



## Customise your ride.

GFT offers you over 85 technical indicators to use in your trading. Learn a little more about some of them below.

### Average Directional Index (ADX)

#### WHAT IT IS:

The Average Directional Index (ADX) helps traders see if a trend is developing in the charts and whether the trend is strengthening or weakening.

#### HOW IT WORKS:

- Rated on a scale of 0 to 100
- Measures trend strength over a set number of days (usually 14)
- Indicator movements bounce mainly between 20 and 40
  - Below 20: ADX detects little trend activity
  - Above 20: Price movements in the currency pair chart are forming a trend
  - Above 40: Detected trend is extremely strong
  - Falling from 40: Trend is weakening.
- Seldom moves above 60

#### PARAMETERS:

In DealBook®, you can change the number of days that are used to calculate the ADX. When you first open DealBook®, the ADX is set to 14 days.

### Average True Range (ATR)

#### WHAT IT IS:

The ATR is used to determine volatility as well as to identify possible trend tops and bottoms.

#### HOW IT WORKS:

- Based on the True Range.
- Calculated by finding the highest difference between:
  - Most recent high and most recent low
  - Most recent high and previous close
  - Most recent low and previous close
- Values in the true range are averaged together over a set period (usually over 14 days).
- Average creates the single line that usually appears in the sub-graph below the chart.
- Low ATR shows that the price for the currency pair is level and that there is little to no volatility in the market.
- High ATR indicates that the markets are volatile.
- Used to:
  - Forecast tops and bottoms in the price movements (as tops and bottoms usually occur during low volatility).

- Multiply the current ATR by a value (most use two or three) and use value as the distance to set a trailing stop, or subtract the value from the current price to determine the value of a stop.

#### PARAMETERS:

In DealBook®, you can change the number of days that are used to calculate the ATR. When you first open DealBook®, the ATR is set to 14 days.

### Bollinger Bands

#### WHAT IT IS:

Bollinger Bands help traders in a number of ways. These bands forecast the highest and lowest prices for a currency pair. They also help traders visualise volatility and determine when a trend may continue or reverse.

#### HOW IT WORKS:

- One of the most commonly used technical indicators.
- Consists of three bands:
  1. The Middle Band is calculated based on the average price of a currency pair over a specific number of time periods.
  2. The Upper Band uses the Middle Band plus two standard deviations; a standard deviation measures how close prices are to the average.
  3. The Lower Band also uses the Middle Band, minus two standard deviations.
- Track the real price movements of a currency pair within these indicator bands:
  - When the market moves cross the Upper Band, the current price of the currency pair is considered high.
  - When market moves cross the Lower Band, the current price is considered low.
  - Traders see these movements as signs that a market may soon reverse its course.
  - When price movements closely follow the Middle Band, the current price is considered to be trading within its average.
- Monitor market volatility.
  - Wide distance between the bands indicates high volatility.
  - Narrow space between the bands indicates low market volatility

#### PARAMETERS:

In DealBook® 360, you can customise the parameters of the Bollinger Bands so that it calculates the average based on the closing, opening, high or low price (close is automatically selected when you first open DealBook®). In both DealBook® 360 and DealBook® WEB, you can also set the time period for the average. You can change the number of deviations between the bands and the displacement.

## Commodity Channel Index (CCI)

#### WHAT IT IS:

The Commodity Channel Index is an oscillator that helps traders forecast when a currency pair is overbought or oversold based on cyclical price movements.

#### HOW IT WORKS:

- Forecasts how close the actual commodities market moves are to the commodities cycle.
- Calculated using four equations.
  1. Typical price is calculated: Average of a currency pair's last high, low and close for selected time period (ex. a day).
  2. Typical price is used to calculate a 20-period Simple Moving Average (SMA).
  3. Difference between the typical price and the SMA is used to determine the Mean Deviation.
  4. These three values are used in the following equation to determine CCI:  $\text{Typical Price} - 20\text{-Day Simple Moving Average} / 0.015 \times \text{Mean Deviation}$
- Calculated automatically in DealBook®.

#### PARAMETERS:

In DealBook®, you can change the number of days that are used to calculate the CCI. When you first open DealBook®, the CCI is set to 14 days.

## Dynamic Momentum Index (DMI)

#### WHAT IT IS:

DMI forecasts when a financial product is overbought or oversold. Traders display this below the price chart to compare market moves to the indicator and forecast when to enter or exit a position.

#### HOW IT WORKS:

- Forecast when a currency pair is overbought or oversold;
- Calculated by comparing the average number of times that a currency pair closes up to the average number of times it closes down;
- Use a rating scale of 1 to 100,
  - Overbought when its price goes above 70
  - Oversold when its price drops below 30.
- Time frame based on market volatility.

