INDICATORS
CATALOG

GUIDE FOR THE USER

visualchart

■ Indicator´s catalog

AVERAGES

AvAdapted
AvExponencial
AvFastk
AvFlat
AvLSie1
AvLSie2
AvLSie3
AvQuick
AvSimple
AvTriangular
AvWeighted
AvWilder

BollingerBands
BP
DisplaceAverages
DMAIND
Keltner
Parabolic
RainbowChart
SWMA
T3TillsonInd
TEMAIND
TFS Line
TSF
WeightClose
ZigZag

CLASSICS

ADX
ADXR
CCI
CSI
DirectionalMov
DINegative
DIPoSitive

DMKOsc
DPO
MACD
Momentum
MomentumSlow
PriceOsc
PriceROC
REI
RSI
SSI
Stochastic
StandardDev
StandardDevP
SwingIndex
SwingIndexAcum
Trix
Willians
WilliansAD

OVER AVERAGES

AvAdaptedOsc
avAdaptedOscP
AvDisagreeOsc
AvDisagreeOscP
AvExponentialOsc
AvExponentialOscP
avFlatOsc
AvFlatOscP
AvLSie1Osc
AvLSie1OscP
AvLSie2Osc
AvLSie2OscP
AvLSie3Osc
AvLSie3OscP
AvQuickOsc
AvQuickOscP
AvSimpleOsc

AvSimpleOscP
AvTriangularOsc
AvTriangularOscP
AvWeigthedOsc
AvWeigthedOscP
AvWilderOsc
AvWilderOscP
BollingerBandsOsc
BollingerBandsOscP
CCI03
DEMADSIF
DEMAIND
DHZ
DSS
DYN
ELR
ELRBEAR
ELRBULL
EXPMOVAVGBOP
FASTK
FORCEINDEX
IDM
MACDHEMEL
MDEMASMT
PSSTOCHRSI
REPULSE
SKYINDICATORC
TFSMBO
TII
TTRENDTRACKIND
RainbowChartOsc

PIVOTS

AroonUpDown
CafeDerdPvotSind1
Fibrange
PivotDown

PivotUp
PVTPOINT01
PVTPOINT02

SPREAD

BOP
CorrelationIndex
DisagreeSpread
DisagreeSpreadSour
MomentumSpreadOsc
PercentSpread
PercentSpreadSour
Rsc
SpreadOsc

VOLATILITY

AnnVolatility
AvTrueRange - ATR
AvTrueRangeP - ATR %
Base
BollVolatility
BollVolatilityOsc
ClosesDSi - DSiCloses
CG
FDI
GapTrading
INVOSC
MasSindex
PriceEvolution
RLA
RSL
RVI
SNRI
TCF
TDVLT
Tickschart
TTFIndicator

<u>VOLATILITY</u>

UlcerIndex

VHF

VolatilityChakin

VolatilityIndex

VolatilityIndexP

VolStop

<u>VOLUMEN</u>

AccumDistrib

AvVolumenRoc

ChaikinOsc

CumVol

EaseMov

FORCE

IPV

IVN

KVO

MFI

OBV

OPINT

PVTrend

TFSVOL

TICKSCHARTSVOL

VolDSifPercent

VolumeRoc

Vol

AVERAGES

�«◼» AvAdapted–Adaptative Moving Average

Introduction:

The adaptative moving average is frequently used together with some other indicators or oscillators in order to smooth the market fluctuations.

This average is built from the VHF oscillator and its aim is to use the market volatility in order to adapt its movement to the moving average decreasing this movement when the volatility is high and accelerating it when the volatility decreases.

This indicator turns out to be especially useful in markets with high contrasts in their volatility averages.

The usual procedure, when trading with moving averages, is to buy when the price of an asset moves above the value of an average and to sell when it falls below it again. An essential element for the moving average interpretation is the selected period. This period must be optimized depending on the asset we work with.

This tool can be used individually or as an analysis complement to other tools and oscillators.

Formula:

Data	Description
VHF_i	Value of the VHF oscillator in the current bar.
$Data_i$	Value in the current bar (Close, Open, High ...)

For the first **p** bars:

$$Med = \frac{1}{p}\sum_{i=1}^{p}VHF_i$$

For p**+1** and subsequent:

$$Dato1 = \left[0{,}078 * \left(\frac{VHF_i}{VHF_{i-(p+1)}} \right) * Dato_i \right] \qquad Dato2 = \left[\left(1 - \left(0{,}078 * \left(\frac{VHF_i}{VHF_{i-(p+1)}} \right) \right) \right) \right] * AvAdapted_{i-1}$$

$$AvAdapted = Dato1 + Dato2$$

Parameters:

Name	Default	Description
Data Source	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
PeriodVHF	28	Number of bars to be considered for the calculation of the VHF.
PeriodAvAdapted	12	Number of bars to be considered for the calculation of the adaptative moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

- Bullish color when the Data Source used for the calculation of the average is above the value of the indicator.
- Bearish color if the data source is below the indicator.
- Neutral color if the value of the indicator and the value of the data source are equal.

This and other aspects of the indicator are configurable in the **properties section**.

The indicator is inserted by Default on the series Data (active chart).

Chart:

■ AvExponential – Exponential Moving Average

Introduction:

The exponential moving average is frequently used together with some other indicators or oscillators in order to smooth the market fluctuations.

The usual procedure, when trading with moving averages, is to buy when the price of an asset moves above the value of an average and to sell when it falls below it again. An essential element for the moving average interpretation is the selected period. This period must be optimized depending on the asset we work with.

This tool can be used individually or as an analysis complement to other tools and oscillators.

Formulas:

Data	Description
Data$_i$	Value in the current bar (Close, Open, High ...)

For a period p:

$$AvExponential = \frac{1}{p} \sum_{p=1}^{p} Dato_i$$

We calculate the value of the coefficient **K:**

$$k = \frac{2}{p+1}$$

For p+1 and subsequent:

$$AvExponential = (Dato_i * k) + [AvExponential_{i-1} * (1-k)]$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is more than one chart inserted in the window they will be codified as Data2, Data3 etc..
Period	30	Number of bars to be considered for the calculation of the exponential moving Average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value;
bearish if the value of the Data source is bellow the value of the indicator and finally neutral color if both values are equal.
These values are fully configurable in the indicator´s **properties editor**.
The indicator is inserted by default on the Data series window (active chart).

Chart:
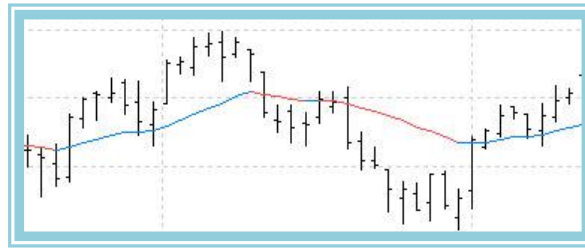
■ AvFastk

Introduction:

-

Formulas:

Data	Description
Dato$_i$	Value in the current bar (Close, Open, High ...)

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is more than one chart inserted in the same window they will be codified as Data2, Data3 etc..)
FASTKPeriod	5	

Representation criteria:

The indicator is represented by default in neutral color but this aspect among other ones, is fully configurable in the indicator´s **properties editor**.

The indicator is inserted by default in a new window.

Chart:

◼ AvFlat – Flat Moving Average

Introduction:

The flat moving average is frequently used together with other indicators or Oscillators to smooth the markets fluctuations. The movement of this average is especially slow. It has to be used with assets with low directionality over huge periods.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation. The period of the moving average is essential and must be optimized depending on the asset we work with.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

$$D1 = Re\,g_i - (p - 1)$$
$$D2 = Re\,g_i - Rb$$

Where:

Reg$_i$ is the number of the current register (1, 2, 3…)
Rb Down rounded p/2

We keep calculating:

$$Suma = \frac{1}{m}\sum_{D1}^{D2} Dato_i$$

$Aux1 = Dato(D1); Aux2 = Dato(D2)$
$D1 = D1 + 1; D2 = D2 + 1$
$Suma = Suma - Aux1 + Aux2$
$MM = Suma * InvAvgPer$

Where:

- *Aux1 and Aux2 are auxiliar variable to stock intermediate values during the calculation*
- *InvAvgPer = 1 / ((Period -1) - Rb +1)*

$$P1 = MM * (m - 1) \qquad P2 = P1 + Dato_i \qquad AvFlat = \frac{P2}{m}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is more than one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Number of bars to be considered for the calculation of the flat moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color if both values are equal. These values are fully configurable in the indicator´s properties editor.

Chart:

■ AvLSie1–Moving Average LSie-1

Introduction:

The moving average LSie-1 includes additional ressources to improve the traditional moving averages. In these traditional moving averages, an inexorable approach to the price line occurs involving most of the times a buy or sells Signal. On the contrary, on the lSie moving averages we use parameters of accelerated distancing or approaching to the prices depending on the behavior of these prices.

The result is a moving average with a strange movement but still very efficient especially when prices move inside a congestion zone.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation

The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
Máx$_i$	Current bar´s high.
Mín$_i$	Current bar´s low.
Máx$_{i-1}$	Previous bar´s high.
Mín$_{i-1}$	Previous bar´s low.
Cie$_i$	Current bar close.

$$AvLife1_i = \sum_{p=1}^{p} Dato_i$$

of the first **p** closes

Si $\dfrac{Max_i + Min_i}{2} \geq AvLife1_{i-1}$ then

Si $\dfrac{Max_i + Min_i}{2} \geq \dfrac{Max_{i-1} + Min_{i-1}}{2}$ then

$$AvLife1_i = \left(AvLife1_{i-1} * (p-1)\right) + \left(\dfrac{\dfrac{Max_i + Min_i}{2}}{p}\right)$$

On the contrary

$$AvLife1_i = AvLife1_{i-1}$$

Si $\dfrac{Max_i + Min_i}{2} < AvLife1_{i-1}$ then

If $\dfrac{Max_i + Min_i}{2} > \dfrac{Max_{i-1} + Min_{i-1}}{2}$ then

$$AvLife1_i = \left(AvLife1_{i-1} * (p-1)\right) + \left[\dfrac{\dfrac{Max_i + Min_i}{2}}{p}\right]$$

On the contrary

$$AvLife1_i = AvLife1_{i-1}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..
Period	6	Number of bars to be considered for the calculation of the LSie-1 moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish ifthe value of the Data source is bellow the value of the indicator and finally neutral color If bothvalues are equal.

These values are fully configurable in the **indicator´s properties editor**. It is inserted by default in the Data series (Active chart).

Chart:

◻ AvLSie2 – Moving Average LSie -2

Introduction:

The moving average LSie-1 includes additional ressources to improve the traditional moving averages. In these traditional moving averages, an inexorable approach to the price line occurs involving most of the times a buy or sell Signal. On the contrary, on the lSie moving averages we use parameters of accelerated distancing or approaching to the prices depending on the behavior of these prices.

The result is a moving average with a strange movement but still very efficient especially when prices move inside a congestion zone.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation..

The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
Máx$_i$	Current bar´s high.
Mín$_i$	Current bar´s low.
Máx$_{i-1}$	Previous bar´s high.
Mín$_{i-1}$	Previous bar´s low.
Cie$_i$	Current bar close.

$$AvLife2_i = \sum_{p-1}^{p} Dato_i$$ of the first **p** closes

$$DIF = \left| \frac{(Max_i - Min_i)}{p} \right|$$

$$DIF1 = |Cie_i - Cie_{i-1}|$$

If $\dfrac{Max_i + Min_i}{2} \geq AvLife2_{i-1}$ then

If $\dfrac{Max_i + Min_i}{2} < \dfrac{Max_{i-1} + Min_{i-1}}{2}$ then

$$AvLife2_i = \left(AvLife2_{i-1} * (p-1)\right) + \left[\frac{\left(\dfrac{Max_i + Min_i}{2}\right) + DIF1}{p} \right]$$

on the contrary

$$AvLife2_i = AvLife2_{i-1} - DIF$$

If $\dfrac{Max_i + Min_i}{2} < AvLife2_{i-1}$ then

Si $\left(Max + Min_i\right) > \dfrac{Max_{i-1} + Min_{i-1}}{2}$ then

$$AvLife2_i = \left(AvLife2_{i-1} * (p-1)\right) + \left[\frac{\left(\dfrac{Max_i + Min_i}{2}\right) - DIF1}{p} \right]$$

on the contrary

$$AvLife2_i = AvLife2_{i-1} + DIF$$

Parameters:

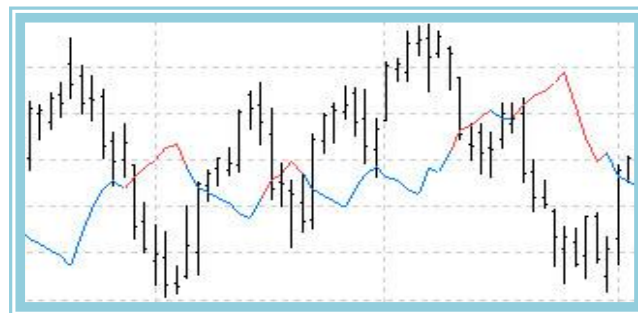| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..
Period	6	Number of bars to be considered for the calculation of the LSie-2 moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish ifthe value of the Data source is bellow the value of the indicator and finally neutral color If bothvalues are equal.

These values are fully configurable in the indicator´s properties editor.

It is inserted by default in the Data series (Active chart).

Chart:

■ AvLSie3 – Moving Average LSie-3

Introduction:

The moving average LSie-1 includes additional ressources to improve the traditional moving averages. In these traditional moving averages, an inexorable approach to the price line occurs involving most of the times a buy or sell Signal. On the contrary, on the lSie moving averages we use parameters of accelerated distancing or approaching to the prices depending on the behavior of these prices.

The result is a moving average with a strange movement but still very efficient especially when prices move inside a congestion zone.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation..

The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
Máx$_i$	Current bar´s high.
Mín$_i$	Current bar´s low.
Máx$_{i-1}$	Previous bar´s high.
Mín$_{i-1}$	Previous bar´s low.
Cie$_i$	Current bar close.

$$AvLife3_i = \sum_{p=1}^{p} Dato_i$$

of the first **p** closes

$$DIF = \left| \frac{(Max_i - Min_i)}{p} \right|$$

$$DIF1 = |Cie_i - Cie_{i-1}|$$

If $\dfrac{Max_i + Min_i}{2} < \dfrac{Max_{i-1} + Min_{i-1}}{2}$ then

$$AvLife3_i = (AvLife3_{i-1} * (p - 1)) + \left[\frac{\left(\frac{Max_i + Min_i}{2} \right) + DIF1}{p} \right]$$

On the contrary

$$AvLife3_i = AvLife3_{i-1} - DIF$$

Parameters:

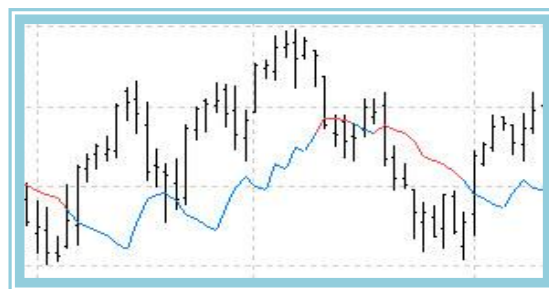| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..
Period	6	Number of bars to be considered for the calculation of the LSie-2 moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color If bothvalues are equal.

These values are fully configurable in the indicator´s properties editor.

It is inserted by default in the Data series (Active chart).

Chart:

◻ AvQuick – Accelerated Moving Average

Introduction:

The accelerated moving average is frequently used along with other indicators or oscillators to smooth the markets fluctuations.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation. The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

Día	Weigth(Peso)	Result(Resultado)
$Dato_1$	$1*\sqrt{f}$	$Weigth_1*Dato_1$
$Dato_2$	$2*\sqrt{f}$	$Weigth_2*Dato_2$
$Dato_3$	$3*\sqrt{f}$	$Weigth_3*Dato_3$
.	.	.
.	.	.
.	.	.
$Dato_p$	$p*\sqrt{f}$	$Weigth_p*Dato_p$

$$AvQuick = \frac{\sum_{i=1}^{p} Re\,sultado_i}{\sum_{i=1}^{p} Peso_i}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Number of bars to be considered for the representation of the accelerated moving average.
Factor_a	2	Acceleration factor.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color ff both values are equal.

These values are fully configurable in **the indicator´s properties editor**.

It is inserted by default in the Data series (Active chart)

Chart:

■ AvSimple – Simple Moving average

Introduction:

The Simple moving average in a chart is the average price of the value over a certain period of time. It represents the consensus of the investor in relation to this asset over this period of time. Naturally, Si the price of the asset is above the selected Simple moving average the price is expected to move higher and in the opposite conditions, the price is expected to move lower.

The Simple moving average, also called arithmetic is calculated by adding the closing price (or open, low, close, etc.) over a certain period of time and dividing it by the number of bars defining this period.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

$$AvSimple = \frac{1}{p}\sum_{i-1}^{p} Dato_i$$

Parameters:

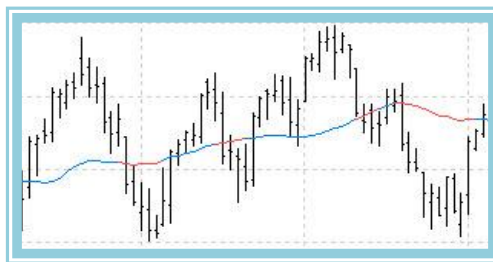| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..)
Period	30	Number of bars to be considered for the calculation of the exponential moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color if bothvalues are equal..

 These values are fully configurable in **the indicator´s properties editor**.

It is inserted by default in the Data series (Active chart).

Chart:

■ AvTriangular –Triangular Moving Average

Introduction:

The triangular moving average is frequently used together with other indicators or Oscillators to smooth or armonize the market fluctuations. This average is built based on a double moving average that smoothes the prices fluctuations.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite situation. The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

$$P1 = R.Alza.\frac{p}{2}$$ Where R.Alza means up round of

$$P2 = R.Baja.\left(\frac{p}{2}\right)+1$$ Where R.Baja means down round of

$$MediaP1 = \frac{1}{P1}\sum_{i=1}^{P1} Dato_i$$

$$AvTriangular = \frac{1}{P2}\sum_{i=0}^{P2} MediaP1$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Number of bars to be considered for the representation of the triangular moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color if both values are equal.

 These values are fully configurable in the indicator´s properties editor.

It is inserted by default in the Data series (Active chart).

Chart:

■ AvWeigthed – Weighted Monving Average

Introduction:

The weighted moving average is frequently used together with other indicators or Oscillators to smooth or armonize the market fluctuations. This average ascribes a different weight to the different closes of each of the days. The closest ones will have a higer weight in the calculation of the average.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation. The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

Day	Weight	Data	Result
Clo_1	1	d_1	$1*d_1$
Clo_2	2	d_2	$2*d_2$
Clo_3	3	d_3	$3*d_3$
Cie_4	4	d_4	$4*d_4$
...	...	...	...
Cie_p	p	d_p	$p*d_p$

$$AvWeighted = \frac{\sum_{i=1}^{p} Re\,sultado_i}{\sum_{i=1}^{p} Peso_i}$$

Parameters:

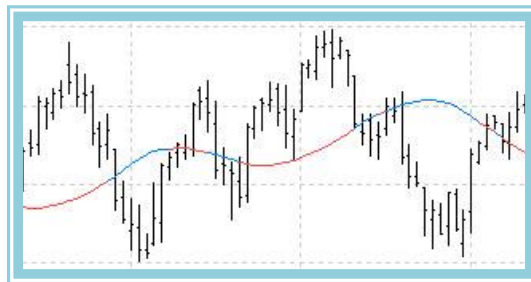| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc...)
Period	30	Number of bars to be used for the calculation of the weighted moving average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish if the value of the Data source is bellow the value of the indicator and finally neutral color if both values are equal.

These values are fully configurable in the **indicator´s properties editor**.

It is inserted by default in the Data series (Active chart).

Chart:

AvWilder–Wilder Moving Average

Introduction:

The Wilder moving average is frequently used together with other indicators and Oscillators to smooth or harmonize the market fluctuations. This average is built based on a Simple moving average smoothed with the usual procedure used by Wilder to soften the movement in several of his Oscillators.

The usual strategy with the moving averages is to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite Situation.The period of the moving average is essential and must be optimized depending on the asset we work with.

This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High …)

Fro a period **p**:

$$AvWilder = \frac{1}{p}\sum_{i-1}^{p} Dato_i$$

For **p+1** and subsequent:

$$AvWilder_i = \frac{(p-1)*AvWilder_{i-1} + Dato_i}{p}$$

Parameters:

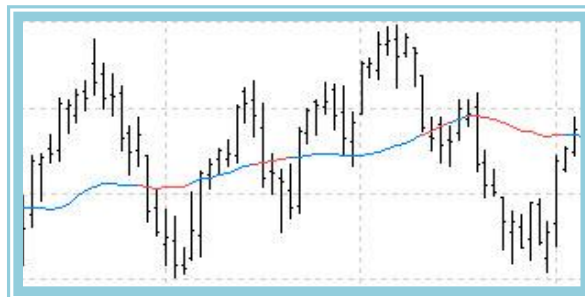| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Number of bars to be used for the calculation of the Wilder Moving Average.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

We use the bullish color when the data source used for the indicator calculation is above the indicator value; bearish ifthe value of the Data source is bellow the value of the indicator and finally neutral color If bothvalues are equal.

These values are fully configurable in the **indicator´s properties editor**.

It is inserted by default in the Data series (Active chart).

Chart:

◻ BollingerBands – BollingerBands

Introduction:

In both the Channels and the Bollinger bands, prices tend to evolve inside them. The characteristics distinguishing the bands are that their range is based on the volatility of the quotes. Over periods with strong oscillations (high volatility) the range of the bands increases. On the contrary periods with low volatility produces bands with lower range.

Interpretation of the Bollinger bands:

- A squeeze of the bands normally results on big movements.
- When prices violate the bands the trend is likely to continue.
- High and low prices outside the bands followed by high and low prices inside the band normally means that the trend is likely to change its direction.
- During flat movements, the fact that prices reach the bands can involve overbuying or overselling conditions.
- The Bollinger Bands are normally used on the charts but can be applied to any indicators.

The Bollinger Bands are especially sensible to moments with huge market fluctuations as they increase their range considerably while when the market fluctuates in range the bands tend to squeeze and a breakout in one sense or another is likely to happen.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (Close, Open, High ...)

First we calculate the moving average (exponential, Simple, smoothed etc.) of the first **p** period:

$$Bollinguer\ Bands = \frac{1}{p}\sum_{i-1}^{i+p} Dato_i$$

The standard deviation in absolute value is calculated the following way:

$$M2 = \left| Desv.Tipica\left(Dato_i - Bollinguer\ Bands\right)\right|$$

Finally we calculate the value of the bands:

$$B.Sup_i = Bollinguer\ Bands + (k * M2)$$

$$B.Inf_i = Bollinguer\ Bands - (k * M2)$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc...)
Period	25	Number of bars to be considered for the calculation of the exponential moving average.
CoeficienteM	2	Multiplying coefficient.
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)
Media	Simple	Type of average we are willing to use (Simple, exponential, weighted, etc.)

Representation criteria:

The 3 lines of the Data are represented in neutral color. These aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by Default in the data series.

Chart:

◼ DisplaceAverages – Displace Averages

Introduction:

This indicator enables to modify the position of any kind of average by displacing it. In function of the selected parameters, we will be able to displace it **rightwards**, **leftwards, or vertically**.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..)
AverageType	RSI	Type of average to be used for the calculation.
DisplacementType	0	Type of displacement to be applied to the average: 0 horizontal displacement 1 vertical displacement -1 Vertical and Horizontal displacement
Period	25	Number of bars to be considered for the calculation of the average.
K	5	Number of bars rightward or leftwards to displace the average.
VerticalPercentage	0	Percentage to be applied to the average in order to diplace it vertically. Si the value is poSitive the average will be displaced upwards and Si negative downwards.

A horizontal displacement to the right is managed by giving a positive value to the parameter **k**, while a diplacement to the left is managed with a negative value to the same parameter.

An upwards vertical displacement is managed by assigning a positive value to the parameter **VerticalPercentage, while** a downwards vertical displacement is managed with a negative value. The type of displacement (vertical or horizontal) will depend on the value given to the variable **DisplacementType**.
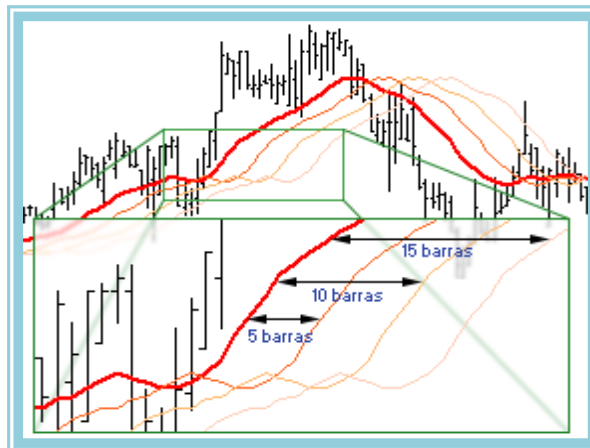
Representation criteria:

The indicator line is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**. The indicator is inserted by Default in the Data window (active chart).

Chart:

🔲 DMAIND – DMA Indicator

Introduction:

DMA means Displaced Moving Average**.** This indicator represents the value of a **Simple moving average** diplaced a certain number of bars backwards.

Fórmula:

-

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc...)
Period	25	Number of bars to be considered for the calculation of a Simple moving average
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)
K	5	Number of bars backward to obtain the value of the average

Representation criteria:

The indicator line is represented in neutral color, but this an other aspects can be configured in the **indicator´s properties editor.**

The indicator is inserted by Default in a new window.

Chart:

🔲 Keltner

Introduction:

There is different ways of building bands or channels based on the prices of the different assets.

The indicator we will describe next can be included in the group of the **Engulfing indicators.** This theory suggests that prices tend to move between certain limits. This way, when the quote reaches one of these limits an abnormal situation occurs offering a good trade opportunity. There are several methods based on this theory and the difference between them is the calculation of the bands, the space between them and their interpretation.

Representation of the Keltner indicator:

> **Central Band:** Simple Moving Averages on price close.
> **Upper Band:** The result of adding a certain percentage to the central band.
> **Lower band:** The result of substracting a certain percentage to this band.

There are different strategies to be applied to this indicator; one of them is to expect a reaction in the opposite sense when the prices touch one of these bands.

The asset is overbought when prices touch the upper band and oversold when prices touch the lower band.

Formula:

-

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc...)
Period	10	Period used to calculate the moving average and the range multiplier used by the indicator.
SimpleAverageDataSource	Close	Field of the quote to calculate the Simple moving average.
Constant	1.5	Multiplier used for the calculation of the bands. The range between them will evolve depending on its value.

Representation criteria:

The indicator line is represented in neutral color, but this an other aspects can be configured in the **indicator´s properties editor.**

The indicator is inserted by Default in the Data window (active chart).

Chart:

◼ Parabolic SAR- Parabolic indicator

Introduction:

The **Parabolic SAR** is a trend following indicator and is very frequently used by traders and investors. Its aim is to provide good exit points for our longs and short trades by keeping up as long as posible in the markets to avoid losing good trades with an early exit.

This indicator was developped by **Welles Wilder,** the value of the exit points will varíate depending on the price movement. SAR means **stop and reversal** and refers to the fact that when prices touch the value of the parabolic (stop point), the indicator reverses and starts and opposite movement.

The indicator is more frequently use to provide us with **stop points** than to determine the market trend.

Wilder recommends establishing the trend with other tools and then operating with the Parabolic SAR in the direction of thistrend:

-If the trend is bullish, start a **long** position when the **Parabolic indicator** is **bellow the prices**.
- If the trend is bearish, start a **short position** when the indicator is **above the prices**. In both cases the indicator is to be used as a stop loss provider.

This indicator basically tries to forecast the prices range basing itself in the following idea:
-If prices make a high and then drop, the parabolic starts his travel down from this point **and getting closer to the prices untill it reaches them** (stop of the Parabolic SAR).

- Then the parabolic **changes its direction** (reversal of the Parabolic SAR) and will start is journey up in this low point.

- Now, if prices rise the parabolic also rises getting closer to the prices…..

