

## DIRECTIONAL MOVEMENT INDEX (DMI)

### Bloomberg definition:

The Directional Movement Index (DMI), developed by J. Welles Wilder [also developed RSI], allows you to see the directional movement of a security using today's high and low prices relative to the previous day's high and low prices. **Use DMI to determine whether a security is in a valid trend, or if it is range-bound.** In addition, the ADX value is a measure of the strength of the trend regardless of the trend direction; the higher the value of ADX, the stronger the trend. **An ADX value greater than 25 generally suggests that the market is trending, and a value less than 20 indicates not trending.**

### TPA Explanation

TPA's TREND-RANGE STRATEGY uses ADX as its first filter to separate all stocks in a client's investable universe into those that are **trending (ADX >25)** and those that have **range characteristics or lacking trend (ADX <20)**. This first filter (ADX) determines what signals TPA will focus upon for each security. A Trending stocks' signals focus on potential **change of trend direction**, while Range signals focus on stocks that **are at extremes or the top or bottom of the trading range**. Low ADX values coincident with range extremes give high confidence that securities are at inflection points. High ADX stocks that are moving counter to trend may be signaling a change in trend direction. **TPA monitors stocks daily for Trend and Range signals.**

Below is an example of a TPA chart. Notice that the bottom panel displays the DMI information with ADX in white, DMI+ in green, and DMI- in red.....



Calculations below....

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### **DMI CALCULATIONS**

+DMI = 100 \* (N Period Smoothed MA of +DM) / ATR

-DMI = 100 \* (N Period Smoothed MA of -DM) / ATR

ADX = 100 \* (N Period Smoothed MA of DX)

ADX<sub>R</sub>[i] = ( ADX[i] + ADX[i - N] ) / 2.....where:

Average True Range: ATR=N Period Smoothed Moving Average of True Range; True Range = Max(Today's High, Previous Close) - Min(Today's Low, Previous Close)

Directional Index: DX = 100 \* abs((+DMI)-(-DMI))/((+DMI)+(-DMI))

Positive Directional Movement: +DM = if UpMove > DownMove and UpMove > 0, then +DM = UpMove, else +DM = 0

Negative Directional Movement: -DM = if DownMove > UpMove and DownMove > 0, then -DM = DownMove, else -DM = 0

UpMove = Today's High - Yesterday's High

DownMove = Yesterday's Low - Today's Low

DMI Period: N Period = For daily, N=days; weekly, N=weeks, ... The default is 1.

(DMI omits non-trading days from computations. Wilder's "Smoothed Moving Average" of a value V of period N is defined as: SmoothMA[i] = ( V[i] + (N-1) \* Sum(V,N)[i - 1] ) / N where Sum(V,N) is the running sum of N values of V.)