- When a currency pair experiences increased volatility, the DMI decreases the number of time periods it uses in its calculation.

- When volatility is decreased, the DMI increase the number of periods. As a result, the DMI is more sensitive to market fluctuations and displays changes more rapidly than the RSI can.

#### PARAMETERS:

In DealBook® 360, you can customise the parameters of the DMI so that it calculates the index based on the closing, opening, high or low price (close is automatically selected when you first open DealBook®). In DealBook® WEB, you can change the number of days the DMI uses. When you first open DealBook® WEB, the days are set to 14.

## Momentum

#### WHAT IT IS:

Momentum compares the most recent closing price to a set number of previous closing prices and plots the difference in a single line. With this comparison, which appears below the price chart, traders can determine the pace of a trend and forecast when the price movements may continue or reverse.

#### HOW IT WORKS:

- Calculate and plot the net change between close of a bar and close ten bars earlier.
- Helps traders determine the pace of a trend and forecast possible trend reversals.
- Helps identify overbought and oversold conditions.

#### PARAMETERS:

In DealBook® 360, you can customise the parameters of Momentum so that it calculates opens, highs, or lows as well as closes. You can also determine if the sub-graph displays in percent mode or not. In both DealBook® 360 and DealBook® WEB, you can change the number of days the Momentum uses. When you first open DealBook®, the days are automatically set to 14.

## Moving Averages

#### WHAT IT IS:

This type of indicator averages prices over a particular time frame to smooth market moves into a single trend line. There are several types of moving averages – each use a variety of different calculation methods to achieve a result. Traders use these to clarify market moves and verify trends when the market is volatile.

#### HOW IT WORKS:

- Helps determine if the highs and lows of a currency pair depict a particular pattern.
- Uses different calculations to simplify price movements. For example:
  - Simple Moving Average (SMA) averages the price of a currency pair over a specific time period.

- Exponential Moving Average (EMA) is calculated the same way, but gives more weight to the most recent prices.

#### PARAMETERS:

The settings for Moving Averages depend on the type you have selected. In DealBook® 360, you can customise the parameters of SMA so that it calculates the average based on the closing, opening, high or low price (close is automatically selected when you first open DealBook®). In DealBook® 360 and DealBook® WEB, you can also change the time frame as well as set the indicator's displacement and pace. EMA also allows you to specify price, time frame and displacement.

## Moving Average Convergence/ Divergence (MACD)

#### WHAT IT IS:

The MACD helps traders forecast when to enter or exit a trade. This indicator can also be used to determine when a trend may be reversing.

#### HOW IT WORKS:

- Based on the Exponential Moving Average (EMA) indicator.
- Calculated by subtracting the value of a slow, 26-day EMA from the value of a fast, 12-day EMA. This value is compared to a 9-day EMA, which is displayed as a signal line.
- MACD trend line rises above the signal line - indication to buy the currency pair.
- MACD drops below the signal line - indication to sell the currency pair.

#### PARAMETERS:

While 12-day and 26-day EMAs are used by most traders, you can change the number of days used to calculate the EMAs in DealBook®. You can also customise the number of days used to calculate the signal line. In DealBook® 360, you can choose to calculate the average based on the closing, opening, high or low price (close is automatically selected when you first open DealBook®).

## Relative Strength Index (RSI)

#### WHAT IT IS:

RSI forecasts when a financial product is overbought or oversold. Traders use this to determine when to enter or exit a position.

#### HOW IT WORKS:

- Compares the average number of days that a currency pair closes up to the average number of days that it closes down
- Average is then rated on a scale of 1 to 100
  - Overbought when its price goes above the 80 baseline
  - Oversold when its price drops below 20 baseline
- Typically used with a 9-, 14-, or 25-calendar day (7-, 10-, or 20-trading day) period against the closing price of a market

- The more days that are included in the calculation, the less volatile the value

#### PARAMETERS:

In the indicator settings, you can change the number of days DealBook® uses to calculate the RSI. You can also change the value of the overbought/oversold baselines that appear in the chart as well. In DealBook® 360, you can also choose to calculate the average based on the closing, opening, high or low price (close is automatically selected when you first open DealBook®).

## Slow Stochastics

#### WHAT IT IS:

The Stochastic Oscillator compares the closing price of a currency pair to its price range over a period of days. Traders use this to measure the momentum of a trend as well as determine when it may reverse its course. Traders can then forecast possible entry or exit points.

#### HOW IT WORKS:

- Measures the momentum strength of a currency pair by analysing how long it can maintain the trend.
- Uses two lines: the %K and %D which appear on a sub-chart below the price chart.
  - The %K line compares the market close for the day to the trading range over 14 days.
  - The %D line is a signal line which uses a simple 5-day Simple Moving Average of the %K.
- Lines to move between a range of zero and 100.
- Oversold when the %K or %D moves below 20, the currency pair is oversold
- Overbought when the %K or %D moves over 80
- When the %K line crosses the %D, many traders consider this to be a good place to buy.
- Likewise, when the %D crosses the %K, it is a good place to sell.