Formula:

Data	Description
Max$_i$	High of the current bar
Min$_{i-1}$	Low of the current bar

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Coef_Aceleration	0.02	Acceleration factor of the Parabolic through the prices. The higher this coefficient the higher the acceleration.
Tope_AF	0.2	Maximum acceleration price allow for the parabolic.

The higher the acceleration coefficient is the more agressive the indicator is.

Representation criteria:

- The line of the indicator is represented in bullish color when bellow prices as, under this situation, it serves as stop for the bullish trend.
- The line of the indicator is represented in bearish color when above prices as, under this situation, it serves as stop for the bearish trend

This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by Default on the Data source Data (Active Chart).

Chart:

◻ RainbowChart –

Introduction:

The advantage of the raimbow averages in relation with the classic averages derives from two different concepts. On one hand the distance between the random fluctuations of the quotes avoids false signals and on the other hand the original form of presenting the trend offers a range movement zone with often results in good signals in the congestion zones.

The strategy is the usual with the moving averages, to buy when the price of an asset overcomes the value of the moving average and to sell in the opposite situation. This tool can be used individually or together with other indicators and Oscillators.

Formulas:

Data	Description
Dato$_i$	Value in the current bar (Close, Open, High ...)

First average $\qquad RCH1 = Dato_1 \qquad RCH1 = 0,5*(Dato_i + Dato_{i-1})$

For the second bar of this first average $RCH1 = 0,5*(Dato_i + Dato_{i-1})$

For the third bar of this first average

Second average $\quad RCH2 = Media1$

For the second bar of this second average $\quad RCH2 = 0,5*(Media1_i + Media1_{i-1})$

For the third bar of this second average $\quad RCH2 = 0,5*(Media1_i + Media1_{i-1})$

Third average $\quad RCH3 = Media2$

For the second bar of this third average $\quad RCH3 = 0,5*(Media2_i + Media2_{i-1})$

For the third bar of this third average $\quad RCH3 = 0,5*(Media2_i + Media2_{i-1})$

And so foth and so on until "m" averages

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
nMedias	10	Number of averages to be considered
PriceSource	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

These values are fully configurable in the indicator´s properties editor.

It is inserted by default in the Data series (Active chart)

Chart:
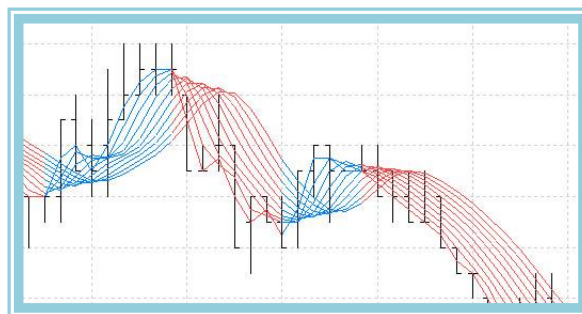
▣ SWMA – Sine Weighted Moving Average

Introduction:

SWMA is the achronym of Sine-Weighted Moving Average. In the article How Smooth Is Your Data Smoother? From Patrick Lafferty, the function Sine is used to smoothe the price curve. This is in consequence its main target. We recommend the use of indicators applied to the line SWMA as an alternative to the prices. In most of the cases the results are improved.

Formulas:

-

Parameters:

| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	5	Number of bars to be considered for the calculation of the indicator

Representation criteria:

The line of the indicator is represented by Default in neutral color. This and other aspects are fully configurable in the **properties editor of the indicator**. It is normally used in the Data series (Active Chart).

Chart:

■ TEMAIND – TEMA Indicator

Introduction:

TEMA is the acronym of **Triple Exponential Moving Average** (Triple Media Móvil Exponencial). It can be used with criterias Similar to the traditional moving averages.

The aim of this indicator is to smooth the prices but it can also be used to smooth the curves of other indicators.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
AvExponentialPeriod	5	Number of bars to be considered for the calculation of the indicator
AvExponentialData2	Close	Field of the bar used for the calculation (Close, Open, High...)

Representation criteria:

The line of the indicator is represented by default in neutral color. This and other aspects are fully configurable in the **indicator´s properties editor.**

The indicator is normally inserted in the Data window (Active Chart).

Chart:
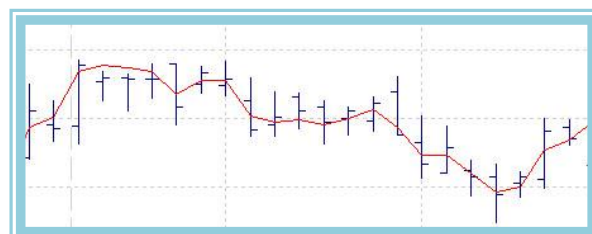
Bibliography:

This indicator was devellopped by Patrick Mulloy and published in January 1994 In Stocks & Commodities.

▣ TFS Line

Introduction:

This indicator calculates the méedium point between the high and the low of a group of bars.

Formulas:

Data	Description
Max$_i$	High of the previous n bars
Mín$_i$	Low of the previous n bars

$$TFSi = (Max_i + Min_i)/2$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
nBars	10	Number of bars to be used for the calculation of the average point.

If the number of previous bars is lower than the number indicated in the parameter **nBars**, the calculation will be run with the existing bars.

Representation criteria:

The line of the indicator is represented by default in neutral color. This and other aspects are fully configurable in the **indicator´s properties editor.**

The indicator is normally inserted in the Data window (Active Chart).

Chart:

▣ TSF – Time Series Forecast

Introduction:

This indicator is based on a regression line and uses **the method of minimal squares** (minimizes the distance existing between the regression line and each of the existing points).

This is a statistical tool use to determine the future prices of the market in relation to past prices. It does so by determining the increasing or decreasing slope of the trend and projecting these calculations into the future.

When prices move above the indicator the trend is considered bullish while when they move bellow the indicator it is considered bearish.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	10	Number of bars to be used for the calculation of the average point.
Data_Source	Close	Field of the bar used for the calculation (Close, Open, High...)
Displacement	0	Number of bars backwards or forwards on which the regression line is based.

Representation criteria:

The line of the indicator is represented by default in neutral color. This and other aspects are configurable in the **indicator´s properties editor**.

The indicator is normally inserted on the Data window (Active chart).
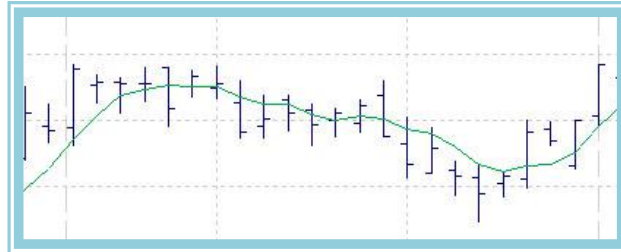
Chart:

WeightClose – Weighted Closes Line

Introduction:

This indicators draws a line representing the average of the prices of a day where the closing price is overweighted. This indicator can be used as a change of trend line in charts with inferior dimension. We can for example draw the line of the indicator in a daily chart and use it in a 10 minutes intraday chart.

Another way of using this indicator is to apply it to other indicators as, with this indicator, the influence of the extreme prices of a bar is reduced as it weights the closing price as the most significant price of the day.

Formulas:

Data	Description
$Máx_i$	High of the current bar.
$Mín_i$	Low of the current bar.
Cie_i	Close of the current bar.
K	Weight.

$$WeightClose = \frac{(Cie_i * k) + Max_i + Min_i}{(2 + k)}$$

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Coeficiente	2	Weighting coefficient.

Representation criteria:

The line of the indicator is represented by default in neutral color. This and other aspects are configurable in the **indicator´s properties editor**.

The indicator is normally inserted on the Data window (Active chart).

Chart:
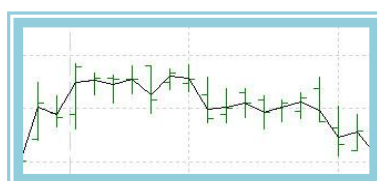
■ Zig-Zag Indicator

Introduction:

This indicator filters the movements occuring in the underlying asset (price or indicator) if these prices are lower than a defined amount. It is normally used to detect the most significant changes of trend.

It is very important to know that previous values of the indicator can be modified later on depending on the new prices, as the pivot can be changed by a more significant new pivot. This is why we do not recommend creating any system based on this indicator.

The idicator is calculated by placing imaginary poins in the chart when the prices change their direction for the specified amount.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Fields	Close	Field of the bar on which the indicator is applied.
nBars	3	Number of bars necessary for the formation of the bullish/bearish pivot.
nDecimals	3	Number of decimals
CalculateType	0	If this value is worth 0 the calculation is made in cash/points. If 1, in percentage.
Percentage	10	Minimal rate of change (in points or %)In funtion of the variable **CalculateType** and in relation with the previous bullish or bearish pivot.

Representation criteria:

The line of the indicator is represented by Default in neutral color however this and other aspects are configurable in the **indicator´s properties editor.**

The indicator is to be plotted in the Data window (Active chart).

Chart:

CLASSIC

☐ ADX

Introduction:

This indicator is part of the well known system **"Directional Movement System"**. The oscillator tries to give an answer to the question of measuring the amount of directional movement over a certain period frame of the prices line.

It oscillates around an intermediate line Situated at 20. Values superior to 20 indicate a victory of directionality from congestion. Values bellow this value indicates lack of directionality.

The advice of the creator of the indicator is to operate in markets with an ADX superior to 25 and to keep the position while the ADX remains above 20.The experience of many investors indicates that the best use of the ADX is as a filter to signals provided by other Oscillators.

ADX uses the Data of the DI+(Directional Positive Index) and DI-(Direccional Negative Index). It gets averages from both Oscillators to present them as a Single data related to price directionality.

Formulas:

First we neeed to obtain the DI+ and DI- for a period p=14 (por Default)

In the following bar we run this calculation:

$$DX = \frac{|DIPositive - DINegative|*100}{DIPositive + DINegative}$$

For bar number 28 (14 bars of DX) we calculate the following:

$$ADX = \left(\frac{\sum_{i=0}^{p} DX_I}{P}\right)$$

For the next bar we calculate:

$$ADX_i = \frac{(ADX_{i-1}*(p-1)) + DX_i}{p}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is more than one chart inserted in the window they will be codified as Data2, Data3 etc..)
Period	14	Number of bars to consider
BandValue	20	Band drawn for better vision in the indicator representation

Representation criteria:

When the value of the indicator is above 25 we represent it in bullish color while when it is bellow 20 we represent it in bearish color. When the indicator oscillates between 20 and 25 we represent it in flat color. This and other aspects are **configurable in the indicator´s properties editor.**

It is inserted by Default in a new window.

Chart:
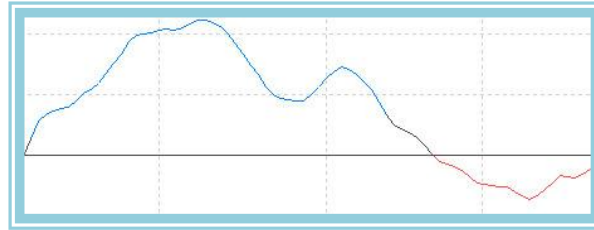
Bibliography:

The ADX was created by Wilder and published in his book "New Concepts en Technical Trading Systems".

ADXR – Average index of ADX

Introduction:
This indicator is part of the well known system **"Directional Movement System "**. The oscillator tries to give an answer to the question of measuring the amount of directional movement over a certain period frame of the prices line.

It oscillates around an intermediate line situated at 20. Values superior to 20 indicate a victory of directionality from congestion. Values bellow this value indicates lack of directionality.
The advice of the creator of the indicator is to operate in markets with an ADXR superior to 25 and to keep the position while the ADXR remains above 20.The experience of many investors indicates that the best use of the ADX is as a filter to signals provided by other Oscillators.

ADX uses the Data of the DI+(Direccional PoSitive Index) and DI-(Direccional Negative Index).It gets averages from both Oscillators to present then as a Single data related to price directionality.

Formulas:

$$ADXR = \frac{ADX_i - ADX_{i-(p-1)}}{2}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered
BandValue	20	Banda drawn for better indicator visualization.

Representation criteria:

When the value of the indicator is above 25 we represent it in bullish color while when it is bellow 20 we represent it in bearish color. When the indicator oscillates between 20 and 25 we represent it in flat color. This and other aspects are **configurable in the indicator´s properties editor.**

It is inserted by Default in a new window.

Chart:
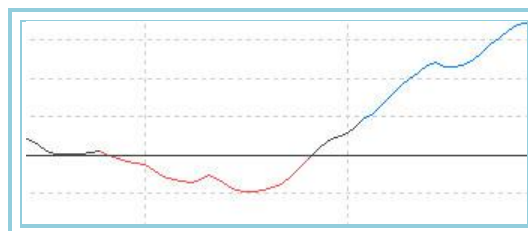
Bibliography:

The ADXR was created by Wilder and published in his book "New Concepts en Technical Trading Systems".

◼ CCI – Commodity Channel Index

Introduction:

The Commodities Channel Index shows the difference between the price of any asset and any of its moving averages. High values of the CCI, mean prices over the average while low values of the CCI mean prices bellow the average.

There are two ways to use the CCI, looking for divergences or using it to detect overbuying or overselling zones.

The divergences occur when new highs/lows of teh prices are not followed by new high/lows of the indicator. These divergences are frequently accompanied by a change of trend.

The CCI oscillates around a certain level depending on an internal constant of the calculation, for example +25 ó -25. Values above +25 mean overbuying conditions while values belllow 25 mean overselling conditions.

On the other hand, the CCI considers that 70 - 80% of the market movement is included in a scale comprised between +25 y -25. Many analysts consider that the market is to be bought with CCI values over 25, and to be sold with CCI values bellow 25.

These recommendations depend on the type of market and the internal constant being used. Visual Chart provides an optimization tool to help us to find the best values of the indicator.

Formulas:

Data	Description
Máx$_i$	High of the current bar.
Mín$_i$	Low of the current bar
Cie$_i$	Close of the current bar

$$PT_i = \frac{(Max_i + Min_i + Cie_i)}{3}$$

$$MPT_i = \frac{1}{p}\sum_{i=0}^{i+p} PT_p$$

$$DPT_i = PT_i - MPT_i$$

$$Valor_i = MPT_i - PT_{i-p}$$

$$MValor_i = \frac{1}{p}\sum_{i=0}^{i+p} |Valor_i|$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Periodo_P	14	Number of bars to be considered for the calculation of the first average.
Periodo_M	14	Number of bars to be considered for the calculation of the second average.
MMov	0.015	Highest movement percentage allowed
BandValue	0	Band drawn for a better visualization of the indicator.

Representation criteria:

When the value of the indicator is above the value of the band we represent it in bullish color while when it is bellow the value of the band we represent it in bearish color. When the indicator oscillates between 20 and 25 we represent it in flat color. This and other aspects are **configurable in the indicator´s properties editor.**

It is inserted by Default in a new window.

Chart:

CSI – Commodities Selection Index

Introduction:

This indicator is part of the group of indicators known as **"Directional Movement System ".** This indicator tries to find objectively the best trades opportunities in a group of futures contracts.

It is to be used as a filter for the Signals provided by other systems or oscillators. To do so, the indicator used the concepts of directionality provided by the Data of the ADXR and the volatility ones provided by the ATR. It also uses the data corresponding to commisSions guarantees demanded by the market, etc.

The previous data are treated with the formulas described above and at the end of the process we will use a number that will indicate us the chances to trade with one future or another. The highest resulting values correspond with futures with high directionality and volatility thus best posSibilities of fast profits.

The procedure conSists on selecting a group of fugures and trade the ones with highest CSI.

Formulas:

Data	Description
ADXR	ADXR of the ADX
ATR	ATR-Average True Range

$$K = \left[\frac{V}{\sqrt{M}} * \frac{1}{150+C} \right] * 100$$

$$CSI_i = (ADXR_i * AvTrueRange_i * K) * 1000$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered.
ValorTick (V)	0.01	Tick value for the corresponding currency.
Garantía (M)	7000	Price/Guarantee demanded by contract.
ComiSiones (C)	0.03	CommisSions by contract.

Representation criteria:

The indicator is represented in neutral color. This and other colors are fully configurable in **the indicator´s properties editor**. It is inserted by Default in a new window.

Chart:
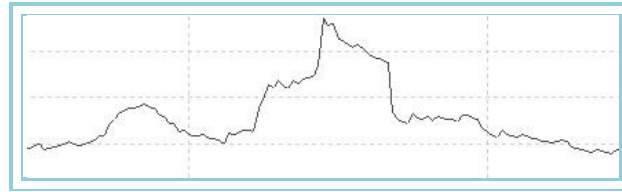
Bibliography:

The CSI was developped by Wilder and published in his book "New Concepts en Technical Trading Systems".

◼ DirectionalMov – Directional Movement

Introduction:

This indicator shows in a single screen all the previously mentionned indicators; DIPoSitive, DINegative , ADX and ADXR.

The group moves around an intermédiate line with value. Value superior to 20 indicates directionality while values bellow 20 indicates congestiono r lack of directionality.

The author used this system to builed an investment mechanic system. The rules can be resumed with the following points:

- Trade in markets with ADX or ADXR superior to 20 or 25
- Buy Si DI+ upcrosses DI-
- Sell Si DI- upcrosses DI+
- A delay can be entered in the way we buy; if there is a cross, place a buy or stop orde in the low or high of the day.

Formulas:

Data	Description
DIPoSitve	Value of the indicator DI+
DiNegative	Value of the indicator DI-
ADX	Value of the indicator ADX
ADXR	Value of the indicator ADXR

Formula of the DIPoSitive:

$$DI+ = \frac{DI_p * 100}{TR_p}$$

Formula of the DINegative:

$$DI- = \frac{DI-_p * 100}{TR_p}$$

Formula of the ADX:

$$ADX_i = \frac{(ADX_{i-1} * (p-1)) + DX_i}{p}$$

Formula of the ADXR:

$$ADXR = \frac{ADX_i - ADX_{i-(p-1)}}{2}$$

Parameters:

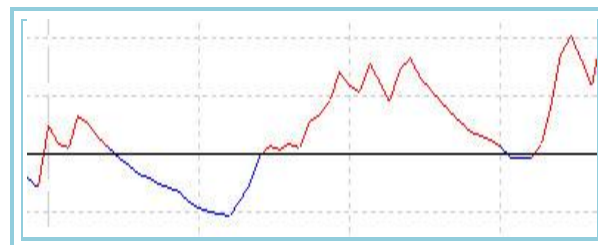| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Calculation period for the ADX.
BandValue	20	Band drawn for a better representation of the indicator.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor. The indicator is inserted by Default in a new window.

Chart:
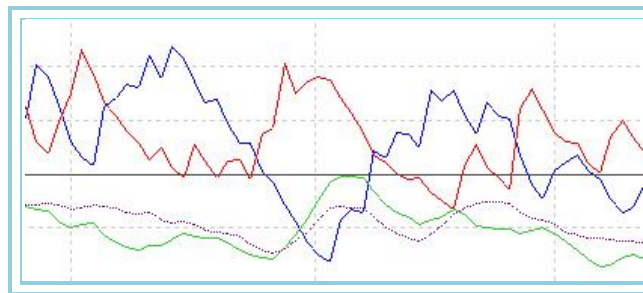
Bibliography:

The indicator Directional movement was devellepped by Wilder and published in his book "New Concepts en Technical Trading Systems".

DINegative –Directional Negative Index

Introduction:

This indicator is part of the previously mentionned "Directional Movement System ". The oscillator measures the amount of negative directional movement for a certain price period.

The indicator moves around an intermediate line situated in 20. Values superior to 20 indicate negative directionality. If the oscillator falls bellow 20 it suggest we are in a congestion zone or in a zone with lack of directionality.

The author recommends to sell the markets with a DI- above 25 and to stay away from markets where the DI- is bellow 20. The experience of many operators suggests that it is advisable to use the indicator as a filter for signals given by other indicators. These signals will only be executed with a DI- indicator above 25.

Formulas:

Data	Description
Max$_i$	High of the bar
Min$_i$	Low of the bar
Cie$_i$	Close of the bar

From the second bar we obtain TRI$_i$ selecting the highest value from:

$$\left|Max_i - Min_i\right|$$

$$\left|Cie_{i-1} - Max_i\right|$$

$$\left|Cie_{i-1} - Min_i\right|$$

From the second bar we start calculating the following formula:

$$DI_1- = Min_{i-1} - Min_i$$

(This data will only be taken into account if the diiference is negative

For a period P we calculate:

$$\sum_{p-1}^{p} TR_i \quad \sum_{p-1}^{p} DI_i -$$

Fort he bar P+1 and subsequent, the calculation will be:

$$TR_p = TR_{i-1} - \left|\frac{TR_{i-1}}{p}\right| + TR_i$$

$$DI_p- = DI -_{i-1} - \left|\frac{DI -_{i-1}}{p}\right| + DI_i -$$

$$DINegative = \frac{DI -_p *100}{TR_p}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation of the indicator
BandValue	20	Band drawn for a better representation of the indicator.

Representation criteria:

The indicator is drawn in bullish color when above 20 and bearish when bellow 20. This and other aspects are fully configurable **from the indicator´s properties editor**.

It is inserted by Default in a new window.

Chart:

Bibliography:

The indicator Directional movement was develepped by Wilder and published in his book "New Concepts en Technical Trading Systems".

🔲 DIPoSitive - Directional Positive Index

Introduction:

This indicator is part of the previously mentionned "Directional Movement System ". The oscillator measures the amount of positive directional movement for a certain price period.

The indicator moves around an intermediate line situated in 20. Values superior to 20 indicate positive directionality. If the oscillator falls bellow 20 it suggests we are in a congestion zone or in a zone with lack of directionality.

The author recommends to buy the markets with a DI- above 25 and to stay away from markets where the DI- is bellow 20. The experience of many operators suggests that it is advisable to use the indicator as a filter for signals given by other indicators. These signals will only be executed with a DI- indicator above 25.

Formulas:

Data	Description
Max_i	High of the bar
Min_i	Low of the bar
Cie_i	Close of the bar

From the second bar we obtain TRI_i selecting the highest of:

$$\left| Max_i - Min_i \right|$$
$$\left| Cie_{i-1} - Max_i \right|$$
$$\left| Cie_{i-1} - Min_i \right|$$

From the second bar we start calculating the following formula:

$$DI_1+ = Max_i - Max_{i-1}$$

(This data will only be taken into account if the difference is poitive, on the contrary it will be 0)

For a period P we calculate:

$$\sum_{p-1}^{p} TR_i \qquad \sum_{p-1}^{p} DI_p$$

For the bar P+1 and subsequent the calculation will be:

$$TR_p = TR_{i-1} - \left| \frac{TR_{i-1}}{p} \right| + TR_i$$

$$DI_p = DI_{i-1} - \left| \frac{DI_{i-1}}{p} \right| + DI_i$$

$$DIPositive = \frac{DI_p * 100}{TR_p}$$

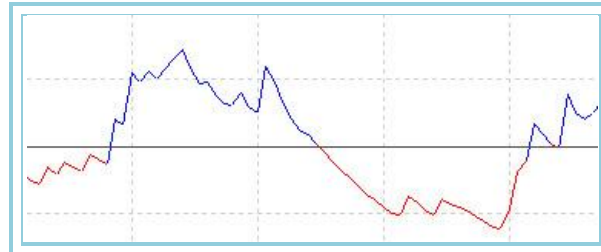**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation of the indicator
BandValue	20	Ban drawn for a better representation of the indicator.

Representation criteria:

The indicator is drawn in bullish color when above 20 and bearish when bellow 20. This and other aspects are fully configurable **from the indicator´s properties editor**.

It is inserted by Default in a new window.

Chart:

Bibliography:

The indicator Directional movement was develepped by Wilder and published in his book "New Concepts en Technical Trading Systems".

DMKOsc – DMK Oscillator

Introduction:

The DMK oscillator can be interpreted the way the Stochastic is interpreted but the difference is that the DMK presents a Single line an its oscillations are different.

The oscillator moves between 0% and 100%. Values between 80% and 100% indicate overbuying conditions while values between 0% and 20% indicate overselling conditions.

As it happens with all indicators appointing overbuying or overselling conditions, we need to wait until prices confirm the change of direction before trading with the Signal.

One of the most important features of the DMK is its ability to anticípate changes of trend in the markets. This indicator always reaches its high and changes its direction several bars before prices do so.

The DMK oscillator offers short term trading opportunities. It can also be used with a chartist point of view by looking for divergences, supports reistances and channels.

Finally, this indicator always shows cyclical trends of the prices better than prices themselves.

Formulas:

Data	Description
Max_i	High of the current bar
Max_{i+1}	High of the previous bar
Min_i	Low of the current bar
Min_{i+1}	Low of the previous bar

$$Var1 = Max_i - Max_{i-1}$$

(We only take it into account ifi the difference is positive. If not it value will be 0)

$$Var2 = Min_{i-1} - Min_i$$

(We only take it into account if the difference is positive. If not it value will be 0)

$$SUM1 = \sum_{s=1}^{s} Var1$$

$$SUM2 = \sum_{s=1}^{s} Var2$$

$$DMK = \left(\frac{SUM1}{SUM1 + SUM2} \right) * 100$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..
Period	13	Number of bars to be considered for the calculation of the indicator
UpperBand	80	Band drawn for a better clarity in the indicator representation.
LowerBand	20	Band drawn for a better clarity in the indicator representation.

Representation criteria:

The indicator is represented in bullish color when its value is above the upper line and in bearish color when its value is bellow the lower line. It will be painted in neutral color then the price is between the two bands.This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window.

Chart:
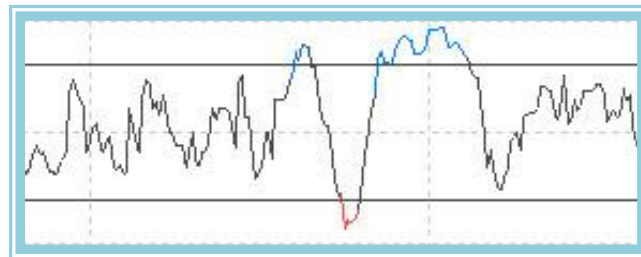
DPO – Detrend Price Oscillator

Introduction:

This indicator indentifies cycles and overbuying and overselling zones independently from the prices evolution.

The cycles with higer length are formed by cycles with lower lenght. By analyzing the lower cycles we can identify changes of trend in the superior cycles. On the other hand the DPO gives greater importance to short period of quotations without taking into account the longest periods trends.

We need to optimize the calculation period for a better observation of the lowest length prices.

The short term traders can buy when the oscillator changes into positive and sell in the opposite situation. We recommend analyzing the results asset by asset to analyze individually the way they move cyclically. It stands to reason that asset moving with great trends followed up by antitrend periods offer worse results.

Formulas:

Data	Description
Cie$_i$	Close of the current bar

$$Med_i = \frac{1}{p} \sum_{i=1}^{i+p} Cie_i$$

$$DPO_i = Cie_i - Med_{i-\left(\frac{p}{2}+1\right)}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	20	Number of bars to be considered for the calculation of the indicator.
BandValue	0	Band drawn for a better clarity in the indicator´s representation.

Representation criteria:

The line of the indicator is represented in bullish color above the band and in bearish color bellow it. This and other aspects are fully configurable in the **indicator´s properties window.**

Chart:
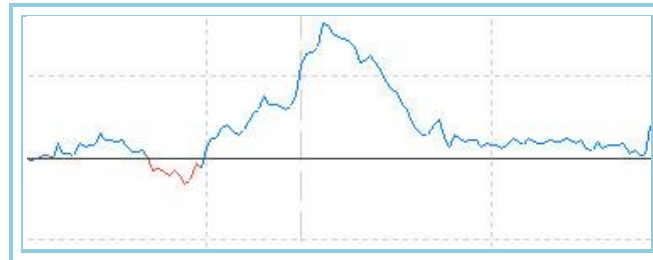
◼ MACD – Moving average convergence/divergence

Introduction:

The MACD is a trend folowing indicator showing the difference between two exponential moving averages with different calculation periods. Also another line is drawn which is the exponential average of this macd that will serve as trading signal. The indicator is very useful in markets with huge oscillations. There is three ways of using this indicator; crossovers, overbuying and overselling conditions and divergences:

Crossovers: The baaic rule is to sell when the indicator falls bellow the Signal line and to buy in the opposite conditions. It is also very popular to buy/sell when the MACD is above/below 0.

