



MARKET CONNECT - CLIENT

Technical Indicators

Borsa Italiana S.p.A.

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1. Accumulation Swing Index

Overview:

The Accumulation Swing Index (Wilder) is a cumulative total of the Swing Index.

Interpretation:

The Accumulation Swing Index may be analyzed using technical indicators, line studies, and chart patterns, as an alternative view of price action.

Parameters:

str Symbol

dbl Limit Move Value

2. Aroon Index and Oscillator

Overview:

The Aroon indicator is often used to determine whether a stock is trending or not and how stable the trend is.

Interpretation:

Trends are determined by extreme values (above 80) of both lines (Aroon up and Aroon down), whereas unstable prices are determined when both lines are low (less than 20).

Parameters:

str Symbol

int Periods

3. Bollinger Bands

Overview:

Bollinger Bands are similar in comparison to moving average envelopes. Bollinger Bands are calculated using standard deviations instead of shifting bands by a fixed percentage.

Interpretation:

Bollinger Bands (as with most bands) can be imposed over an actual price or another indicator. When prices rise above the upper band or fall below the lower band, a change in direction may occur when the price penetrates the band after a small reversal from the opposite direction.

Parameters:

str Source

int Periods

int Standard Deviations

int Moving Average Type

4. Fractal Chaos Bands

Overview:

The chaotic nature of stock market movements explains why it is sometimes difficult to distinguish hourly charts from monthly charts if the time scale is not given. The patterns are similar regardless of the time resolution. Like the chambers of the nautilus, each level is like the one before it, but the size is different. To determine what is happening in the current level of resolution, the fractal chaos band indicator can be used to examine these patterns.

Parameters:

str Symbol

int Periods

5. Chaikin Money Flow

Overview:

The Chaikin Money Flow oscillator is a momentum indicator that spots buying and selling by calculating price and volume together. This indicator is based upon Chaikin Accumulation/Distribution, which is in turn based upon the premise that if a stock closes above its midpoint $[(high+low)/2]$ for the day then there was accumulation that day, and if it closes below its midpoint, then there was distribution that day.

Parameters:

str Symbol
str Volume Source
int Periods

6. Chaikin Volatility Oscillator

Overview:

The Chaikin Volatility Oscillator is a moving average derivative of the Accumulation/Distribution index.

Interpretation:

The Chaikin Volatility Oscillator adjusts with respect to volatility, independent of long-term price action.

Parameters:

str Symbol
int Periods
int Rate Of Change
int Moving Average Type

7. Chande Momentum Oscillator (CMO)

Overview:

The Chande Momentum Oscillator (Chande) is an advanced momentum oscillator derived from linear regression.

Interpretation:

Increasingly high values of CMO may indicate that prices are trending strongly upwards. Conversely, increasingly low values of CMO may indicate that prices are trending strongly downwards. CMO is related to MACD and Price Rate of Change (ROC).

Parameters:

str Source
int Periods

8. Commodity Channel Index

Overview:

The CCI was developed by Donald Lambert. The purpose of this indicator is to identify cyclical turns in commodities.

Interpretation:

This indicator oscillates between an overbought and oversold condition and works best in a sideways market.

Parameters:

str Symbol
int Periods

9. Comparative Relative Strength

Overview:

The Comparative Relative Strength index divides one price field by another price field.

Interpretation:

The base security is outperforming the other security when the Comparative RSI is trending upwards.

Parameters:

str Source 1

str Source 2

10. Detrended Price Oscillator

Overview:

The Detrended Price Oscillator is used when long-term trends or outliers must be removed from prices or index indicators.

Interpretation:

This indicator is often used to supplement a standard price chart. Other indicators can be plotted over the Detrended Price Oscillator.

Parameters:

str Source

int Periods

int Moving Average Type

11. Directional Movement System

Overview:

The Welles Wilder's Directional Movement System contains five indicators; ADX, DI+, DI-, DX, and ADXR.