#### PARAMETERS:

You can change the number of days that DealBook® uses to calculate Slow Stochastics. You can also change the value for the overbought/oversold baselines that appear in the sub-chart as well as the value for the %K and %D slow period. In DealBook® 360, you can choose to calculate the average based on the closing, opening, high or low price (close is automatically selected when you first open the application).

## Linear Regression

The Linear Regression indicator is calculated by fitting a linear regression line over the values for the given period, and then determining the current value for that line. A linear regression line is a straight line which is as close to all of the given values as possible. The linear regression indicator at the beginning of a data series is not defined until there are enough values to fill the given period.

Same as: Time Series Moving Average and Time Series Forecast with an offset of zero.

## Accumulation Swing

The Accumulation Swing indicator is an oscillator-based on the swing index (S"). A currency trading price buying signal is generated when the daily high exceeds the previous SI significant high, and a currency trading price selling signal occurs when the daily low dips under the significant SI low.

With the Accumulation Swing Index attempting to show the real trading market, it closely resembles actual prices. This allows usage of classic support/resistance analysis on the Index. Typical analysis involves looking for breakouts, new highs and lows, and divergences.

## Aroon

The Aroon indicator is used to determine if a currency trading price is moving in a trend or sideways as well as how strong the trend is. If the price of a currency trading price is rising, the close for the period will be closer to the end of the period, and vice versa. The Aroon indicator shows how much time passed between the highest (up) or lowest (down) close since the beginning of a period (in percents).

When Aroon (up) and Aroon (down) are moving together, there is no clear trend (the price is moving sideways, or about to move sideways). When the Aroon (up) is below 50, it is an indication that the uptrend is losing its momentum, while when the Aroon (down) is below 50; it is an indication that the downtrend is losing its momentum. When the Aroon (up) or Aroon (down) are above 70, it indicate a strong trend in the same direction, while when the value is below 30, it indicates a trend coming in an opposite direction.

Finally, for the Aroon Oscillator, the positive value indicates an upward trend (or coming trend), and the negative value indicates a downward trend. The higher the absolute value of an oscillator, the stronger is an indication of a trend.

## Chande Momentum

The Chande Momentum indicator is a momentum oscillator. There are two different ways this oscillator is used as a trading signal. The first is to measure overbought or oversold levels for a given currency. The second method is to buy when the oscillator crosses above its moving average line and to sell when the oscillator crosses below its moving average line.

The Chande Momentum indicator is constructed using the sum over a given period of price changes on up days, sum (high-low) up, and the sum over the same period of prices on down days, sum (high-low), down. An exponential moving average of this line is then overlaid upon the oscillator as a signal line. The oscillator requires two parameters: the period over which the price ranges will be summed, and the period for the moving average.

## Chikou Span

Please see Ichimoku.

## Commodity Selection Index

The Commodity Selection Index ("CSI") is a momentum indicator which helps to select commodities suitable for short-term trading.

A high CSI rating indicates that the commodity has strong trending and volatility characteristics. The trending characteristics are brought out by the Directional Movement factor in the calculation, and the volatility characteristics are brought out by the Average True Range factor.

## DEMA

Double Exponential Moving Average ("DEMA") is a unique composite of a single exponential moving average and a double exponential moving average that provides less lag than either of the two components individually. DEMA can be used in place of trading traditional moving averages.

## Detrended Price Oscillator

The Detrended Price Oscillator ("DPO") attempts to eliminate the trend in prices. Detrended prices allow you to more easily identify cycles and overbought/oversold levels.

Long-term cycles are made up of a series of short-term cycles. Analysing these shorter term components of the long-term cycles can be helpful in identifying major turning points in the longer term cycle. The DPO helps you remove these longer-term cycles from prices.

To calculate the DPO, create an n-period simple moving average (where "n" is the number of periods in the moving average). Then, subtract the moving average "(n / 2) + 1" days ago from the closing price. The result is the DPO.

## Directional Movement - ADXR

The ADXR takes the ADX value of a bar and averages it with the ADX value of a recent, trailing bar. This has the effect of smoothing the ADX values. As with the ADX, a rising ADXR might indicate a strong underlying trend while a falling ADXR suggests a weakening trend subject to a reversal. ADXR can also identify non-trending markets or the deterioration of an ongoing trend. Although market direction is important in its calculation, the ADXR is not a directional indicator.