Oberbought/Oversold: The MACD is also very usefull to appoint market overselling/overbuying conditions. When the singnal line is above the MACD line and both are rising price are overbought and a correction is likely to happen. These conditions will always depend on the type of market or value.

Divergences: A change in the direction of the prices is likely to happen when there is a difference betwen new extreme points reached by the prices and extreme points reached by the indicator.

Formulas:

Data	Description
Cie$_i$	Close of the current bar (any field of the quote).

$$M1 = Med.Exp(p1).Cie_i$$
$$M2 = Med.Exp(p2).Cie_i$$

Then we calculate the MACD:

$$MACD = M1 - M2$$

Finally the Signal:

$$SIG = Med.Exp(p3).MACD$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..
PeriodoME_1(p1)	12	Number of bars to be used for the calculation of the short moving average.
PeriodoME_2(p2)	26	Number of bars to be used for the calculation of the lon moving average.
Periodo_MED_SIG(p3)	9	Number of bars to be used for the calculation of the Signal line.
PriceSource	Close	Field of the bar to be used for the calculation (high, low, close …)
BandValue	0	Band drawn for a better clarity in the indicator representation.

Representation criteria:

The lines of the indicator are drawn in bullish color when the MACD is above the 0 line and in bearish color when bellow. This and other aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by Default in a new window.

Chart:
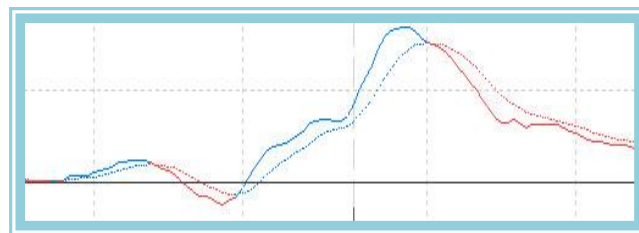
◼ Momentum – Momentum Oscillator

Introduction:

The momentum oscillator calculates the difference between the close of a bar and other closes specified in a period **n**.The indicator is used for trading purpose the way the ROC (Rate of Change) is used. Both show the velocity in the change of the price of an asset. However the ROC shows this change in percentage while the Momentum shows this change as a proportion. There is two ways to use this indicator:

As a trend following Oscillator. Buy when the indicator changes its trend in low levels; sell when the indicator changes its trend in high levels. A moving average can be applied to the indicator to check the changes of direction. Si the momentum reaches extremely low levels (relative to their historical values), the trend is likey to continue. In any case, the signals generated by the indicator must be confirmed by the price movement.

As a forecasting indicator. This method assumes that very high levels of the indicator coincide with fast rises of the prices. Very low levels of the indicators often coincide with fast failures of the prices.

Formulas:

Data	Description
Dato$_i$	Close of the current bar. Any field of the quote can be used.

$$Momentum_i = \frac{Dato_i}{Dato_{i-y}} * 100$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..
Period	12	Number of bars to be considered for the calculation of the indicator.
PriceSource	Close	Field of the bar to be used for the calculation (high, low, close …)
BandValue	100	Band drawn for a better clarity of the indicator representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and in bearish color when bellow it. This and other aspects are fully configurable **from the indicator´s properties editor**. It is inserted by Default in a new window.

Chart:
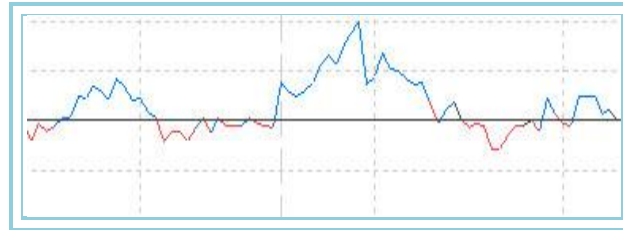
◼ MomentumSlow –

Introduction:

The momentum slow measures the difference between the close of a bar related to the close of other bars specified in a period **n**. The difference with the Classic momentum is the smoothing of the line with a moving average to calculate the Data. Also a seonc line is used for the Signal as with the MACD.

The interpretation of the indicator is exactly the same as for the omomentum Oscillator. Both indicators show the velocity of the rate of change of a stock however the Momentum indicator shows it directly while the MomentumSlow shows the rate of change smoothed by a moving average.

This indicator can be used two different ways:

As a trend following Oscillator. Buy when the indicator changes its trend in low levels; sell when the indicator changes its trend in high levels. A moving average can be applied to the indicator to check the changes of direction. Si the momentum reaches extremely low levels (relative to their historical values), the trend is likey to continue. In any case, the signals generated by the indicator must be confirmed by the price movement.

As a forecasting indicator. This method assumes that very high levels of the indicator coincide with fast rises of the prices. Very low levels of the indicators often coincide with fast failures of the prices.

The indicator can be used as the MACD the way explained above.

Formulas:

Data	Description
$Dato_i$	Close of the current bar. Any other field of the bar can be used.

$$M = Dato_i - Dato_{i-p1}$$

$$SM = \frac{1}{p2} \sum_{p2-1}^{p2} M$$

$$MTO = \frac{1}{p3} \sum_{p3-1}^{p3} SM$$

Parameters:

| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	15	Period of **p1** previous bars.
Media_1	5	Number of bars to be considered for the calculation of the first SMA

Media_2	5	Number of bars to be considered for the calculation of thesecond SMA
PriceSource	Close	Field of the bar to be used for the calculations (high, low, close …)
BandValue	0	Band drawn for a better clarity in the indicator representation.

Representation criteria:

The lines of the indicator are represented in bullish color when the line of the MomentumSlow rises and bearish color when it falls. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:
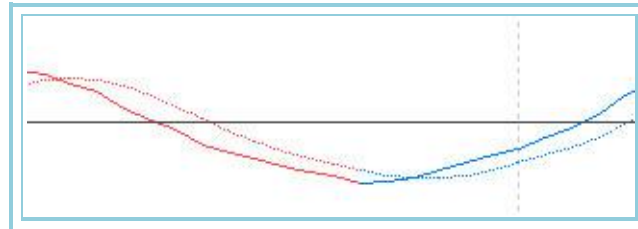
■ PriceOsc – Price Oscillator

Introduction:

The price Oscillator is a trend following indicator calculating the difference between two exponential moving averages of different periods.It Is very useful in markets with huge oscillations.

There is three ways of using this indicator; Lines crossover, overbuying/overselling conditions and divergences.

Lines crossovers. The basic rule is to sell when the indicator fails below the 0 line and to buy when it moves above this line.

Overbuying and overselling conditins. When the line is well above 0 prices are overevaluated and a change of trend is likely to occur towards levels closer to 0. These conditions variate depending on the type of market or asset we are working in.

Divergences. If there is a difference between the levels appointed by the indicator and the levels appointed by the chart a change of trend is likely to occur. These divergences are more significant when they occur in overbuying or overselling zones.

The indicator is very similar to the MACD except that this one is expressed in percentage.

The difference between the two averages is reflected under a linear chart. If the short period moving average is above the long period moving average the conditions are considered bullish, while the opposite situation is considered as bearish.

An indicator as this one calculating the difference between two MA is very efficient when appointing overbuying and overselling levels.

Formulas:

Data	Description
$Dato_i$	Close of the current bar. Any field of the bar can be used.

$$M1 = Med.Exp(p1).Dato_i$$

$$M2 = Med.Exp(p2).Dato_i$$

$$PriceOsc = \left(\frac{M1 - M2}{M1}\right) * 100$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Periodo_1	12	Number of bars to be considered for the calculation of the first MA.
Periodo_2	26	Number of bars to be considered for the calculation of the secondMA.
PriceSource	Close	Field of the bar used for the calculations (high, low, close)
BandValue	0	Band drawn for a better clarity in the indicator representation.

Representation criteria:

The indicator line is represented in bullish color when above the band and bearish color when bellow. This and other aspects are fully configurable in **the indicator´s properties editor.**

It is inserted by Default in a new window

Chart:

▣ PriceRoc – Rate of Change

Introduction:

The price ROC indicator shows the difference between the current price and the price of a period **p**. The difference can be shown in points or percentage.

It is a well known fact that prices moves in cyclical movements. The ROC presents these movements by measuring the behavior of the prices over a certain period of time. While prices raise the ROC indicator also rises, while when price fall the ROC also falls. The higher the change in the prices is the higher the ROC measure.

The time period used for the ROC can change from 1 bar period (in this case very volatile results will be produced) to as many bars as required. The most popular time periods are 12 and 25 bars for short and médium term periods.

The 12 period ROC is an excellent indicator to detect overbuying and overselling zones in the short and médium term. The higher the ROC value the higher the oberbuying level of the ROC.

However, as it happens with all the overbuying/overselling indiators, it is advisable to wait for price confirmation when a Situation of this kind occurs, before trading. A market can remain overbought for a long time period.

The 12 period ROC tends to be very cyclic, oscillating back and forwards in a very clear regular cycle. By studying the ROC cycles we can anticípate many times the market cycles.

The indicator can also be used as a mechanical system buying when the indicator line upcrosses the 0 line and selling when it downcrosses the 0 line. As in other occaSion we recommend to use Visual Chart´s optimizing features to find the best period for the indicator. It is advisable to use this indicator along with other trend following indicators.

Formulas:

Data	Description
Dato$_i$	Close of the current bar. Any other field of the bar can be used.

$$PriceROC = \left[\frac{Dato_i - Dato_{i-p}}{Dato_{i-p}}\right]*100$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	20	Number of bars to be considered for the calculations.
PriceSource	Close	Field of the bar to be used for the calculations (high, low, close …)
BandValue	0	Band drawn for a better clarity in the indicator´s representation.

Representation criteria:

The indicator line is drawn in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by Default in a new window.

Chart:
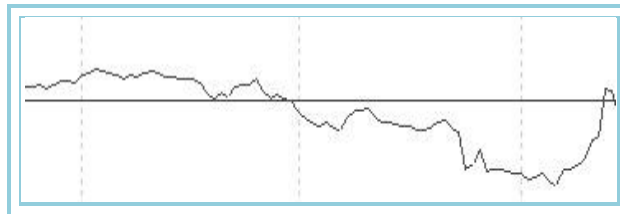
REI– ExpanSion index TDR

Introduction:

The interpretation of the indicator is very Similar to the interpretation os the Stochastic except that the current indicator is represented with a single line that moves with a faster and more cyclic trend.

The oscillator moves between -100% and 100%. Values between 70% and 100% indicates that the value is overbought while values between -70% and -100% indicates overselling conditions.

As with all this type of indicators, it is avisable to wait for prices confirmation and not rely only in the signals provided by the indicator. For example, If an overbuying/overselling indicator shows overbuying contions we need to wait for a change of trend in the prices to sell. The MACD can help us when forecasting changes in the trend.

The REI offers good opportunities for short term trading. It can also be use with a chartist vision by studying divergences, supports and resistances, short term channels and other figures.

Formulas:

Data	Description
Máx$_i$	High of the current bar.
Mín$_i$	Low of the current bar.
Cie$_i$	Close of the current bar

We run the following calculation of Dato1 and Dato2:

$$Dato1 = Max_i - Max_{(i-p1)}$$
$$Dato2 = Min_i - Min_{(i-p1)}$$

If one of these 2 conditions is true

$$Max_i \geq Min_{i-p2}$$
$$Max_i \geq Min_{i-(p2+1)}$$

Then a=1

If one of these 2 conditions is true:

$$Min_i \leq Max_{i-p2}$$
$$Min_i \leq Max_{i-(p2+1)}$$

Then b=1

Finally If a=1 and b=1 then VAR1=1

Now, we calculate VAR2 the following way:

If one of these two conditions is true

$$Max_{i-p1} \geq Min_{i-(p2+2)}$$
$$Max_{i-p2} \geq Min_{i-(p2+3)}$$

Then c=1

If one of the conditions is true:

$$Min_{i-p1} \leq Max_{i-(p2+2)}$$
$$Min_{i-p2} \leq Max_{i-(p2+3)}$$

Then d=1

Finally If Si c=1 and d=1 then VAR2=1

If $VAR1 + VAR2 > 0$ then $NUM = Dato1 + Dato2$

If $VAR1 + VAR2 = 0$ then $NUM = 0$

We calculate DEN:

$$DEN = |Dato1| + |Dato2|$$

And finally REI is calculated as:

$$REI_i = 100 * \frac{\sum_{p3-1}^{p3} NUM_{p3}}{\sum_{p3-1}^{p3} DEN_{p3}}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Periodo_1	5	Number of bars to be considered for the calculation (p1).
Periodo_2	2	Number of bars to be considered for the calculation (p2).
Periodo_3	5	Number of bars to be considered for the calculation (p3).
UpperBand	80	Band drawn for a better clarity in the indicator´s representation
MediaBand	0	Band drawn for a better clarity in the indicator´s representation
LowerBand	-80	Band drawn for a better clarity in the indicator´s representation

Representation criteria:

The line of the indicator is represented in bullish color when above the superior band, in bearish color when bellow the lower one and finally, in flat color between the two lines. This and other aspects are fully configurable in the **indicator´s properties editor.**

It is inserted by Default in a new window.

Chart:
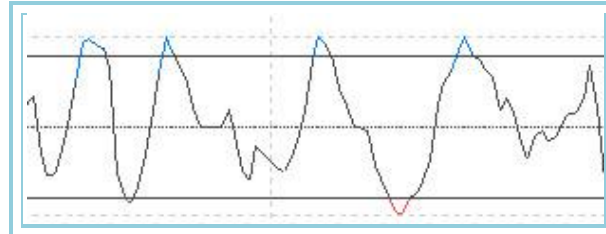
RSI– Relative Strength Index

Introduction:

The RSI is a very popular indicator. The Name is a bit confusing as it does not compare the relative difference between two assets but the internal strength of a single asset. A most appropriated name will be Internal Strength Index.

This is an oscillator moving around between 0 and 100. One of the most popular analysis methods is the search for divergences. When prices reach high values while the RSI does not reach them, a divergence is happening, prices are week and we can assume a change of trend is likely to occur. Movements of the RSI bellow its most recent low can provide the Signal for this change of trend. There are several ways to interprete the indicator:

High and Low quotes. The RSI normally reaches values above 70 or bellow 30 before the asset itself does so.

Chartist patterns. The RSI frequently forms patterns as head and shoulders, triangles etc... while these patterns cannot be noticed in the prices charts.

Breakouts. When the RSI overcomes historical levels never reached before.

Supports and resistances: Sometimes the RSI shows better than prices themseves supports and reSistance points.

Divergences. When prices reach high/low valuee while the RSI does not reach them, a divergence is happening, prices are weak and we can assume a change of trend is likely to occur.

Formulas:

Data	Description
Cie_i	Close of the current bar.
Cie_{i-1}	Close of the previous bar.

For the first **n** bars:

If $Cie_i > Cie_{i-1}$ then $ALZA_i = (Cie_i - Cie_{i-1})$

If $Cie_i < Cie_{i-1}$ then $BAJA_i = (Cie_{i-1} - Cie_i)$

$MediaALZASi = \sum_{Periodo}^{0} ALZA \, / \, Period$

$MediaBAJASi = \sum_{Periodo}^{0} BAJA \, / \, Period$

For the rest of bars:

If $Cie_i > Cie_{i-1}$ then $ALZAi = (Cie_i - Cie_{i-1})$

$If \ Cie_i < Cie_{i-1}$ then $BAJAi = (Cie_{i-1} - Cie_i)$

$MediaALZASi = (ALZA_{i-1} * (RSIDataPeriod - 1) + ALZA_i) / RSIDataPeriod$

$MediaBAJASi = (BAJA_{i-1} * (RSIDataPeriod - 1) + BAJA_i) / RSIDataPeriod$

Once the two averages have been calculated, we calculate:

$RS = 1+(MediaALZASi/MediaABAJASi)$

$RSI = 100 - (100/RS)$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation.
UpperBand	70	Band drawn for a better clarity in the indicator´s representation.
LowerBand	30	Band drawn for a better clarity in the indicator´s representation.

Representation criteria:

The indicator line is drawn by default in bullish color above the upper band in bearish color bellow the lower band. It is drawn in flat color between both bands. This and other aspects are fully configurable from the **indicator´s properties editor**.

It is inserted by default in a new window.

Chart:
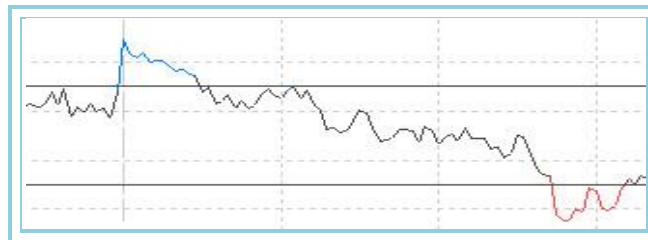
■ SSI– Stock Selection Index

Introduction:

This is part of the group of indicators forming the **"Directional Movement System "**.The oscillator tryies to find the best trading options within a group of assets.

It stands to reason that it is to be used as a filter for Signals provided by other systems or Oscillators. To manage its target, the indicator uses the concept of directionality provided by the ADXR data to which it adds the volatility data provided by the r ATR. It even uses the Data corresponding to commisSions, guarantees required by the market etc etc.

The previous Data are treated with the formulas described above and, at the end of the process, we use a number giving us the opportunity to trade with one asset or another. High values correspond with assets presenting huge directionality and volatility. (Thus greater risk and greater reward).

The procedure of the indicator consists on using a group of firms and trade the ones presenting higher values in the indicator.

Formulas:

Data	Description
ADXR	Value of the indicator ADXR.
AVTrueRange	ATR – Average True Range

$$K = \left[\frac{V}{\sqrt{Cierre_i}} * \frac{1}{150 + C} \right] *100$$

$$SSI_i = (ADXR_i * AvTrueRange_i * K) *1000$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation.
ValorTick(V)	0.01	Tick value on the corresponding currency.
ComiSiones(C)	0.03	Comissions by stock/share.

Representation criteria:

The indicator line is represented in bullish color above the upper line and bearish color bellow the lower line. It will be represented in neutral color in between. This and other aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by default in a new window.

Chart:
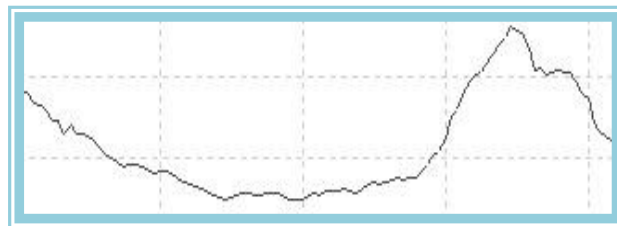
Bibliography:

The Oscillator was developped by Wilder and published withing his book "New Concepts en Technical Trading Systems".

◼ Stochastic – Stochastic Oscillator

Introduction:

The stochastic indicator is made of two lines. The main one is called %K and the other one, %D. %D is a moving average of %K. The %K is normally drawn as a solid line and %D shows as a dotted line. Both lines oscillate in between 0 and 100, and the direction of both of them confirms the direction of the market prices.

There are severl ways of trading with this indicator:

- Buy when any of the lines fall below a certain level, for example 20 and then rises above this level straight away. Sell when the line moves above 80 and then moves bellow 80 straight away.

- Buy when %K rises above %D and sell when %D is above %K.

- Look for divergences, for example when prices reach high quotes while the indicator does not reach them tendencia.

Formulas:

Data	Description
Máx$_i$	High of the current bar.
Mín$_i$	Low of the current bar.
Cie$_i$	Close of the current bar

We look for the high of a p period:

$$H = Max.per(p)$$

We calculate the low of the same period **p**:

$$L = Min.per(p)$$

$$k = \frac{(Cie_i - L)}{(H - L)} * 100$$

We calculate SK:

$$SK = \sum_{p1-1}^{p1} k$$

We calculate SD by applying to SK a period p2:

$$SD = Med.Exp(p2).SK$$

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Period where we obtain the highs and lows.
SK	3	Period of the SK moving average.
SD	3	Smoothing period of k.
Media	Exponencial	Average to run the calculation(Simple, smoothed or exponential)
UpperBand	80	Band used for a better clarity in the indicators representation.
LowerBand	20	Band used for a better clarity in the indicators representation.

Representation criteria:

This and other aspects are fully configurable in the indicator´s properties editor. It is inserted by Default in a new window.

Chart:
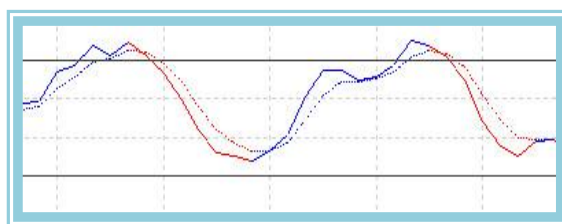
◼ StandardDev– Standard Deviation

Introduction:

The standard deviation is a measure of the market volatility. It is obtained from a period n of the Simple moving average of a certain data (close or other indicator) and then, by calculating the deviation of the prices in relation to this average.

The stardard deviation is normally used as a complement of another indicator rather than on its own. For example the Bollinger Bands are calculated by adding the standard deviation to a Simple moving averge.

A high value of the Standard deviation means high volatility. On the contrary, low values of the standard deviation mean lack of volatility. Most analysts coincide on the fact that strong directional movements with huge volatility are the results of

fear and euphoria from the investors while congestion zones correspond to periods with low volatility.
This indicator is not used to generate Signals but is used as a filter for other indicators..

Formulas:

Data	Description
Dato$_i$	Field of the current bar (close, high, low etc.)

$$StandarDev = \sqrt{\dfrac{n * \sum_{0}^{n} Dato^2 - \left(\sum_{0}^{n} Dato\right)^2}{n^2}}$$

Parameters:

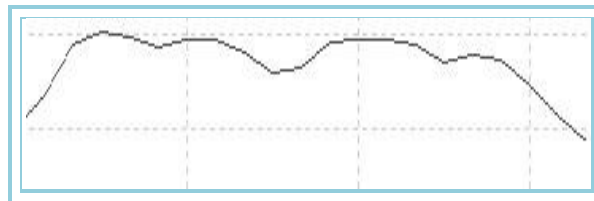| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is moret han one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period n	10	Period used to run the calculation
PriceSource	Close	Field of the bar used for the calculation (close,high, low etc.)

Representation criteria:

The indicator line is represented in neutral color. This and other aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by Default in a new window.

Chart:
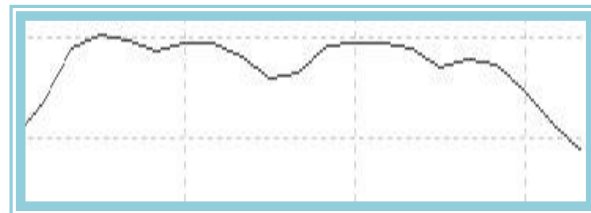
StandardDevP – Standard deviation %

Introduction:

The standard deviation percentage is a measure of the market volatility. It is obtained from a period n of the Simple moving average of a certain data (close or other indicator) and then, by calculating the deviation of the prices in relation to this average.

A high value of the Standard deviation means high volatility. On the contrary, low values of the standard deviation mean lack of volatility. Most analysts coincide on the fact that strong directional movements with huger volatility are the results of fear and euphoria from the investors while congestion zones correspond to periods with low volatility.
This indicator is not used to generate Signals but is used as a filter for other indicators.

Formulas:

Data	Description
Dato$_i$	Field of the bar (close, high, low, etc.)

$$StandardDevP = \dfrac{StandardDev *100}{Cie_i}$$

Parameters:

| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period n	10	Period used for the calculation
PriceSource	Close	Field of the bar used for the calculation (close, high, low etc.)

Representation criteria:

The line is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor..

It is inserted by default in a new window

Chart:

☐ SwingIndex – Swing Index

Introduction:

"Somewhere in between the labyrinth of Open, High, Low and Close there is a ghost, the real market ". This indicator tries to give an answer to this affirmation by implanting some formulas that weight the market most Significant points over the latest days.

The trading with this indicator is quite complicated. It can be used for very short term operations but always after a serious study of the possibilities for each asset.

Formulas:

Data	Description
Cie_i	Close of the current bar.
Cie_{i-1}	Close of the previous bar.
Ape_i	Open of the current bar.
Ape_{i-1}	Open of the previous bar.
$Máx_i$	High of the current bar
$Mín_i$	Low of the current bar

We obtain the value for N with this formulat:

$$N = (Cie_i - Cie_{i-1}) + 0,5 * (Cie_i - Ape_i) + 0,25 * (Cie_{i-1} - Ape_{i-1})$$

If *Ape* does not exist in the Data base, we will take:

$$Ape_i = \frac{Max_i + Min_i}{2}$$

We calculate the variable R and according to this procedure we select the high from A, B or C, Where:

$$A = |Max_i - Cie_{i-1}|$$

$$B = \left| Min_i - Cie_{i-1} \right|$$

$$C = \left| Max_i - Min_i \right|$$

If A is the higher then:

$$R = \left\| Max_i - Cie_{i-1} \right| - 0,5 * \left| (Min_i - Cie_{i-1}) \right| + 0,25 * \left| (Cie_{i-1} - Ape_{i-1}) \right\|$$

If B is the higher then:

$$R = \left\| Min_i - Cie_{i-1} \right| - 0,5 * \left| (Max_i - Cie_{i-1}) \right| + 0,25 * \left| (Cie_{i-1} - Ape_{i-1}) \right\|$$

If C is the higher then:

$$R = \left\| Max_i - Min_i \right| + 0,25 * \left\| (Cie_{i-1} - Ape_{i-1}) \right\|$$

We calculate thh variable K by chosSing the high from:

$$\left| Max_i - Cie_{i-1} \right|$$

$$\left| Min_i - Cie_{i-1} \right|$$

We determine L as the highest movement alllowed:

$$L = Cie_i * Mmov$$

Finally the SwingIndex:

$$IDF_i = \left[\frac{N}{R} \right] * \left[\frac{K}{L} \right] * 50$$

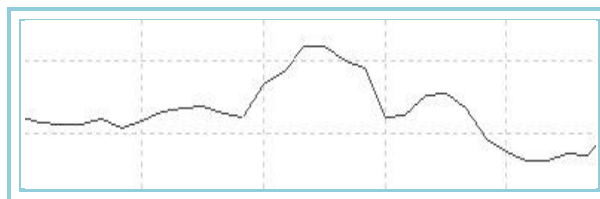**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
MMov	0.15	High percentage of movement allowed in one period.
BandValue	0	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The line is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:
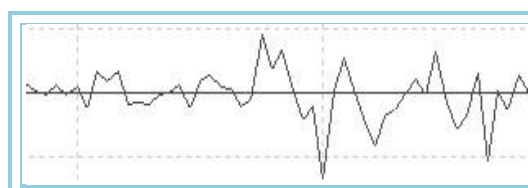
Bibliography:

The fluctuation index was developed by Wilder and published in his book "New Concepts in Technical Trading Systems".

■ SwingIndexAccum – Swing Index Accumulated

Introduction:

This Oscillator accumulates bar by bar the values generated by the Fluctuation index. Values bellow 0 indicate bearish trend while an Oscillator above 0 indicates a dominance of the bulls.

It is very complicated to trade with this indicator. It can be used for operations in the very short term, but after a serious study of the real possibilities of trading for a certain value.

Formulas:

Data	Description
SwingIndex$_i$	Current fluctuation index
SwingIndex$_{i-1}$	Fluctuation index in the previous bar

SwingIndexAcum$_i$=SwingIndexAcum$_{i-1}$ + SwingIndex$_i$

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
MMov	0.15	Highest percentage of movement allowed for 1 period.

Representation criteria:

The line is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

Bibliography:

The fluctuation index was developped by Wilder and published in his book "New Concepts en Technical Trading Systems".

■ TRIX

Introduction:

Trix is a momentum oscillator. It measures the percentage of change experienced by a certain asset. The peculiarity of this indicator lies in the internal calculation process; first, we use three moving averages that are applied in cascade to the Data of the previous calculations, in order to try to smoothe the prices random movements. Second, the Data comparison are not made between prices and average but between the Data of the last exponential moving average being calculated.

The indicator can be interpreted two different ways:

It can be used as a trend following indicator. Buy when the indicator upcrosses the 0 line and sell in the opposite conditions

It can also be used as a predictive indicator. This method assumes that high value of the indicator correspond to fast rises. Low values correspond with fast falls..

