

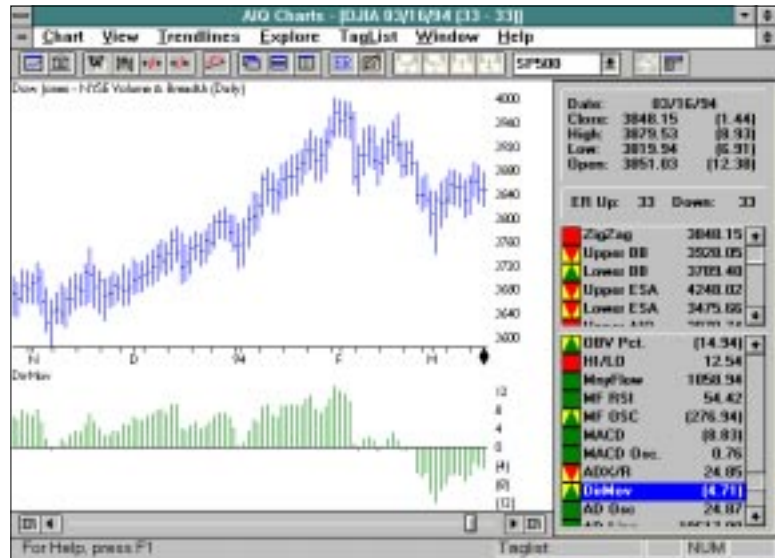
Directional Movement Index (DirMov)

The Directional Movement Index is the difference between the upside (positive) directional indicator and the downside (negative) directional indicator used in the computation of the ADX/ADXR values. The resulting difference, a positive or negative value that cycles around zero, is simply used to determine the direction of the price trend for which the ADX/ADXR is indicating strength.

A positive value indicates an upward movement and a negative value indicates a downward movement. For the very short term, the direction of a change can also be used as an indicator.

Note

The Directional Movement Index works well with the ADX/ADXR indicator. When a signal is generated by the ADX/ADXR, indicating that a trend is in force, the Directional Movement Index will show the direction of that trend.



*Directional Movement Index,
AIQ Market Timing Chart*

The AIQ Market Timing Chart for 03/16/94 is a good example of how this indicator is used as a signaling device. The indicator moved from negative to positive on October 14, 1993 and stayed positive for most of the subsequent market advance.

But with any single indicator, there is a danger in following one simple rule. Observe the movement on November 5, 1993 when the Directional Movement Index dipped below zero and then returned to positive territory. This whipsaw would have caused the trader who followed this simple rule at least the cost of commissions to switch positions.

Value shown in Control Panel

The value shown is the value of the Directional Movement Index for the date specified.

Changeable constants

There are no constants that can be changed for the Directional Movement Index.

ER UP/DOWN

Not an indicator in the classical sense, ER Up/Down is simply a historical view of the AIQ Expert Ratings for the displayed ticker. When the indicator is selected, a histogram of ER values appears. The value plotted for a period is the higher of the two ER values for that period in absolute terms.

For example, if the ER reading is Up 30/Down 35, the ER Up/Down value is negative 35. Positive ER values are shown above the zero line and negative ER values below the zero line.

High/Low indicator (HI/LO)

Note

The High/Low indicator can be displayed only on charts of market type tickers.

The High/Low indicator is a 5% exponentially smoothed average of new highs (stocks reaching new high prices for the year) minus new lows (stocks making new low prices for the year).

The High/Low indicator tends to be a leading indicator of major market moves. Look for breaks in the trendline of the High/Low Indicator and for nonconformations with market indices when they are at extreme values.



*High/Low Indicator,
AIQ Market Timing Chart*

On the AIQ Market Timing Chart for 11/01/94, the Dow is moving sideways in September and October of 1994. However, the trend of the High/Low indicator is down, an obvious divergence with price action. The downward movement of the High/Low indicator contributed to the sell signal (ER Down: 100) issued by the AIQ expert system on 11/01/94.

Value shown in Control Panel

The value shown is the value of the High/Low indicator for the date specified.

