Chapter I.

Technical Indicators Explained

In This Chapter

The information in this chapter is provided to help you learn how to use the technical indicators that are available for charting on the AIQ TradingExpert Pro charts. There is a brief explanation of how each indicator is derived and how it is used.

1. Reproducing charts shown in this manual

When reproducing a chart from this manual, in order to obtain values for the Expert Ratings and indicators that agree with the manual, you should do the following:

1. Change the market date to the date of the chart you are reproducing. The market date is the most current date on the chart (date at far right).

2. Be sure that your data base contains historical data for at least 200 trading days (or 200 weeks for weekly plots) prior to the date you are examining. This allows TradingExpert Pro to compute the indicators for the knowledge base.

Variations in indicator values explained

Differences in the values of some indicators may occur depending on the position of a particular date relative to the market date of the displayed chart. Indicators such as the Accumulation/Distribution and On-Balance Volume are computed as summations. When a particular date is at the far right on the chart, these summations contain over 200 periods of data. However, as this date is shifted to the left, the summation contains fewer periods of data. Therefore, as the date is moved backwards in time summations contain proportionately less data. This can result in the value of a summation for a particular date changing depending on the position of the date on the chart.

Since exponentially smoothed averages are computed as summations, the value of indicators which are computed using the exponentially smoothed average formula can also change depending on the position of the date on the chart. However, with an exponentially smoothed average, the differences are noticeable only when the data being smoothed fluctuates widely from day to day.

The actual value of these summation indicators is, however, of little importance. Important are the shapes of their graphs, showing trends and trend breaks, and nonconformations and divergences with price action of the ticker you are examining.

Note
Data sources can also cause indicator variations. When you reproduce a chart from this documentation, indicator values could possibly vary because of different data sources.

2. Changing indicator constants

TradingExpert provides users with the ability to control the computation of each of the indicators that can be displayed. This is accomplished through the constants used in the computation of the indicators. Factors such as time periods and smoothing constants may be varied for most of the indicators.

Default settings

The indicator constants set by AIQ and delivered with TradingExpert (defaults) are those derived from extensive historical research and have been deemed to be the best for AIQ usage. When an indicator is first displayed, the values used by the system to compute the indicator are the default settings.

Changing indicator constants is an optional feature, and has been included for advanced users of TradingExpert. For example, technical indicator constants can be adjusted for longer-term or shorter-term trading styles. Less experienced users, if they wish to experiment, will find this feature an excellent tool for determining, by trial-and-error, their own best or optimum values. Default settings are easily restored. The default values are always listed in the dialog box used for changing the indicator constants.

Note

In this chapter, the default indicator values together with permissible ranges are noted at the end of the explanation for each indicator.

How to change indicator constants

 Follow these basic steps:

1. Access the dialog box for changing indicator constants in one of two ways when you are working within ***Charts****:*

    • With a chart displayed, double click the indicator on the Control Panel of the chart.

    • With a chart displayed, click **Chart** on the menu bar, select **Settings**, and then select **Indicator Constants**.

    The *Change Indicator Constants* dialog box will appear on your screen. (*continued next page*)

Dialog box for Change Indicator Constants
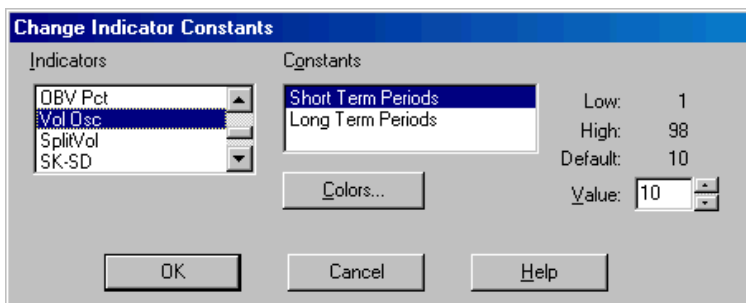
2. In the *Change Indicator Constants* dialog box, use the **up/down** arrows on the *Indicators* scroll box to select the indicator you want to change.

3. Constants that can be changed are displayed in the *Constants* text box. Also displayed are the default values for each indicator and permissible ranges for changing the values. If an indicator has no constants to be changed, the dialog box will indicate *no constants*.