Formulas:

Data	Description
MME_i	Exponential Moving Average
$Dato_i$	Field of the current bar (high,low,close).

$$MOVIL1 = Med.Exp(p1).Dato_i$$

$$TIX = Med.Exp.(p).Dato\,1$$

$$MOVIL\,3 = Med.Exp\,(p).MOVIL\,2$$

Then we calculate the change percentage for a period C:

$$Trix = \frac{(MOVIL3_i - MOVIL3_{i-c})*100}{MOVIL3_{i-c}}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Periodo_1	12	Period for the calculation of the first Exponential Moving Average
Periodo_2	12	Period for the calculation of the second Exponential Moving Average
Periodo_3	12	Period for the calculation of the third Exponential Moving Average
Periodo_C	1	Period for the calculation of the rate of change.
PriceSource	Close	Field of the bar on which it is calculated.
BandValue	0	Band drawn for better clarity in the **indicator´s representation.**

Representation criteria:

The line is represented in bullish color when the indicator rises and in bearish color when it falls. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window
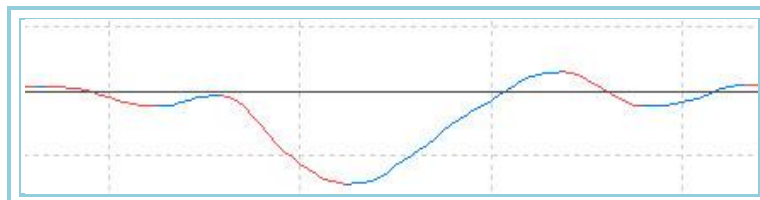
Chart:

☐ Willians – Oscillator Willian %R

Introduction:

The interpretation of the Williams %R is very Similar to the Sotchastic one with the difference that the chart is represented inversely and the line is not smoothed. To show the Williams inversely it is represented with negative numbers.

Values of the oscillator between 80% and 100%, will involve overselling conditions of the corresponding asset while values between 0 and 20% will involve overbuying conditions.

As it happens with all the overbuying/overselling indicators it is advisable, when the indicator produces a signal, to wait for price confirmation before trading. The reason is that these indicators can remain overbought or oversold for a long period of time thus creating false signals.

A very interesting phenomenum of the Williams is its ability to anticipate the changes of trend in the market. In most of the cases the indicator reaches its highs before the prices do.

Formulas:

Data	Description
Max_i	High of the current bar
Min_i	Low of the current bar
Cie_i	Close of the current bar

We look foor the high of a period p:

$$H = Max.per(p)$$

We calculate the low of the same period p

$$L = Min.per(p)$$

And finally:

$$Williams = \frac{(H - Cie_i)}{(H - L)} * (-100)$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Period considered for the calculation of the indicator
UpperBand	-20	**Band drawn for better clarity in the indicator´s representation.**
LowerBand	-80	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The indicator line is represented in bullish color above the upper line, in bearish color bellow the lower line and in flat color in between. This and other aspects are fully configurable in **the indicator´s properties editor**.
It is inserted by default in a new window

Chart:
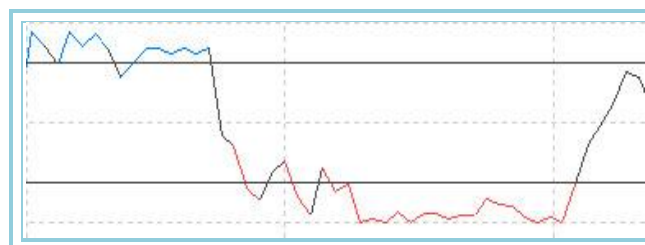
■ WilliansAD – Willians Accumulation/Distribution

Introduction:

There is accumulation when the Close of the current bar is superior to the previous bar and its value is based on the difference between the current close and the low of the quote. There is distribution when the Close of the current bar

is lower thant the close of the previous bar and its calculation refers to the difference between the current close and the high.

The value of the WAD is accuumulative. A new poSitive close is added to the WAD (Accumulation) or a new negative close is substracted to the WAD (Distribution). Si the close of the current bar is equal to the close of the previous bar the WAD does not change.

The WAD is normally used to identifydivergences between the prices activity and the indicator itself. Si the market reaches high quotes while the indicator does not reach them the trend may be weakening and a possible change of trend is likely to occur.

Formulas:

Data	Description
Cie_i	Close of the current
Max_i	High of the current bar
Max_{i-1}	High of the previous
Min_i	Low of the current bar
Min_{i-1}	Low of the previous

$$TRH = High\ \{Cie_{i-1},\ Max_i\}$$

$$TRL = Low\ \{\ Cie_{i-1},\ Min_i\}$$

If $Cie_i > Cie_{i-1}$ then $\quad X = Cie_i - TRL$

If $Cie_i < Cie_{i-1}$ then $\quad X = Cie_i - TRH$

If $Cie_i = Cie_{i-1}$ then $\quad X = 0$

$$INDICE_i = INDICE_{i-1} + X$$

And finally:

$$WAD = Med.Exp(p).INDICE_i$$

Parameters:

| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	5	Period considered for the calculation of the indicator

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band, in bearish color when bellow the lower band and in flat color in between. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
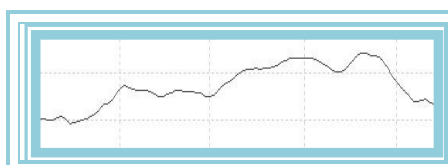
OVER AVERAGES

■ AvAdaptedOsc –Adaptative Moving Average Oscillator

Introduction:

The adaptative moving average oscillator calculates the percentage difference between each of the bar closes and an adaptative moving average. It is very useful to detect bizarre prices fluctuations. An excesSive separation of the indicator from the 0 line indicate that prices soon will stop their unusual trend to enter i a congestion zone.

The indicator can be used in a classic way buying if the value of the oscillator changes into positive and selling if it does into negative. In this case, some filters can be established to avoid false signals. Ths indicator can also be used to detect overbuying and overselling zones triggering a signal that can be executed in consensus with another indicator setting the STOP point for the positions.

Cyclics behavior of the prices are also reflected in the DATA exit os the oscillator.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvAdapted_i$	Value of the indicator in the current bar.

$$AvAdaptedOsc = \frac{(Dato_i - Med.Adp_i)*100}{Med.Adp_i}$$

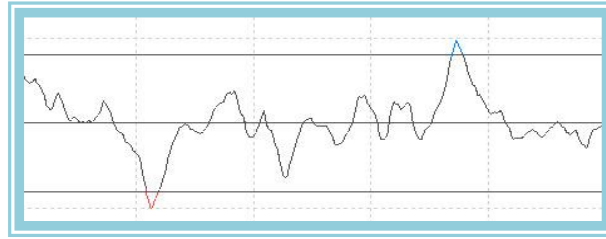**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
PeriodoVHF	28	Period used for the calculation of the indicatorVHF. Necessary to calculateAvAdapted.
PeriodoAvAdapted	12	Period used for the calculation ofla media adaptativa.
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in **the indicator´s properties** editor.

It is inserted by default in a new window

Chart:

◼ AvAdaptedOscP – Percentage Adaptative Moving Average Oscillator

Introduction:

This indicator takes the high and low values of the Adaptative Moving average Oscillator over a certain period and assigns them the values +100 and –100 respectively. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchasing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
Dato$_i$	Value in the current bar (high, low, close).

$$MAX = Max(AvAdaptedOsc)$$
$$MIN = Min(AvAdaptedOsc)$$

If $AvAdaptedOsc >= 0$ then

$$AvAdaptedOscP = \frac{AvAdaptedOsc*100}{MAX}$$

If $AvAdaptedOsc < 0$ then

$$AvAdaptedOscP = \frac{AvAdaptedOsc*100}{MIN}$$

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
PeriodoVHF	28	Period used for the calculation of the indicator VHF, necessary for AvAdaptedOsc.
PeriodoAvAdapted	12	Period used for the calculation ofAvAdaptedOsc.
PriceSource	Close	Field of the bar to be used for the calculations.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

◼ AvDisagreeOsc – Average Disagree Oscillator

Introduction:

The Average Disagree Oscillator measures the percentage difference between two moving averages. It is very useful to detect bizarres fluctuations of the prices. An exceSive separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way buying when the indicators changes into poSitive and selling when it changes into negative. It this case, some filters can be set to avoid false Signals. It can also help us to detect overbuying and overselling zones triggering a Signal along with another indicator that will give us the exit stop points.

The indicator also appoints cyclical behavior of the prices.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).

$$AvDisagreeOsc = Med2 - Med1$$

Parameters:

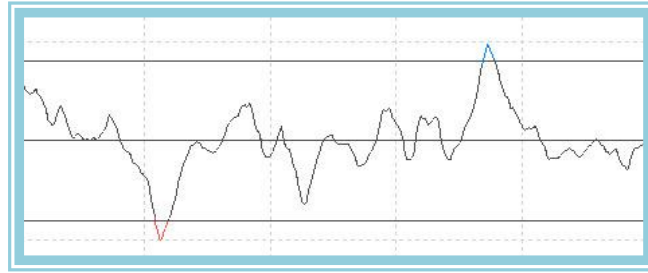| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Media1	Simple	Type of average to be used for the first MA (Simple, exponential, weighted)
PeriodoM1	30	Period used for the calculation of the first moving average.
OrigenDataM1	Close	Field of the bar to calculate the average.
Media2	Simple	Type of average to be used for the second MA (Simple, exponential, weighted)
PeriodoM2	10	Period used for the calculation of the average.
OrigneDataM2	Close	Field of the bar to calculate the average.
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
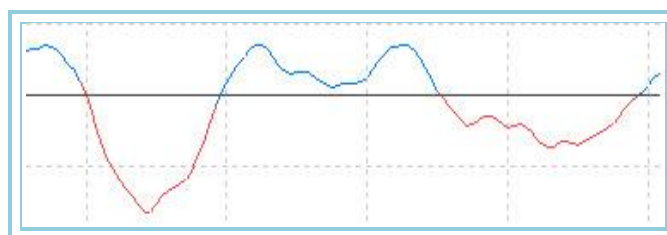
■ AvDisagreeOscP – Percentage Average Disagree Oscillator

Introduction:

This indicator takes the high and low values of the Average Disagree Oscillator over a certain period and assigns them the values +100 and −100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) zones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. .

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zones and buy the overselling zones.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).

If $DSI_i > = 0$

$$AvDisagreeOscP_i = \frac{DIF_i *100}{Max(AvDisagreeOsc)}$$

If not

$$AvDisagreeOscP_i = \frac{DIF_i *100}{Min(AvDisagreeOsc)}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Media1	Simple	Type of average to be used for the first MA (Simple, exponential, weighted)
PeriodoM1	30	Period used for the calculation of the first moving average.
OrigenDataM1	Close	Field of the bar to calculate the average.
Media2	Simple	Type of average to be used for the second MA (Simple, exponential, weighted)
PeriodoM2	10	Period used for the calculation ofla media
OrigneDataM2	Close	Field of the bar to calculate the average.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

■ AvExponentialOsc – Average Exponential Oscillator

Introduction:

The average exponential Oscillator calculates the percentage difference of the close of each bar in relation with an exponential moving average. It is very useful to detect bizarres fluctuations of the prices. An exceSive separation from the prices would forecast an endof trend and return to price congestion.

It can be used in a classical way buying when the indicators changes into poSitive and selling when it changes into negative. It this case, some filters can be set to avoid false Signals. It can also help us to detect overbuying and overselling zones triggering a Signal along with another indicator that will give us the exit stop.

The indicator also appoints cyclical behavior of the prices.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvExponential_i$	Value of the indicator in the current bar.

$$AvExponentalOsc = \frac{(Dato_i - Med.Exp_i)*100}{Med.Exp_i}$$

Where Med. Exp_i = $AvExponential_i$

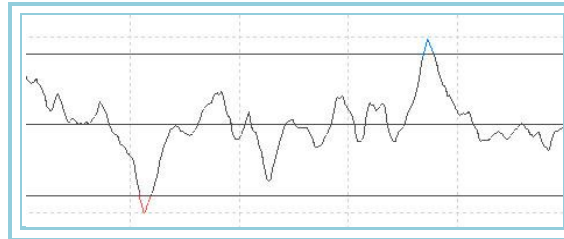**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in the indicator´s properties editor.
It is inserted by default in a new window

Chart:

■ AvExponentialOscP – Percentage Average Exponential Oscillator

Introduction:

This indicator takes the high and low values of the Exponential Moving average Oscillator over a certain period and asSigns them the values +100 and –100 respectively. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading.

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvExponentialOsc	Indicator´s value

$$MAX = Max(AvExponentialOsc)$$
$$MIN = Min(AvExponentialOsc)$$

Si $AvExponentialOsc >= 0$ then

$$AvExponentialOscP = \frac{AvExponentialOsc *100}{MAX}$$

If $AvExponentialOsc < 0$ then

$$AvExponentialOscP = \frac{AvExponentialOsc *100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvExponentialOsc.
PriceSource	Close	Filed of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

■ AvFlatOsc – Average Flat Oscillator

Introduction:

The Average Flat Oscillator calculates the percentage difference between the close of each bar and a Flat Moving Average. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an end of trend and return to price congestion.

This indicator can be used in a classical way by buying if the value of the oscillator changes into poSitive and selling if it does so into negative. It this case, some filters can be set to avoid false signals..

It can also help us to detect overbuying and overselling zones triggering a signal along with another indicator that will give us the exit stop points

It is also interesting to appoint that cyclical behaviors of the prices are perfectly reflected in the oscillator´sline.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvFlat_i$	Value of the indicator in the current bar.

$$AvFlatOsc = \frac{(Dato_i - Med.Apl_i)*100}{Med.Apl_i}$$

Where Med. Apl$_i$ = AvFlat$_i$
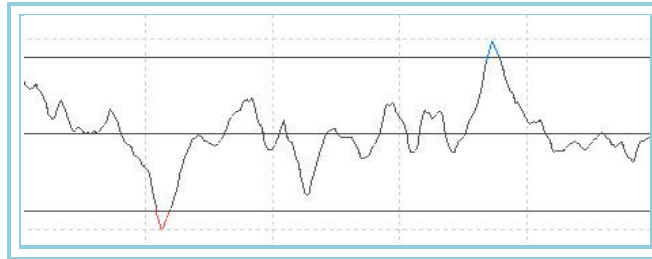
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil.
PriceSource	close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in the indicator´s properties editor.
It is inserted by default in a new window

Chart:

◼ AvFlatOscP – Oscilador mmovil aplanada porcentual

Introduction:

This indicator takes the high and low values of the Average flat Oscillator over a certain period and asSigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes::

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading.).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvFlatOsc	Value of the indicator.

$$MAX = Max(AvFlatOsc)$$
$$MIN = Min(AvFlatOsc)$$

If $AvFlatOsc >= 0$ then

$$AvFlatOscP = \frac{AvFlatOsc*100}{MAX}$$

If $AvFlatOsc < 0$ then

$$AvFlatOscP = \frac{AvFlatOsc*100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvFlat.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

◼ AvLSie1Osc – Average lSie-1 Oscillator

Introduction:

The Average LSie-1 Oscillator calculates the percentage difference between the close of each bar and a moving average lSie-2. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way buy buying when the indicator turns into negative and selling when it turns into positive. In this case, some filters can be set to avoid false signals.It can also help us to detect overbuying and overselling zones triggering a signal along with another indicator that will give us the exit stop points

It is also interesting to appoint that cyclical behavior of the prices are perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvLSie1_i$	Value of the indicator in the current bar.

$$AvLife1Osc = \frac{(Dato_i - AvLife1_i)*100}{AvLife1_i}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is more than one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofl the SMA lSie-1.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable **in the indicator´s properties editor**.
It is inserted by default in a new window

Chart:

■ AvLSie1OscP – Oscillator Average LSie1 percentage

Introduction:

This indicator takes the high and low values of the Average lSie1 over a certain period and asSigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvLSie1Osc	Value of the indicator.

$$MAX = Max(AvLife1Osc)$$
$$MIN = Min(AvLife1Osc)$$

If $AvLSie1Osc_i >= 0$ then

$$AvLife1OscP = \frac{AvLife1Osc *100}{MAX}$$

If $AvLSie1Osci < 0$ then

$$AvLife1OscP = \frac{AvLife1Osc *100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofAvLSie1Osc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully **configurable in the indicator´s properties editor**. It is inserted by default in a new window

Chart:

■ AvLSie2Osc – Moving Average lSie-2 oscillator

Introduction:

The Average LSie-2 Oscillator calculates the percentage difference between the close of each bar and a _moving average lSie-2_. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an endof trend and return to price congestion.

It can be used in a classical way buy buying when the indicator turns into negative and selling when it turns into positive. It this case, some filters can be set to avoid false signals.

It can also help us to detect overbuying and overselling zones triggering a signal along with another indicator that will give us the exit stop points

It is interesting to appoint that cyclical behavior of the prices are perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvLSie2_i$	Value of the indicator in the current bar.

$$AvLife2Osc = \frac{(Dato_i - AvLife2_i)*100}{AvLife2_i}$$

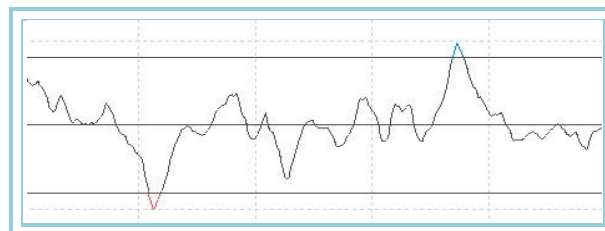**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofla media móvil lSie-2.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable **in the indicator´s properties editor**. It is inserted by default in a new window

Chart:

■ AvLSie2OscP – Moving Average lSie-2 percentage oscillator

Introduction:

This indicator takes the high and low values of the Average lSie2 Oscillator over a certain period and assigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading.).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvLSie2Osc	Valor del indicador.

$$MAX = Max(AvLife2Osc)$$
$$MIN = Min(AvLife2Osc)$$

If $AvLSie2Osc_i >= 0$ then

$$AvLife2OscP = \frac{AvLife2Osc *100}{MAX}$$

If $AvLSie2Osc_i < 0$ then

$$AvLife2OscP = \frac{AvLife2Osc *100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofAvLSie2Osc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable **in the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

▣ AvLSie3Osc – Average lSie-3 Oscillator

Introduction:

The Average LSie-3 Oscillator calculates the percentage difference between the close of each bar and a moving average lSie-3. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way buy buying when the indicator turns into negative and selling when it turns into positive. It this case, some filters can be set to avoid false signals.

It can also help us to detect overbuying and overselling zones triggering a signal along with another indicator that will give us the exit stop points

It is interesting to appoint that cyclical behavior of the prices are perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$avLSie3_i$	Value of the indicator in the current bar.

$$AvLife3Osc = \frac{(Dato_i - AvLife3_i)*100}{AvLife3_i}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofla media móvil lSie-2.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in **the indicator´s properties editor**. It is inserted by default in a new window

Chart:

◾ AvLSie3OscP – Average lSie-3 Oscillator percentage

Introduction:

This indicator takes the high and low values of the Average lSie 3 Oscillator over a certain period and assigns them the values +100 and −100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvLSie3Osc	Indicator´s value.

$$MAX = Max(AvLife3Osc)$$
$$MIN = Min(AvLife3Osc)$$

If $AvLSie3Osc_i >= 0$ then

$$AvLife3OscP = \frac{AvLife3Osc * 100}{MAX}$$

If $AvLSie3Osc_i < 0$ then

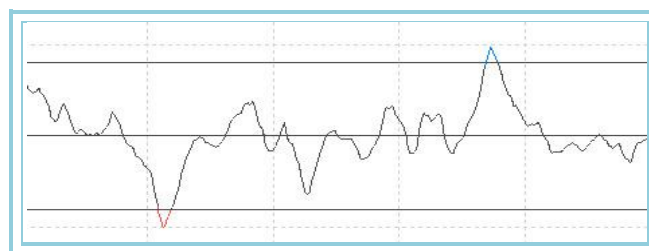$$AvLife3OscP = \frac{AvLife3Osc * 100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	6	Period used for the calculation ofAvLSiesOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully **configurable in the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

◼ AvQuickOsc – Average Quick Oscillator

Introduction:

The Average Quick Oscillator calculates the percentage difference of each bar close and a quick moving average. It is very useful to detect bizarres fluctuations of the prices. An exceSsve separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way by buying if the value of the oscillator changes into positive and selling if it does so into negative.

It can also be very useful to detect overbuying and overselling zones.

It is also interestin to appoint that cyclical behavior of the prices is perfectly reflected in the indicator line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvQuick_i$	Value of the indicator in the current bar.

$$AvQuickOsc = \frac{(Dato_i - Med.Ace_i)*100}{Med.Ace_i}$$
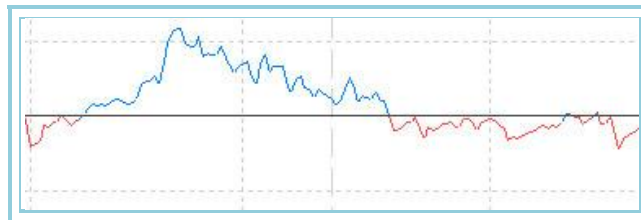
Where Med. Ace_i = $AvQuick_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil acelerada.
Factor_a	2	Acceleraton factor for the calculation of te moving average.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable **in the indicator´s properties editor**. It is inserted by default in a new window.

Chart:

AvQuickOscP – Quick Moving Average Percentage Oscillator

Introduction:

This indicator takes the high and low values of the Quick Moving average Oscillator over a certain period and assigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvQuickOsc	Indicator´s value.

$$MAX = Max(AvQuickOsc)$$
$$MIN = Min(AvQuickOsc)$$

If $AvQuickOsc >= 0$ then

$$AvQuickOscP = \frac{AvQuickOsc * 100}{MAX}$$

If $AvQuickOsc < 0$ then

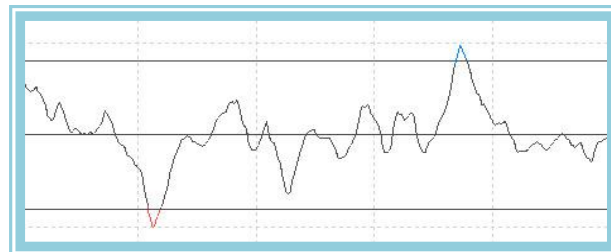$$AvQuickOscP = \frac{AvQuickOsc * 100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc.) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvQuickOsc.
Factor_a	2	Factor used for the calculation of AvQuickOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

◻ AvSimpleOsc – Average Simple Oscillator

Introduction:

The oscilllator Average Simple Oscillator calculates the difference between the close of each bar and a Simple moving average. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way by buying Si the indicator turns into positive and by selling Si it does so into negative. It this case, some filters can be set to avoid false Signals..

It can also be used to detect overbuying and overselling zones.

It is also interesting to appoint that cyclical behavior of the prices is reflected in the indicator´s line.

Formulas:

Data	Description
Dato$_i$	Value in the current bar (high, low, close).
AvSimple$_i$	Value of the indicator in the current bar.

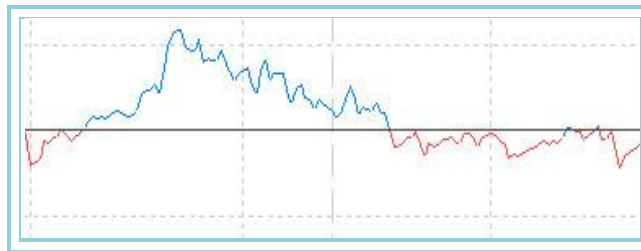$$AvSimpleOsc = \frac{(Dato_i - Media_i)*100}{Media_i}$$

Where Media$_i$ = AvSimple$_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil Simple.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in the **indicator´s properties editor**. It is inserted by default in a new window.

Chart:

◼ AvSimpleOscP – Simple Moving Average Percentage Oscillator

Introduction:

This indicator takes the high and low values of the Average Simple Oscillator over a certain period and assigns them the values +100 and −100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvSimpleOsc	Indicator´s value.

$$MAX = Max(AvSimpleOsc)$$
$$MIN = Min(AvSimpleOsc)$$

Ifi $AvSimpleOsc >= 0$ then

$$AvSimpleOscP = \frac{AvSimpleOsc * 100}{MAX}$$

If $AvSimpleOsc < 0$ then

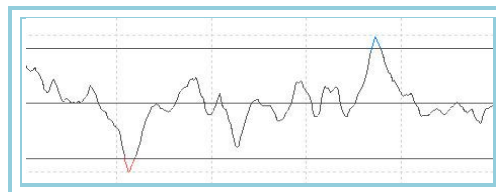$$AvSimpleOscP = \frac{AvSimpleOsc * 100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvSimpleOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

◻ AvTriangularOsc – Average Triangular Oscilator

Introduction:

The Average Triangular Oscillator calculates the difference between the close of each bar and a triangular moving average. It is very useful to detect bizarres fluctuations of the prices. An excesive separation from the prices would forecast an end of trend and return to price congestion.

It can be used in a classical way by buying when the indicator changes into poSitive and selling when it changes into negative.. It this case, some filters can be set to avoid false Signals.

It can also be used to detect overbuying and overselling zones.

It is also interesting to appoint that cyclical behavior of the prices is perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvTriangular_i$	Value of the indicator in the current bar.

$$AvTriangularOsc = \frac{(Dato_i - Med.Tri_i)*100}{Med.Tri_i}$$
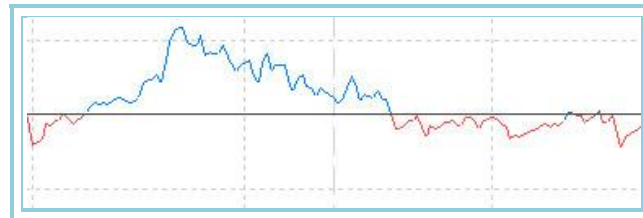
Where Med. Tri$_i$ = AvTriangular$_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil triangular.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable **in the indicator´s properties editor**. It is inserted by default in a new window

Chart:

◼ AvTriangularOscP – Average Triangular Percentage Oscilator.

Introduction:

This indicator takes the high and low values of the Average Triangular Oscillator over a certain period and assigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvTriangularOsc	Valor del indicador.

$$MAX = Max(AvTriangularOsc)$$
$$MIN = Min(AvTriangularOsc)$$

If $AvTriangularOsc >= 0$ then

$$AvTriangularOscP = \frac{AvTriangularOsc * 100}{MAX}$$

If $AvTriangularOsc < 0$ then

$$AvTriangularOscP = \frac{AvTriangularOsc * 100}{MIN}$$
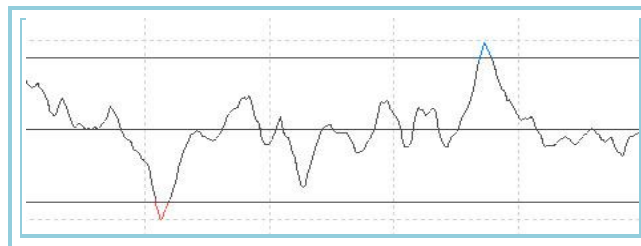
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvTriangularOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable **in the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

■ AvWeightedOsc – Average Weighted Oscillator

Introduction:

The Weighted Moving Average Oscilator shows the user the percentage difference between each bar close and a Weighted Moving Average. It is very useful to detect bizarres fluctuations of the prices. An exceSive separation from the prices would forecast an endof trend and return to price congestion.

It can be used in a classical way by buying when the indicator changes into poSitive and selling when it changes into negative.. It this case, some filters can be set to avoid false Signals.

It can also be used to detect overbuying and overselling zones..