Changeable constants

The time period used to compute the average may be changed. The default value is 39 days and permissible range is 1 to 200 days.

Moving Average Convergence-Divergence Index (MACD)

The MACD is a two-component indicator based on two exponential moving price averages. Because of the early signals which can be derived from this indicator, it is regarded by many analysts as helpful in the trading of stock options. MACD (*Reference No. 3*) is a more classic version of the Price Phase Indicator.



The first component of the MACD is a line which represents the difference between two moving averages, each computed for a different period of time. This first component is called the *Price Phase Line*. The second component, which is called the *Signal Line*, is an exponential average of the first component.

Tip

You can expand an indicator plot to fill the entire chart window. Position your mouse cursor on the indicator plot, and press the **Z** key. Pressing the **Z** key again restores the indicator plot to its previous size.

The two lines are charted together on the same time scale. If you have not changed the default color settings, the Price Phase Line is green and the Signal Line is purple. You can also determine which line is which by the position of the lines during periods when a definite trend is established. The Price Phase Line is the upper line during upward price movements and the lower line during downward movements. The Signal Line, being an average of the Price Phase Line, is the lower line during upward moves and the upper line during downward moves.

As a general rule, it is considered bullish when the Price Phase Line is rising and is above the Signal Line. Conversely, it is bearish when the Price Phase Line is falling and is below the Signal Line.

Buy and sell signals are generated by the crossing of the two lines. In general, a buy signal occurs when the Price Phase Line crosses from below to above the Signal Line. A sell signal is indicated when the Price Phase Line crosses from above to below the Signal Line.

An example of a buy signal can be seen on the chart for International Flavors & Fragrances (IFF). The stock moved sideways from September through late October of 1994. At the same time, the MACD was making higher lows. On October 26, the Price Phase Line crossed above the Signal Line and continued to rise. This proved to be an excellent buying opportunity.

Because of its smoothed nature, this indicator can be helpful in highly volatile markets such as the options market. Although generally less effective during narrow, trendless markets, it provides good signals during widely swinging trading ranges and at the conclusion of strong trends.

MACD is especially valuable for its ability to signal a turnaround following a sharp decline. In this situation, divergences are particularly significant and often predate important market bottoms. Divergences pertain to trends and occur when the trend of price action and the trend of an indicator are in opposite directions.

In addition to trend breaks, divergences, and Signal Line crossings, it is important to watch for overbought and oversold levels. When the MACD rises above a certain level, the ticker is in an overbought region and a reversal is likely. The same is true in the oversold direction.

Value shown in Control Panel

The value shown is the value of the MACD Price Phase Line for the date specified.

Changeable constants

The smoothing constants that are used to compute the exponential averages are a function of the number of days that the average represents. These constants, expressed in terms of the number of days represented by the average, may be changed. Default values and permissible ranges for these constants are as follows:

	<u>Default</u>	<u>Range</u>
Short MA	12	1-99
Long MA	25	2-99
Signal Line	9	1-99

MACD Oscillator (MACD Osc)

The MACD Oscillator is computed as the difference between the MACD Price Phase Line and the MACD Signal Line. Or, another way of looking at it, the value of the oscillator is a measure of the vertical separation between the two lines on the MACD chart.

The MACD Oscillator is used as a very sensitive short-term price momentum indicator. When the Price Phase Line is above the Signal Line, price is moving up and the MACD Oscillator is positive (positive values are those values above the zero line). If the Price Phase Line is below the Signal Line, price is moving down and the MACD Oscillator is negative (below the zero line).



*MACD Oscillator,
International Flavors & Fragrances*

The International Flavors & Fragrances chart is for the same analysis date, 12/28/94, as the previous chart which shows the MACD Index. Comparing the two charts, you can see that the MACD Oscillator moved above the zero line on October 26, and stayed positive through most of November — it is easy to see exactly when the Price Phase Line crossover occurs by using the MACD Oscillator as the value check.

This oscillator is best used as an early warning indicator. As long as it is moving in the same direction as price, momentum is increasing. When it reverses, it is an early warning that price movement has stalled and momentum is weakening.