The ADXR differs from ADX in that it is less sensitive to short, quick reversals because it results in a 'smoother' calculation. It was developed to compensate for the variance of excessive tops and bottoms and is especially helpful when used in conjunction with trend-following strategies. Strategies that rely on volatility as an indication of movement may not take into account that movement does not necessarily indicate volatility. ADXR provides information pertaining to the strength of a trend, helping you to manage the risk of trading in volatile markets that fluctuate between trending and non-trending.

## Envelope

Envelopes are used to indicate the trading range of a given trading market above and below an average price. In this case, an exponential moving average is taken against the market, and then a trading band is applied by adding and subtracting a fixed percentage of the average on that day. This will calculate the price 5% above and 5% below the average.

## Fast Stochastics

The Fast Stochastic indicator calculates the location of a current price in relation to its range over a period of bars. The default settings are to use the most recent 14 bars (input Length), the high and low of that period to establish a range (input HighValue and LowValue) and the close as the current price (input CloseValue). This calculation is then indexed and plotted as FastK. A smoothed average of FastK, known as FastD, is also plotted. FastK and FastD plot as oscillators with values from 0 to 100. The direction of the Stochastics should confirm price movement. For example, rising Stochastics confirm rising prices.

Stochastics can also help identify turning points when there are non-confirmations or divergences. For example, a new high in price without a new high in Stochastics may indicate a false breakout. Stochastics are also used to identify overbought and oversold conditions when the Stochastics reach extreme highs or lows. Additionally, FastK crossing above the smoother FastD can be a buy signal and vice versa.

## Forecast Oscillator

The Forecast Oscillator is an extension of the linear regression-based indicators. It is a percentage comparison of the price of an issue and the price as indicated by the Time Series Forecast Oscillator.

The oscillator is above zero when the forecast price is greater than the actual price. Conversely, it's less than zero if it's below. When the forecast price and the actual price are the same, the oscillator would plot as zero. Prices that are persistently below the forecast price suggest lower prices ahead. Actual prices that are persistently above the forecast price suggest higher prices ahead.

## Inertia

The Inertia indicator is used to measure the momentum of a currency trading price based on its volatility. An outgrowth of the Relative Volatility Index, Inertia is simply a smoothed RVI.

Inertia is measured on a scale from 0 to 100. Negative Inertia is seen if the indicator is below 50. If the indicator is above 50, it is said to have positive Inertia. Signs of positive Inertia are indicative of a long-term upward trend. Signs of negative Inertia illustrate long-term downtrends.

## Intraday Momentum

The Intraday Momentum Index ("IMI") is a combination of the Relative Strength Index and Candlestick Analysis.

The IMI is calculated like the RSI but uses the relationship between the intraday opening and closing prices to determine whether the day is up or down. When the close is above the open, it is an up day. If the close is below the open, it is a down day. White candlesticks signify an up day, black candlesticks used for down days.

As with the RSI, overbought conditions (and lower prices ahead) are indicated when the index rises above 70. Values below 30 indicate a potential oversold situation and higher price ahead. Remember, as with all overbought/oversold indicators, you should first quantify the trendiness of the market before acting on any signals.

## Ichimoku

The Ichimoku Kinko Hyo indicator determines market trends, levels of support and resistance, and generates buy and sell signals. This indicator works best on the week and day time charts.

When assigning a dimension of parameters, four time frames of different extent are used. The significances of the separate lines that make up this indicator are based on these intervals:

- Tenkan-sen displays the average value of the price for the first period of time; defined as the sum of a maximum and the minimum for this time frame, divided by two.
- Kijun-sen displays the average value of the price for the second time frame.
- Senkou Span A displays the midpoint between the previous two lines, shifted forward on value of the second time frame.
- Senkou Span B displays the average value of the price for the third time frame, shifted forward on value of the second time frame.

- Chinkou Span displays the closing price of the current candle, shifted back on value of the second time frame. The distance between the lines, Senkou, is shaded on the schedule with other colour and is named as 'cloud'. If the price is found between these lines, the market is considered without a trend and the edges of a cloud will derivate levels of support and resistance.

If the price is found above a cloud, its upper line will derivate the first level of support, and second - second level of support. If the price is found under a cloud, the lower line will derivate the first level of resistance, in upper - second.

If the line, Chinkou Span, intersects the chart of the price bottom-up, it is a signal to buy. If it intersects top-down, it is a signal to sell.

Kijun-sen is used as a parameter of movement in the market. If the price is higher than the Kijun-sen, the price will most likely rise. When the price intersects this line, changes in the trend are likely.

An alternative version of usage for the Kijun-sen is the submission of signals. The buy signal is generated when the line Tenkan-sen intersects Kijun-sen bottom-up and a sell signal is generated when the Tenkan-sen intersects Kijun-sen top-down. Tenkan-sen is used as the indicator of a market trend. If this line grows or drops, the trend exists. When it goes horizontally, the market has come into the channel.