4. Use the **up/down** arrows in the *Value* text box to select new values.

5. When you have made your selection, choose **OK**.

6. The values entered are stored and will become the new default constants for that indicator when you again call up a chart. AIQ assumes that the new constants are the ones that you prefer, and therefore they are saved for future analysis.

Important
AIQ emphasizes that changing the indicator constants does not alter the expert system knowledge base or the rules. Changing the constants only affects the indicators displayed on the charts.

Tip
You will find a *Colors* command button in the *Change Indicator Constants* dialog box. Click the name of an indicator, then click the *Colors* command button. You then can change the colors of that one indicator.

Explanation of technical indicators

The technical indicators that can be plotted on the AIQ charts are divided into three groups:

• **Price Plot indicators**: These indicators are designed to be shown in conjunction with price and are, therefore, displayed within the Price Plot section of a chart. Included in this group are price averages and trading bands.

• **Separate indicators**: The majority of the technical indicators fall in this group. These indicators are displayed separately below the Price Plot.

• **Charting tools**: These are not conventional indicators but are special charting methods. Included in this group are Candlestick charts and Point and Figure charts.

Price Plot indicators

This section provides explanations of the technical indicators that are available for charting on the Price Plot of a chart.

Upper/Lower AIQ	AIQ Trading Bands
Upper/Lower BB	Bollinger Bands
Upper/Lower ESA	ESA Trading Bands
Upper/Lower MA	Moving Average Trading Bands
ESA (ST, IT, & LT)	Exponentially Smoothed Averages (Short, Intermediate, & Long Term)
MA (ST, IT, & LT)	Moving Averages (Short, Intermediate, & Long Term)
21 d High	Maximum price during prior 21 days (days adjustable)
21 d Low	Minimum price during prior 21 days (days adjustable)
ParaSAR	Trailing price stops
ZigZag	Filtered Waves

AIQ Trading Bands (Upper/Lower AIQ)

These bands are designed simply to encompass 90% of price activity. The AIQ Trading Bands indicate overextended prices. A price above the upper trading band is possibly a selling opportunity. A price below the lower trading band is perhaps a buying opportunity.
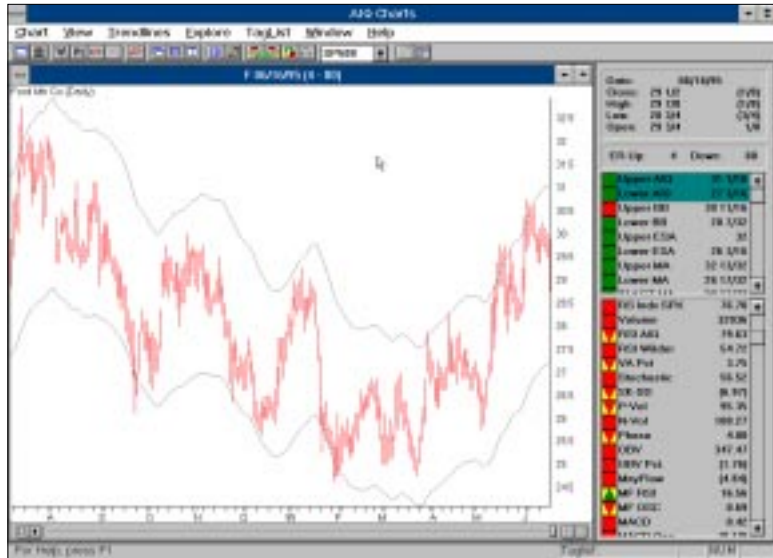
AIQ Trading Bands

Values shown in Control Panel

The values shown are the prices corresponding to the Upper and Lower Trading Bands for the date specified.

Changeable constants

There are no constants to be changed for the AIQ Trading Bands.

Note
In the explanations of technical indicators in this chapter, the terms day and period are used interchangeably to refer to time periods. When the indicators are calculated from weekly data, the terms day and period should be replaced by week.

Bollinger Bands (Upper/Lower BB)

Bollinger Bands, developed and introduced by John Bollinger, are trading bands based on the volatility of prices around a simple moving average

The result of using volatility to compute the spacing of the bands above and below the average is that the spacing varies with volatility. Volatility in this case is measured as the statistical standard deviation computed on the same set of data as the moving average.

