

## How to Create the Stochastic Momentum Index (SMI) in NeuroShell Trader

Both standard Stochastic indicators and the Stochastic Momentum Index(SMI) indicate momentum in the market, but Stochastic %D, %K and Slow %D rely on only the close while the Stochastic Momentum Index looks at the range between the high and low as well as the close.

SMI is used with volume indicators to gauge whether the buying/selling pressure is real. Traders also use the SMI as a general trend indicator, interpreting values above 40 as indicative of a bullish trend and negative values greater than -40 as showing a bearish trend.

We're going to show you how to build the SMI indicator as an example of how to create your own custom indicators by combining existing Trader indicators. We're using the bottom up method that creates the individual parts of the formula and combines those pieces into the SMI indicator.

To learn more about the bottom up method, visit <https://nstsupport.wardsystemsgroup.com/support/bottom-up-method-video/>  
If you prefer to approach the problem from a higher level and add the individual components in the overall formula, you can use the top-down method that is described here:  
<https://nstsupport.wardsystemsgroup.com/support/top-down-method-video/>

### Step 1 - Create the High/Low Midpoint

The textbook formula defines the midpoint as the (max high value + low min value)/2

- A. Select division from the Arithmetic category.
- B. Numerator = add2, Arithmetic category.
  - Operand #1 = Max Value, Basic category. Parameters are High and 10 periods.
  - Operand #2 = Min Value, Basic category. Parameters are Low and 10 periods.
- C. Denominator = 2

### Step 2 - Close Minus High/Low Midpoint

Subtract the Close from the High/Low Midpoint

- A. Select subtract from Arithmetic category.
  - Operand #1 = close
  - Operand #2 = High/Low Midpoint

### Step 3 - Exponential Moving Average of Close Minus Midpoint

Use 3 period Exponential Moving Average to smooth the result of the Close Minus High/Low Midpoint

- A. Select Exponential Moving Average from Averages category.
  - Time Series = Close - High/Low Midpoint
  - ExpAvg Periods = 3

### Step 4 - Double Smooth the Close Minus High/Low Midpoint

Apply another 3 period Exponential Moving Average to smooth the result of Step 3.

- A. Select Exponential Moving Average from Averages category.
  - Time Series = ExpAvg(3) of Close Minus Midpoint
  - ExpAvg Periods = 3

Step 5 - Exponential Moving Average of MaxHigh Minus MinLow

This step uses an Exponential Moving Average to smooth the MaxHigh Minus the MinLow.

A. Select Exponential Moving Average from Averages category.

Time Series = Sub(Max(High,10), Min(Low,10)) [Use Subtract from Arithmetic category, Max/Min Value over 10 periods from Basic category]

ExpAvg Periods = 3

Step 6 - Double Smooth MaxHigh Minus MinLow

Smooth the results of Step 5 with another 3 period Exponential Moving average.

A. Select Exponential Moving Average from Averages category.

Time Series = ExpAvg(3) of ExpAvg of (Sub(Max(High, 10), Min(Low,10)))

ExpAvg Periods = 3

Step 7 - Divide the double smoothed Close Minus Midpoint by the double smoothed MaxHigh Minus the MinLow.

A. Select Divide from the Arithmetic Category

Numerator = result of Step 4

Denominator = result of Step 6

Step 8 - Create the Stochastic Momentum Index

Multiply the result of Step 7 by 100 to generate the results as a percentage.

A. Select Multiply 2 from the Arithmetic Category

Operand 1 = Result of Step 7

Operand 2 = 100