Value shown in Control Panel

The value shown is the value of the MACD Oscillator for the date specified.

Changeable constants

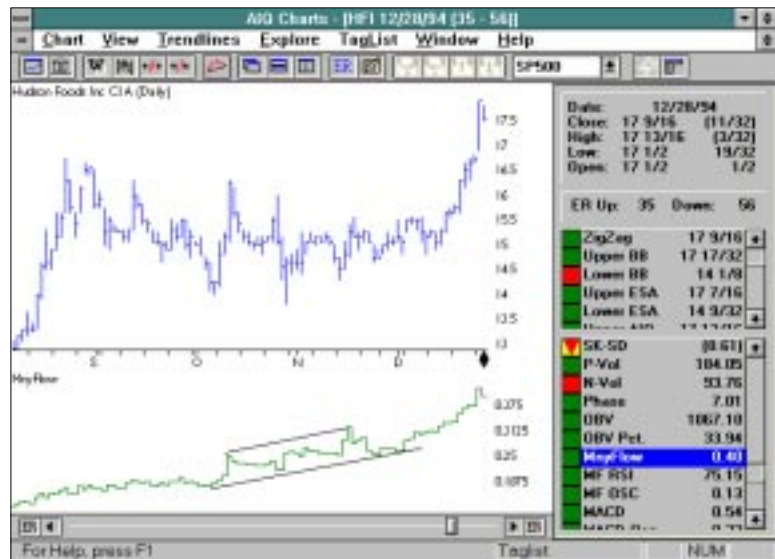
There are no constants for this indicator as it is computed directly from the constants entered for the MACD.

Money Flow (MnyFlow)

This indicator measures the flow of money into and out of a ticker. Money flow is similar to the Accumulation/Distribution indicator in that it attempts to measure the balance of supply and demand.

Money Flow is computed by multiplying total trading dollars by a factor called the flow factor. Total dollars is estimated by multiplying average price for the period's activity by the total volume for the period. The average price is computed as the average of the high, the low, and the close.

The flow factor was taken from the work of Marc Chaikin and is exactly the same as the accumulation factor used in the calculation of Volume Accumulation Percentage. The factor is determined from the relation of the closing price to the intraday high and low. If the closing price is midway between the high and the low, then money flow pressure is balanced and the factor is zero. If the day's closing price is equal to the day's highest price, then the flow factor is 1.0. If the day's closing price is equal to the intraday low, then the flow factor is minus 1.0, which is interpreted to mean a total outflow of dollars from the ticker.



Money Flow, Hudson Foods Inc.

Because this indicator is a summation indicator, the actual values that you see in the indicator column will depend upon how many total days of data are available for summation. If the date you are examining is on the far right of the chart, then TradingExpert Pro

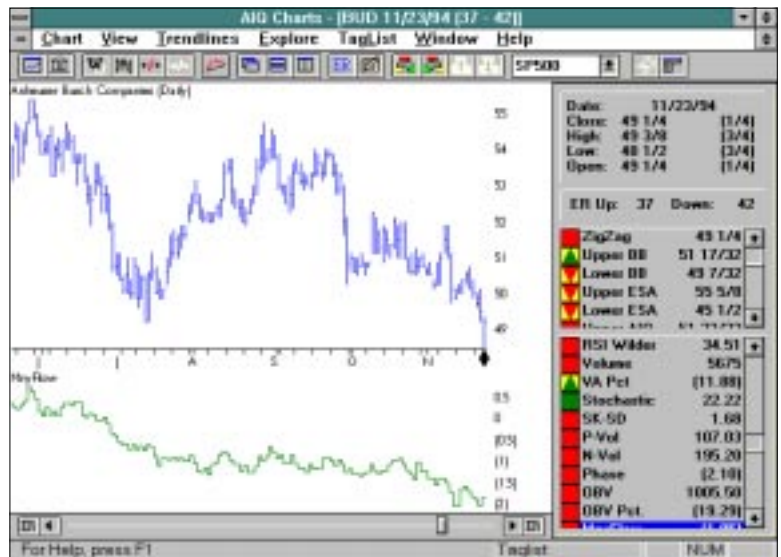
uses over 200 periods (days or weeks) of data to arrive at the figure. If that same date that you are examining were in the middle of the chart, then there are fewer periods of data for the summation, and thus there will be a different value.