To compute his bands, Bollinger recommends using a 20-Day Moving Average, which is the arithmetic average of the previous 20 days of data. Volatility for the same period, the same 20 days, is the variation of the data around the average for the last 20 days. This variation is measured by the standard deviation of the data from the average. The actual trading band is plotted some number of standard deviations above and below the average.

Aside from the computational differences, Bollinger Bands are used in the same way as other trading bands. In addition, Bollinger has developed several rules for these Bands that can be used to look for indications of possible price moves.

The Bollinger rules are:

1. Sharp moves in price tend to occur after the Bands tighten, and the closer to the average the better. Since reduced volatility denotes a period of consolidation, the first increase in volatility after a consolidation tends to mark the start of the next move.

2. Moving outside the Bands signals a continuation of the move until the prices drop below or inside of the Bands.

3. Moves starting at one Band tend to go to the opposite Band.

The charts of Microdyne Corp. (MCDY) and AFLAC Inc. (AFL) shown on the next page contain examples of Bollinger's first rule.

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

Bollinger Bands, Microdyne Corp.

In the Microdyne chart, the Bands narrowed in August and September of 1994 as reduced volatility produced a period of consolidation. This is followed by a sharp move up in the price of the stock. The Bands narrowed again in December, followed by another move up in the Microdyne stock.

Bollinger Bands, AFLAC Inc.

The chart of AFLAC (AFL) shows a tightening of the Bollinger Bands during December 1994 and January 1995, followed by a sharp move up in the price of the stock.

Values shown in Control Panel

The values shown are the prices corresponding to the Upper and Lower Bollinger Bands for the date specified.

Changeable constants

The Bollinger Bands constants that can be changed are the number of periods in the moving average and the number of standard deviations that defines the distance of the Bands from the average. The longer the moving average period, the more stable the average becomes. Also, standard deviations beyond three tend to reduce the value of the Bands.

The default values, which are those recommended by the developer, are a 20-period moving average and 2 standard deviations of variability around the average. Permissible ranges are 1-100 periods and 1-5 standard deviations (Sigma Factor).

Exponentially Smoothed Average Trading Bands (Upper/Lower ESA)

These bands are placed above and below the exponentially smoothed price average by an amount equal to a constant percentage of the average.

The ESA Trading Bands indicate overextended prices. A price above the upper trading band is possibly a selling opportunity. A price below the lower trading band is perhaps a buying opportunity.

Values shown in Control Panel

The values shown are the prices corresponding to the Upper and Lower ESA Trading Bands for the date specified

Changeable constants

The constants that can be changed are the number of periods that the exponentially smoothed average represents and the percentage of that average that is used to compute the distance of the bands from the average.

The default values and permissible ranges for these constants are as follows:

	Default	Range
Periods	28	1-100
% of ESA	10	1-100

Moving Average Trading Bands (Upper/ Lower MA)

These bands are placed above and below a moving average of price by an amount equal to a constant percentage of that average.

The Moving Average Trading Bands indicate overextended prices. A price above the upper trading band is possibly a selling opportunity. A price below the lower trading band is perhaps a buying opportunity.

Values shown in Control Panel

The values shown are the prices corresponding to the Upper and Lower Moving Average Trading Bands for the date specified

Changeable constants

The constants that can be changed are the number of periods that the moving average encompasses and the percentage of the average price that is used to compute the distance of the bands from the average.

The default values and permissible ranges for these constants are as follows:

	Default	Range
Periods	20	1-100
% of MA	10	1-100

Tip

If you are displaying multiple charts, you can maximize one of the charts to fill the entire chart window. First make the chart "active" by clicking your mouse on its title bar, then click the **maximize button** in the upper right corner of the active chart. To restore the chart to its previous size, click the **restore button** (two arrows).

Exponentially Smoothed Averages (ESA), Short, Intermediate, & Long Term

The ESA, Exponentially Smoothed Average, is a price average that smooths the random price fluctuations that normally occur in a series of daily price data. Similar to the simple moving average, it is used to depict the underlying trend of the data. The Exponentially Smoothed Average tends to offer support and resistance — support in an up-trending market and resistance in a down-trending market. Historically, support and resistance will prevail until a breakout occurs. A price which breaks through an ESA line can be a signal that a trend reversal is taking place.