## Kairi

The Kairi indicator charts the percentage difference between the current closing value and its simple moving average. It can be used either as a trend indicator or as an overbought/oversold signal.

## Keltner Channel

The Keltner Channel plots two bands around a central modified moving average and is similar to Bollinger Bands in the way the distance of the upper and lower bands from the average will vary according to the underlying volatility of price. As opposed to Bollinger Bands, which use standard deviation in the calculation, Keltner bands use Average True Range.

True Range was developed by J. Welles Wilder Jr. to represent the real highs and lows of the day to include possible gaps from the prior bar's close to the current bar's open. This is a tool that was intended more for the futures and equities markets where there is a significant time gap between the close and the following day's open. In this way, True Range is calculated by taking the maximum of:

1. High - Low
2. The prior bar's close - Low
3. High - the prior bar's close

However, it is very unusual for these gaps to occur in the market since there is no time difference between one day's close and the next day's open. Thus a gap can only really effectively occur over weekends or during volatile market conditions.

A modified average is then taken of a series of True Range calculations. Clearly, if there has been a significant level of high range bars the upper and lower bands will move away from the average while a series of low range bars will cause the bands to move inwards towards the average. Thus Keltner Bands will automatically expand and contract as the market volatility rises and falls respectively.

Basic usage of the Keltner channels are two-fold:

1. In consolidating markets the upper and lower bands may be considered as approximate support and resistance where trades may be considered to take advantage of range trading.
2. Where price breaks cleanly through and closes outside one of the bands there is a higher risk of a trend in the direction of the break developing.
3. The central moving average may be used as a trailing stop when in a trending move

It is always recommended that trades are not initiated on the basis of one indicator only and utilising other techniques such as momentum indicators (i.e., RSI, Stochastics, etc.) may be used in order to help confirm or deny the entry signals. Reference to price patterns is also preferred.

Parameter Defaults: Period = 12 (controls the measurement period for the average)

Factor = 1 (controls the placement of the bands around the average)

Plots: Upper KC Upper Band line, Mid KC Central Moving Average, Lower KC Lower Band line

Formula:

Mid KC = "Period" length modified moving average

Upper KCv = Mid KC + "Period" length Average True Range x Factor

Lower KC = Mid KC - "Period" length Average True Range x Factor

## Kijun Sen

Please see Ichimoku.

## Linear Regression Slope

The Linear Regression Slope is just one of the more than 100 technical tools available within DealBook® 360. It crunches the numbers of past market prices to provide you with insight into price trends and possible turning points, churning out the resulting data as a line that can be overlaid on a chart and updated as the current market prices update.

This indicator uses past market values to forecast potential market values in the near future, and is used to help determine when a trend may change direction. Some technical analysts believe that when prices rise above or fall below this linear regression line, prices are overextended and will begin to move in the opposite direction back toward the line. This is how this tool is used to indicate when a trend may change direction.

## Mass Index

The Mass Index uses the range of the bars to calculate several values, including exponential averages of the ranges. It then calculates and plots an index of these calculations. The Mass Index is used in trending markets to monitor direction and warn of potential changes in market direction.

The Mass Index signals a possible price reversal when the Mass Index line crosses above the setup line and subsequently falls below the trigger line. This is known as a reversal bulge. The Mass Index does not identify the trend direction, but rather warns of possible reversals.

## Median Price

The Median Price function calculates the midpoint between the high and low prices for the day. Sometimes it is also referred to as the mean or average price.

The median price provides a simplified view of the currency trading prices for the day. It can be used to smooth out some of the volatility of the closing price since it includes information for the entire trading day rather than specifically the end of the day.

The median price can be used anywhere a closing price or other single price field would be used.

## Moving Average Exponential

An exponential moving average is calculated by combining a certain percentage of the current value with an inverse percentage of the previous value of the exponential moving average. For example, if 25% weight is being given to the current value, 25% of the current value is added to 75% of the previous moving average to get the current moving average.

The period is used to determine the relative weight which previous values should be given. The formula  $2 / (\text{period} + 1)$  is used to determine the percentage. For example, a period of 7 would cause 25% ( $2 / (7 + 1)$ ) of the current value and 75% of the previous exponential moving average value to be used.

NOTE: All previous values are used to make up a current exponential moving average, even values from before the period. The period is used as a rough estimate of how long new values will remain significant in calculation.

The value at the beginning of a data series is considered to be zero. Therefore, you may want to ignore the values before the period has completed.

Moving Averages are useful for smoothing raw, noisy data, such as daily prices. Price data can vary greatly from day-to-day, obscuring whether the price is going up or down over time. By looking at the moving average of the price, a more general picture of the underlying trends can be seen.