The ADX (Average Directional Movement Index) is an indicator of how much the market is trending, either up or down: the higher the ADX line, the more the market is trending and the more suitable it becomes for a trend-following system. This indicator consists of two lines: DI+ and DI-, the first one being a measure of uptrend and the second one a measure of downtrend.

Detailed information about this indicator and formulas can be found in Welles Wilder's book, "New Concepts in Technical Trading Systems".

The standard Directional Movement System draws a 14 period DI+ and a 14 period DI- in the same chart panel. ADX is also sometimes shown in the same chart panel.

Interpretation:

A buy signal is given when DI+ crosses over DI-, a sell signal is given when DI- crosses over DI+.

Parameters:

str Symbol

int Periods

12. Directional Movement System

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Interpretation:

A buy signal is given when DI+ crosses over DI-, a sell signal is given when DI- crosses over DI+.

Parameters:

str Symbol
int Periods

13. Ease of Movement

Overview:

The Ease of Movement oscillator shows a unique relationship between price change and volume.

Interpretation:

The Ease of Movement oscillator rises when prices are trending upwards under low volume, and likewise, the Ease of Movement oscillator falls when prices are trending downwards under low volume.

Parameters:

str Symbol
str Volume
int Periods
int Moving Average Type

14. Exponential Moving Average

Overview:

An Exponential Moving Average is similar to a Simple Moving Average. An EMA is calculated by applying a small percentage of the current value to the previous value. An EMA applies more weight to recent values.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source
int Periods

15. High Low Bands

Overview:

High Low Bands consist of triangular moving averages calculated from the underlying price, shifted up and down by a fixed percentage, and include a median value.

Interpretation:

When prices rise above the upper band or fall below the lower band, a change in direction may occur when the price penetrates the band after a small reversal from the opposite direction.

Parameters:

str Symbol
int Periods

16. High Minus Low

Overview:

Returns the high price minus the low price.

Parameters:

str Symbol

17. Linear Regression

Overview:

Linear regression is a common statistical method used to forecast values using least squares fit.

Parameters:

str Source

int Periods

18. Moving Average Convergence / Divergence (MACD)

Overview:

The MACD is a moving average oscillator that shows potential overbought/oversold phases of market fluctuation. The MACD is a calculation of two moving averages of the underlying price/indicator.

Interpretation:

Buy/Sell interpretations may be derived from crossovers (calculated from the Signal Periods parameter), overbought/oversold levels of the MACD and divergences between MACD and actual price.

Parameters:

str Symbol

int Short Cycle

int Long Cycle

int Signal Periods

19. Mass Index

Overview:

The Mass Index identifies price changes by indexing the narrowing and widening change between high and low prices.

Interpretation:

According to the inventor of the Mass Index, reversals may occur when a 25-period Mass Index rises above 27 or falls below 26.5.

Parameters:

str Symbol

int Periods

20. Median Price

Overview:

A Median Price is simply an average of one period's high and low values.

Interpretation:

A Median Price is often used as an alternative way of viewing price action, and also as a component for calculating other indicators.

Parameters:

str Symbol

21. Momentum

Overview:

The momentum indicator calculates change of over a specified length of time as a ratio.

Interpretation:

Increasingly high values of the momentum oscillator may indicate that prices are trending strongly upwards. The momentum oscillator is closely related to MACD and Price Rate of Change (ROC).

Parameters:

str Source

int Periods

22. Money Flow Index

Overview:

The Money Flow Index measures money flow of a security, using volume and price for calculations.

Interpretation:

Market bottoms below 20 and tops above 80. Divergence of price and Money Flow Index are also used.

Parameters:

str Symbol

str Volume

int Periods

23. Moving Average Envelope

Overview:

Moving Average Envelopes consist of moving averages calculated from the underlying price, shifted up and down by a fixed percentage.

Interpretation:

Moving Average Envelopes (or trading bands) can be imposed over an actual price or another indicator. When prices rise above the upper band or fall below the lower band, a change in direction may occur when the price penetrates the band after a small reversal from the opposite direction.

