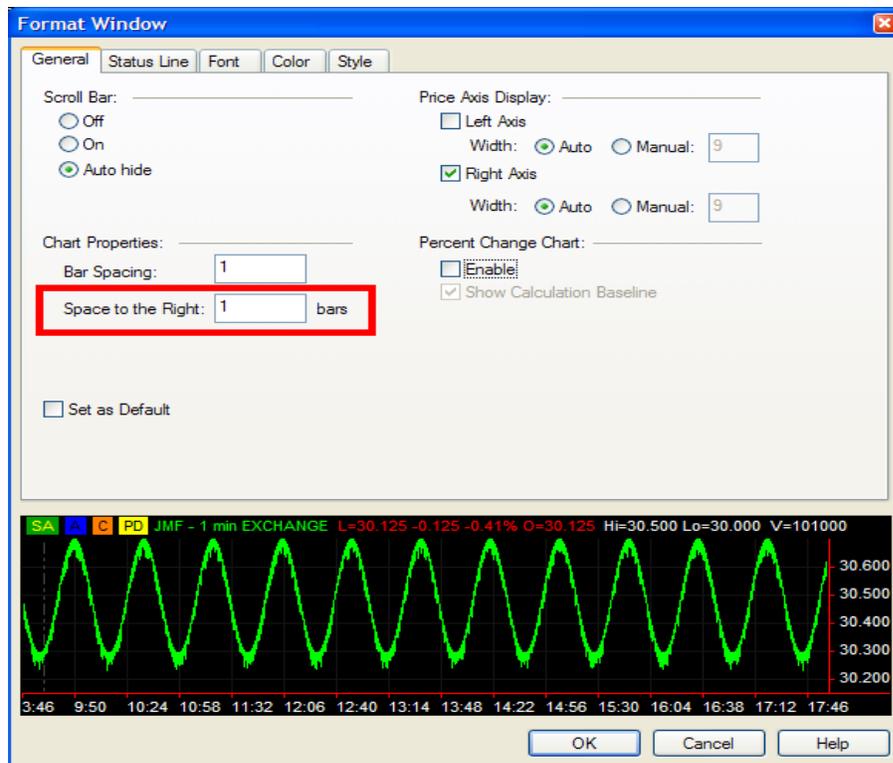
Right click on your chart and choose 'Format Window…' and make sure 'Space to the Right' is at least '1'.

8. **When I use the 'tracking' cursor on tick charts the values on the higher and lower timeframe charts are different.**
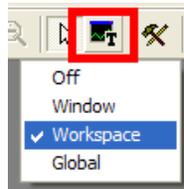
TradeStation's tracking cursor doesn't work correctly on tick or volume charts. When you click on a higher timeframe tick/volume chart the cursor on the lower timeframe tick chart will sometimes be located on the wrong bar. The tracking cursor works correctly on minute and above charts.

9. **When I set *DisplayType* to '2', what is this showing me?**
A *DisplayType* of '2' is displaying the 'in-between bar' value of the indicator. This shows the value of the indicator at that point in time. For example, when a 15 minute bar is calculating it is forming tick by tick. At the end of 5 minutes it has a specific value, then at the end of 10 minutes it has another specific value, before finally settling on a value at the end of 15 minutes. However, on a 15 minute chart you lose these 'in-between' values and are only left with the end of the 15 minute value. If you are working on a 5 minute bar and have the HT indicator set to calculate 15 minutes bars, and *DisplayType* set to '2' then the HT indicator is showing you what the 15 minute indicator was at the end of the 5 minute bar and the 10 minute bar, as well as the value on the 15 minute bar.

10. **I want to always display a fixed *multiple* of the current chart, rather than a fixed number of minutes. i.e. whether I am on a 5 minute chart, 10 minute, 30 minute etc I always want to display 3 times that amount. How can I do this easily?**
The way to do this is to use the word 'BarInterval' in the 'HT_Bar_Interval' input.

We use the word 'BarInterval', then a '*' (for multiply), then a number. This will then always multiply the current bar interval.
'BarInterval' will only work for tick and minute charts, it doesn't work for daily and above charts.

11. **When I use multiple day, week or month calculations the indicators sometimes seem to be out of sync with the price calculations. Why is this and what can I do about it?**
When you use an intraday chart then the there is always a 'reset' at the end of the day, a place where everything can be in sync. When you use multiple day or week calculations then there is no place for this 'reset' to take place. So the only place to sync is at the very beginning of the chart. When you see these calculations out of sync it is because the different indicators have different *MaxBarsBack* requirements and hence are starting their calculations at different points. The way to get these indicators to sync correctly is to manually change the *MaxBarsBack* setting so that the first calculation point of the indicators will line up.