Since moving averages can be used to see trends, they can also be used to see whether data is bucking the trend. Entry/exit systems often compare data to a moving average to determine whether it is supporting a trend or starting a new one.

## Moving Average Modified

The Modified Moving Average ("MMA") is an algebraic technique which makes averages more responsive to price movements. The average includes a sloping factor to help it catch up with the rising or falling value of the currency trading price. Modified moving Averages are similar to simple moving averages. The first point of the modified moving average is calculated the same way the first point of the simple moving average is calculated. However, all subsequent points are calculated by first adding the new price and then subtracting the last average from the resulting sum. The difference is the new point, or MMA.

## Moving Average Simple

The Simple Moving Average ("SMA") indicator is calculated by summing the closing prices of the currency for a period of time and then dividing this total by the number of time periods. Sometimes called an arithmetic moving average, the SMA is basically the average price over a period of time.

Because the Simple Moving Average gives equal weight to each daily price, the longer the time period studied, the greater the smoothing out of recent market volatility. Long-term moving averages smooth out all the minor fluctuations showing only longer-term trends. Shorter-term moving averages will show shorter term trends but at the expense of the long term.

Most of the time, prices are on one side or the other of the moving average. As trends develop, the moving average will slope in the direction of the trend, showing the trend direction and some indication of its strength based on the steepness of the slope.

## Moving Average Triangular

The Moving Average Triangular indicator calculates a simple arithmetic average of prices, specified by the input Price. It then calculates and plots a simple arithmetic average of this average. The length of each of these averages is one more than half the value specified in the input Length, rounded to a whole number. This uses all the price data from the most recent number of bars specified by the input Length, but with the smoothing effect of 'averaging the average'.

A moving average is generally used for trend identification. Attention is given to the direction in which the average is moving and to the relative position of prices and the moving average. Rising moving average values (direction) and prices above the moving average (position) would indicate an uptrend. Declining moving average values and prices below the moving average would indicate a downtrend. A displaced moving average plots the moving average value of a previous bar or later bar on the current bar.

## Moving Average Weighted

The weighted moving average is calculated by averaging together the previous values over the given period, including the current value. These values are weighted linearly, with the oldest value receiving a weight of 1, the next value receiving a weight of 2, and so on up to the current value, which receives a weight equal to the period.

The moving average at the beginning of a data series is not defined until there are enough values to fill the given period.

NOTE: For more exaggerated weighting on the current values, you may want to use an exponential moving average. You could also average two or more weighted moving averages together.

Moving Averages are useful for smoothing raw, noisy data, such as daily prices. Price data can vary greatly from day-to-day, obscuring whether the price is going up or down over time. By looking at the moving average of the price, a more general picture of the underlying trends can be seen.

Since moving averages can be used to see trends, they can also be used to see whether data is bucking the trend. Entry/exit systems often compare data to a moving average to determine whether it is supporting a trend or starting a new one.

## Parabolic SAR

The Parabolic SAR (“PSAR”) indicator is based on the relationship between a market’s price and time. It is used to determine when to stop and reverse (“SAR”) a position utilising time/price based stops.

Once a Parabolic SAR is reached, the current position is exited and a new position in the opposite direction is taken. It is primarily used in trending markets and is based on always having a position in the market. The indicator may also be used to determine stop points and estimating when you would reverse a position and take a trade the opposite direction. The indicator derives its name from the fact that when charted, the pattern resembles a parabola or French curve.

## Percent Change

The Percent Change indicator calculates and plots the net change, expressed as a percent, between a bar’s price, as specified by the input Price, and that price the number of bars ago specified in the input Length. The default settings plot the percent change for the close of each bar compared to the bar before it. This indicator is a quick and easy method of viewing price swings on a bar-by-bar basis illustrating price volatility.

## Percent of Resistance

The Percent of Resistance (“PCR”) indicator is an oscillator that compares a currency’s closing price to its price range over a given time period.

## Percent R

The Percent R indicator is an overbought / oversold oscillator that is best applied to choppy markets and markets locked in a sideways price pattern or trading range. It can also be used to indicate when to buy on troughs in bull markets and sell on rallies in bear markets. In general, this indicator can help you take advantage of shorter-term countertrend moves occurring within longer-term trends as well as indicate the best time to exit or enter a particular market.

An oversold market is believed to occur when the Percent R line is less than the buy zone line. Conversely, an overbought market is believed to occur when the Percent R line is greater than the sell zone line.

## Price Channel

The Price Channel indicator calculates the highest high and lowest low of the trailing number of bars specified by the input Length. Lines representing the trailing highs and the trailing lows are then plotted. When a market moves above the upper band, it is a sign of market strength. Conversely, when a market moves below the lower band, it is a sign of market weakness. A sustained move above or below the channel lines may indicate a significant breakout.