Parameters:

str Source

int Periods

int Moving Average Type

dbl Shift

Shift is a double value specifying the percentage of shift for each moving average from the actual values

24. Negative Volume Index

Overview:

The Negative Volume Index shows focus on periods when volume decreases from the previous period.

Interpretation:

The interpretation of the Negative Volume Index is that well-informed investors are buying when the index falls and uninformed investors are buying when the index rises.

Parameters:

str Source
str Volume

25. On Balance Volume

Overview:

The On Balance Volume indicator shows a relationship of price and volume as a momentum index.

Interpretation:

On Balance Volume index generally precedes actual price movements. The premise is that well-informed investors are buying when the index rises and uninformed investors are buying when the index falls.

Parameters:

str Source
str Volume

26. Parabolic SAR

Overview:

The Parabolic SAR was developed by Welles Wilder. This indicator is always in the market (whenever a position is closed, an opposing position is taken). The Parabolic SAR indicator is most often used to set trailing price stops. A stop and reversal (SAR) occurs when the price penetrates a Parabolic SAR level.

Parameters:

str Symbol
dbl Min AF (accumulation factor)
dbl Max AF (accumulation factor)

27. Performance

Overview:

The Performance indicator calculates price performance as a normalized value or percentage.

Interpretation:

A Performance indicator shows the price of a security as a normalized value. If the Performance indicator shows 50, then the price of the underlying security has increased 50% since the start of the Performance indicator calculations. Conversely, if the indicator shows -50, then the price of the underlying security has decreased 50% since the start of the Performance indicator calculations.

Parameter:

str Source

28. Positive Volume Index

Overview:

The Positive Volume Index shows focus on periods when volume increases from the previous period.

Interpretation:

The interpretation of the Positive Volume Index is that many investors are buying when the index rises, and selling when the index falls.

Parameters:

str Source
str Volume

29. Price Oscillator

Overview:

The Price Oscillator shows a spread of two moving averages.

Interpretation:

The Price Oscillator is basically a moving average spread. Buying usually occurs when the oscillator rises, and conversely, selling usually occurs when the oscillator falls.

Parameters:

str Source
int Long Cycle
int Short Cycle
int Moving Average Type

30. Price Rate of Change

Overview:

The Price ROC shows the difference between the current price and the price one or more periods in the past.

Interpretation:

A 12-day Price ROC is most often used as an overbought/oversold indicator.

Parameters:

str Source
int Periods

31. Price and Volume Trend

Overview:

The Price and Volume Trend index is closely related to the On Balance Volume index.

Interpretation:

The Price and Volume Trend index generally precedes actual price movements. The premise is that well-informed investors are buying when the index rises and uninformed investors are buying when the index falls.

Parameters:

str Source
str Volume

32. Rainbow Oscillator

Overview:

The rainbow oscillator is based upon multiple time frames of a moving average.

Interpretation:

When values stay above 80 or below 20, the trend may reverse suddenly.

Parameters:

str Source
int Levels
int Moving Average Type

33. Relative Strength Index (RSI)

Overview:

The RSI (Wilder) is a popular indicator that shows comparative price strength within a single security.

Interpretation:

9, 14 and 25 period RSI calculations are most popular. The most widely used method for interpreting the RSI is price/RSI divergence, support/resistance levels and RSI chart formations.

Parameters:

str Source
int Periods

34. Simple Moving Average

Overview:

The Simple Moving Average is simply an average of values over a specified period of time.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source
int Periods

35. Prime Numbers Oscillator

Overview:

The prime numbers oscillator was developed by Modulus Financial Engineering, Inc. This indicator finds the nearest prime number from either the top or bottom of the series, and plots the difference between that prime number and the series itself.

Interpretation:

This indicator can be used to spot market turning points. When the oscillator remains at the same high point for two consecutive periods in the positive range, consider selling. Conversely, when the oscillator remains at a low point for two consecutive periods in the negative range, consider buying.