On the Format Indicator page, General tab you need to change the 'Maximum number of bars study will reference:' to 'User defined:' and then edit the number
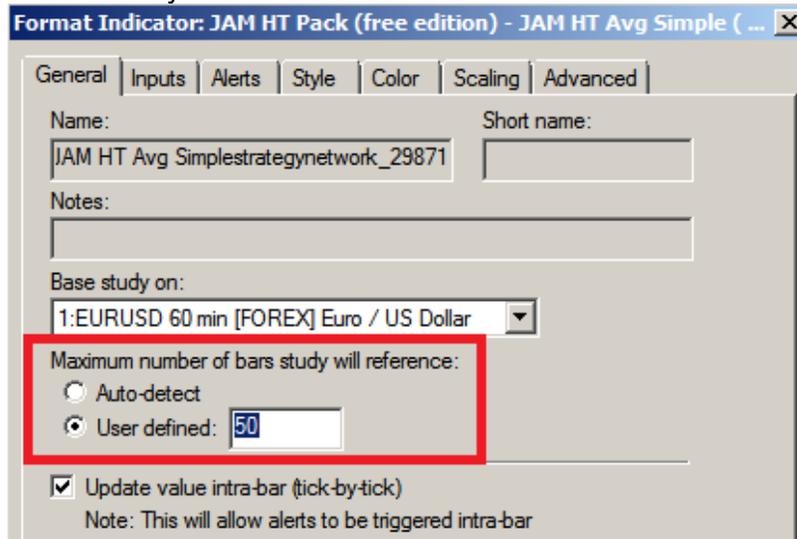
If you increase this number by 1 it will shift the start point of the calculation one bar to the right. If you decrease it by one it will shift the start point of the calculation one bar to the left. The only way to get the correct number is through trial and error. It will be different for different indicators and different inputs.

Appendix A – Conversion Reference

Things to know about conversions

Converting between timeframes (such as from tick to minute, or minute to daily) is complex and will sometimes produce unexpected results. This section explains which conversions are expected to produce exact results and which are less accurate.

This table shows the quality of the conversions.

		Higher (slow) Timeframe						
		Tick	**Volume**	**Minute**	**Daily**	**Weekly**	**Monthly**	**Yearly**
Lower (fast) TimeFrame	**Tick**	Exact	-	Approx.	Exact*	Exact*	Exact*	Exact*
	Volume	-	Approx.	Approx.	Exact*	Exact*	Exact*	Exact*
	Minute	-	-	Exact	Exact*	Exact*	Exact*	Exact*
	Daily	-	-	-	Exact	Exact	Exact	Exact
	Weekly	-	-	-	-	Exact	Approx.	Approx.
	Monthly	-	-	-	-	-	Exact	Exact
	Yearly	-	-	-	-	-	-	Exact

Exact – Exact means just that – 100% correct data conversions. So, using the chart above, we can see that converting from a lower-timeframe tick chart to a higher-timeframe tick chart (the top left corner where 'Tick' and 'Tick' meet) will produce 100% accurate conversions.

Exact* - Converting from intraday (tick/minute) data to daily/weekly/monthly/yearly data is dependent on the underlying symbol. For FX Spot data the results will be 100% accurate. Stocks, Bonds and Futures are more complex because the prices on intraday charts do not necessarily match those on daily charts. (If you go look at a chart of GOOG and compare the OHLC of a Daily chart with the OHLC of a 60 minute chart for the same day, you will see the differences). So, whilst the HT Pack is accurately converting data from intraday to daily+, the actual data is different. So you will get different results.

Approx. – These results are just approximations, and should not be relied on if accuracy is your goal. 1) The accuracy of converting from tick bars to minute bars depends on the bar interval of the tick bar (the lower the better), the bar interval of the minute bar (the higher the better), the volume of the underlying instrument (the higher the better) and the particular indicator involved. 2) The accuracy of converting Volume/Share bars is limited by the way they are defined by TradeStation (a Share bar of 300 shares, for example, can contain 300+x shares, where x is a variable number). So it just isn't possible to accurately convert Volume/Share bars to higher timeframes. 3) Because there aren't an exact number of weeks in a Month or Year these calculations can't be done accurately. You should use either Daily or Monthly data to do these calculations.

'Advanced' bar types. The JAM HT Pack cannot be used with bar types such as Kase, Momentum, Range etc. Conversions are done on a mathematical relationship and there is no mathematical relationship between, for example, a 1 point range Kase bar and a 2 point range Kase bar. Therefore, these conversions are mathematically impossible, and hence not supported by the HT Pack.

Conversion Assumptions and the JAMHTConfig function

The JAM HT Pack has the ability to create bars (and apply indicators to those bars) that are not usually available with TradeStation. For instance, it is possible to create two day bars:

Two week bars:

Quarterly bars:

There is no configuration file available with this free edition. All multi-day, multi-week, or multi-month calculations start from the beginning of the chart.