This indicator is NOT displaced by default. Changing the input Displace to a positive number displaces the plot to the left. Changing the input Displace to a negative number displaces the plot to the right.

## Price Oscillator

The Price Oscillator indicator calculates a fast, or short, moving average and a long, or slow, moving average. The difference between these two values is then plotted. The moving averages are not plotted. One approach to analysing moving averages is to note the relative position of the 2 averages: the short moving average above the long moving average would yield a positive Price Oscillator value and be bullish; the short moving average below the long moving average would yield a negative Price Oscillator value and be bearish.

Calculating the difference between the two averages and plotting this as an oscillator makes extreme positive and negative values stand out as possible overbought and oversold conditions.

## Relative Volatility

The Relative Volatility Index (“RVI”) is the RSI, only with the standard deviation over the past 10 days used in place of daily price change. Use the RVI as a confirming indicator, as it makes use of a measurement other than price as a means to interpret market strength.

The RVI measures the direction of volatility on a scale from zero to 100. Readings greater than 50 indicate that the volatility is more to the upside. Readings less than 50 indicate that the direction of volatility is to the downside.

## Rate of Change

The Rate of Change indicator is technically the same as the Change in Value function or the Percent Change in Value function, depending on whether the As Percent parameter is selected. In either case, the function returns the amount by which the data has changed over the given period. The Percent Rate of Change value is traditionally multiplied by 100 for easier graphing.

The Rate of Change indicator at the beginning of a data series is not defined until there are enough values to fill the given period.

## Senkou Span

Please see Ichimoku.

## Standard Deviation

The Standard Deviation indicator provides a good indication of volatility. It measures how widely values are

dispersed from the average. Dispersion is the difference between the actual value and the average value. The larger the difference between the actual and average prices, the higher the standard deviation will be and the higher the volatility. The closer the actual value is to the average value, the lower the standard deviation and the lower the volatility.

## Standard Error Bands

The Standard Error Bands indicator is an attempt to show the trend and the volatility around the trend. Three plots are produced by this indicator. The middle plot is the ending value of a 21-period linear regression line. The upper plot, the upper standard error band, is the result of adding two standard errors to the ending value of the regression line. The lower plot, the lower standard error band, is a result of subtracting two standard errors from the end value of the linear regression line. Since large changes in the closing price can greatly affect the values of the line and error bands, a three period (bar) simple moving average of the ending value of the regression line and the standard errors are plotted.

Although the Standard Error Bands are similar to Bollinger bands they are interpreted differently. Standard Error Bands show the direction of the current trend and the volatility around it. Bollinger bands show the volatility around the average of the plotted price.

One method of using the Standard Error Bands is to look for the bands to tighten as price starts to move (upward or downward). When this occurs it is said that price tends to trend easily. The bands will often remain tight as long as the trend is strong. At the same time, the Linear Regression line will likely keep rising or falling depending on the direction of the trend. Once the Bands start to widen, it is indicative of the price slowing down. This may be followed by the Linear Regression line leveling off and possibly reversing, a signal that the trend may be nearing its end.

## STARC Bands

Stoller Average Range Channels (“STARC”) Bands create a channel surrounding a simple moving average. The width of the created channel varies with a period of the average range. The width of the created channel varies with a period of the average range; thus the name (“ST” for Stoller, plus “ARC” for Average Range Channel). STARC Bands, in a fashion similar to Bollinger Bands, will tighten in steady markets and loosen in volatile markets. However, rather than being based on closes, the STARC Bands are based on the average true range, thus giving a more in-depth picture of market volatility. While the penetration of a Bollinger Band may indicate a continuation of a price move, the STARC Bands define upper and lower limits for normal price action.

## Swing Index

The Swing Index indicator assigns a Swing Index value from 0 to 100 for an up bar and 0 to -100 for a down bar. This indicator uses the current bar's Open, High, Low, and Close as well as the previous bar's Open and Close to calculate the Swing Index values. If the Swing Index crosses over 0, a short-term price increase is likely. Conversely, a cross below 0 suggests a decline in market price. A larger or smaller swing index value indicates the severity of the market's increase or decline in price.

## TEMA

The Triple Exponential Moving Average ("TEMA") is a bit misleading in that it is not simply a moving average of a moving average of a moving average. It is a unique composite of a single exponential moving average, a double exponential moving average, and a triple exponential moving average that provides less lag than any of the three components individually. TEMA can be used in place of traditional moving averages and can be used to smooth price data or other indicators.

## Tenkan Sen

Please see Ichimoku.