However, the actual value of the indicator is of little importance. It is the shape of the indicator plot that is the critical factor. Important are the trends and trend breaks, and nonconformations (highs and lows do not agree) and divergences (trends do not agree) with price action of the ticker.

When using this indicator, look for divergences between price action and Money Flow. An example of this is shown in the chart for Hudson Foods Inc. (HFI). From mid-August through mid-December, HFI prices are drifting sideways. But, during this same period of time, the Money Flow indicator shows a gradual increase with a pattern of higher highs and higher lows.

In spite of the fact that prices are sideways, this stock is being accumulated, presumably by the smart money. The smart money's approval of this stock is justified by the substantial price increase that occurred in subsequent months.

Another example of the use of the Money Flow indicator is shown in the Anheuser Busch Companies (BUD) chart. The chart shows the stock rallying from July to September of 1994, but Money Flow remains flat. The rally proved to be temporary, and BUD later fell below its July low.



*Money Flow,
Anheuser Busch Companies*

Value shown in Control Panel

The value shown is the value of the Money Flow indicator for the date specified.

Changeable constants

There are no constants for Money Flow. The time period used to compute the average money flow values is the entire analysis period.

Money Flow Oscillator (MF Osc)

The Money Flow Oscillator is simply the difference between the current value of the Money Flow indicator and the value some constant number of periods ago. When the Money Flow Oscillator is positive, it means that money flow is increasing over time. When the indicator is negative, it means that money is flowing out and demand is decreasing.

*Money Flow Oscillator,
Marion Merrell Dow Inc.*



An example of this is seen in the chart for Marion Merrell Dow (MKC). The Money Flow Oscillator has been positive for nearly five months, evidence that money has been flowing into the equity and that demand for the equity is strong. The fact that the oscillator

continued to rise even as the stock corrected in early May and late June is indicative of the strength in this equity.



Money flow Oscillator,
ASARCO Inc.

The chart for ASARCO (AR) shows a sharp rally from mid-August to October of 1994, while the Money Flow Oscillator remained negative for all but one day. This nonconformation was followed by a drop of the AR stock with price returning to the prior lows.

Value shown in Control Panel

The value shown is the value of the Money Flow Oscillator for the date specified.

Changeable constants

In the calculation of the Money Flow Oscillator, the current value is compared against a prior value to obtain a difference. The number of periods separating the prior value from the current value is the only constant involved. The default value is 21 days and the permissible range is 1 to 60 days.

Money Flow RSI (MF RSI)

Developed by Quong and Soudack, Money Flow RSI is a short-term indicator which attempts to measure the flow of money into or out of a ticker. It is similar to other indicators such as Volume Accumulation Percentage in that both price and volume data are included in the calculation. However, with Money Flow RSI, the resulting value is normalized to a scale of 0 to 100 so that it can be used over a variety of situations independent of the price.

The price component of Money Flow RSI is the average price of the ticker which is computed each day by averaging the high, low, and closing prices. Money Flow RSI is considered positive on days when the ticker closes higher and negative on days when the ticker closes lower.

The extent of Money Flow RSI is determined by multiplying the average price by the volume for the day. A money flow ratio is then computed from the ratio of positive money flow, averaged over a specified number of days (10 days works well), to negative money flow, averaged over the same period. This ratio is then normalized by means of the RSI formula which translates the data to a scale ranging between zero and 100. Zero indicates extreme negative money flow, and 100 indicates extreme positive money flow. A value of 50 indicates a balance between positive and negative money, and presumably the forces of supply and demand.

Money Flow values above 80 indicate a top, where profits will be taken and money will soon begin to flow out of the ticker. Extreme values of 90 and above indicate a situation where overbuying is evident, which is usually followed by a sell-off.