Depending on the value of the smoothing constant used in the exponential smoothing formula, the ESA can represent a short-term, intermediate-term, or long-term trend. The longer the time period used to calculate the smoothing constant, the longer the term of the trend depicted by the average.

All data values in the time series are included in the ESA computation. However, the values are weighted so that only the more recent values are actually reflected in the average. The exponential smoothing formula assigns maximum weight to the most recent data value and successively smaller weights to each prior value in the series. Because these weights decline exponentially with time, older data (data older than the term of the average) does not significantly affect the value of the average.

ESA, Bank America Corp.

The Bank America (BAC) chart shows a good example of the Exponentially Smoothed Average (ESA) providing resistance during end-of-year weakness and support during the 1995 rally.

Values shown in Control Panel

The values shown are the prices corresponding to the Short-, Intermediate-, and Long-Term ESA 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:

	Default	Range
ST ESA	10	1-100
IT ESA	28	1-100
LT ESA	49	1-100

Moving Averages (MA), Short, Intermediate, & Long Term

Moving Average is perhaps the oldest and most widely used statistical method applied to stock price data. Primarily, it is used to smooth out short-term fluctuations and depict the underlying trend; the longer the time period used in the calculation, the longer the term of the trend depicted by the average.

Long-Term Moving Average, Merck & Co.

Mathematically, the Moving Average is a simple arithmetic mean, giving equal weight to all data values. Although many different time periods are commonly used, 21 days is considered appropriate for short-term trading and 50 days for intermediate-term trading. For long-term trend analysis, most analysts prefer a 200-day average.

The Moving Average, like the Exponentially Smoothed Average, tends to offer support and resistance — support in an up-trending market and resistance in a down-trending market. Historically, support and resistance will prevail until a breakout occurs. A price which breaks through a Moving Average line can be a signal that a trend reversal is taking place.

A 100-week Moving Average is plotted on the weekly chart of Merck (MRK), providing a long-term picture of the stock's trend. When price is below the Moving Average, the long-term trend is down. When price moves above the Moving Average, as it did in September 1994, the long-term trend changes to up, a bullish signal.

Values shown in Control Panel

The values shown are the prices corresponding to the Short-, Intermediate-, and Long-Term Moving Average for the date specified.

Changeable constants

The time period used to compute the average may be changed. Default values and ranges are as follows:

	Default	Range
ST MA	21	1-200
IT MA	50	1-200
LT MA	100	1-200

ParaSAR (parabolic stop-and-reversal)

Welles Wilder's Parabolic Time/Price System, usually referred to as "SAR" (stop-and-reversal), is used to set trailing stops. Each day a new SAR stop level is computed based on that day's closing price. Note that stop values are valid only for the day on which they are computed. According to the system, the trader should remain long when the SAR is below the current price and short when it is above the price.

With these values plotted on the price chart, the relationship between price and the SAR stop level is readily apparent. When you are long, an exit point is signalled when the SAR switches from below to above the price. The reverse is true when you are short. In other words, you should close long positions when price falls below the SAR and close short positions when price rises above the SAR.

ParaSAR, Cisco Systems

On the Chart for Cisco Systems, ParaSAR stop levels are shown by a series of short horizontal dashes above and below the price plot. Notice how the SAR trailing stop is always rising when it is below price and falling when it is above. A number of good short-term buying and selling opportunities are signalled by SAR reversals on this chart.

`Value shown in Control Panel`

The value shown is the SAR stop value for the date specified.

`Changeable  constants`

Two values used in the computation of the SAR trailing stop may be changed. Default values and ranges are as follows (values are expressed in 1/1000):

	Default	Range
Acceleration	20	1-40
Limit	200	1-400

21-Day High (21-d High) and 21-Day Low (21-d Low)

The 21-Day High indicator is a plot of the highest price during the previous 21 days. The 21-Day Low indicator is a plot of the lowest price during the previous 21 days. The number of days can be adjusted by the user.

These indicators are designed to identify support and resistance levels.

`Values shown in Control Panel`

The values shown are the price values of the High and Low indicators for the date specified

`Changeable  constants`

The time period may be changed. Default is 21 days and permissible range is 1 to 125 days.

ZigZag (Filtered Waves)

ZigZag is not as much an indicator as it is a generalization of price action wherein the significant price movements are shown while the day-to-day randomness is removed *(Reference No. 34)*. ZigZag reduces price action to a series of straight lines connecting successive highs and lows in closing prices.