## Time Series Forecast

The Time Series Forecast ("TSF") indicator is based on linear regression calculations using the Least Squares method. Linear regression is a statistical tool used to predict future market values relative to past values. TSF attempts to 'predict' the future value of a market by determining the upward or downward bias of a trend and extending that calculation into the future. For example, if prices are trending up, TSF attempts to logically determine the upward bias of the price relative to the current price and extend that calculation forward. When the market price is above the indicator, the trend is considered up. When the market price is below the indicator, the trend is considered down. Additionally, many analysts believe when prices rise above or fall below the indicator line; prices will likely pull back to the line. The TSF indicator also monitors the current trend to determine if a change in direction occurred.

The Time Series Forecast indicator is similar to the Linear Regression indicator with the exception of two significant differences. The first difference is that TSF plots its line forward (to the right of the chart) by the number of bars specified by the BarsPlus input. The second difference is the default Length input value used for the TSF is much shorter because the plot line is extended forward. A larger Length input would create a grossly exaggerated plot and would not be as reliable as a shorter-term length when analysing trends and price activity.

## TRIX

The TRIX indicator is an oscillator used to identify oversold and overbought markets and it can also be used as a momentum indicator. As is common with many oscillators, TRIX oscillates around a zero line. When used as an oscillator, a positive value indicates an overbought market while a negative value indicates an oversold market. As a momentum indicator, a positive value suggests momentum is increasing while a negative value suggests momentum is decreasing. Many analysts believe the TRIX crossing above the zero line is a buy signal while closing below the zero line is a sell signal. Also, divergences between price and TRIX can indicate significant turning points in the market.

TRIX calculates a triple exponential moving average of the log of the Price input over the period of time specified by the Length input for the current bar. The current bar's value is subtracted by the previous bar's value. This prevents cycles shorter than the period defined by Length input from being considered by the indicator.

Two main advantages of TRIX compared to other trend-following indicators are its excellent filtration of market noise as well as its tendency to be a leading rather than a lagging indicator. It filters out market noise using the triple exponential average calculation thus eliminating minor short term cycles that may otherwise signal a change in market direction. Its ability to lead a market stems from its measurement of the difference between each bar's smoothed versions of the price information. When interpreted as a leading indicator, TRIX is best used in conjunction with another market timing indicator to minimise the effect of false indications.

## Typical Price

The Typical Price for each bar is calculated as an average of 3 values: high, low and close. This value is then plotted on the chart. An average of the Typical Price from the most recent number of bars specified by the input Length is also plotted. Using the Typical Price instead of the close in calculating and plotting, say, a moving average weighs the high and low into the calculation.

## Ultimate Oscillator

The Ultimate Oscillator indicator calculates the sums of the True Ranges of the number of bars specified by the inputs Avg1Len, Avg2Len and Avg3Len. These sums are divided into the sums of the distance from the close to the low. This value is weighted for the three lengths and plotted on the chart.

Many analysts believe divergences between the Ultimate Oscillator as well as a breakout in the trend of the indicator are significant signals. For example, a bullish divergence is said to occur if market prices reach a new low but the indicator does not follow. Conversely, a bearish divergence is said to occur if market prices reach a new high but the indicator does not follow.

## Volatility Chaikin's

The Volatility Chaikin's indicator measures the difference between high and low prices. This formula is used to indicate the top or bottom of the market.

There are two ways to interpret this measure of volatility. One method assumes that market tops are generally accompanied by increased volatility and that the latter stages of a market bottom are generally accompanied by decreased volatility.

Another method assumes that an increase in the volatility indicator over a relatively short time period indicates that a bottom is near and that a decrease in volatility over a longer time period indicates an approaching top.

## Weighted Close

The Weighted Close for each bar is calculated as an average of the high, low and close, with the close getting twice the weight of the high and low. This value is then plotted on the chart. An average of the Weighted Close from the most recent number of bars specified by the input Length is also plotted. Using the Weighted Close instead of the close in calculating and plotting, say, a moving average weighs the high and low into the calculation.

## Williams Accumulation/Distribution

The Williams' Accumulation/ Distribution indicator is used to determine if the trading market is controlled by buyers (accumulation) or by sellers (distribution); and trading when there is divergence between price and the A/D indicator.

The Williams A/D indicator recommends buying when prices fall to a new low, yet the A/D indicator fails to reach a new low. Likewise, sell when the price makes a new high and the indicator fails to follow suit.

## Zig Zag

The Zig Zag indicator shows past performance trends and only the most significant changes. It does this by filtering out any changes less than a specified amount.

The Zig Zag indicator is used primarily to help you see changes by highlighting the most significant reversals. Understand that the last segment in a Zig Zag chart can change based on changes in the underlying plot, price being only one example. That is, a change in a currency's price can change a previous value of the indicator. Since the Zig Zag indicator adjusts its values based on subsequent changes, it has perfect hindsight into what prices have done.

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