Parameters:

str Source

36. Prime Numbers Bands

Overview:

Similar to the Prime Numbers Oscillator, the prime numbers oscillator was developed by Modulus Financial Engineering, Inc. This indicator finds the nearest prime number for the high and low, and plots the two series as bands.

Interpretation:

This indicator can be used to spot market trading ranges.

Parameters:

str Symbol

37. Standard Deviations

Overview:

Standard Deviation is a common statistical calculation that measures volatility. Other technical indicators are often calculated using standard deviations.

Interpretation:

Major highs and lows often accompany extreme volatility. High values of standard deviations indicate that the price or indicator is more volatile than usual.

Parameters:

str Source
int Periods
int Standard Deviations
int Moving Average Type

38. Stochastic Oscillator

Overview:

The Stochastic Oscillator is a popular indicator that shows where a security's price has closed in proportion to its closing price range over a specified period of time.

Interpretation:

The Stochastic Oscillator has two components: %K and %D. %K is most often displayed as a solid line and %D is often shown as a dotted line. The most widely used method for interpreting the Stochastic Oscillator is to buy when either component rises above 80 or sell when either component falls below 20. Another way to interpret the Stochastic Oscillator is to buy when %K rises above %D, and conversely, sell when %K falls below %D.

Parameters:

str Symbol
int %K Periods
int %K Slowing
int %D Periods
int Moving Average Type

The most commonly used arguments are 9 for %K periods, 3 for %K slowing periods and 3 for %D smoothing.

39. Fractal Chaos Oscillator

Overview:

The chaotic nature of stock market movements explains why it is sometimes difficult to distinguish hourly charts from monthly charts if the time scale is not given. The patterns are similar regardless of the time resolution. Like the chambers of the nautilus, each level is like the one before it, but the size is different. To determine what is happening in the current level of resolution, the fractal chaos oscillator can be used to examine these patterns.

Parameters:

str Symbol
int Periods

40. Swing Index

Overview:

The Swing Index (Wilder) is a popular indicator that shows comparative price strength within a single security by comparing the current open, high, low and close prices with previous prices.

Interpretation:

The Swing Index is a component of the Accumulation Swing Index

Parameters:

str Symbol
dbl Limit Move Value

41. Time Series Moving Average

Overview:

A Time Series Moving Average is similar to a Simple Moving Average, except that values are derived from linear regression forecast values instead of raw values.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source
int Periods

42. Trade Volume Index

Overview:

The Trade Volume index shows whether a security is being accumulated or distribute (similar to the Accumulation/Distribution index).

Interpretation:

When the indicator is rising, the security is said to be accumulating. Conversely, when the indicator is falling, the security is said to being distributing. Prices may reverse when the indicator converges with price.

Parameters:

str Source
str Volume
dbl Minimum Tick Value

43. Triangular Moving Average

Overview:

The Triangular Moving Average is similar to a Simple Moving Average, except that more weight is given to the price in the middle of the moving average periods.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source
int Periods

44. TRIX

Overview:

TRIX is a momentum oscillator that shows the rate of change of an exponentially averaged closing price.

Interpretation:

The most common interpretation of the TRIX oscillator is to buy when the oscillator rises and sell when the oscillator falls. 3, 8 and 14 period moving averages are often used to smooth the TRIX oscillator.

Parameters:

str Source
int Periods

45. Stochastic Momentum Index

Overview:

The Stochastic Momentum Index, developed by William Blau, first appeared in the January 1993 issue of Stocks & Commodities magazine. This indicator plots the closeness relative to the midpoint of the recent high/low range.

Interpretation:

The Stochastic Momentum Index has two components: %K and %D. %K is most often displayed as a solid line and %D is often shown as a dotted line. The most widely used method for interpreting the Stochastic Momentum Index is to buy when either component rises above 40 or sell when either component falls below 40. Another way to interpret the Stochastic Momentum Index is to buy when %K rises above %D, and conversely, sell when %K falls below %D.