ZigZag, International Paper Co.

On the International Paper Co. (IP) chart, ZigZag shows price as a series of successive highs and lows which are at least 5 percent apart. The concept of wave action in prices is easily seen — price appears as a series of crests and troughs generated by the sequence of high and low prices. The fact that ZigZag removes the random aspect of stock prices allows the user to concentrate on the major moves and their duration within a wave.

Value shown in Control Panel

The value shown is the price value of the ZigZag indicator for the date specified

Changeable constants

The percentage difference between successive highs and lows may be changed. The default value is 5, and permissible range is 1 to 15.

Note

The last point on the ZigZag chart is always the current price. Since this last point usually does not coincide with the last major trend, a short final trendline will normally appear at the far right. This final trendline gives an indication of the direction and strength of recent price action.

Separate indicators

This section provides explanations of the technical indicators that are available for charting separately below the Price Plot.

Accumulation/Distribution (AcmDis)

Accumulation/Distribution is a single value indicator that weighs buyer dominated volume (accumulation) against seller dominated volume (distribution). It is computed as a running total of weighted volume. A weighting factor derived from price action is applied to the day's volume and the result is added to the accumulated total. The weighting factor, which ranges in value between +1 and -1, is a measure of accumulation and distribution pressures.

The volume weighting factor is determined from the closing price in relationship to the intraday high and intraday low. (For weekly charts, the intraweek high and low are used.) If the closing price is midway between the high and the low, then accumulation and distribution pressures are balanced, and the factor is zero. If the closing price is equal to the day's highest price, then the accumulation factor is 1.0. If the day's closing price is equal to the intraday low, then the accumulation factor is -1.0, which indicates distribution.

Since this is a summation indicator, the actual indicator values that you see on the Control Panel 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 uses over 200 periods of data to arrive at the figure. If that same date is in the middle of the chart, then there are fewer periods of data for the summation, and the value will be somewhat different. However, the actual value of the Accumulation/Distribution line is not important. What is important are the trends and trend breaks, and nonconformations and divergences with the price action of the ticker.

Note
In the explanations of technical indicators in this chapter, the terms day and period are used interchangeably to refer to time periods. When the indicators are calculated from weekly data, the terms day and period should be replaced by week.

Note
To select indicators for charting and for printing, see *Using the Indicator Library*, Chapter IV in the Reference Manual.

Accumulation/Distribution,
Clear Channel Comm.

When charting the Accumulation/Distribution indicator, look for 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.

On the Clear Channel Comm. (CCU) chart, there is a classical divergence. While prices decline during the month of June 1994, the trend of the Accumulation/Distribution is positive. This divergence signals the rise in the stock price which took place later that summer.

`Value shown in Control Panel`

The value shown is the value of the Accumulation/Distribution indicator for the date specified

`Changeable  constants`

There are no constants to be changed for the Accumulation/ Distribution indicator.

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 original size.
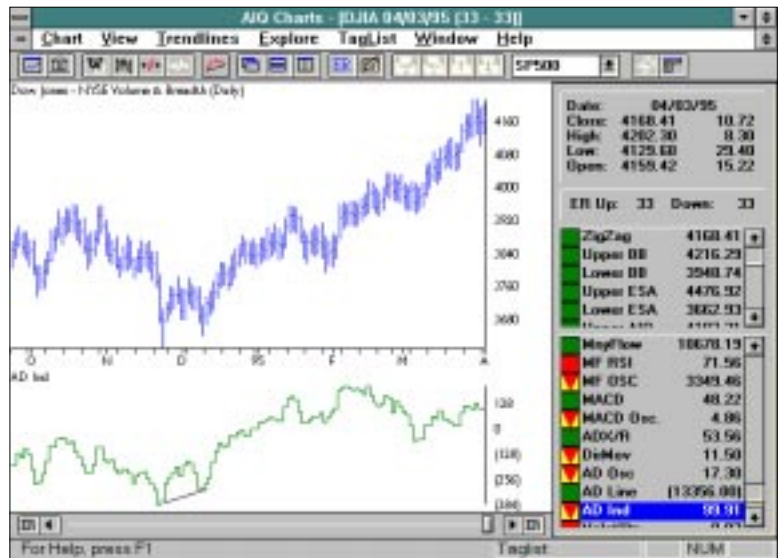
The Advance/Decline Indicator is an exponentially weighted average of the net advancing versus declining issues. With this indicator, the direction of the trend is of importance and not the actual value of the indicator. When the indicator is increasing, advances are outweighing declines, and when it is decreasing, there are more declining issues than advancing.