It is also interesting to appoint that cyclical behavior of the prices is perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvWeighted_i$	Value of the indicator in the current bar.

$$AvWeightedOsc = \frac{(Dato_i - Med.Pon_i) * 100}{Med.Pon_i}$$
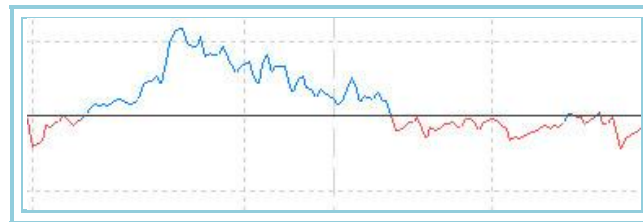
Where Med. Pon$_i$ = AvWeighted$_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil ponderada.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in the **indicator´s properties editor**. It is inserted by default in a new window

Chart:

◻ AvWeightedOscP – Average Weighted Oscillator Percentage

Introduction:

This indicator takes the high and low values of the Weighted Moving average Oscillator over a certain period and asSigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchaSing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading. o).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvWeightedOsc	Valor del indicador.

$$MAX = Max(AvWeightedOsc)$$
$$MIN = Min(AvWeightedOsc)$$

If $AvWeightedOsc >= 0$ then

$$AvWeightedOscP = \frac{AvWeightedOsc *100}{MAX}$$

If $AvWeightedOsc < 0$ then

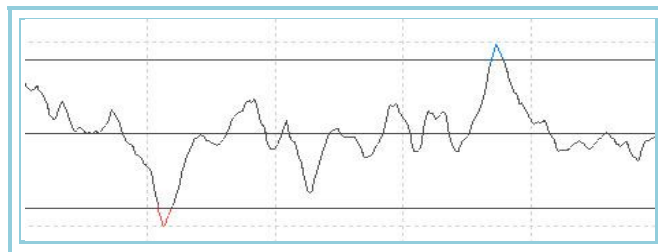$$AvWeightedOscP = \frac{AvWeightedOsc *100}{MIN}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc...)
Period	30	Period used for the calculation ofAvWeightedOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

▣ AvWilderOsc – Average Wilder Oscillator

Introduction:

The Average Wilder Oscillator calculates the difference between the closes of each bar and a <u>wilder moving average</u>. It is very useful to detect bizarres fluctuations of the prices. An exceSive separation from the prices would forecast an en dof trend and return to price congestion.

It can be used in a classical way by buying when the indicator changes into positive and selling when it changes into negative. It this case, some filters can be set to avoid false signals.

It can also be used to detect overbuying and overselling zones.

It is also interesting to appoint that cyclical behavior of the prices is perfectly reflected in the indicator´s line.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$AvWilder_i$	Value of the indicator in the current bar.

$$AvWilderOsc = \frac{(Dato_i - Med.Wil_i)*100}{Med.Wil_i}$$
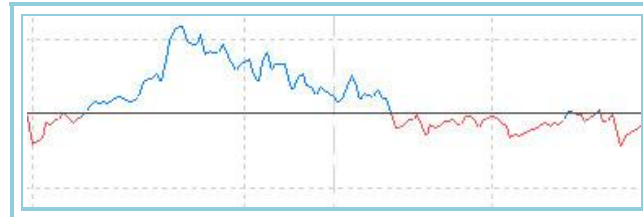
Where Med. Wil$_i$ = AvWilder$_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofla media móvil wilder.
PriceSource	Close	Field of the bar used for the calculation
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The indicator line is represented in bullish color when above the line and bearish color when bellow the line. This and other aspects are fully configurable in **the indicator´s properties editor**. It is inserted by default in a new window

Chart:

◼ AvWilderOscP – Average Wilder Percentage Oscillator

Introduction:

This indicator takes the high and low values of the Average Wilder Oscillator over a certain period and assigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes::

As a generator of entry points purchasing in 2 reference points. Buy when the indicator upcrosses the –80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading.).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
AvWilderOsc	Valor del indicador.

$$MAX = Max(AvWilderOsc)$$
$$MIN = Min(AvWilderOsc)$$

If $AvWilderOsc >= 0$ then

$$AvWilderOscP = \frac{AvWilderOsc *100}{MAX}$$

If $AvWilderOsc < 0$ then

$$AvWilderOscP = \frac{AvWilderOsc *100}{MIN}$$

Parameters:
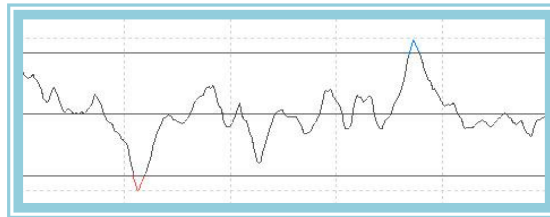
Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	30	Period used for the calculation ofAvWilderOsc.
PriceSource	Close	Field of the bar used for the calculation of the indicator.
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

☐ BollingerBandsOsc –Bollinger Bands Oscillator

Introduction:

The Bollinger Bands oscillator calculates the percentage difference between the close of each bar and the bands.

It can be used in a classical way by buying when the indicator changes into positive and selling when it changes into negative. It this case, some filters can be set to avoid false signals.

The oscillator can be used to look for divergences in relation to the closing prices. These divergences, most of the time, forecast changes of trend.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
B. Sup_i	Upper band of the BollingerBands indicator.
B. Inf_i	Lower band of the BollingerBands indicator.

$$Bollinguer\,BandsOsc_i = \frac{[Dato_i - (B.Sup_i + B.Inf_i)/2]}{(B.Sup_i - B.Inf_i)} * 100$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	25	Period used for the calculation of the indicator
CoeficienteM	2	Multiplying coefficient.
PriceSource	Close	Bar data used for the calculation of the indicator.
Media	Simple	Type of average used to calculate the BollingerBands (Simple, exponential or weighted).
BandValue	0	Line drawn for a better clarity in the indicator´representation.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**. It is inserted by default in a new window.

Chart:
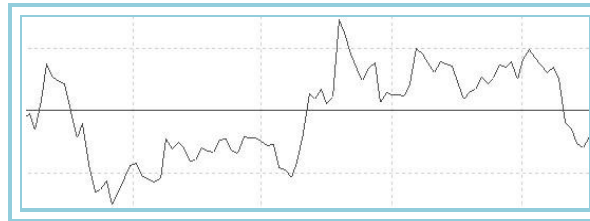
◻ BollingerBandsOscP – Percentage Bollinger Bands Oscillator

Introduction:

This indicator takes the high and low values of the Bollinger Bands Oscillator over a certain period and assigns them the values +100 and –100 respectivelly. The rest of values are split proportionally between the previously mentioned extreme amounts.

The result is very interesting as we can notice very easily, the overbuying (+80) and overselling (-80) ones for a certain period.

These references enable to use the oscillator for two very usefull purposes:

As a generator of entry points purchasing in 2 reference points. Buy when the indicator upcrosses the −80 line and sell when the indicator downcrosses the +80 band. (This modality offers good entry points for short term trading.).

As a filter for buy/sell Signals provided by other oscillators. In this case, sell the overbuying zoned and buy the overselling zones.

Formulas:

Data	Description
BollingerBandsOsc	Value of the indicator.

$$MAX = Max(Bollinguer\,BandsOsc)$$
$$MIN = Min(Bollinguer\,BandsOsc)$$

If $BollingerBandsOsc >= 0$ then

$$Bollinguer\,BandsOscP = \frac{Bollinguer\,BandsOsc *100}{MAX}$$

If $BollingerBandsOsc < 0$ then

$$Bollinguer\,BandsOscP = \frac{Bollinguer\,BandsOsc *100}{MIN}$$

Parameters:

| Name	Defaul	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	25	Period used for the calculation ofBandasBollingerOsc.
CoeficienteM	2	Multiplying coefficient.
PriceSource	Close	Field of the bar used for the calculation of the indicator.

Media	Simple	Type of average used to calculate the BollingerBands (Simple, exponential or weighted).
UpperBand	80	Value of the Upper band used as exit point for a better clarity in the representation
BandMedia	0	Value of the medium band used as exit point for a better clarity in the representation
LowerBand	-80	Value of the lower band used as exit point for a better clarity in the representation

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
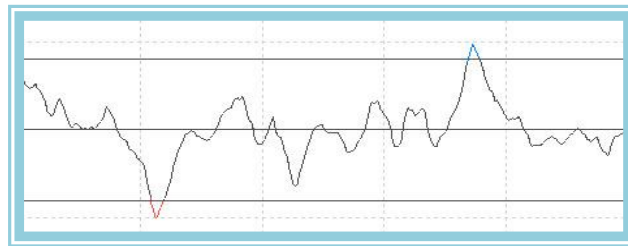
◻ DEMAIND – DEMA Indicator

Introduction:

DEMA is the short name of Double Exponential Moving Average . It can be used with crieterias similar to the traditional moving averages.

The aim of this indicator is to smooth the prices if we use it straight on the prices window but it can also be applied to another indicator in order to smooth its line.

This technique produces a dealy in the crossover of the indicator with the bars avoiding these way false signals in strong trends situations.

Formulas:

Data	Description
$Dato_i$	Value of the current bar(close, high, low, etc.)

$X1_i = Med.\ Exp(p)Dato_i$

$X2_i = Med.\ Exp\ (X1_i\ )$

$DEMAIND_i =\ (2 * X1_i)\text{-}X2_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is more than one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period (p)	21	Period considered for the calculation of the indicator
DataSource	Close	Field of the bar to run the calculation.

Representation criteria:

The line is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

Bibliography

The indicator was developped by Patrick Mulloy and published in 1994 in the magazine Stocks & Commodities.


◻ DHZ – Developing Hot Zones

Introduction:

Is there a way to forecast the close of a bar by using its open? Next we present a technique that analyzes the behavior of each bar of the historical and the relation between close and open.

Formulas:

Data	Description
$Dato_i$	Value of the current bar (close, high, low, etc...)

According to the author, MasSimiliano Scorpio, the bar is divided in six zones and 5 points are selected the following way:

- o **point 1:** High of the bar plus a volatility measure corresponding to 30% of the ATR with period 10.
- o **point 2:** High of the day.
- o **point 3:** average ponint of the bar.
- o **point 4:** Low of the day.
- o **point 5:** low of the bar minus 30% of the ATR indicator with period 10.
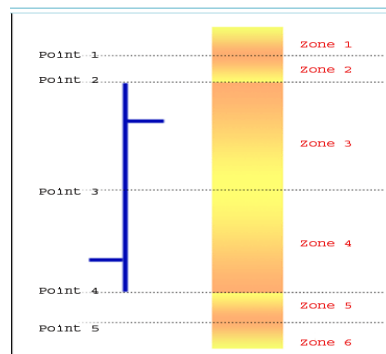
6 zones are created and we can analyze how many time the open occurs on each of the zones and how many times it closes on each of them. Now, straight after the opening of the following bar a line is drawn appointing the criteria with most posSibilities of being fulfilled.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ATRPeriod	14	Period considered for the calculation of the indicator
Percentage	30	Percentage applied to the indicator so place the points 1 and 5.

Representation criteria:

The line is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

It is to be inserted on the chart.

Chart:

The indicator is only drawn in real time overt the latest bars, as its aim is to show the price with most posSibilities of being the Close of the current bar.
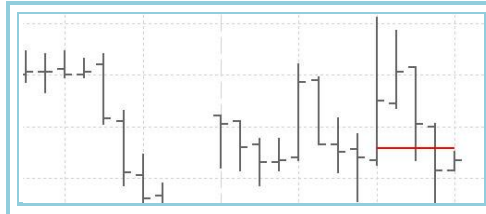
Bibliography

It was developed by Massimiliano Scorpio and published in Deceember 2002 in Stocks & Commodities.

◼ DYN – Dynamo

Introduction:

This indicator applies a smoothing mechanism to a data series by using a Simple moving average.

Formulas:

Data	Description
AvFastkData$_i$	Value of the indicator in the current bar.
AvSimpleAvFastkData$_i$	Average Simple of the AvFastk in the current bar .
Max$_i$	High of the current bar
Min$_i$	Low of the current bar.

If $AvFasktData_i > max_i$ then $\quad max_i = AvFasktData_i$

If $AvFastkData_i < min_i$ then $\quad min_i = AvFastkData_i$

$MidPnt_i = (max_i + min_i)/2$

$DYN_i = MidPnt_i - (AvSimple(AvFastkData_i)-AvFastkData_i)$

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
UpperBand	77	Band drawn for better clarity in the indicator´s representation.
LowerBand	23	Band drawn for better clarity in the indicator´s representation.
AVFASTKPeriod	5	Number of bars to be considered for the calculation of AVFASTK.
SMAPeriod	5	Number of bars to be considered for the calculation of AVSimple.

Representation criteria:

The lines are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
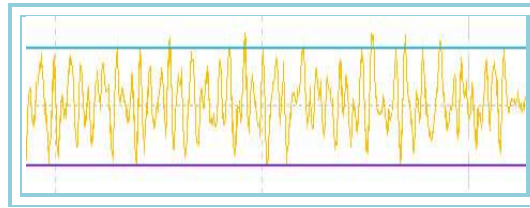
Bibliography

Indicator published in the magazine Futures Magazine July-1996. Autor: E. Marshall Wall.

■ ELBEAR – Elder Ray Bear Power

This indicator measures the distance between the low of the current bar and an exponential moving average. The indicator line respresents the ability of the sellers to move the price bellow the consensus (bear power).

Formulas:

Data	Description
Dato$_i$	Field of the bar to be used for the calculation of the indicator ELRBEAR.
Min$_i$	Low of the current bar.

$BEAR_i : Mín_i - Med.\ Exp(p)Dato_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ELRBEARDataAvExponential DataPeriod	13	Number of bars to be considered for the calculation of the moving average by uSing the indicator ELRBEAR.
ELRBEARDatavExponentialD ataSource	Close	Field of the bar to be used for the calculation of ELRBEAR.
BandValue	0	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The lines are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
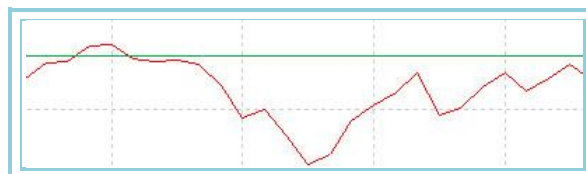
■ ELBULL – Elder Ray Bull Power

This indicator measures the distance between the high of the current bar and an exponential moving average. The indicator line respresents the ability of the sellers to move the price above the consensus (bull power).

Formulas:

Data	Description
Dato$_i$	Field of the bar to be used for the calculation of the indicatorELRBULL.
Max$_i$	High of the current bar.

BULL$_i$: Max$_i$ - Med. Exp(p)Dato$_i$

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ELRBULLDataAvExponential DataPeriod	13	Number of bars to be considered for the calculation of the moving average by uSing the indicator ELRBULL.
ELRBULLDatavExponentialD ataSource	Close	Field of the bar to be used for the calculation of ELRBULL.
BandValue	0	Band drawn for better clarity in the indicator´s representation.

Representation criteria:
The lines are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

☐ ELR – Elder Ray

The Elder Ray is made of two indicators, Elder Ray Bear Power and Elder Ray Bull Power . The first of them measures the distance between the high of the bar and an exponential moving average while the second measures the distance between the low of the current bar and an exponential moving average.

The line of the indicator Elder Ray Bull represents the ability of the buyers to move prices above the market consensus (bull power), represented by the value of the exponential moving average and the line of the indicator Elder Ray Bear, represents the ability of the sellers to move prices bellow the consensus (bearish power).

Formulas:

Data	Description
Dato$_i$	Field of the bar to be used for the calculation of the indicators ELRBEAR and LRBULL.
Max$_i$	High of the current bar.
Min$_i$	Low of the current bar.

BEAR $_i$: Mín$_i$ - Med. Exp(p)Dato$_i$
BULL $_i$: Máx$_i$ - Med. Exp(p)Dato$_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)

ELRBEARDataAvExponential DataPeriod	13	Number of bars to be considered for the calculation of the moving average by uSing the indicator ELRBEAR.
ELRBEARDatavExponentialD ataSource	Close	Field of the bar to be used for the calculation ELRBEAR.
ELRBULLDataAvExponential DataPeriod	13	Number of bars to be considered for the calculation of the moving average by uSing the indicator ELRBEAR.
ELRBULLDataAvExponential DataSource	Close	Field of the bar to be used for the calculation ELRBULL.
BandValue	0	Band drawn for better clarity in the indicator´s representation.

Representation criteria:

The lines are represented in neutral color. This and other aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by default in a new window

Chart:

⬜ EXPMOVAVGBOP – Average Exponential on Balance of Power

This indicator is based on the **Balance of power** (BOP), that scores each of the bars in function of the bullish and bearish strengths present in the market.

Each day the bullish and bearish strength fight in the market field. The calculation of the BOP, according to the previous idea, conSists on giving a score to both of them according to their behavior on each bar.

The scoring works the following way:

1.- **Score based on the open**: Measures the movement between the open and the extremes of the bar. The fartthest away the open is from the high of the bar the more bullish strength will be obtained. The bearish strength will obtain the corresponding score by measuring the distance between the same open and the low.

2.- **Score based on the close**: Measures the movement between the close and the extreme of the bars. The bullish strength will be obtained by measuring the distance between the close and the low of the bar and the equivalent formula will be applied for the bearish strength.

3.- **Score basde on the open-close** : In this case a comparison will be run between the open and the close of the bar, the predominant strength will obtain an extra score. The higher the difference between the strengths the higher the score given will be.

By using these three parameters we obtain the average score of both strengths for each of the bar. Finally the value of the BOP will be obtained by the difference between the bullish and bearish strength.

Formulas:

$EXPMOVAVGBOP_i$: Med. Exp($\underline{BOP_i}$)

**Parameters:**

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is more than one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Period used for the calculation of the average exponential .

Representation criteria:

The line of the indicator will be drawn in neutral color. A band is drawn in the 0 level for a better representation. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:
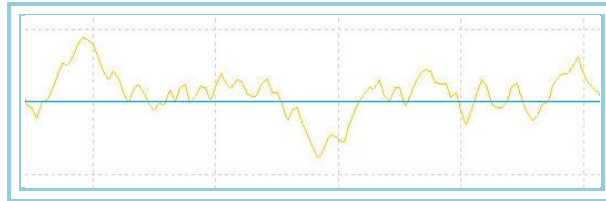
FORCEINDEX – Force Index

This is a trend following indicator that quantifies the market movement. It combines three baSic elements as the direction of the movement, the range and the volume. The indicator also calculates an additional line to help us on its interpretation. When the indicator is above this line the trend is bullish and when bellow this line the trend is bearish.

Once the indicator has been calculated its peaks are smoothed with an exponential moving average as in normal conditions its peaka are very strong to be used in a trading system (the formula can be seen in the enclosed image).

Formulas:

Data	Description
Vol_i	Volumen en la barra actual.
Cie_i	Close in the current bar
Cie_{i-1}	Close in the previous bar.

$Force_i : Vol_i * (Cie_i - Cie_{i-1}) / Cie_i$

$ForceIndex_i : Med.\ Exp\ (Force_i)*k$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..)
Range	30	Periodo de la media móvil exponencial que se aplica sobre el indicador Force Index.
Factor	1	Multiplicador aplicado sobre la línea principal del indicador.

Representation criteria:

The line is represented in neutral color. Also a band line is drawn in the level 0 for a better respresentation. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

▪ IDM

This indicator tries to predict the trend by using the price and volume as tools. It works as an antitrend system and its interpretation is based on the divergence between prices and quotes. It is based upon the <u>two days volatility</u>.

The high and lows reached by the prices coincide many times with the peaks of the indicator, when prices make a high the indicator makes a low and the opposite.

Formula:

We calculate the value Pct:

$Pct_i = (Close_i - Close_{i-1})/Close_{i-1}$

We calculate the value K:

$K_i = (3 + Close_i)/VM_i$ Where VM_i = Av. Simple(volatility two days)

We calculate the value P:

$P_i = Pct_i + K_i$

We caculate the value PC and PV depending on the direction of the trend:

If $Close_i > Close_{i-1}$ then

$PC_i = Volume_i$

$PV_i = Volume_i /P_i$

If $Close_i >= Close_{i-1}$ then

$PC_i = Volume_i /P$

$PV_i = Volume_i$

A higher weight is given to PC if the direction is bullish and to PV if the direction is bearish

Finally the value of ID will depend on the higher value:

If $PC_i > PV_i$ then $IDM_i = PVi/PC_i$

If $PC_i <= PV$ then $IDM_i = PCi/PV_i$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Days	30	Period used for the calculation of the high and the low.
AveragePeriod	2	Period to calculate the moving average.

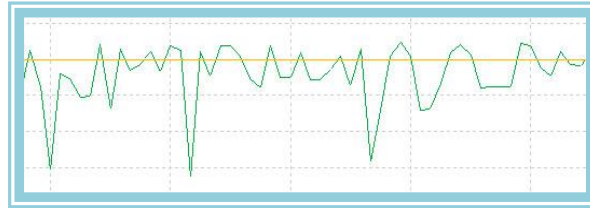**Representation criteria:**

The line of the indicator is represented in neutral color. Also a band line is drawn at the 0 level. This and other aspects are fully **configurable in the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

■ MACDHEMEL – MACD HEMELX

This indicator presents together the value of the MACD and its histogram (difference between the two lines). It also enables to represent it values under the form of an histogram, and in different color according to their position in relation with the average.
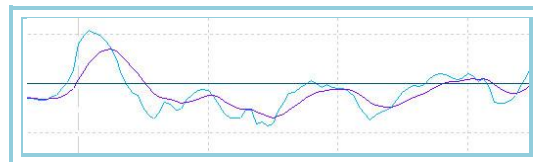
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ShorterDEMAPeriod	12	Number of bars to be used for the calculation of the short period DEMA.
LongerDEMAPeriod	26	Number of bars to be used for the calculation of the long period DEMA.
SignalPeriod	9	Number of bars to be used for the calculation of the exponential moving average.
Band	0	Intermediate band of the indicator

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the **indicator´s properties editor**.

It is inserted by default in a new window

Chart:

■ MDEMASMT – MACD DEMA SMOOTHED

In order to calculate the value of the first Data line, we find the difference between the first DEMA with short period and the second DEMA with long period. Once the result is obtained, we use it to calculate the second Data line which is the exponential moving average of the first line. This way, we obtain an indicator Similar to the classic MACD .

Para el cálculo en Visual Chart, se utiliza el indicador DSierencia DEMA.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ShorterDEMAPeriod	12	Number of bars to be used for the calculation of the short period DEMA.
LongerDEMAPeriod	26	Number of bars to be used for the calculation of the long period DEMA.
SignalPeriod	9	Number of bars to be used for the calculation of the exponential moving average.
Band	0	Intermediate band of the indicator

Representation criteria:

The lines of the indicator are represented in neutral color. Also a band is drawn in the 0 level for a better representation. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window.

Chart:
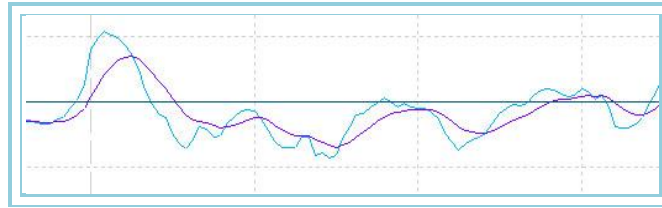
◼ PSSTOCHRSI – PS StochRSI

Introduction:

This indicator relates the difference between the value of the RSI and the difference between its lowest and higest value over the same period of time, represented in percentage. In a certain way we are applying and indicator of internal strength to the RSI RSI.

We also use for the calculation of this indicator in Visual Chart, the indicator HigLowRSI.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Range	30	Period of the RSI.
UpperBand	70	Upper band drawn for a better representation of the RSI.
LowerBand	30	Lower band drawn for a better representation of the RSI.
RangeSum	3	Number of bars summed in the calculation of the indicator.
Length	10	Period of the functions calculating the high and low values of the indicator.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

It is inserted by default in a new window

Chart:

◼ TII – Trend IntenSity Index

Introduction:

This is a trend following indicator that quantifies the strength of the current movement. The trend´s strength is measured in percentage and the line of the indicator moves between 0 and 100.The intenSity of the trend is determinded by the distance between the oscillator and the neutral value Situated in 50%.

Consequently, values superior to 50 indicate bullish trend while values inferior to 50 indicate bearish strength. Values close to 50 indicate congestion zones.

As a trend following oscillator it is very easy to use it in a trading system. Value superior to 80 provide good long opportunities while values inferior to 20 provide good shorts opportunities.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
LCalculation	30	Number of bars necessaries to start calculating the indicator.
AvSimpleRange	30	Period used by the Simple moving average of the indicator.
UpperBand	80	Superior band expressed in percentage. (Values from 50%)
BottomBand	20	Inferior band expressed in percentage. (Values bellow 0%)

Representation criteria:

4 ldata lines are represented in netural color. This and other aspects are fully configurable **in the indicator´s properties editor**. It is inserted by default in a new window

Chart:

Bibliography:

Indicator published in the magazine "STOCKS & COMMODITIES" June-02.

☐ TTRENDTRACKIND – Trend Tracking Indicator

Introduction:

This is a trend following indicator that depends basically in the bullish and bearish pivots and in a fast moving average.

The methodology of the indicator consists on calculating the average value of the most recent pivots (bullish and bearish). Once the calculation is made, the indicator accumulates the values of the averages having produced a breakout favorable to market prices. Finally we obtain the average resulting of these accumulations generating the line representing the investor's behavior.

The difference bween the recent movements represented by the Simple average and the past movements represented by the average of the pivots is the so called Trend Tracking that informs of the following:

Positive Difference: Si the prices are higher than the trend marked by the latest pivots.
Negative Difference: Si the prices are lower than the trend marked by the latest pivots.
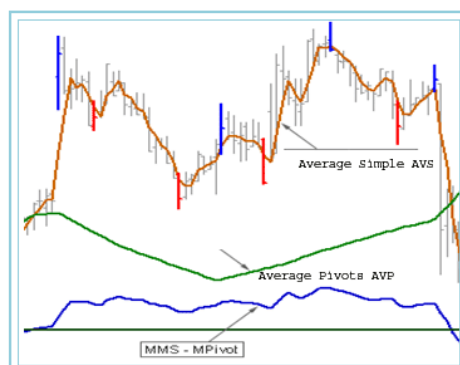
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	5	Period used for the calculation of the Simple moving average. This value is also used to indicate the number of lateral bars necessary to calculate the pivot.

Representation criteria:

2 Data lines are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

It is inserted by default in a new window

Chart:

The fact that the indicator is poSitive or negative does not necessarily involve a bullish or bearish trend; it just appoints that prices are higher or lower than the average value of the latest pivots. This means that we can be inside a bullish trend but prices have fallen in relation to their average value of the latest sesSions.

The important point with this indicator is the relation between the current value of the Trend Traking and its previous values:

- If Trend Traking is falling but its value is > 0 -> Bearish trend but BULLISH trend in thelong term.
- If Trend Traking is riSing but its value is < 0 -> Bullish trend but BEARISH in the long term.

Also, Si the l Trend traking is bullish with poSitive values we are inside a very strong bullish trend, and the same in the opposite conditions.

🔲 RainbowChartOsc – Raimbow Chart Oscilator

Introduction:

The Raimbow Chart Oscillatorm measures the different relations between the different raimbow moving averages and the closes in order to configure a technical scheme with huge posSibilities for short term trading.

The upper and lower bands relate the extreme values between, on one Side, the closes and the raimbow averages and on the other Side the high and low values of the closes over a certain period. The bars diagram relates the closed with the average value of the raimbow averages.

There are many interpretation of this oscillator. We will make the point here on the short trem Signals by taking long positions when the bar diagram is above 0 and short positions when bellow.

Formulas:

Data	Description
$Dato_i$	Value in the current bar (high, low, close).
$RCH1_i$, $RCH2_i$...	Averages obtained by RainbowChart.

Dato1 = Higher value of $Dato_i$, $RCH1_i$, $RCH2_i$,...

Dato2 = Lower value of, $RCH1_i$, $RCH2_i$,...

Dato3 = Highest $Dato_i$ of the latest p Data.