Values less than 20 indicate a bottom, which is often followed by an uptrend. Money Flow RSI values less than 10 indicate an oversold situation where good buying opportunities can often be found.

The developers of Money Flow RSI also suggest that divergences between price action and the trend of the indicator can signal a turn. AIQ has found this to be true on the buy side more so than on the sell side. The developers also say to watch for a situation where the indicator does not reaffirm a new high or low in price action. Such a nonconformation is often called a failure swing. This type of signal has greater validity at the extreme ends of the Money Flow scale.

The International Paper Co. (IP) chart is a good example of the kinds of signals that can be generated by Money Flow RSI. Money Flow RSI moved above 20 (lower horizontal line) on November 7, 1994, a

buy signal. The stock rallied for a few days. This was followed by a positive divergence between the indicator and the stock. IP fell to a new low in late November but Money Flow RSI continued to rise. As you can see on the chart, the stock then rallied back to the prior high.

*Money Flow RSI,
International Paper Co.*



Another Money Flow RSI signal can be seen in January of 1995. The stock reached another new high, but Money Flow RSI was trending lower. Then, on February 1, 1995, Money Flow RSI registered an oversold buy signal and the stock again moved higher.

In each of these examples, the stock moved in the direction of the Money Flow RSI signal.

Value shown in Control Panel

The value shown is the value of the Money Flow RSI for the date specified.

Changeable constants

The time period used to compute the average Money Flow values may be changed. Default is 6 days for market type tickers and 10 days for all other tickers. Permissible range is 1 to 40 days.

Negative Volume Index (N-Vol)

Note

The Positive and Negative Volume indicators are used by AIQ in the Weighted Action List report, the Positive indicator for up signals and the Negative indicator for down signals. These indicators are used to determine the relative weight assigned to each equity on the report.

This is an index of price action during periods of decreasing volume. A cumulative index, on days of decreasing volume the percentage gain (or loss) of the ticker price is added to (or subtracted from) the index.

The Negative Volume indicator is based on the premise that smart money investors buy in periods of relative low volume, prior to price movements. The unsophisticated investor, on the other hand, will buy when the movement has already started, typically on busy days. As a result, analysis of the Negative Volume indicator's buy signals suggest an early movement in the price of a ticker.

The Negative Volume indicator is a summation indicator, and the actual values that you see in the Control Panel will depend upon how many total periods of data are available for accumulation. However, the actual value of this indicator is not important. Important is the shape of the plot, which can show trends and trend breaks, and nonconformations and divergences with price action of the ticker.

The trend of the Negative Volume Indicator can be used to confirm signals. Also, watch the relationship between the indicator and a smoothed average of the indicator. A price uptrend is indicated when the Negative Volume Index is in an uptrend and is above the average. A price downtrend is indicated when the index is in a downtrend and is below the average.

Displayed (opposite page) is a chart for the Beverages industry group (2080A). The Negative Volume Index bottomed in November of 1994, indicating a downtrend for the group. In December of 1994, the indicator rose well above the average, confirming along with the Positive Volume Index that an uptrend was in place.

Value shown in Control Panel

The value shown is the value of the Negative Volume Index for the date specified.

Changeable constants

The time period used to compute the smoothed average may be changed. The default value is 21 days and permissible range is 1 to 60 days.



Negative Volume Index, Beverages industry group

On-Balance Volume (OBV)

OBV is a widely used indicator developed by Joseph Granville (*Reference No. 21*) and shows accumulation and distribution action.

The indicator is computed as a continuous summation of daily volume. On days when prices advance, the volume for that day is added to the running total. On days when prices decline, the volume for that day is subtracted from the running total. On-Balance Volume is different from Volume Accumulation Percentage because there is no weighting.

OBV assumes that if the price today is higher than the price yesterday, all of today's volume is accumulation. If the price today is lower than the price yesterday, all of the volume is distribution.

As with the other summation indicators, the actual values that you see in the Control Panel will depend upon how many total periods of data are available for accumulation. If the date you are examining is on the far right of the chart, then TradingExpert Pro uses over 200 periods of data to arrive at the figure. If that same date were in the middle of the chart, then there are fewer periods of data to accumulate, and thus there will be a different value.