The Advance/Decline Indicator is a breadth indicator very similar to the Advance/Decline Line. However, this indicator tends to be more sensitive and at times will signal a move earlier than the Advance/Decline Line.

Note
In this documentation, the chart of the DJIA with NYSE Volume and Breadth is referred to as the AIQ Market Timing Chart. The Price Plot is of the Dow Jones Industrial Average. The Expert Rating and technical indicator values are derived from both DJIA and NYSE breadth and volume figures.

Advance/Decline Indicator, AIQ Market Timing Chart

The AIQ Market Timing Chart for 04/03/95 shows an example of the sensitivity of the Advance/Decline Indicator. While the Dow fell in early December to retest the November low, the Advance/Decline Indicator did not reach its previous low. This nonconformation signaled the coming move up.

Value shown in Control Panel

The value shown is the value of the Accumulation/Decline Indicator for the date specified

`Changeable constants`

The smoothing constant that is used to compute the exponential average of the Advance/Decline Indicator is a function of the number of days that the average represents. This constant, expressed in terms of the number of days represented by the average, may be changed. The default value is 27 days and the permissible range is 1-200 days.

Advance/Decline Line (AD Line)

This classic indicator is the difference between the day's advances and the day's declines summed to the previous day's total. The Advance/Decline Line is a very good indicator of the overall strength of the total market. It tracks the entire market, and tends to lead the indices in market direction. A break in the A/D Line tends to indicate a future break in average prices.
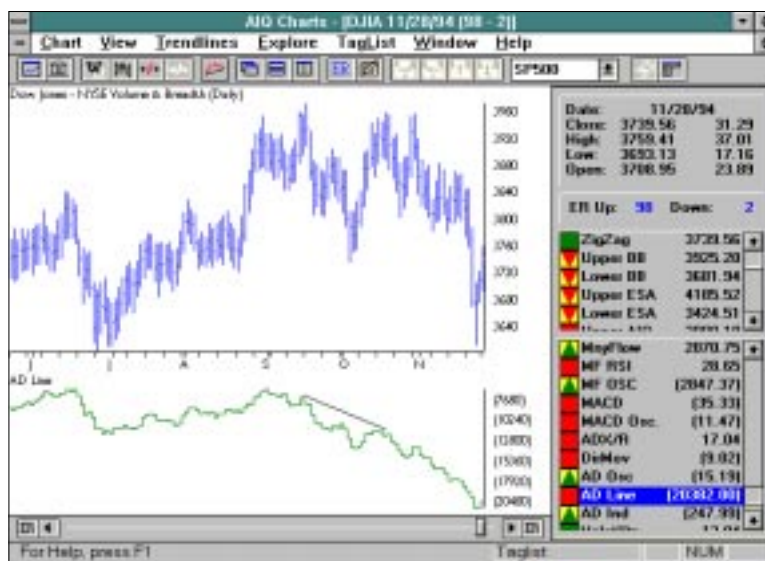
Advance/Decline Line, AIQ Market Timing Chart

On the AIQ Market Timing Chart for 11/28/94, you can see that the Dow is flat from September to November of 1994, while the Advance/Decline Line is falling. This divergence signaled the November 1994 weakness of the market.

As with other summation indicators, the actual values in the Control Panel will depend upon how many total periods of data are available for summation. If the date you are examining is on the far right of the chart, TradingExpert 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 for summation, and thus there will be a different value. The actual value is not important. Important is the shape of the chart, which can show trends and trend breaks, and nonconformations and divergences with the price action of the market.

`Value shown in Control Panel`

The value shown is the value of the Advance/Decline Line for the date specified.

`Changeable  constants`

The Advance/Decline Line has no changeable constants.