Dato4 = Lowest Dato$_i$ of the latest p Data.

$$Dato5 = \frac{1}{p} \sum_{p-1}^{p} RainbowChart_p$$

First line:

*L1 = 100 * (Dato1-Dato2)/(Dato3-Dato4)*

Second line:

*L2 = L1 * (-1)*

Bars diagram:

B= [100(Dato$_i$ – Dato5)]/ Dato3-Dato4*

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
NMedias	10	Number of averages to be used for the calculation of the RainbowChart.
UltimosDias	8	Period used for the calculation of the indicator.
PriceSource	Close	Field of the bar used for the calculation of the indicator.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**. It is inserted by default in a new window

Chart:
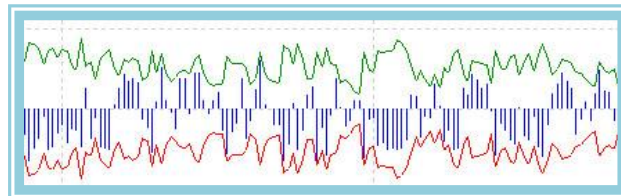
PIVOTS

◼ AroonUpDown – Aroon Up/Down

Introduction:

This indicator tries to predict the changes of trend of the prices, from bullish to bearish or from distribution to congestion. It contains two data lines called Aroon Up and Aroon Dow that move in a range from 0 to 100 along with two reference bands. Here is a description of the way the indicator works:

➤ For the Aroon Up, we look for the higher value over a certain period. If the bar where this high value has occurred is the current one, the value of the indicator will be equal to 100, while if this high value has been produced a certain number of bars backward (defined by the period of the indicator) the value will be 0.

➤ For the Aroon Dow, we follow the same process but we use the low instead of the high.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..)
Period	14	Number of bars to look for the high and low.
UpperBand	70	Value of the upper band.
LowerBand	30	Value of the lower band.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**. It is inserted by default in a new window

Chart:

Bibliography:

Published in the magazine Stock&Commodities September 1995.

◼ FIBRANGE – Fibonacci Range

Introduction:

This indicator represents the intraday range by drawing the high, the low and the average point (represented by the level 0) and also two Fibonacci levels of this range. It also calculates the Situation of the current price in relation to the total range. It the current price is close to the sesSion´s high, the line representing the Situation will be close to the high value of the indicator. This enables to see where the price is in relation to the day´s range.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2, Data3 etc..)
FibTrigger	0.214	Defines the fibonacci levels on the price range that guide us while defining our entries. Si we put 0.214, we wil use two fibonacci levels: one representing 21.4% of the total range and another one representing 78.6% (1 – 0.214) of the total range.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor. The indicator used 6 Data lines:

- Line 1 represents the lowest values of the indicator.
- Line 2 represents the highest values of the indicator.
- Line 3 represents the difference between the sum of the lowest value of the indicator and the close with the lowest value of the day.
- Line 4 represents the 0 band.
- Line 5 represents the sum of the lowest value of the indicator and the product of the range day with the parameter FibTrigger.
- Line 6 represents the line opposite to 5.

Chart:

-

◻ PIVOTDOWN – Pivot Down

Introduction:

The Pivot Down is the bar where the value of the low is lower than the low of a certain number of previous and subsequent bars.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
GetSwingLowDataOccr	1	This is a numerical value indicating the pivot number we are willing to obtain. Si Ocurrence is worth 1 we will be obtaining the first pivot from the current bar , Si it is wortyh 2 the second….
GetSwingLowDataPrice	Close	This is the field of the bar we are willing to refer to. We can calculate this function with any field of the bar.
GetSwingLowDataStregh	5	Number of bars to consider in both Sides of the pivot.
GetSwingLowDataLength	50	In this parameter, we will specSiy the number of bars backward to consider for the pivot search.

Representation criteria:

The indicator line is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:
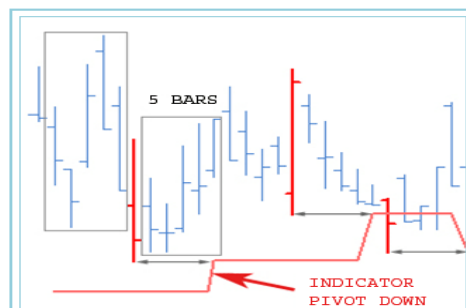
We can see in the image how then 5 bars have passed to the right the value of the indicator is updated to the bar with the new pivot low.

PIVOTUP – Up Pivot

Introduction:

The Pivot Up is the bar where the value of the high is higher than the high of a certain number of previous and subsequent bars.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
GetSwingHighDataOccr	1	This is a numerical value indicating the pivot number we are willing to obtain. Si Ocurrence is worth 1 we will be obtaining the first pivot from the current bar , Si it is wortyh 2 the second….
GetSwingHighDataPrice	Close	This is the field of the bar we are willing to refer to. We can calculate this function with any field of the bar.
GetSwingHighDataLength	50	Number of bars to consider in both Sides of the pivot.
GetSwingHighDataStregh	5	In this parameter, we will specSiy the number of bars backward to consider for the pivot search.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

Chart:
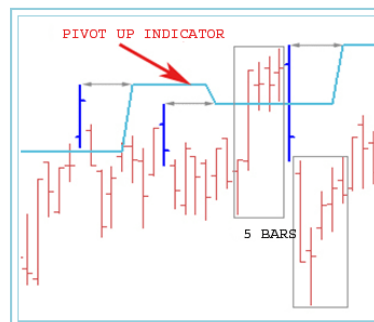
PVTPOINT01 – Pivot Point 01

Introduction:

"Cut your losses and let your benefits run", this proverb must be familiar to all investors however is not so easy to take i tinto practice. This technicque describe next tries to determine critical levels and support and reSistance prices making the strategy eaSier.

A pivot point is the point where the prices change their direction. The pivot and the support and reSistance levels for the current day are calculated by uSing the high, low and close of the previous bar.

Formulas:

There are different variants:

Variant 0. Traditional method:

$Pivot\ Point = (High(1) + Low(1) + Close\ (1)) / 3$

Support 1 = (2*Pivot Point) - High(1)

ReSistanea 1 = (2*Pivot Point) - Low (1)

Support 2 = Pivot Point - (High (1) - Low(1))

ReSistance 2 = Pivot Point + (High (1) - Low (1))

High (1), Low (1) y Close (1)are the high, low and close of the previous day respectivelly.

Variant 1. This variant includes the open of the current bar and calculates the average of the 4 values taking into account any gap formed on the open. The formulat of the pivot variates, however the calculation of supports and reSistances remains equal:

Pivot point = (High(1) + Low (1) + Close (1) + Open)/4

Variant 2. This variants changes the close of the previous bar by the open of the current bar, the calculation is as follows:

Pivot point = (High(1) + Low (1) + Open)/3

The calculation of supports and reSistances does not change.

In the image bellow we can see the difference of the application of the three variants. The author suggest to use the tradditional method except the cases with opening gaps where he suggest to use the firt variant.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
StartSesSion	930	Time to start drawing the bars, this factor is used for better clarity in the indicator representation.
VariantType	0	In function of this parameter one or another variable will be applied (0-2).

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:

Bibliography:

This indicator was published in February 2000 in Stocks & Commodities.

PVTPOINT02 – Pivot Point 02

Introduction:

This indicator derivates from the classic Pivot Point, and its only different characteristic is that it has another support and another reSistance. As it happens with the other verSion of the indicator, the pivots and reSistances are calculated with the previous bar´s data.

Formulas:

Pivot point: (High(1) + Low (1) + Close (1)) / 3
Support 1: 2 * Pivot point - High(1)
Support 2: 3 * Pivot point - 2 * High(1))
Support 3: Low(1) + 2 * (Pivot point - Máxima(1))
ReSistance 1: (2 * Pivot point) - Low(1)
ReSistance 2: (3 * Pivot point) - 2 * Low(1)
ReSistance 3: High(1) + 2 *(Pivot point- Low(1))

High(1), Low(1) and Close(1,) are the high, low and close of the previous day respectivelly.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
StartSesSion	930	Time to start drawing the bars, this factor is used for better clarity in the indicator representation.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

Chart:

Bibliography:

This indicator was published in February 2000 in the magazine Stocks & Commodities.

SPREAD

■ BOP – Balance of Power

Introduction:

Balance of power (BOP), that scores each of the bars in function of the bullish and bearish strengths present in the market.

The scoring works the following way:

1.- **Score based on the open**: Measures the movement between the open and the extremes of the bar. The fartthest away the open is from the high of the bar the more bullish strength will be obtained. The bearish strength will obtain the corresponding score by measuring the distance between the same open and the low.

2.- **Score based on the close**: Measures the movement between the close and the extreme of the bars. The bullish strength will be obtained by measuring the distance between the close and the low of the bar and the equivalent formula will be applied for the bearish strength.

3.- **Score based on the open-close** : In this case a comparison will be run between the open and the close of the bar, the predominant strength will obtain an extra score. The higher the difference between the strengths the higher the score given will be.

Then, by uSing this three parameters we obtain the average score of both strengths for each of the bar. Finally the value of the BOP will be obtained by the difference between the bullish and bearish strength.

This indicator helps to determine the existing trend, the prices divergence, the market direction and the overbuying and overselling levels.

As other indicators do, BOP quantifies the velocity in the prices. The trends marked by the indicators are more sensible than the trends marked by the prices as it is very difficult to keep the velocity in the indicator trend than it is in the price trend. Thus, when BOP changes its trend direction the price can still keep going in the same direction but with less velocity. Consequently, a change in the trend marked by the indicator serves as a warning Signal of a change of trend, but still the Signal must be confirmed by prices.
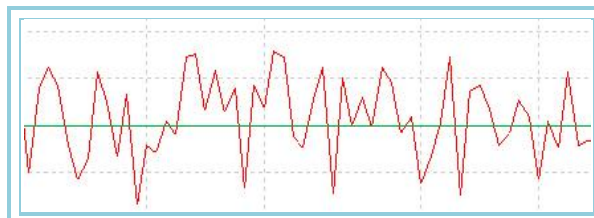
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor**.

Chart:

Bibliography:

This indicator was published in August 2001 in Stocks & Commodities.

◼ CorrelationIndex – Correlation Index.

Introduction:

The Correlation Index calculates the frequence of the price movement in one direction and in the opposite direction for two assets over a certain period of time. This frequence value oscillates between +1 and -1 and is normally used to measure the correlation between two markets or values.

A poSitive correlation indicates that both markets and assets have the same trend while a negative correlation indicates that they have opposite trends. A value close to 0 indicates small correlation.

The aim of the Correlation index is to measure the relation between two variables and obtain the coefficient that will be comprised between +1and -1. The indicator will reach 1 when the correlation between the two series is perfect. It will reach -1 when the correlation is opposite and 0 when there is no correlation at all.

A small correlation index (for example + 0.10) suggests that the relation between the two variables is small. However, a high correlation index indicates that an independent variable (for example a price) will change when an independent variable (for example an oscillator changes.

The direction of the change in the variable will depend on the Sign of the coefficient. Si poSitive then the depending variable will move in the same direction than the independent and Si negative then the depending variable will move in the same direction than the independent variable

The correlation index can be used three different ways:

1. Correlation between the price and an oscillator, for example a high negative correlation value (ex: -0.70) means that when the oscillator changes the price will probably change in the opposite direction.
2. Correlation between a price and another price. In thee cases the change in one price frequently predicts the change in another price. This can be seen in several assets. For example the correlation coefficient between the gold and the price of the euro is highly negative thus an increaSing of the value of the euro involves the decreasing in the value of the gold.
3. Correlaction between an oscillator an another; in certain circumstances the behavior of an oscillator can predict the behavior of another ocscillator, in othe words, the behavior of a volumen based indicator can predict the behavior of a rate of change based indicator.

Formulas:

Data	Description
$Cie1_i$	Close of the first Data source.
$Cie2_i$	Close of the second Data source.
n	Number of assets couples included in the calculation

$$ICO = \frac{\left(\sum_{p=1}^{p} Cie_p * cie2_p\right) - \left(n * \left(\frac{1}{p}\sum_{p=1}^{p} Cie1_p\right) * \left(\frac{1}{p}\sum_{p=1}^{p} Cie2_p\right)\right)}{\sqrt{\left[\left(\sum_{p=1}^{p} Cie_i^2\right) - \left(n * \left(\frac{1}{p}\sum_{p=1}^{p} Cie1_p\right)^2\right)\right] * \left[\left(\sum_{p=1}^{p} Cie2_p^2\right) - \left(n * \left(\frac{1}{p}\sum_{p=1}^{p} Cie2_p\right)^2\right)\right]}}$$
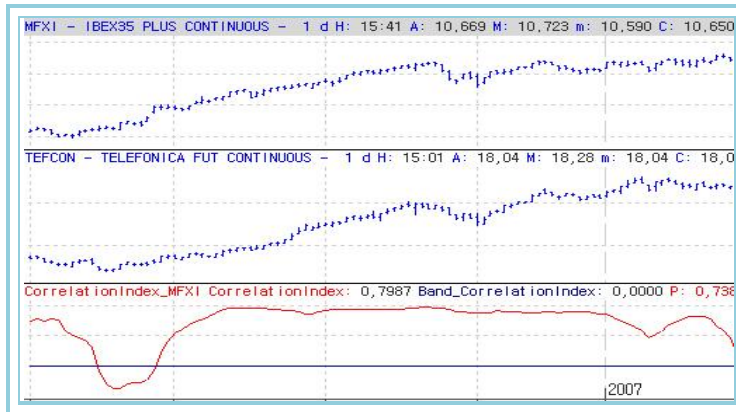
Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second data source.
Period	20	Number of bars to be considered.
BandValue	0	Band drawn for a better clarity in the indicator representation.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:

◼ DisagreeSpread – Disagree Spread

Introduction:

The indicator Disagree Spread calculates the difference in the prices between two markets. This indicator is normally used to monitor futures and options. The futures spread investors monitor the relation between the prices of different futures. As a consequence, we need, at least, two different markets to run comparisons.

A spread trade involves to buy one asset and sell another one at the same time. For example, we could buy gold and sell Silver expecting the gold to rise faster than the Silver falls.

This strategy can also be used with a Single asset buy buying it October settlement and selling the November settlement.

The Disagree Spread uses two Data series for its calculation in order to measure the difference between the two Data. It compares the close of the two series. The aspect of the resulting curve is Similar to the Beta oscillator one, except that in this case the indicator is expressed in price and not in percentage.

The Disagree spread can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between two prices.
3. Spread between one oscillator and another.

Formulas:

Data	Description
$Pre1_i$	Data series of the first asset (open, Close, etc.).
$Pre2_i$	Data series of the second asset. (open, Close, etc.)

$$DisagreeSpread = \left(Pre1_i - Pre2_i \right)$$

Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second Data Source.
PriceSource	Close	Field of the bar to be used for the calculation.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

Chart:

■ DisagreeSpreadSour – Disagree Spread with Source

Introduction:

The indicator Disagree Spread with Source calculates the difference between the prices of two markets. It is normally used to monitor futures and options. The investors in future spreads follow the relations between prices of different futurs. Consequently two different markets or assets are needed to run the comparisons.

A spread trade involves buying one asset and selling another one at the same time. For example, we could buy gold and sell Silver expecting the gold to rise faster than the Silver falls.

This strategy can also be used with a single asset buy buying it October settlement and selling the November settlement.

The Disagree Spread with Source uses for its calculation two data series with the aim of measuring the difference between them. It compares the close of the two data series and substract to them a factor K that is worth the differential spread of the first bar. The aspect of the resulting curve is Similar to the spread differential one:

The Spread disagree can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between a price and another price.
3. Spread between two oscillators.

Formulas:

Data	Description
DisagreeSpreadPre1$_i$	Value of the indicator Spread Differential.

$$DisagreeSpreadSour = DisagreeSpread - k$$

Where k is the spread of the first register.

Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second Data source.
PriceSource	Close	Field of the bar used for the calculation.
BandValue	0	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The line of the indicator is drawn in bullish color above the band and n bearish color bellow the band. This and other aspects are fully configurable in the **indicator´s properties editor**.

Chart:
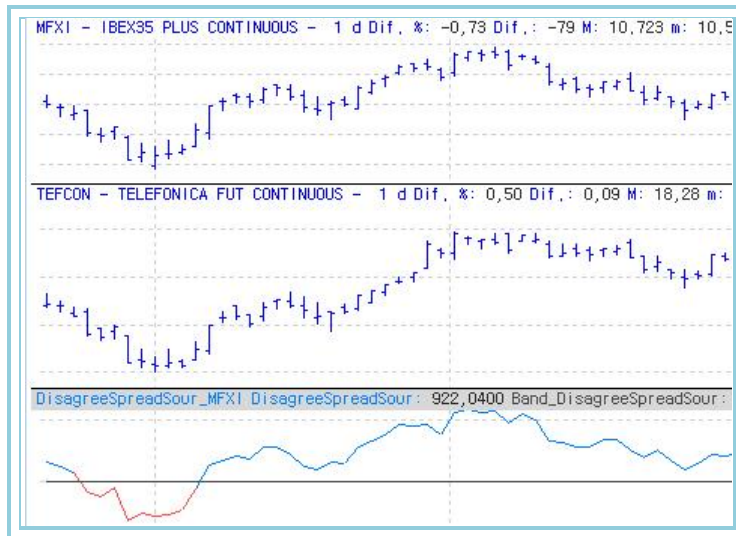
MomentumSpreadOsc –Beta Momentum Spread Oscillator

Introduction:

The Beta Momentum Spread Oscillator uses for its calculation two data series with the aim of measuring the trend of the relative strenght of a momement of one data series in relation with the other. It compares the close of a day in relation of the previous close on each of the series and then substract both values. Finally it applies the momentum standard formulat by substracting to today´s close the value of "N" bars close. The result is a Data curve with the following interpretation:

- If the Data of the oscillator are above zero it means that the first data series is accelerating the increaSing movement in relation to the second one.
- If the Dataof the oscillator are bellow zero it means that the first data series is decreasing with more strength than the second one.

The Beta Momentum Spread Oscillator can be used three different ways:

1. Momentum Beta between a price and an oscillator.
2 Momentum Beta between a price and another price.
3. Momentum Beta between two oscillators.

Formulas:

Data	Description
SpreadOsc	Value of the Beta Oscillator.

$$MomentumSpreadOsc = BETA_i - BETA_{i-(m+1)}$$

Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Fuente Base_2	Data1	Second Data Source.
Periodo_C	10	Comparison register.
BandValue	0	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The line of the indicator is represented in bullish color when the indicator is above the band and in bullish color when bellow the band. This and other aspects are fully configurable in the **indicator´s properties editor**.

Chart:

■ PercentSpread – Percentage Spread

Introduction:

The Percentage Spread Oscillator calculates the price difference between two different markets and express it in percentage related to their closes.

A spread trade means buying and selling to different assets at the same time expecting a faster movement in one than in the other. For example, we can buy gold and sell silver expecting the price of the gold to rise faster than the silver fails.

We can also use this strategy with a single asset for example by buying October settlement for a future contract and selling December settlement for the same contract.

The percentage spread used two data series for its calculation with the aim of measuring the difference between. It compares today Close for the two data series. The aspect of the curve is similar to the Beta Oscillator on. The indicator can be interpreted the following way:

- Values above 0 indicate that the first seires is behaving with more strenght.
- Values bellow 0 indicate that the fist data series is weaker that the second one.

The Percentage Spread can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between a price and another price.
3. Spread between one oscillator and another.

Formulas:

| Data	Description
DisagreeSpread	Value of the indicator
Prec1	Data series of the source asset.

$$PercentSpread = \frac{DisagreeSpread * 100}{Prec1}$$

Parameters:

Name	Default	Description
DataSource1 (Prec1)	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second data source
PriceSource	Close	Field of the bar used for the calculation.

Representation criteria:

The linw of the indicator is represented in bullish color above 0 and in bearish color bellow 0. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:
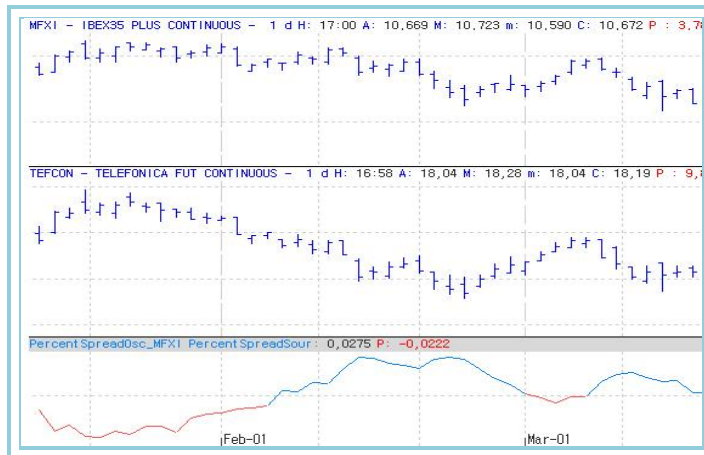
■ PercentSpreadSour – Percentage Spread with Source

Introduction:

The indicator Spread Percentage with Source calculates the difference in the price of two different assets and expressed this difference in percentage.

A spread trade means buying and selling to different assets at the same time expecting a faster movement in one than in the other. For example, we can buy gold and sell Silver expecting the price of the gold to rise faster than the Silver fails.

We can also use this strategy with a single asset for example by buying October settlement for a future contract and selling December settlement for the same contract.

The Spread Percentage with Source uses for its calculation two Data series with the aim of measuring the difference between them. It compares today´s closes for the two data series and then substract to them a K factor that corresponds to the percentage spread of the first bar. The look of the curve is very Similar to the percentage spread one. The indicator can be interpreted the following way:

- Values above 0 indicate that the first seires is behaving with more strenght.
- Values bellow 0 indicate that the fist data series is weaker that the second one.

The Percentage Spread with Source can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between a price and another price.
3. Spread between one oscillator and another.

Formulas:

Data	Description
PercentSpread	Value of the indicator.

$$PercentSpreadSour = PercentSpread - k$$

Where k is the percentage spread of the first register.

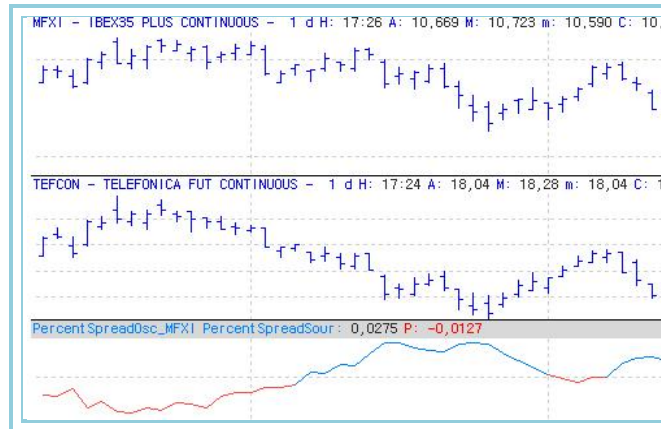**Parameters:**

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second Data source.
PriceSource	Close	Field of the bar used for the calculation.

Representation criteria:

The line of the indicator is represented in bullish color above 0 and in bearish color bellow 0. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:

◻ RSC – Strength Index

Introduction:

The Strenght Index uses for its calculations two Data series with the aim of measuring the relative strenght of one asset in relation to another. It compares the close of the day for both series. The resulting aspect of the curve is similar to the Beta Oscillator one. It can be interpreted the following way:

- Values above 0 indicate that the first seires is behaving with more strenght.
- Values bellow 0 indicate that the fist data series is weaker that the second one.

The Stength Index can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between a price and another price.
3. Spread between one oscillator and another.

Formulas:

Data	Description
Pre1$_i$	Price series for the first Data source.
Pre2$_i$	Price series for the second Data source.

$$Indice = \frac{Pre1_i}{Pre2_i}$$

Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second Data source

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
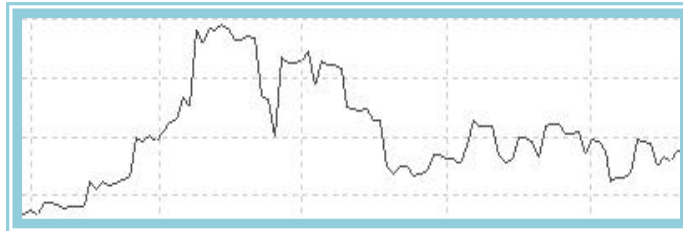
◻ SpreadOsc –Beta Oscillator

Introduction:

The Beta Momentum Oscillator uses for its calculations two data seriies with the aim of measuring the trend of the relative strength between both series. It compares the closes of the day of both data series and then substract them. It finally applies the momentum standard formula by substracting to today´s value the value "N" bars ago. The result is a data curve with the following interpretation:

- Values above 0 indicate that the first seires is behaving with more strenght.
- Values bellow 0 indicate that the fist data series is weaker that the second one.

The Momentum Beta Oscillator can be used three different ways:

1. Spread between a price and an oscillator.
2. Spread between a price and another price.
3. Spread between one oscillator and another.

Formulas:

Data	Description
$Cie1_i$	Close of the current for the first Data series.
$Cie1_{i-1}$	Close of the previous bar in the first Data series.
$Cie2_i$	Close of the current bar for the second Data series.
$Cie2_{i-1}$	Close of the previous bar for the second data series.

$$B1 = \sum_i \frac{(Cie1_i - Cie1_{i-1})*100}{Cie1_i}$$

$$B2 = \sum_i \frac{(Cie2_i - Cie2_{i-1})*100}{Cie2_i}$$

$$BETA = B1 - B2$$

Parameters:

Name	Default	Description
DataSource1	Data1	First Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
DataSource2	Data1	Second Data source.
BandValue	0	**Band drawn for better clarity in the indicator´s representation.**

Representation criteria:

The line of the indicator is represented in bullish color above the band and in bearish color bellow the band. This and other aspects are fully configurable **in the indicator´s properties editor**.

Chart:

VOLATILITY

⬛ Annvolatility – Yearly Volatility

Introduction:

The yearly volatility is a measure of the standard deviation of the logarythm of two consecutive closes for a certain period we generally consider between 10 and 20 bars as Default value).

The oscillator do not provide directly buy and sell signala it is rather used as a filter for the signals provided by other indicators.

In general a low historical volatility represents low risk situations to interact the market.

Formulas:

Data	Description
$Dato_i$	Data in the current bar (open, Close, High…).

$$P1 = Log_n\left[\frac{Dato_i}{Dato_{i-1}}\right]$$

$$P2 = DTI(n).P1$$ Where **DTI** is the standad deviation.

$$AnnVolatility = P2 * F * 100$$ Where **F** takes:

End of Day = 1,0
Week = 0,2
MOnth = 0,04545

Intraday = $int\left(\frac{10}{n}\right) + 1$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Periodo_N	10	Number of bars to be considered for the calculation of the indicator .
PriceSource	Close	Dato de la barra que se utiliza para el cálculo (apertura, High, Low etc.)

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:

■ AvTrueRange – ATR – Average True Range

Introduction:

The ATR is a volatility indicator that takes into account the existing range between the close of the previous bar and the high or low of the current bar or the range between the high or low of a Single bar.

The ATR measures the range of a bar by considering the influence of the close of the previous bar. This helps to take into consideration possible gaps produced in the quotes. The ATR calculates a moving average of these values on a certain number of bars. This tool is very useful to measure the market volatility.

Extreme values of the ATR can be interpreted as a posible change in the market from bullish to bearish trend or from directional market to congestion market.

This oscillator does not provide buy or sell signals by itself, it is rather to be used as a filter for Signals provided by other indicators.

In general a low volatility involves low risk Situations.

Formulas:

Data	Description
Max_i	High of the current bar.
Min_i	Low of the current bar.
Cie_i	Close in the current bar.

$$a = |Max_i - Min_i|$$
$$b = |Cie_{i-1} - Max_i|$$
$$c = |Cie_{i-1} - Min_i|$$
$$TR = M\acute{a}ximo\,(a,b,c)$$

$$AvTrueRange_i = \frac{\sum_{i-1}^{p} TR_i}{p}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation of the indicator.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:

◼ AvTrueRangeP – ATR % - Average Percentage

Introduction:

The ATR & is a volatility indicator that takes into account the existing range between the close of the previous bar and the high or low of the current bar or the range between the high or low of a Single bar and presents this difference as a percentage.

The ATR %measures the range of a bar by considering the influence of the close of the previous bar. This helps to take into consideration possible gaps produced in the quotes. The ATR %calculates a moving average of these values on a certain number of bars. This tool is very useful to measure the market volatility.

Extreme values of the ATR can be interpreted as a posible change in the market from bullish to bearish trend or from directional market to congestion market.

This oscillator does not provide buy or sell signals by itself, it is rather to be used as a filter for signals provided by other indicators.

In general a low volatility involves low risk situations.

Formulas:

Data	Description
AvTrueRange$_i$	Value of the indicator in the current bar.

$$AvTrueRangeP_i = \frac{(AvTrueRange_i - Minimo)*100}{M\acute{a}ximo - Minimo}$$

Where **High** is the higest value reached by the AvTrueRange for a period p.
Where **Low** is the lowest value reached by AvTrueRange in a period p.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculation of the indicator.
UpperBand	80	Upper band drawn for a better representation of the indicator.
LowerBand	20	Lower band drawn for a better representation of the indicator.