However, the actual value of On-Balance Volume is not important. Important is the shape of the indicator plot, which can show trends and trend breaks, and nonconformations and divergences with price action.



On-Balance Volume, Coca-Cola Co.

Signals are determined from divergences and nonconformations. Divergences occur when the trend of price action and the trend of the indicator are in opposite directions. A nonconformation occurs when price action achieves a new high or new low that is not matched by an equivalent high or low by the indicator.

A break in a well-established trend of the indicator line itself is often followed by a break in prices in the same direction. Divergences between price trends and OBV trends often signal a move in the direction of the OBV trend. Nonconformations between new high or low prices and the OBV line can signal a reversal of the current price trend.

A positive divergence can be seen on the chart for Coca-Cola (KO) during the months of December 1994 and January 1995. While price made a lower low the trend of OBV was up.

On-Balance Volume is sometimes used in combination with Accumulation/Distribution. Nonconformation signals generated by these indicators are strongly enhanced when the two agree. If a nonconformation is indicated on both the AcmDis line and the OBV line, the resulting signals are stronger than if evaluated separately.

Value shown in Control Panel

The value shown is the value of On-Balance Volume for the date specified.

Changeable constants

There are no constants that can be changed for this indicator.

Reminder...

You can expand an indicator plot to fill the entire chart window. Position your mouse cursor on the indicator plot, and press the **Z** key. Pressing the **Z** key again restores the indicator plot to its original size.

On-Balance Volume Percentage (OBV Pct)

On-Balance Volume Percentage is a measure of the supply and demand forces during a specific period of time. It is derived from On-Balance Volume and expressed as a percentage of the total volume.

One pattern to watch for is a nonconformation when price is making new highs or lows. When OBV Percentage is not confirming new highs or lows, it is an indication that a price reversal may be ahead.

A second situation occurs when price is making a new high and this indicator is negative. This is often followed by a price decline. A bullish signal occurs when prices are making a new low and this indicator is positive.

Another signal that can be generated by the On-Balance Volume Percentage is when the indicator simply crosses the zero line — crossing from negative to positive is a buy signal and from positive to negative is a sell signal. The chart for Clear Channel Comm. (CCU) shows some examples of this simple decision rule.



*On-Balance Volume Percentage,
Clear Channel Comm.*

On-Balance Volume Percentage tends to work better with stocks that have high volume and thus a small spread between high and low for the day. For over-the-counter stocks, the closing price is often the same as the high or low for the day. In these situations, the Volume

Accumulation Percentage indicator loses its meaning because of its dependence on the spread between the close price and high and low price for the day. OBV Percentage, however, does not depend on this relationship and, thus, is a better indicator for low capitalization stocks.

Many times you will find that when the OBV Percentage and the Volume Accumulation Percentage are in sync, the resulting signal is far more powerful. When both are positive it is a buy signal, and when both are negative it is a sell signal. One will usually turn before the other and it is the second one crossing the zero line that confirms the signal. Notice on the CCU chart that both indicators remained positive during July and August of 1994, confirming the rally of the stock.

Value shown in Control Panel

The value shown is the value of On-Balance Volume Percentage for the date specified.

Changeable constants

The time period used for the volume summations may be changed. The default value is 21 days and the permissible range is 1 to 60 days.

Open Interest (OpenInt)

Open Interest is the total number of outstanding or unliquidated contracts at the end of the day. A transaction can cause Open Interest to go up, down, or stay the same according to the following summary:

<u>Buyer</u>	<u>Seller</u>	<u>Change in OI</u>
Buys new long	Sells new short	Increases
Buys new long	Sells old long	No Change
Buys old short	Sells new short	No Change
Buys old short	Sells old long	Decreases

Note

Open Interest can be displayed only on futures charts.

When Open Interest increases, money is flowing into the market. That is, new long positions are being opened along with new short positions. This strengthens the probability that the present trend will continue.