Advance/Decline Oscillator (AD Osc)

An oscillator is the difference, in percentage terms, between two different exponentially smoothed averages. The Advance/Decline Oscillator was developed from the McClellan Oscillator *(Reference No. 32)*. It is the difference between a long-term and a short-term advance/decline moving average. The difference is computed by subtracting the day's declines from the day's advances and that number is averaged on a short-term basis and a long-term basis. This oscillator is the difference between the two averages.

Advance/Decline Oscillator,
AIQ Market Timing Chart

Look for nonconformations with price action (highs or lows do not agree) when charting the Advance/Decline Oscillator. Examining the AIQ Market Timing Chart for 11/01/94, you can see that on that date the Advance/Decline Oscillator moved into negative territory. The action of this indicator contributed to the 100 sell signal (ER Down: 100) issued by the AIQ expert system. The market fell sharply during the month of November.

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Value shown in Control Panel
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The figure shown is the numeric difference between the two advance/decline averages 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 averages represent. These constants, expressed in terms of the number of days represented by the average, may be changed. Default values and permissible ranges for the constants are as follows:

	Default	Range
Short Term	19	1-59
Long Term	39	2-60

Tip
If you are displaying multiple charts, you can maximize one of the charts to fill the entire chart window. Make the chart "active" by clicking your mouse on its title bar, then click the **maximize button** in the upper right corner of the active chart. To restore the chart to its original size, click the **restore button** (two arrows).

Average Directional Movement Index (ADX/R)

The Average Directional Movement Index (ADX) is a trend-following indicator devised by Welles Wilder *(Reference No. 49)*. It is based on the somewhat obscure concept of directional movement and was designed to evaluate the trending characteristics of a market or a security.

When buying and writing options, different strategies are employed in trending and in trendless markets. A trend-following strategy in sideways, trendless markets is usually frustrating and, according to Wilder, markets exhibit strong trends only about 30% of the time. The ADX helps you avoid trendless markets. This indicator tells you when trending reaches a significant level and trading should be profitable. When a market is not exhibiting trending or directional behavior, this indicator tells you to avoid that market.

Directional movement is a measure of the net total price movement over a given period of time. Positive and negative directional movements are first determined by summing the daily up and down moves. These values are then normalized by dividing them by the True Range, the absolute value of the total move for the period. The difference between the normalized values, expressed as a percentage, is defined as the directional movement.

The Average Directional Movement Index (ADX) is obtained from directional movement by use of exponential averages and ratios. The ADX is charted along with a second line, the ADXR indicator, which is a smoothed average of the ADX.

The AIQ Market Timing Chart for 03/16/94 shows the ADX/ADXR indicator lines charted in the lower window. Since the ADXR is an exponentially smoothed average of the ADX, the ADX line cycles above and below the ADXR line. If you have not changed the default colors, the ADX component is the green line and the ADXR line is the purple line.

Look for a rising ADX as an indication of significant directional movement and the beginning of a good trading period. Diminishing directional movement and a poor period for trend-following is indicated when the ADX turns lower.

The market was in a strong uptrend from October 1993 to February 1994 with the ADX rising for most of the period (see the 03/16/94 Market Timing Chart). In February, the ADX fell below the ADXR line, signaling an end to the trend.

Average Directional Movement Index, AIQ Market Timing Chart
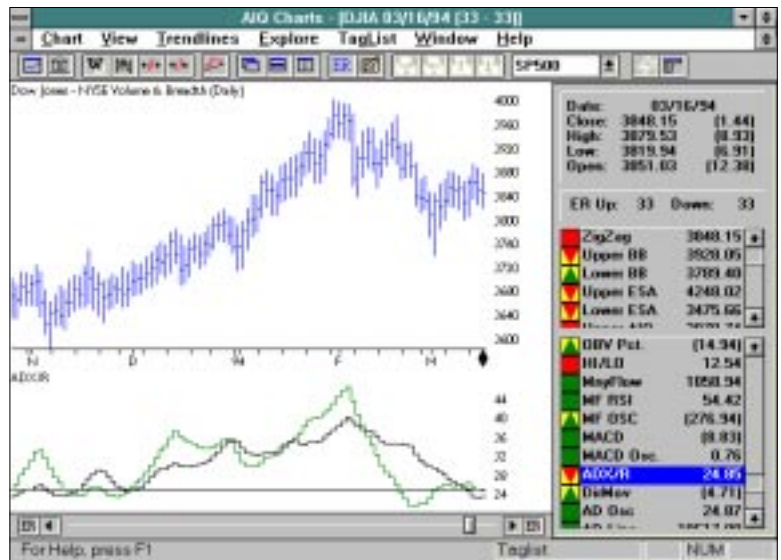
Generally, an ADX value above 25 indicates significant directional movement and a good trading opportunity. For your convenience, this level is specified on the ADX/R chart by the horizontal line.