Representation criteria:

The line of the indicator is represented in bullish color above the band and in bearish color bellow it. This and other aspects are fully configurable in **the indicator´s properties editor**.
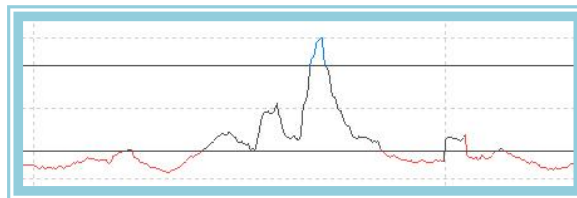
Chart:

■ Base

Introduction:

This indicator calculates the difference between two charts. It is important to be carefull when uSing the indicator, first we need to open the first chart, insert the second chart bellow it and then apply the indicator indicating the first of the chart as Data source.
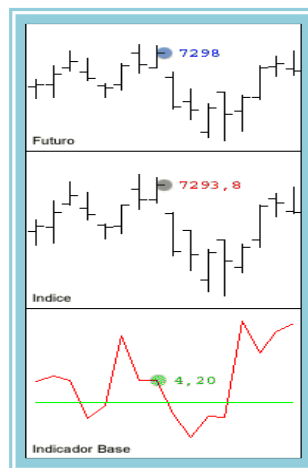
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:

■ BollVolatility –Bollinguer Volatility

Introduction:

The Bollinguer Volatility is a measure of the difference between the upper and lower band of the bollinger bands. In fact, it is a straight measure of the market volatility for a certain period. This oscillator is normally used as a filter to signals provided by other indicators.

Formulas:

Data	Description
B. Sup$_i$	Value of the upper band in the current bar.
B. Inf$_i$	Value of the lower band in the current bar

$$BollVolatility = B.Sup_i - B.Inf_i$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	25	Number of bars to be considered for the calculation of the indicator.
CoeficienteM	2	Multiplying coefficient.
PriceSource	Close	Field of the bar used for the calculation of the indicator
Media	Simple	Type of average used for the calculation of the indicator

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:
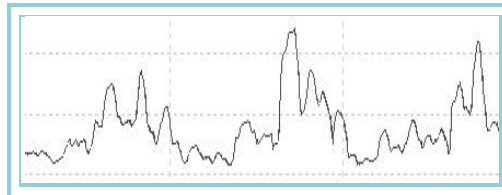
■ BollVolatilityOsc –Bollinguer Volatility Oscillator

Introduction:

This indicator takes the high and low values of the Bollinger Volatility for a certain period and assign to them the values +100 and 0 respectivelly. The rest of values are divided proportionally between the two extreme amounts previously mentionned.

As a result we can find very easily zones of high volatility (above +80) and low volatility (bellow 20) for a certain period of the quotes historical data.

This reference enables us to use the oscillator for two different purposes:

> ➢ To filter the buy/sell signals given by other indicators by triggering their signal in zones with low volatility and consequently low risk.

> ➢ To take additional precautions in the zone with high historical volatility when the risks of being in the market increase exponentially.

Formulas:

Data	Description
BollVolatility$_i$	Value of the indicator in the current bar.

$$BollVolati\,lityOsc_i = \frac{(BollVolati\,lity_i - Minimo)*100}{M\acute{a}ximo - Minimo}$$

Where **High** is the highest value reached by the indicator over a period p.
Where **Low** is the lowest value reached by the indicator over a period p.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	25	Number of bars to be considered for the calculation of the indicator
CoeficienteM	2	Multiplying coefficient
PriceSource	Close	Field of the bar to be used for the calculations
UpperBand	80	Upper band drawn for better clarity in the indicator´s representation.
LowerBand	20	Lower band drawn for better clarity in the indicator´s representation.

Representation criteria:

The line of the indicator is represented in bullish color when above the upper band and in bearish color when bellow the lower band.

Chart:
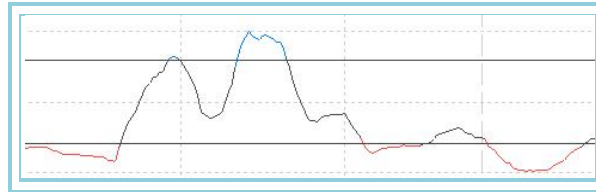
☑ ClosesDSi – DSiCloses – Difference between closes

Introduction:

This indicator shows the difference between the Close of the current bar and the Close of the bar a certain period ago.

Formulas:

Data	Description
cie_i	Close of the current bar.
cie_p	Close of p bar ago.

$$DSi\_cie_i = cie_i - cie_p$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	2	Number of bars to be considered for the calculation of the indicator.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
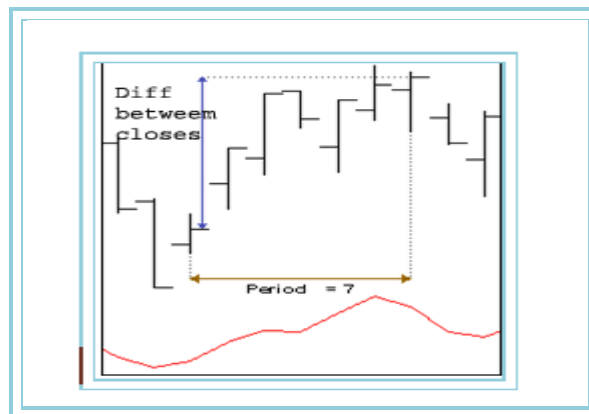
■ CG – Center of Gravity

Introduction:

This indicator was created to try to avoid delay in the generation of buy/sell signals. The aim of the indicator is to smooth the price curve in order to idenfity in a clear way the points of change of trend without delay.

Formulas:

Data	Description
Close$_i$	Close of the current bar.
X$_i$	Current position inside the number of bars to be studied.

$$CG = \frac{\sum_{i=0}^{Periodo}(x_i+1)*Cierre_i}{\sum_{i=0}^{Periodo}Cierre_i}$$

The appearance of the indicator variates in function of the number of bars to be studied.The ideal way that the number of bars to be studied was half of the dominant cycle as, this way, the full movement will be captured.

If the number of bars is too big, the indicator is not sensible enough and does not show a defined trend. Otherwise, if the period is too small, the benefits of the smoothing are lost. Consequently, a compromise must be reached in the number of bars to be used for the calculation.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	10	Number of bars to be used for the calculation of the indicator.

Representation criteria:

2 lines are drawn in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

Chart:
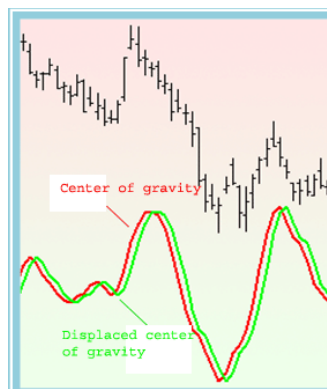
Line 1 corresponds to the center of gravity and line 2 is the center of gravity displaced 1 bar.

Bibliography:

Indicator published in STOCKS&COMMODITIES May-02.

■ FDI – Fractal DimenSion Index

Introduction:

Almost allthe systems based on the "Chaos theory' have a quantifiable measure as fractal dimenSion. A fractal is an object where individual parts are Similar inside the full amount.

The regularity inside the irregularity is important as each time frame inside a market can have similar fractal patterns. FDI provides us with the necessary help to determine the persistence or antipersistance of a value represented in a chart analysis software.

The indicators oscillates between 1 and 2.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
N	30	Number of bars to be considered for the calculation of the indicator

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:
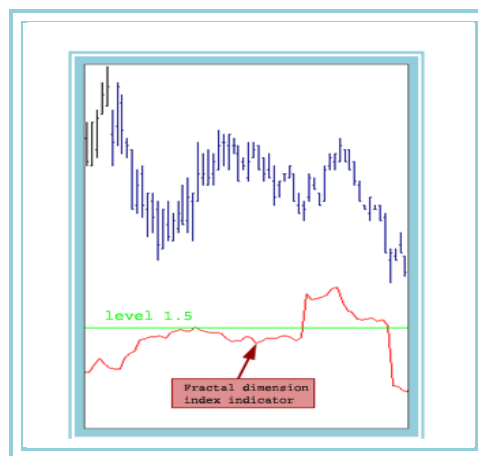
Bibliography:

Published in Stocks & Commodities May 2003.

GapTrading – Gap Trading Indicator

Introduction:

This indicator appoints the gaps Si they overcome a certain %.
The up gaps are signal of strength while the down gaps are signals of weakness.

Depending on the Chart compression (daily, weekly, monthly...) a gap can be more significant than another...
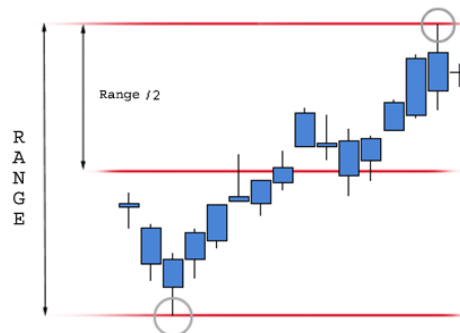
Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Down	1	% difference between the open of the current day with the close of the previous day to chec Si we can consider it as a bear gap.
Up	1	% difference between the open of the current day with the close of the previous day to chec Si we can consider it as a bull gap.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully **configurable in the indicator´s properties editor.**

Chart:
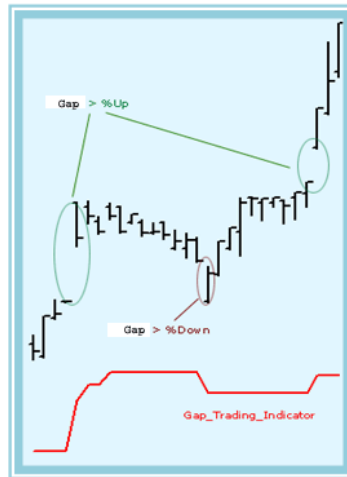
Bibliography:

"Technical AnalySis of the future markets" - John J. Murphy

◻ InvOsc – Inverse Oscillator

Introduction:

This indicator is based on the range concept. It is defined as the difference between the highest high and the lowest low for a group of bars.


Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Range	7	Number of bars to be considered for the calculation of the range.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

A line is also drawn in the level 0 for a better representation of the indicator.

Chart:
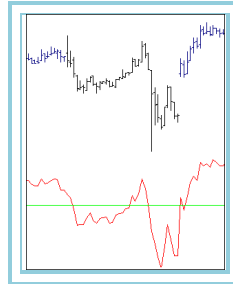
Bibliography:

"Technical analysis of the future markets" - John J. Murphy

◼ MaSinsdex – Índice de Mass

Introduction:

The Mass index uses two exponential moving averages of the range of the bars to run its calculations. The indicator is to be used in markets with strong trends in order to monitor the direction and warm about potential changes of trend.

This oscillator does not provide buy and sell signals it is rather use as a filter to signals provided by other oscillators.

Formulas:

Data	Description
Max_i	High of the current bar.
Min_i	Low of the current bar.

From the first register, we calculate:

$$DIF = Max_i - Min_i$$

For the previous Data we calculate the exponential moving average:

$$MEX\,1 = Med\,.Exp\,(m1)\,DIF$$

We calculate an exponential moving average on the previous results:

$$MEX\,2 = Med\,.Exp\,(m2)\,MEX\,1$$

$$COF = \frac{MEX\,1}{MEX\,2}$$

$$MassIndex = \sum_{y=1}^{p} COF$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period_M1	9	Number of bars to be considered for the calculation of the first exponential moving average.
Period_M2	9	Number of bars to be considered for the calculation of the second exponential moving average.
Periodo_P	25	Period for the calculation of the summatory COF.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
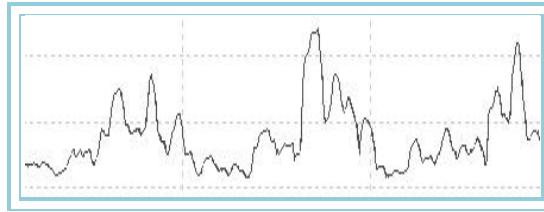
◼ PriceEvolution –

Introduction:

This indicator shows the variation of the prices of a certain asset and from a certain date. As an example, we could calculate the changes suffered by the prices since the beginning of the year. To do so, we neeed to open the required chart with the beginning of the year as start date so that we can compare the close of each of the bars with the open of the first bar of the Chart.

Formulas:

Data	Description
Aper	Opening price of the first bar of the chart
Cie_i	Close of the current bar.

Calculation in points:

$$PriceEvolution_i = Cie_i - Aper$$

Calculation in percentage:

$$PriceEvolution_i = (Cie_i - Aper)*100 /Aper$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
PointsPercentage	0	This parameter configures the way to show the Data of the indicator. Si its value is zero, the information shows up in points and Si different from 0 it shows up in percentage.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
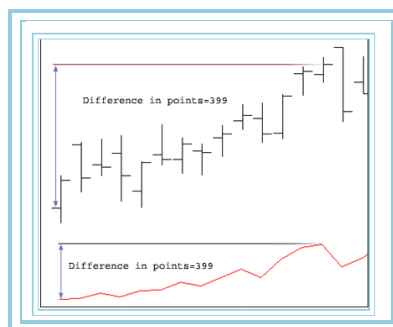
▪ RLA – Regression Line Angle

Introduction:

The linear regression is a statistical tool enabling to relate two variables if certain conditions are fulfilled. The regression equation relates the price of the asset or index with the variable "time", in order to find out how the first variable evolves in function of the Historical Data. Visual Chart uses the method ordinary low squares (MCO) to adjust to the quote chart the line moving closer to all prices that will appoint the trend.

Parameters:

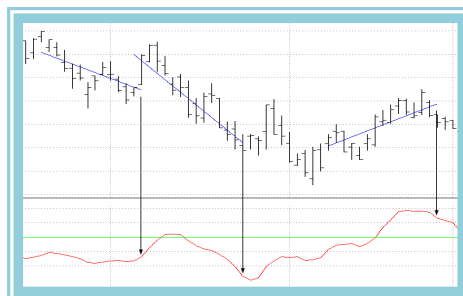| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	15	Number of bars to be considered for the calculation of the indicator.

The regression technique is a highly sofisticated statistical tool requiring for its validiy the fullfilling of certain conditions:

➢ First the relation between the time and quotes must be linear. Even though the statistical technique of linear regression is apliable to certain case of non linear relation as it is the case of the functions potential, exponential, potential-exponential, hyperbolic, hyperbolic-exponential or parabolic the indicator Regression Line Value Index can only be calculate on variables related linearly. This fact presents a serious inconvenience when prices follow, for example a growing pattern or any other patter different from the straight line.

➢ Second, the estimation materials must be independent with normal distribution and constant variation.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor**. Also a 0 line is drawn for a better representation of the indicator.

Chart:

The value shown by the indicator is the angle of the regression line adjusted in the corresponding bar to the indicated number of periods.

▪ RSL – Regression Line Slope

Introduction:

The linear regression is a statistical tool enabling to relate two variables if certain conditions are fulfilled. The regression equation relates the price of the asset or index with the variable "time", in order to find out how the first variable evolves in function of the Historical Data. Visual Chart uses the method ordinary low sqaures (MCO) to adjust to the quote chart the lne moving closer to all prices that will appoint the trend.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	15	Number of bars to be considered for the calculation of the indicator.

The regression technique is a highly sofisticated statistical tool requiring for its validiy the fullfilling of certain conditions:

> ➢ First the relation between the time and quotes must be linear. Even though the statistical technique of linear regression is apliable to certain case of non linear relation as it is the case of the functions potential, exponential, potential-exponential, hyperbolic, hyperbolic-exponential or parabolic the indicator Regression Line Value Index can only be calculate on variables related linearly. This fact presents a serious inconvenience when prices follow, for example a growing pattern or any other patter different from the straight line.

> ➢ Second, the estimation materials must be independent with normal distribution and constant variation.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully **configurable in the indicator´s properties editor**. Also a 0 line is drawn for a better representation of the indicator.

Representation criteria:

Chart:

The value shown by the indicator is the slope of the regression line adjusted in the corresponding bar to the assignated number of periods.

When the value of the indicator is positive, it means that the trend is positive suggesting a posible growth in prices.

If prices are falling, the value of the indicator will fall as well.

Nul values indicate a lateral displacement of the quotes.

◼ RVI – Relative Vigor Index

Introduction:

The idea of this indicator is very simple; the bars with a close superior to the open suggest a bullish market while the bars with a close inferior to the open suggest a bearish market.

Formulas:

The indicator uses for its calculation a quotient made of:

1. A numerator formed by the difference between the Close and the open smoothed by a four bar´s period weighted moving average.

2. As a denominator it used the negotiation range of the bar (high minus low) filtered with a four bar´s period weighted moving average.

Both the numerator and the indicator are summed independently considering the value of the indicator a ration between both of them.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	15	Number of bars to be considered for the calculation of the indicator.
Decimals	2	Number of decimals used foor the calculation.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully **configurable in the indicator´s properties editor.**

Chart:

Indicador Relative Vigor Index
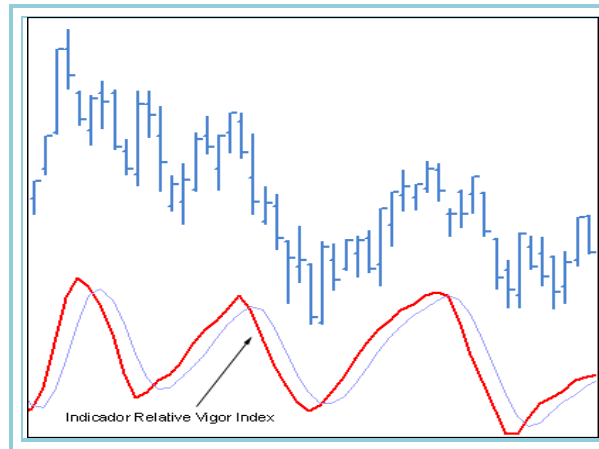
The rules for the use of this indicator are flexible as the indicator is normally in phase with the market cyclics movements.

Bibliography:

Published in January 2002 in Stocks & Commodities.

SNRI – Signal to noise ratio indicator

Introduction:

This indicator is called Signal to Noise Ratio as it establishes a straight relation between the signal of a wave, in this case the quotes of a certain asset to which we have applied a smoothing to avoid extreme results and the existing noise of the market defined by a moving average applied to the average range-center of the bar-of the quotes.

The ratio Signal /noise is normally measured in decibles, consequently the result is a logarythmic ratio. In this places where the Signal is equal to the level of noise we will get as result zero DB that will be the logarithm of 1.

The author concludes that the range of the signal must be at least the double of the noiser range in order to obtain a reasonable benefit.

Signals analysts accept as valid the low level of 6 dB from which the Signal generation has a low risk of error.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully **configurable in the indicator´s properties editor.**

A band is drawn at the level of 6 for better clarity in the indicator representation.

Chart:
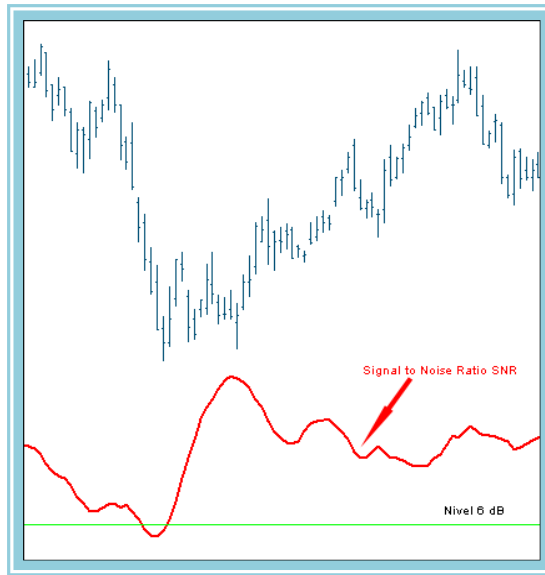
Bibliography:

Created by John Ehlers and published in Stocks & Commodities (Marzo 2000).

TCF – Trend Continuation Factor – Factor

Introduction:

This indicator appoints the existing trend. It is made of two lines called TCF+ and TCF-, TCF+is used to identify periods of bullish trend while TCF- is used to identify periods of bearish trends.
Positive values of the TCF+ indicate bullish trend while positive values of the TCF- indicate bearish trend.

From the definition of the lines of the indicator we can deduce that both lines can not take positive values at the same time as they cannot be two different trends at the same time but both of them can take negative values and this will mean that we are in a period of consolidation.

Formulas:

Four data list are used for the calculation of the indicator:

Changes lits+: List on which we note the difference between the close of the current bar and the close of the previous bar when the result is poSitive. In this case, in the list Change – we note a 0.

Changes list -: List on which we note the difference between the close of the current bar and the close of the previous bar when the result is negative. In this case, in the list Changes+ we note a 0.

List CF+ (Continuation Factor): Si Changes + results zero, we not a zero in this list, Si not its value will be the result of Changes+ plus the previous value of the FC+.

List CF- (Continuation Factor): Si Changes + results zero, we not a zero in this list, Si not its value will be the result of Changes - plus the previous value of the FC+.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Range	25	Number of bars to be considered for the calculation of the indicator.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are **fully configurable in the indicator´s** properties editor.

Also a line is drawn at the 0 level for better clarity in the indicator´s representation.

Chart:
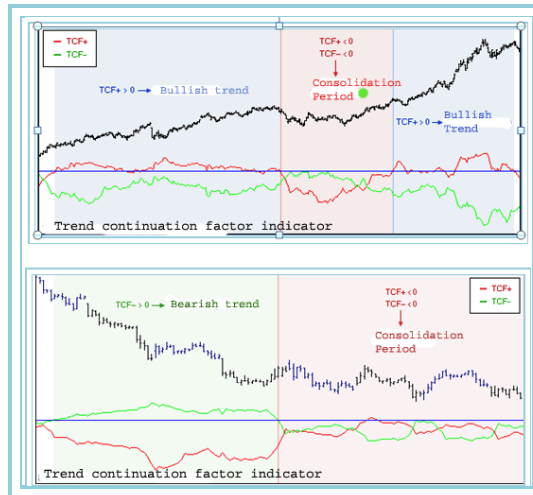
TCF+ is the indicator´s red line. It is the result of the difference of the summatory of n-values (range) of the list Changes+ minus the summatory of the n-values of the list FC-.

TCF- es la línea verde del indicador. It is the result of the difference of the summatory of n-values (range) of the list Changes- minus the summatory of the n-values of the list FC+.

Bibliography:

Indicator published in "Stocks&Commodities" (March-02).

▣ TicksChart

Introduction:

This indicator shows the ticks produced in the quotes. This way, we can see the value of the ticks produced all over the day.

It enables to show a certain amount of ticks defined by the parameter NumTick. It includes two different ways of representing the information:

- Visualize all the ticks produced in the quote
- Represent them only when the price changes.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
TicksNumber	500	Maximum amount of ticks to be represented
OnChangeClose	No	This parameter can take two values (Yes or No). The default value is "no", in this case the indicator represents each tick produced. Si we select the option "Yes", the value is represented only with new prices

Representation criteria:

The indicator´s line is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:

▣ TTFIndicator

Introduction:

This indicator suggests a way to detect the trend ang move with it as long as possible. To do so, it uses two concepts:

➢ Buy Power. This is the difference between the High of N most recent periods minus the low of n periods previous to the most recent ones.

➢ Sell Power. This is the difference between the High of the N periods previous to the N most recent periods minus the low of the most recents.

Fórmula:

$$TTF = ((\text{Buy Power} - \text{Sell Power})/(0.5*(\text{Buy Power} + \text{Sell Power})))*100$$

We use GetHighestIndicator and GetLowestIndicator for the calculation of the TTF indicator in Visual Chart.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Lenght	15	Periodo to calculate the high and the low.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

The TTF indicator will move within three different zones depending on the market trend:
➢ In a bulllish trend TTF will take values superior to +100.
➢ In a bearish trend TTF will take value inferior to −100.
➢ In a consolidation zone TTF will take values between −100 y +100.

Bibliography:

This indicator was developed by M.H. and presented in Stock and Commodities December 2004.

UlcerIndex – Ulcer Index Indicator

Introduction:

This indicator measures the stress level in relation with a the behavior of a market investment. It uses the price regression to measure the level of stress and it does so by comparing the current price with the most recent prices.

The higher the Ulcer Index is the higher the level of stress with the investment.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	20	Number of bars to be considered for the calculation
DataSource	Close	Field of the bar to be used for the calculations.
SafeLevel	5	Level above which the ulcer index is considered high.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

The same level is drawn in the indicator for a better clarity on its representation.

Chart:

☑ VHF –Vertical Horizontal Filter

Introduction:

The biggest dilemma in technical analySis is probably to determine in prices are trending or consolidating.The trend following indicators as the MACD are excelent to generate Singnals in trending markets by they also generate many strong Signals in ranging markets. On the other hand oscillators as the RSI and stochastic work very good in ranging markets bu are not useful in trending markets. The VHF tries to determine which are the best indicators to be used.

They are several ways of interpreting this indicator:

The VHF can be used on its own to determine the market strength. The higher the value of the VHF is the stronger the trend of the asset and the best opportunity to use trend following indicators.

We can also us the direction of the VHF to determine Si we are inside a congestion zone. A falling measure of the VFH indicates that the market is probably entering a congestion zone.

We can also use the VHF as a contrary indicator. We can expect congestion after having reached high values while we can expect trend after having reached low values.

Formulas:

Data	Description
Dato$_i$	Value in the current bar(Close, open etc.)

HCP takes the higherl Close in a period p:

$$HCP = Maximo(Dato_i)$$

LCP takes the value of the lowest close over a period p:

$$LCP = Minimo(Dato_i)$$

$$Valor1 = HCP - LCP$$

$$Valor2 = \sum_{P-1}^{P} |Cie_i - Cie_{i-1}|$$

$$VHF = \frac{Valor1}{Valor2}$$

Parameters:

| Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	28	Number of bars to be considered for the calculations.
PriceSource	Close	Field of the bar to be used for the calculations

Representation criteria:

The line of the indicator is represented in bullish color above 0,4 and in bearish color below this same amount. This and other aspects are fully configurable **in the indicator´s properties editor**.

Chart:
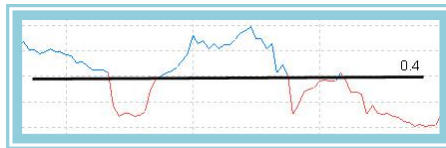
VolatilityChaikin –Chaikin Volatility

Introduction:

The Chaikin's volatility oscillator uses an exponential moving average of the range of each bar to run its calculations, it is in fact a direct measure of the market volatility for a certain period.

This oscillator does not provide buy and sell signals on its own, it is normally used as a filter for the signals provided by other indicators.

Formulas:

Data	Description
Max_i	High of the current bar.
Min_i	Low of the current bar.

$$M1 = Med.Exp(p_1)(Max_i - Min_i)$$

$$VolatilityChaik_i = \frac{(M1_i - M1_{i-p2})*100}{M1_{i-p2}}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)

Period_M1	9	Number of bars to be considered for the calculation of the first exponential moving average.
Period_M2	9	Number of bars to be considered for the calculation of the second exponential moving average.
Periodo_P	25	Period for the calculation of the COF summatory.

Representation criteria:

The line of the indicator is represented in neutral color.This and other aspects are fully configurable **in the indicator´s properties editor.**

A 0 band is alsow drawn for a better clarity in the indicator´s representation

Chart:
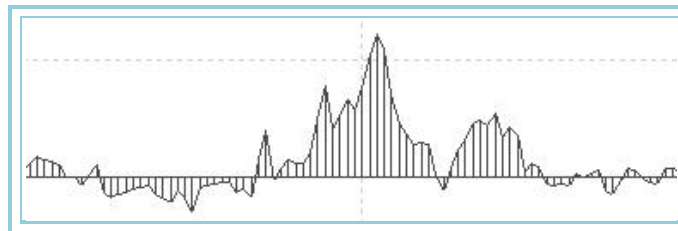
■ VolatilityIndex – Volatility index

Introduction:

The Volatility index measures the range between the Close of the previous bar and the high or low of the current bar or the range between the high and low of a Single bar.