In an uptrend, declining Open Interest is bearish because traders holding long positions are closing their positions and taking money out of the market. Traders holding shorts are being forced to cover their positions. When all the shorts are out of the market, the uptrend will likely turn downward. In a downtrend, diminishing Open Interest is bullish.

Value shown in Control Panel

The value shown is the value of Open Interest for the date specified.

Changeable constants

The smoothing constant used to compute the exponential average of Open Interest may be changed. The default value for this constant is 21 periods and the permissible range is 1 to 200 periods.

Positive Volume Index (P-Vol)

The Positive Volume Index is an index of price action during periods of increasing volume. It is a cumulative index. On days of increasing volume, the percentage gain (or loss) of the ticker price is added to (or subtracted from) the cumulative total.

The Positive Volume Index is based on the premise that “volume is the fuel to sustain rallies.”

As with the other summation indicators, the actual values that you see in the indicator column for the Positive Volume indicator will depend upon how many total periods of data are available for accumulation. If the date you are examining is on the far right of the chart, then TradingExpert Pro can use over 200 periods of data to arrive at the figure. If that same date were in the middle of the chart, then there are fewer periods of data to accumulate, and thus the indicator value will be different.

However, the actual values are not important. Important is the shape of the indicator plot, which can show trends and trend breaks, and nonconformations and divergences with price action of the ticker.

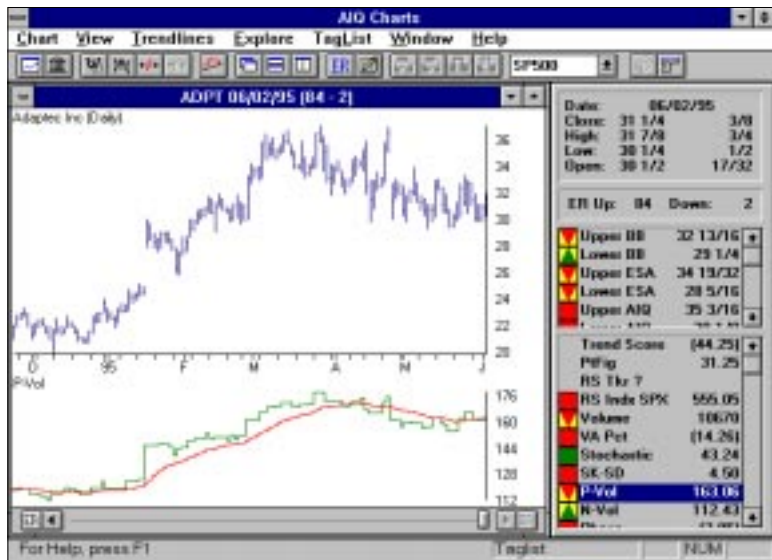
The trend of this indicator can be used to confirm signals. Also, watch the relationship between the indicator and a smoothed average of the indicator. A price uptrend is indicated when the Positive Volume Index is in an uptrend and is above the average. A price downtrend is indicated when the Positive Volume Index is in a downtrend and is below the average.

Typically, the Negative Volume Index precedes the Positive Volume Index. When the two are in agreement, a stronger buy or sell signal is then generated.

Note

The Positive and Negative Volume indicators are used by AIQ in the Weighted Action List report, the Positive indicator for up signals and the Negative indicator for down signals. These indicators are used to determine the relative weight assigned to each equity on the report.

*Positive Volume Index,
Adaptec Inc.*



On the chart for Adaptec Inc. (ADPT), the Positive Volume Index is shown as the boxy line, and an exponentially smoothed average of the index is shown as the smoother line. During up periods, the index is above the average line. In down periods, the index is below the average line. A buy signal occurs when the index moves above the average. A sell signal occurs when the index moves below the average.

Examining the ADPT chart, you can see that the Positive Volume Index rose above its average line in January 1995, and remained above the average until April. The stock began an uptrend when Positive Volume moved above the average. When the indicator dropped below the average, the uptrend of the stock ended.

Value shown in Control Panel

The value shown is the value for Positive Volume Index for the date specified.

Changeable constants

The time period used to compute the smoothed average may be changed. The default value is 21 days and permissible range is 1 to 60 days.