Parameters:

str Symbol
int %K Periods
int %K Smoothing
int %K Double Smoothing
int %D Periods
int Moving Average Type
int %D Moving Average Type

The most commonly used arguments are 13 for %K periods, 25 for %K smoothing, 2 for %K double smoothing, and 9 for %D periods.

46. Average True Range

Overview:

The Average True Range (Wilder) measures market volatility.

Interpretation:

High ATR values may signal market bottoms, and low ATR values may signal neutral markets.

Parameter:

str Symbol

47. Typical Price

Overview:

A Typical Price is simply an average of one period's high, low and close values.

Interpretation:

A Typical Price is often used as an alternative way of viewing price action, and also as a component for calculating other indicators.

Parameter:

str Symbol

48. Ultimate Oscillator

Overview:

The Ultimate Oscillator compares prices with three oscillators, using three different periods for calculations.

Interpretation:

The most popular interpretation of the Ultimate Oscillator is price/indicator divergence.

Parameters:

str Symbol

int Cycle 1

int Cycle 2

int Cycle 3

49. Variable Moving Average

Overview:

A Variable Moving Average is an exponential moving average that adjusts to volatility.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source

int Periods

50. Vertical Horizontal Filter

Overview:

The Vertical Horizontal Filter (VHF) identifies whether a market is in a trending or choppy movement phase.

Interpretation:

The VHF indicator is most commonly used as an indicator of market volatility. It is also frequently used as a component for other technical indicators.

Parameters:

str Source

int Periods

51. VIDYA

Overview:

VIDYA (Volatility Index Dynamic Average), developed by Chande, is a moving average derived from linear regression R2.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator. Because VIDYA is a derivative of linear regression, it quickly adapts to volatility.

Parameters:

str Source

int Periods

dbl R2 Scale

R2Scale is a double value specifying the R-Squared scale to use in the linear regression calculations. Chande recommends a value between 0.5 and 0.8 (default value is 0.65).

52. Volume Oscillator

Overview:

The Volume Oscillator shows a spread of two different moving averages of volume over a specified period of time.

Interpretation:

The Volume Oscillator offers a clear view of whether or not volume is increasing or decreasing.

Parameters:

str Volume

int Short Term

int Long Term

int Points Or Percent (output scale type)

53. Volume Rate of Change (ROC)

Overview:

The Volume Rate of Change indicator shows clearly whether or not volume is trending in one direction or another.

Interpretation:

Sharp Volume ROC increases may signal price breakouts.

Parameters:

str Volume

int Periods

54. Weighted Close

Overview:

Weighted Close is an average of each day's open, high, low, and close, where more weight is placed on the close.

Interpretation:

The Weighted Close indicator is a simple method that offers a simplistic view of market prices.

Parameter:

str Symbol

55. Weighted Moving Average

Overview:

A Weighted Moving Average places more weight on recent values and less weight on older values.

Interpretation:

A Moving Average is most often used to average values for a smoother representation of the underlying price or indicator.

Parameters:

str Source
int Periods

56. Welles Wilder's Smoothing

Overview:

The Welles Wilder's Smoothing indicator is similar to an exponential moving average. The indicator does not use the standard exponential moving average formula. Welles Wilder described 1/14 of today's data + 13/14 of yesterday's average as a 14-day exponential moving average.

Interpretation:

This indicator is used in a the manner that any other moving average would be used.

Parameters:

str Source
int Periods

57. Williams' Accumulation/Distribution

Overview:

The Accumulation/Distribution indicator shows a relationship of price and volume.

Interpretation:

When the indicator is rising, the security is said to be accumulating. Conversely, when the indicator is falling, the security is said to be distributing. Prices may reverse when the indicator converges with price.

Parameter:

str Symbol

58. Williams' %R

Overview:

Williams' %R measures overbought/oversold levels.

Interpretation:

The most widely used method for interpreting Williams' %R is to buy when the indicator rises above 80 or sell when the indicator falls below 20.

Parameters:

str Symbol
int Periods