The ADX/ADXR is best used in conjunction with the Directional Movement Index. When the ADX/ADXR shows that a trend is in force, the Directional Movement Index will show the direction of that trend.

Value shown in Control Panel

The value shown in the Control Panel for ADX/ADXR is the ADX value for the date specified.
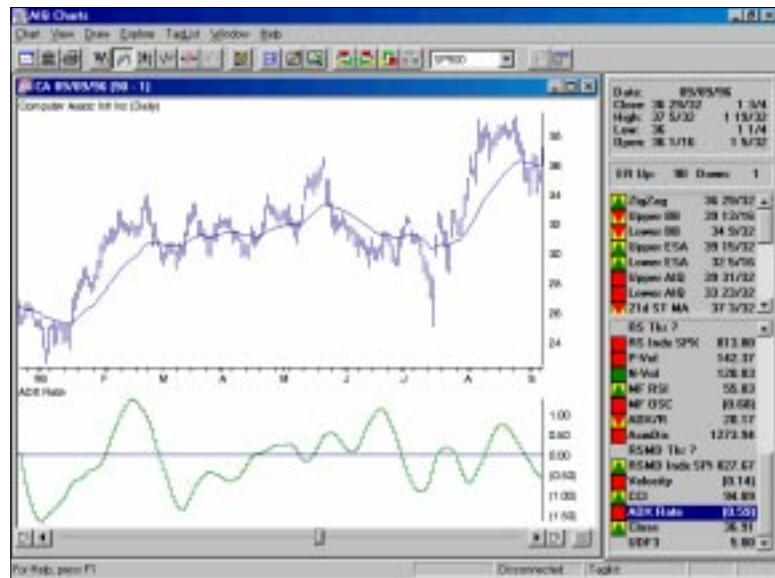
Changeable constants

The only constant required for the calculation of the ADX and ADXR is the period of time over which the data is averaged. The default value of 14 days is based on Wilder's work. If you should want to change this value, the permissible range is 1 to 55 days.

ADX Rate

ADX Rate is a trend indicator which measures the rate of change of ADX using least squares methodology. The indicator is calculated as the slope of the line that most closely approximates the data over the period of time specified.

ADX Rate is used to determine short-term changes in trend strength. The indicator cycles above and below the zero line as the trend increases and decreases in strength. When the indicator is above the zero line and rising, a trend is developing. When the indicator is falling, the trend is weakening. A high positive level indicates a strong trend and a low negative level indicates that price is non-trending (i.e., no trend in either direction).

*ADX Rate,
Computer Associates*

In the example, ADX Rate shows a strong up trend at the start of the charted period followed by several months when the trend is relatively flat. In June, the trend was briefly down but strengthened again to the upside in August.

Changeable constants

The only constant involved in the calculation of ADX Rate is the time period over which the slope is calculated. The default value is 14 days and the permissible range is 1 to 50 days.

Commodity Channel Index (CCI)

Commodity Channel Index (CCI) is a price momentum indicator developed by Donald R. Lambert. Despite its name, the indicator is equally applicable to stocks as well as commodities.

CCI creates an index similar to a statistical standard score that measures price excursions from the mean price as a statistical variation. According to the developer, normal random fluctuations of the CCI fall within a channel between +100% and -100%. Movements above or below this channel are called nonrandom and are defined as trading opportunities.

The CCI trading strategy is to buy when the index rises above 100% and sell when it falls back below 100%. On the short side, sell short when CCI falls below -100% and cover shorts when CCI rises above -100%.

Commodity Channel Index, Computer Associates

In the example chart, CCI indicates two good buying opportunities for the nimble short-term trader. However, the stock recovered so quickly after the July sell signal that a short-side trade would not have been profitable.

Changeable constants

The only constant involved in the calculation of the CCI is the moving average time period. The default value is 90 days and the permissible range is 1 to 100 days.