When the indicator takes into account the influence of the close of the previous bar it gives importance to some gaps that may occur in the quotes. The volatility index calculates a single moving average over a certain number of bars. Extreme values of the indicator can forecast a possible change of the market situation.

This oscillator does not provide buy and sell signals on its own, it is normally used as a filter for the signals provided by other indicators.

Formulas:

Data	Description
Max_i	High of the current bar.
Min_i	Low of the current bar.
Cie_{i-1}	Close of the previous bar.

We can consider TR as the higher value of:

$$\left| Max_i - Min_i \right|$$

$$\left| Cie_{i-1} - Max_i \right|$$

$$\left| Cie_{i-1} - Min_i \right|$$

For the first TR we use a moving average of the first p bars:

$$Volatility\,Index_p = \frac{1}{p} \sum_{p-1}^{p} TR$$

For subsequent bars:

$$Volatility\,Index_i = \frac{(p-1) * IVP_{i-1} + TR}{p}$$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc...) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	9	Number of bars to be considered for the calculations.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
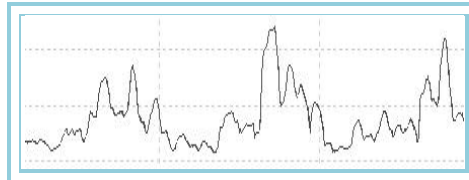
◼ **VolatilityIndexP – Percentage Volatility index**

Introduction:

This indicator takes the extreme values (low and high) of the volatility index and assign them the values +100and 0 respectivelly. The rest of the values provided are shared proportionally between these extreme values.

The result is very interesting as we can find, with a simple look, zones with high volatility (above +80) and low volatility (bellow 20) for a certain period.

These references enable us to use the oscillator for two different purposes:

> ➢ To filter the buy and sell signals provided by other oscillators by triggering them only in low volatility zones.
> ➢ To take additional precautions in the zones with high historical volatility because of the sensible increase of the trading risks.

Formulas:

Data	Description
VolatilityIndex$_i$	Value of the indicator in the current bar.

$$VolatilityIndexP_i = \frac{(VolatilityIndex_i - Minimo)*100}{Máximo - Minimo}$$

Where **High** is the higher value reached by VolatilityIndex in a period p.
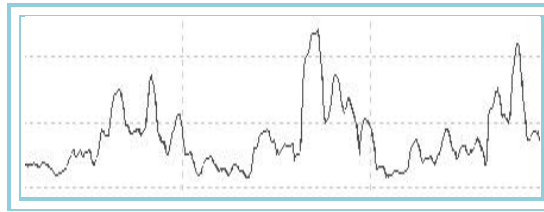Where **Low** is the lower value reached by VolatilityIndex in a period p p.

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
Period	14	Number of bars to be considered for the calculations.
UpperBand	80	Upper band.
LowerBand	20	Lower band.

Representation criteria:

The line of the indicator is drawn in bullish color above the band and in bearish color bellow the band.

Chart:

■ VolStop – Volatility Stop

Introduction:

This indicator is based on the ATR Average True Range.

Formulas:

Data	Description
ATR$_i$	Value of the indicator in the current bar.
Cie$_i$	Value of the Close in the current bar.
Factor	Múltiplying factor of the average range.

Upper band of the indicator VolStop: $VolStopSup_i = Cie_i + (ATR_i * Factor)$

Lower band of the indicator VolStop: $VolStopInf_i = Cie_i - (ATR_i * Factor)$

Parameters:

Name	Default	Description
DataSource	Data1	Data source on which the indicator is applied (asset, indicator etc..) If there is morethan one chart inserted in the window they will be codified as Data2,Data3 etc..)
ATRRange	14	Perido of the ATR.
Factor	2	Number of times to add or substract the average true range to the Close of the bar.

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:
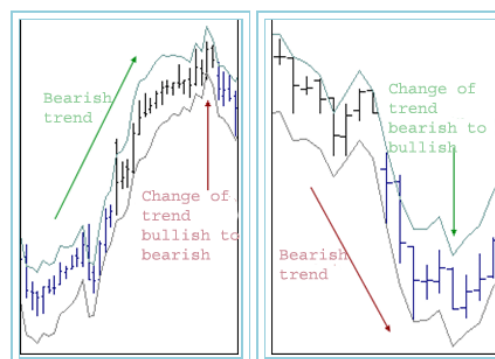
Bibliography:

Indicator published in STOCKS&COMMODITIES October-99.

VOLUME

◼ AccumDistrib – Acummulation/Distribution

Introduction:

The indicator Accumulation/Distribution (ACD) relates the open, the close and the range of a bar. It gives huge importance to the volume. We will call this volume accumulation when buying and distribution when selling. The indicator is based on the premise that the most volumen coming with the movement the more significant this movement will be.

Both ocisllators ACD and OBV try to give a trend confirmation by analyzing price and volumen behaviors.

When the Accumulation/Distribution has high values it indicates that the asset is being accumulated (bought) as most of the volumen is associated to the bullish movement of the price. On the other hand when it moves downwards it means that the asset is being distributed (sold).

In the ACD and in most of the accumulation indicators the interpretation of the indicator´s lines is more important than their numerical values.
The divergences between the Accumulation/Distribution and the prices forecast a change of trend in the quotes..

Formulas:

Data	Description
Max	High of the bar.
Cie_i	Close of the bar.
Min	Low of the bar.
Vol	Volume of the bar.

$$P1 = \frac{[Cie - Min] - [Max - Cie]}{[Max - Min]}$$

$$P2 = P1 * Vol$$
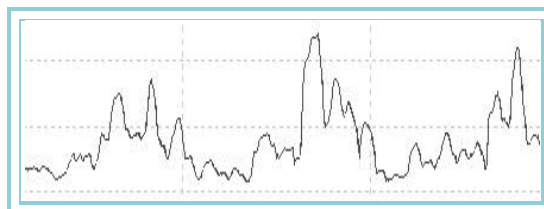
$$P3 = P2_i + P2_{i-1}$$

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:

◼ ChaikinOsc –Chaikin Oscillator

Introduction:

This indicator gives great inportance to the volumen to identify the internal strenght or weakness of the market. It is frequent to use it to detect a possible change in the market sentiment when prices do not indicate so.

The Chaikin oscillator (CKO) applies exponential moving averages to the oscillator ACD. Accumulation /distribution uses the relation between the open and close of each bar and the range of this same bar in orde to give weight and characterize the volumen as Accumulation or Distribution. The concept of the CKO is very similar to the OBV but the CKO is accumulative and weighted. By comparing the volume flow with the prices we can identify high and lows in the medimul term.

One of the most important signals generated by the CKO is the divergence in high levels of overbuying or overselling. Another way of using the oscillator is as a base for trend confirmation when the oscillator changes its direction.

Formulas:

Data	Description
AccumDistrib	Value of the indicator

First we calculate the exponential moving average of M on the ACD:

$$Media1 = Med.Exp(M).AccumDistrib$$

Next we calculate the exponential moving average of N on the ACD:

$$Media2 = Med.Exp(N).AccumDistrib$$

Finally we find the difference between both averages 2:

$$ChaikinOsc = Med1 - Med2$$

Parameters:

Name	Default	Description
Period_M	10	Period to calculate the first exponential moving average
Period_N	3	Period to calculate the second exponential moving average.
BandValue	0	Band used for better clarity in the indicator representation.

Representation criteria:

The lines of the indicator are represented in neutral. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:
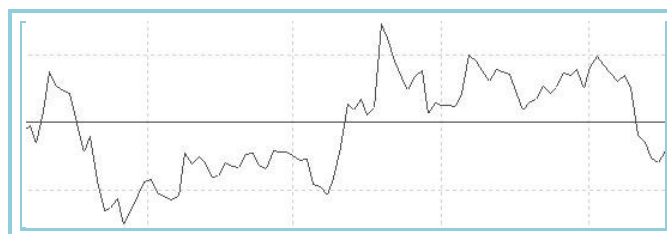
◼ CumVol – Cumulative Volume

Introduction:

This is a cumulative indicator based on the values of the volumen and the variation of the prices.

Formulas:

Data	Description
Cie_i	Close of the current bar.
Cie_{i-1}	Close of the previous bar
$Volumen_i$	Volume in the current bar.

For the first bar:

$$CumVol = 0$$

For the second bar and subsequent:
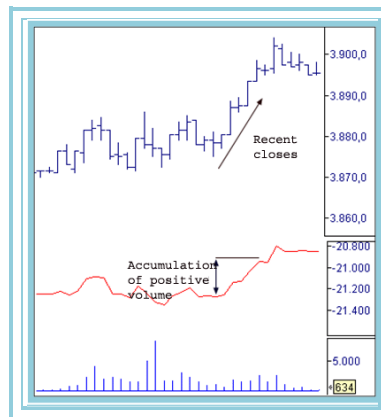
$$CumVol[(Cie_i - Close_{i-1})*Volumen_i]+CumVol_{i-1}$$

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

◼ EaseMov – Oscillator EOM

Introduction:

The EOM calculates the existing relation between the volumen and the rate of change. In fact this indicator tries to calculate the amount of volume necessary to make the price changing.

High values of the EOM are the result of prices accompanied by low volumes. If prices are statics or need much volume to move then the indicator will oscillate around zero.

The indicator EOM produces a buying signal when it closes the 0 line rising and a sell signal when it comes close to 0 after a strong bullish movement ..

Formulas:

Data	Description
Max_i	High of the current bar.
Max_{i-1}	High of the previous bar.
Min_i	Low of the current bar.
Min_{i-1}	Low of the previous bar.
Vol_i	Volume in the current bar.

$$MID = \frac{Max_i - Min_i}{2} - \frac{Max_{i-1} - Min_{i-1}}{2}$$

$$BOX = \frac{\dfrac{Vol_i}{v1}}{Max_i - Min_i}$$

If $Máx_i - Mín_i = 0$, then $Máx_i - Mín_i = 1$

$$EMV = \left[\frac{1}{p1}\sum_{p1=1}^{p1}\frac{MID}{BOX}\right] * v2$$

$$EaseMov = \frac{1}{p2}\sum_{p2=0}^{p2} EMV$$

Parameters:

Name	Default	Description
Periodo_P1	14	Number of bars to be considered for the calculation of the indicator.
Periodo_P2	9	Number of bars to be considered for the calculation of the indicator.
V1	1000000	
V2	10	
BandValue	0	Band drawn for a better clarity in the indicator´s representation

Representation criteria:

The line of the indicator is drawn in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**

Chart:
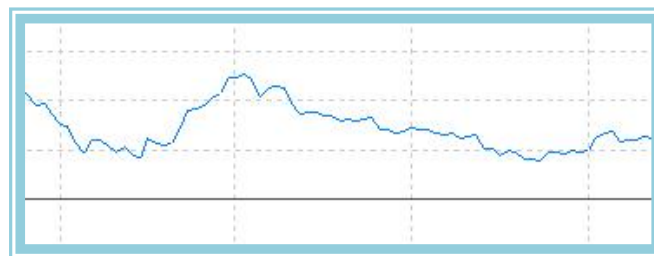
◼ FORCE - Force

Introduction:

Trend following Oscillator that quantifies the movement of the market. It combines three basic elements as the direction of the movement, its magnitude and the market volume.

Formulas:

Data	Description
Vol_i	Volume of the current bar.
Cie_i	Close in the current bar
Cie_{i-1}	Close in the previous bar

$Force_i : Vol_i * (Cie_i - Cie_{i-1}) / Cie_i$

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.
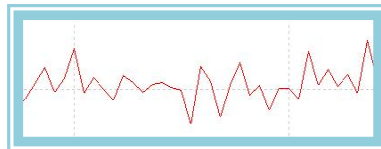
Chart:

☐ IPV – Positive Volume Index

Introduction:

The IPV is calculated in function of the volume increase in relation to the previouos chart bar. The premise of this indicator is that the private investors (not professionals) start their positions in the momens of euphoria characterized by a significant volume increase.

The IPV assumes that in days with volume increase; less experienced investors enter the market. On the contrary, when there is few volume professionals are starting positions. The IPV shows which investor is in the market

This indicator does not offer signals to enter the market, instead, it can be used as a filter for other indicators.

Formulas:

Data	Description
Vol_i	Volume in the current bar
Vol_{i-1}	Volume in the previous bar
Cie_i	Close in the current bar
Cie_{i-1}	Close in the previous bar

If $Vol_i \leq Vol_{i-1}$

then $IPV = IPV_{i-1}$

If Voli > Voli-1

then $$IPV = IPV_{i-1} + \left(\frac{Cie_i - Cie_{i-1}}{Cie_{i-1}} \right) * IPV_{i-1}$$
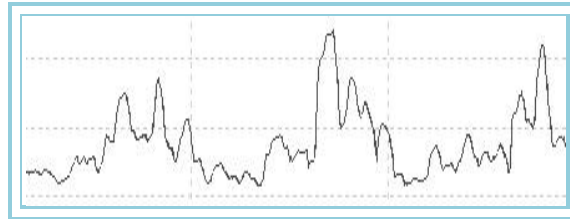
Parameters:

Name	Default	Description
ORG	100	Original Register.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

▣ IVN – Negative Volumen Index

Introduction:

The IPV is calculated in function of the volumen increase in relation to the previouos chart bar. The premise of this indicator is that the private investors (not professionals) start their positions in the momens of euphoria characterized by a significant volume increase.

There is a huge probability that the market is to be bullish when the IVN is above its 1 year moving average. On the other hand, the probability of the market to be bearish is high when the IVN is below the same moving average.

This indicator does not offere signals to enter the market, instead, it can be used as a filter for other indicators

Formulas:

Data	Description
Vol_i	Volume in the current bar
Vol_{i-1}	Volume in the previous bar
Cie_i	Close in the current bar
Cie_{i-1}	Close in the previous bar

If $Vol_i \geq Vol_{i-1}$

    Then $IVN = IVN_{i-1}$

If $Vol_i < Vol_{i-1}$

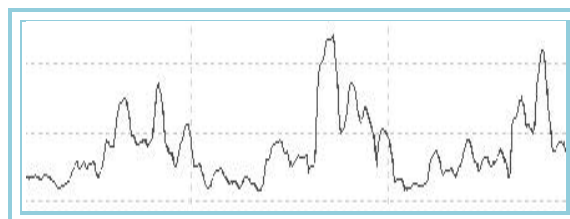$$IVN = IVN_{i-1} + \left(\frac{Cie_i - Cie_{i-1}}{Cie_{i-1}} \right) * IVN_{i-1}$$
then

Parameters:

Name	Default	Description
ORG	100	Value for the first IVN.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

▣ KVO – Oscilador de volumen de Klinger

Introduction:

The KVO oscillator related price and volume. It compares the average prices of the current day with the average prices of the previous day and in function of the obtained results it applies to them a multiplying coefficient. Each day it adds or subscribes a number relating prices and volumes. Then it applies to this result to exponential moving averages to smooth the movements and apply a momentum technique to determine the trend of the resulting curve. It finally applies another moving average to the result of the previous calculation.

The result is a curve moving in stable trends. As all the oscillators, it can be used in different ways:

  ➢ From a chartist point of view by interpreting divergences in relation to the price curves.
  ➢ As a filter for Signals provided by other oscillators indicating the most favourable Situations to enter the market.
  ➢ As an entry point Signal provider Si it upcrosses the 0 line (long) and when it downcrosses it (short)..

Formulas:

Data	Description
Max_i	Volume in the current bar.
Max_{i-1}	Volume in the previous bar
Cie_i	Close in the current bar
Cie_{i-1}	Close in the previous bar.
Min_i	Low in the current bar.
Min_{i-1}	Low in the previous bar.

If $$\frac{Max_i + Min_i + Cie_i}{3} > \frac{Max_{i-1} + Min_{i-1} + Cie_{i-1}}{3}$$

then $$Dato1 = 1$$

on the contrary $$Dato1 = 0$$

$$Dato2 = Max_i - Min_i$$

If $$Dato1_i = Dato1_{i-1}$$

then $$Dato3 = Dato3_{i-1} + Dato2_i$$

on the contrary $$Dato3 = Dato2_{i-1} + Dato2_i$$

$$Dato4 = Vol_i * \left| 2 * \frac{Dato2}{Dato3} - 1 \right| * Dato1 * 100$$

$$Dato5 = Med.Exp(p2).Dato4$$

$$Dato6 = Med.Exp(p3).Dato4$$

$$Dato7 = Dato5 - Dato6$$

$$KVO = Med.Exp(p1)Dato7$$

Parameters:

Name	Default	Description
Periodo_1	13	Period of the exponential moving average for the calculation of the KVO.
Periodo_2	34	Period of the exponential moving average for the calculation of the Dato5.
Periodo_3	55	Period of the exponential moving average for the calculation of the Dato6.
BandValue	0	Band drawn for better clarity in the indicator´s representation.

Representation criteria:

The line of the indicator is represented in bullish color when above the band and in bearish color when bellow. This and other aspects are fully configurable in **the indicator´s properties editor**.

Chart:
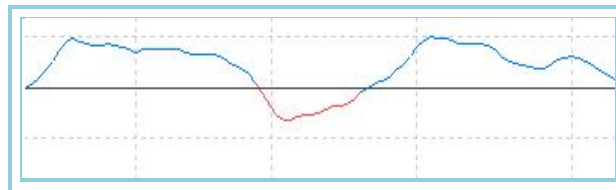
MFI – Money Flow Index

Introduction:

The MFI is a movement indicator showing the strenght with which the Money enters and exits the market. It is associated to the RSI but while the RSI takes the prices into account the MFI also considers the volume. The use of prices and volume all together gives a different perspective to the trader.

The MFI calculates and indexed value based on prices and volume. The calculations are run on each bar when the average price is above the previous average price or when the average price is bellow the average price of the previous bar. The MFI can be useful to identifyoverbuying or overselling Situations.

There is two ways of using this indicator.

> By looking for divergences between the price and the indicator. A change in the market direction is about to happen if the divergences between prices and indicator are strong.
> A strong bullish movement is likely to happen when the MFI is above 80 and, on the contrary a huge bearish movement is likely to happen if the indicator is bellow 20.

Formulas:

Data	Description
Max_i	Volume in the current bar.
Min_i	Low in the current bar.
Cie_i	Close in the current bar
Vol_i	Volume in the current bar.

$$TP = \frac{Max_i + Min_i + Cie_i}{3}$$

$$MF = TP * Vol_i$$

If TPi > TPi-1 $\quad ALZA = MF_i - MF_{i-1}$

If TPi < TPi-1 $\quad BAJA = MF_{i-1} - MF_i$

$$SALZA = \sum_{p-1}^{p} ALZA$$

$$SBAJA = \sum_{P-1}^{p} BAJA$$

From the register p+1 we calculate:

$$MFF = \frac{SALZA}{SBAJA}$$
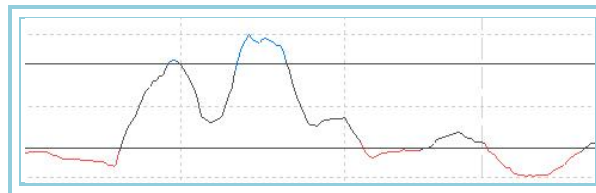
$$MFI = 100 - \frac{100}{1 + MFF}$$

Parameters:

Name	Default	Description
Period	14	Period to be considered for the calculation of the indicator.
UpperBand	80	Upper Band
LowerBand	20	Lower band

Representation criteria:

The line of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

☑ TICKSCHARTVOLFS – Ticks Chart Volume

Introduction:

The functionning of this indicator is Similar to the tick chart´s one but instead of visualizing the price it visualizes the volume. It enables to show up to a certain amount of volume ticks defined by the parameter NumTick. It also suggests two ways of representing the information. Depending on the value of the parameter OnChangeClose, it can show all the ticks produced in the quote or represent them only when the price changes. With the latest option we show the volume accumulated in the ticks produced at the same price.

Parameters:

Name	Default	Description
TicksNumber	500	Maximum amount of ticks to be representd.
OnChangeClose	No	If we leave the Default value, the indicator is represented with each new tick produced. If we select "Yes", it value is represented only when the price changes.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in the indicator´s properties editor.

Chart:
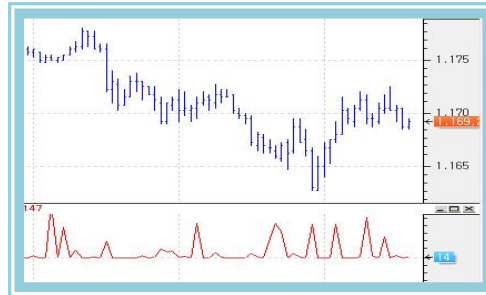
◻ OVB – On Balance Volume

Introduction:

The oscillator on Balance Volume takes into account the volumen accumulated in the market and the direction it moves in. Whe a bar closes above the previous bar close the volume is considered as increaSing volume while when it closes bellow it is considered as decreasing volume.

This indicator tries to anticipate the movement in prices by monitoring the volume. OBV measures the change on the volumen flow to do so.

This indicator does not offer buy and sell Signals on itself but can be used as a filter for other indicators.

Formulas:

Data	Description
Cie_i	Value of the close in the current bar.
Vol_i	Volume in the current bar

Starting up from the second register:

If $Cie_i > Cie_{i-1}$ then $OBV = OBV_{i-1} + Vol_i$

If $Cie_i < Cie_{i-1}$ then $OBV = OBV_{i-1} - Vol_i$
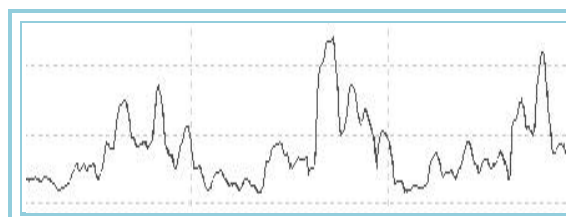
If $Cie_i = Cie_{i-1}$ then $OBV = OBV_{i-1}$

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The lines of the indicator are represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

◼ OPINT – Open Interest

Introduction:

This indicator represents the number of contracts left opened at the Close of the session. It is used to measure the activity and strength of an asset. An increasing of the value of this indicator together with a price increase means that "new buyers" are entering the market and this can be seen as a confirmation of the prices bullish movement. Analogically a decrease in the number of opened contracts while prices are making new Highs is normally interpreted as a Signal of trend weakening.

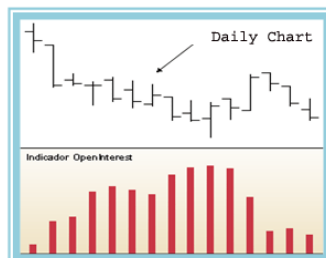This indicator is only valid for future daily chart.

Parameters:

Name	Default	Description
–	–	–

Representation criteria:
The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor.**

Chart:

◼ PVTrend – Volume-Price trend

Introduction:

The PVT is Similar to the OBV as both are a volume indicator adjusted to the price close. While the OBV adds volume when the price is superior to the previous price and subtract volume when the price is lower than the previous price the PVT adds or subtract only a portion of this volume. The volume accumulated by the PVT is determined by the increase or fall of the prices in relation to the Closes of the previous bar.

The PVT calculates the percentage change in prices between the current Close and the previous Close. Then the volume is multiplied by this percentage and the result is added to a cumulated total. The indicator represents this accumulated total. The PVT is used to confirm the strength of the current trend and to verSiy Si some divergence between price and volumes are occurring.

The PVT is to be interpreted the way the OBV is. The OBV adds the same volume to the indicator independently from the rise proportion while the PVT adds a volume proportional to the prices oscillations.

Formulas:

Data	Description
Cie_i	Close of the current bar.
Vol_i	Volume of the current bar.

First we calculate the percentage of change of the current price:

$$PC = \left(\frac{Cie_i - Cie_{i-1}}{Cie_{i-1}} \right)$$

The oscillator is obtained from:
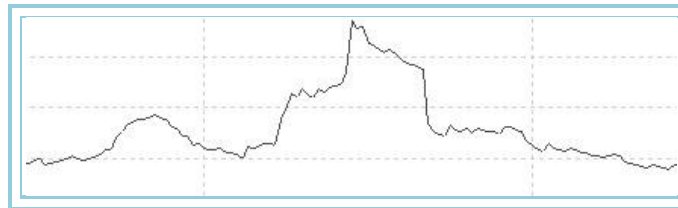
$$PVTrend = (PC * Vol_i) + PVTrend_{i-1}$$

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor**.

Chart:

■ VolDSifPercent – Volume Percentage Difference

Introduction:

This indicator calculates the variation suffered by the volume in relation with the previous day (in the case of daily charts) or in relation with the previous bar in the case of intraday charts. The value represented in the indicator is the percentage difference in the volume between this two days (or bars).

The indicator is represented by two data lines one of them shows this previously mentioned difference and the other one is the reference line at the level 0. It the contracting volume is superior than in the previous day/bar it is considered as poSitive value and Si not as negative.

Formulas:

Data	Description
Vol_i	Volume in the current bar.
Vol_{i-1}	Volume in the previous bar

$$VolDSifPercent_i = [(Vol_i - Vol_{i-1})*100] / Vol_{i-1}$$

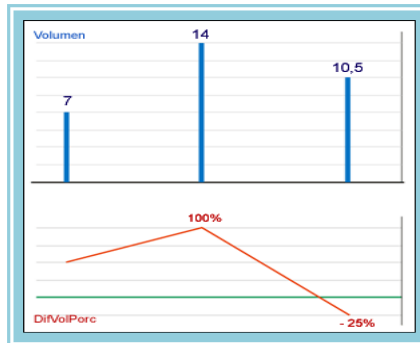**Parameters:**

Name	Default	Description
-	-	-

Representation criteria:

The line of the indicator is drawn in neutral color. This and other aspects are fully configurable **in the indicator´s properties editor**. A 0 line is also drawn for better clarity in the representation of the indicator.

Chart:

VolumeRoc – Volume Rate of Change.

Introduction:

The ROC-Volume indicator is calculated by applying the ROC-Price formula to the volume. The RCV oscillator compares the volume of the current bar with the volume of the historical bars. The difference is represented in percentage and the oscillator moves around a 0 line.

Formulas:

Data	Description
Vol$_i$	Volume in the current bar.

$$RCV = \left[\frac{Vol_i - Vol_{i-p}}{Vol_{i-p}} \right] * 100$$

Parameters:

Name	Default	Description
Period	20	Number of bars to be considered for the calculation of the indicator.

Representation criteria:

The line of the indicator is represented in bullish color above the 0 line and in bearish color bellow the 0 line. This and other aspects are fully configurable **in the indicator´s properties editor**. Also a band is drawn at the 0 level for better clarity in the indicator representation.

Chart:

AvVolumeRoc – Average Volume Rate o Change

Introduction:

This indicator applies a moving average to the volume in order to calculate the rate of change of this volume moving average..

The oscillator RCV with average compared the average volume of the current bar with other historical bars. The difference is represented in percentage and the oscillator moves around a 0 line.

This indicator does not provide buy and sell Signals it is rather used as a filter to Signals provided by other indicators.

Formulas:

Data	Description
Vol_i	Volume in the current bar.

We calculate the moving average of the volume:

$$MV = \frac{1}{M}\sum_{i=1}^{M} Vol_i$$

We calculate the ROC on the previous average:

$$AvVolumenRoc = \left[\frac{MV_i - MV_{i-p}}{MV_{i-p}}\right]*100$$

Parameters:

Name	Default	Description
Period_P	20	Number of bars to be used for the calculation of the indicator.
Period_M	10	Number of bars to be used for the calculation of the Simple moving average.

Representation criteria:

The line of the indicator is represented in neutral color. This and other aspects are fully configurable in **the indicator´s properties editor.**
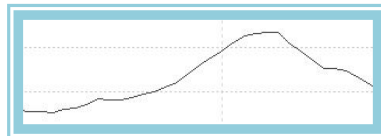
Chart:

◼ Vol – Volume

Introduction:

This is one of the most requested data before taking a trading decision. It can be interpreted two different ways:

As an important element of chartist analysis. It is generally accepted that a bullish movement accompanied by volume is consistent. On the contrary a decrease of the volume will mean that a rise is weak, and the trend is about to change its direction as the investors are selling their stocks.

This data is also used as base for numerous technical oscillators.

Parameters:

Name	Default	Description
-	-	-

Representation criteria:

The indicator is represented in bullish color when it value in the current bar is superior to its value in the previous bar and in bearish color in the opposite Situation.

Chart: