TM-DataManager Application

* Installation and Operation Manual *

Version 1.0.4

*Supporting Weather and Stock Quote Display
for TimeMachines TimeZone Clock Displays*

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1 Introduction

The TimeMachines TM-DataManager Windows application is used for querying the National Weather service and/or financial data through Mboum Financial services. Initial location information is entered into the application to setup weather reports. Stock, Index, and other financial data can be accessed and displayed real time on the clock display. Programmable options exist to allow periodic updates, options to restrict updates by time of day and to exclude weekends. The specific data reported by the weather and stock queries can be adjusted and directed to the VAR1-VAR5 variables in multiple TimeZone clocks. The TimeZone clocks can be setup to tailor the display of this information. These features further extend the use of of the TimeZone clocks.

The weather data comes from the National Weather Service system at weather.gov. This is a free site that can be used to access weather for US customers. It is completely free to use. The financial data comes from Mboum Financial services through the rapidapi.com system. An account must be setup to access this data and an API key is generated to allow access. Up to 500 queries can be requested per month at no cost. For higher frequency queries, there is a small cost.

2 Installation

Installation of the TM-DataManager application is like any other windows application. Launch the installer and follow the directions. Double-click the desktop icon to start the application and bring up the main window.

2.1 OpenSSL Installation

OpenSSL for Windows MUST also be installed for the https lookups to function in TM-DataManager. It can be found here:

https://slproweb.com/products/Win32OpenSSL.html

Download the OpenSSL v1.1.1 light 32 bit version, install it, and TM-DataManager should be good to go.

Win64 OpenSSL v1.1.1u Light EXE | MSI	3MB Installer	Installs the most commonly used essentials of Win64 OpenSSL v1.1.1u (Recommended for users by the creators of OpenSSL). Only installs on 64-bit versions of Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win64 OpenSSL v1.1.1u EXE | MSI	63MB Installer	Installs Win64 OpenSSL v1.1.1u (Recommended for software developers by the creators of OpenSSL). Only installs on 64-bit versions of Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v1.1.1u Light EXE | MSI	3MB Installer	Installs the most commonly used essentials of Win32 OpenSSL v1.1.1u (Only install this if you need 32-bit OpenSSL for Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v1.1.1u EXE | MSI	54MB Installer	Installs Win32 OpenSSL v1.1.1u (Only install this if you need 32-bit OpenSSL for Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.

Without OpenSSL installed, TM-DataManager will not function. For example, getting the list of local stations for weather, will return nothing.

2.2 Log Files

Log files are created, but location is dependent on Windows version. Some end up in the program directory, others will be in c:\users\username\AppData\Local\VirtualStore\Program Files (x86)\TMDataManager.

3 Main Window Overview

The main window of the TM-DataManager, hereafter referred to as TMDM, shows the real time status of the data acquisition. The top half of the window is showing weather data and the lower half stock data. This data is updated on the intervals setup in the Setup dialog of the application.

3.1 Weather Setup

The initial setup of the weather is done by finding the GPS coordinates of desired location for the weather. This can be done in a number of ways. If you have a TimeMachines time server, the web page of the device will show the current location. Alternately, a quick Google search of the form, "GPS coordinates of place" will generally yield a good location.

Note that Google will return the longitude as a positive number, but the TMDM will expect it to be negative. The entry field will force the format of the entry.

Enter the GPS coordinates of the location in the latitude, longitude fields of TMDM, the "Get Stations" button can be clicked. This will query the NWS servers to find offices near the coordinates, which are populated into the "Choose Weather Station" pull down. Select the desired observation location. This location will be saved, even though the next time the application is closed and opened, the Choose Weather Station list will be empty, this is OK, only the Station ID is needed. The label under the latitude, longitude entry fields shows the ID and the chosen station. In the above window, it is KLNK. From this point forward the weather information will be as observed by KLNK. The label under the Weather Station pull down shows the last update time of the Station, not TMDM. Weather stations update their data at different times and intervals. There is no issue querying for updates every 10 minutes. Within the stations update interval the data won't change, but when it does, it will be updated to the TimeZone display clocks.
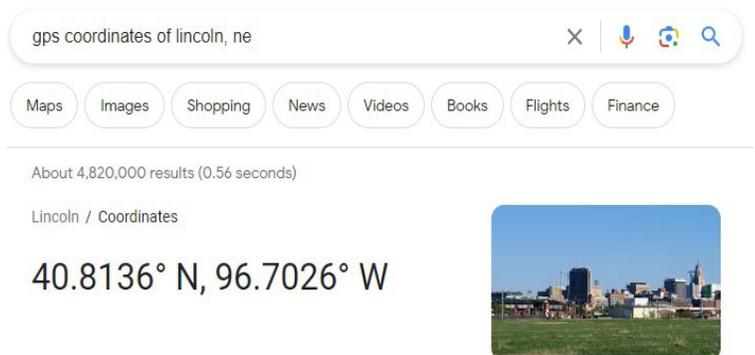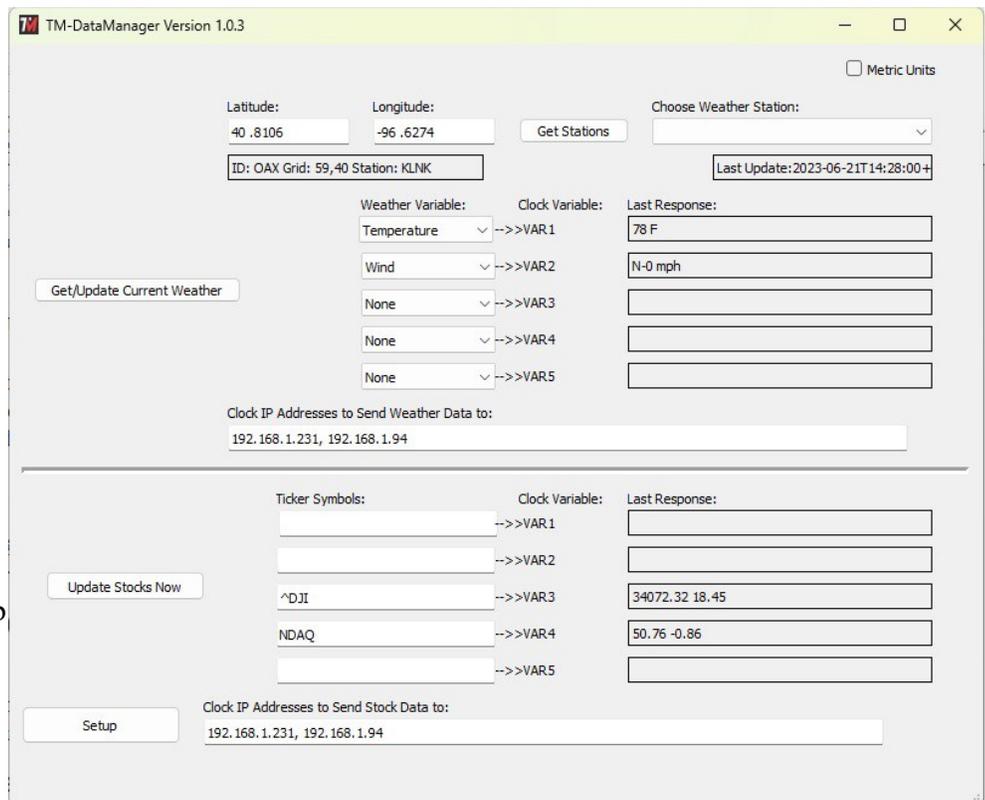
3.1.1 Get/Update Current Weather

This button will request a weather update and send the results to the TimeZone displays immediately.

3.1.2 Metric Units Checkbox

If checked, temperatures and wind speeds will be displayed in Celsius and km/h respectively.

3.1.3 Weather Variable to Clock Variable

This section is used to select which of the retrieved weather information is sent to to the TimeZone display. There are 5 different pieces of data retrieved:

- Current Conditions – this returns a string containing all of the below, as well as a brief discription of conditions, i.e. cloudy, clear, mostly cloudy etc.

- Temperature – Current temperature

- Dewpoint – Current Dewpoint

- Wind – Current windspeed and direction

- Humidity – Current relative humidity

Each pull down will send its data to the specified VAR entry of the TimeZone display. In the example main window above, Temperature is being sent to VAR1, and the Wind information is being sent to VAR2. VAR3-5 are not sent weather information.

Whenever weather data is retrieve, the exact text that is being sent to the clocks will be displayed in the text boxes for VAR1-5. In the above screen shot, VAR1 has a temperate of 82F, and VAR2 is showing the wind at S-9mph.

3.1.4 Clock IP Addresses to Send Weather Data to

This text entry box is a comma delimited list of IP addresses that the variable data will be sent to. These should be the base IP addresses of the TimeZone Display/Clocks.

3.2 Finance Data Setup

See the Setup Button section for more information on setting up the financial provider API.

The finance data setup requires that the user know the ticker symbols for what they wish to gather data on. Multiple ticker symbols are allowed on each line by separating them with a comma. Typically this will result in needing to scroll the information when displayed on the TimeZone display. A couple of common tickers are shown on the prior page. "^DJI" retrieves the Dow Jones Industrial Average, and "^IXIC" is the Nasdaq Composite. Additional settings that affect the stock market quotes is in the Setup Dialog and accessing that dialog will be required before any quotes can be received.

3.2.1 Update Stocks Now

This button will request all stocks be retrieved. All ticker symbols are combined into a single request and then the individual data is parsed out.

3.2.2   Clock IP Addresses to Send Stock Data to

This text entry box is a comma delimited list of IP addresses that the variable data will be sent to.

4   Setup Button

The Setup button in the bottom left corner is used to further setup the TMDM application and is a required step for setting up the stock quotes. The setup dialog is shown here.

4.1 Weather Setup

The weather setup is the top portion of the dialog box and only is affecting when the TMDM will request data from the National Weather Service. Current between the hours of 7 AM and 6 PM, weather updates will be requested every 15 minutes and weekends will be skipped.
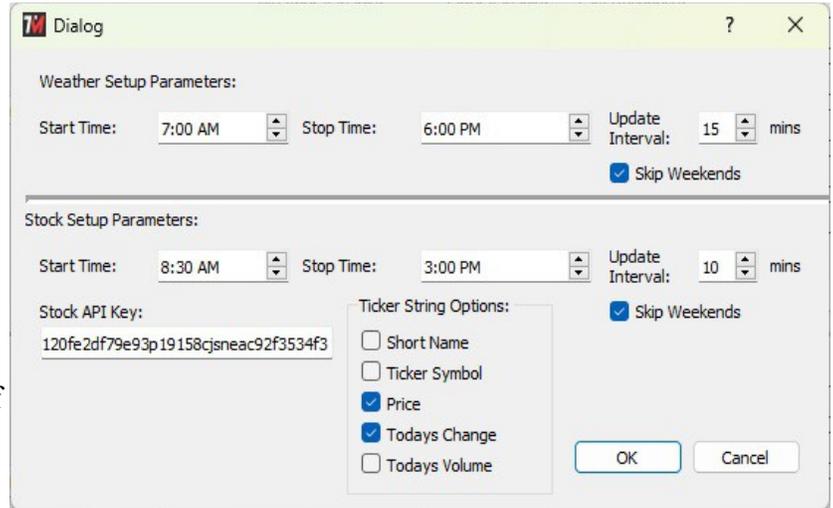
4.2 Stock Setup

4.2.1 Stock API Key

The first step in setting up the stock quotes request is to get an API Key from rapidapi.com and to activate the Mboum Finance API. Rapidapi.com will provide an API key that can then be used to access the quote information. Rough steps to get the API Key:

1) Open a web browser and communicate with https://rapidapi.com

2) Sign Up for an account

3) Select the Basic Pricing Plan for $0.

4) Search for Mboum and select it from the returned list.

5) Choose the Subscribe to Test option and then select the $0 Basic plan. Paid plans can always be selected later if more than 500 requests per month are used. The $9.95, as of this writing, Pro plan allows 10,000 lookups per month which should be plenty. The X-RapidAPI-Key value on this screen should be copied and pasted into the Stock API Key field of the Setup Dialog.
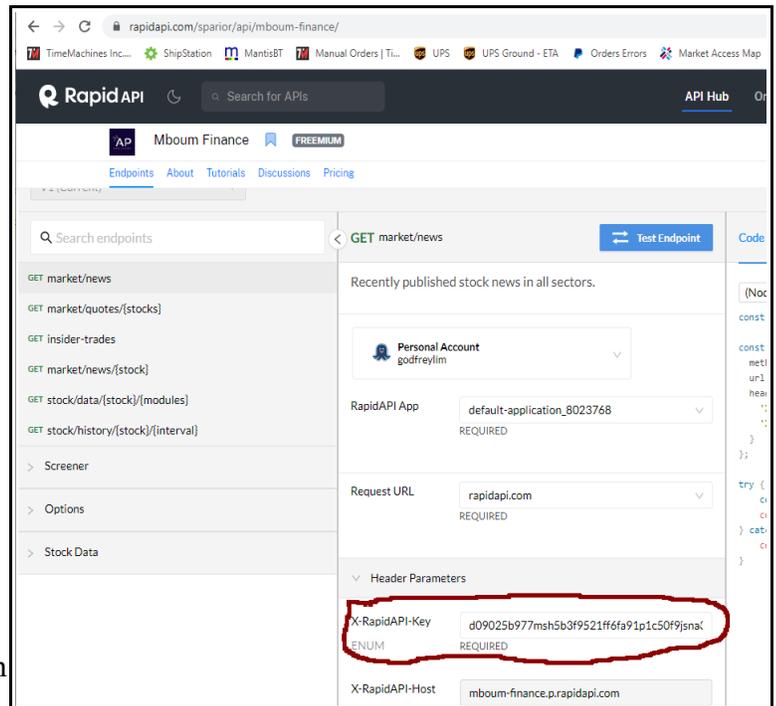
4.2.2 Operation Times and Rates

The Start and End time of the quoting system can be set here as well as how often to do the updates and whether to skip weekends. The NYSE is open from 9:30AM to 4:00 PM EST. The TMDM operates on your local

computers time so if the computer is not running Eastern Standard Time, these times can be adjusted to match stock market hours. By limiting these hours of quoting, and setting the delay interval, it is possible to stay on the free plan. It just depends on the desired granularity of data desired.

4.2.3   Ticker String Options

The ticker string options select which data gets reported in the VARs. Checked items are included in the variable information delivered to the TimeZone displays.

The VAR1-5 fields display exactly what is being sent to the TimeZone displays and can be immediately updated with the Update Quotes button on the main screen.

5 Displaying Data on TimeZone Clock Displays

The TimeZone Clocks have the ability to show many different types of data. Some of that data originates within the clock itself, such as the date, day of the week, year, static text, etc. TM-Manager is used to set this data into a wide range of formats utilizing variables names that are enclosed within '^' characters. See the clock manual for more information on what is available. In addition to the built in variables, the clock has the ability to display variable data that can be set through the API of the clock. (The API is documented and posted on the website as well on the Support page.) ^VAR1^ - ^VAR5^ can be set through the API and displayed as part of the TimeZone data. The TM-DataManager software sends the data retrieved from the internet, through the weather and financial APIs previously discussed, to these VAR variables. The VAR variables can then be included as part of the time zone display loop, to show externally updated information.

The screenshot in the Main Window section is sending data to four of the variables:

^VAR1^ - Temperature in Lincoln, NE

^VAR2^ - Windspeed in Lincoln, NE

^VAR3^ - DOW Jones Industrial Average

^VAR4^ - NDAQ stock symbol

5.1 Example TimeZone Clock Configuration

The below images show the configuration within TM-Manager for the Clock Settings dialog box. The displayed zone is incremented in each one. Notice that the Time Zone setting does not change from USA Central time in each dialog. This means the displayed time is not changing, but only the 2nd dot-matrix line.
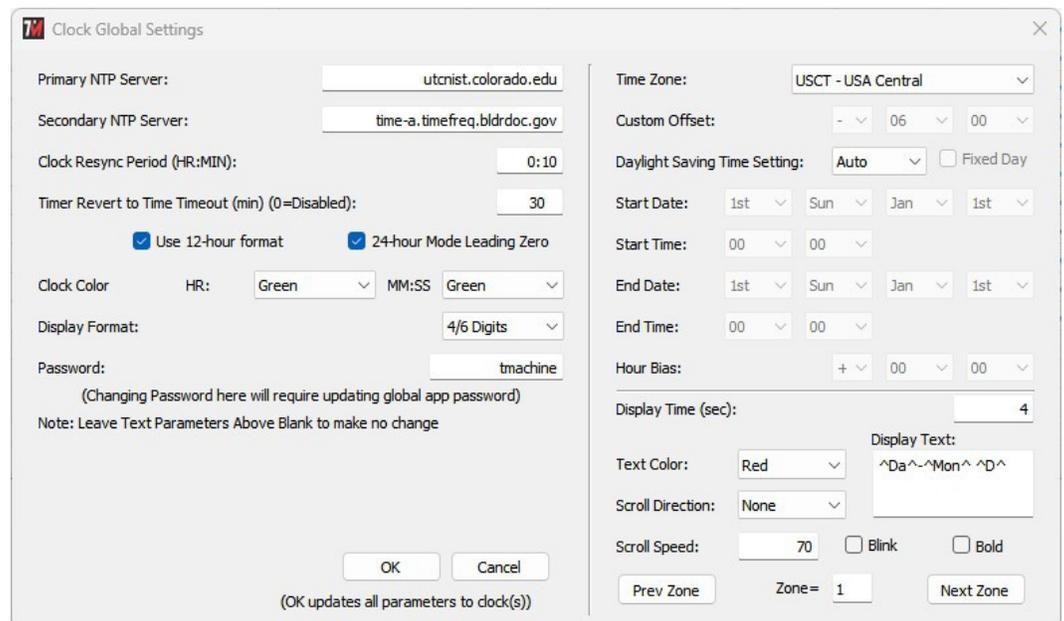
This first zone is showing the default value of the date in the format Day-Month Year. These variables are sourced internally to the TimeZone clock display.

TIME MACHINES
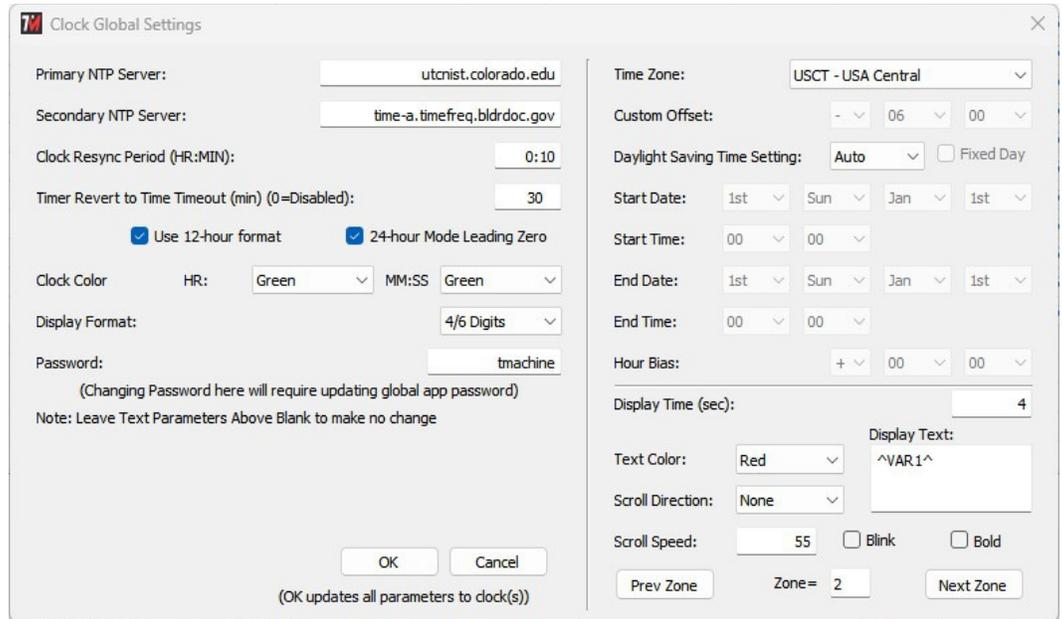
The second zone is show ^VAR1^. It is not scrolling, it is simply centered. This is the outside temperature in Lincoln, NE at any given time as provided by the TM-DataManager software.
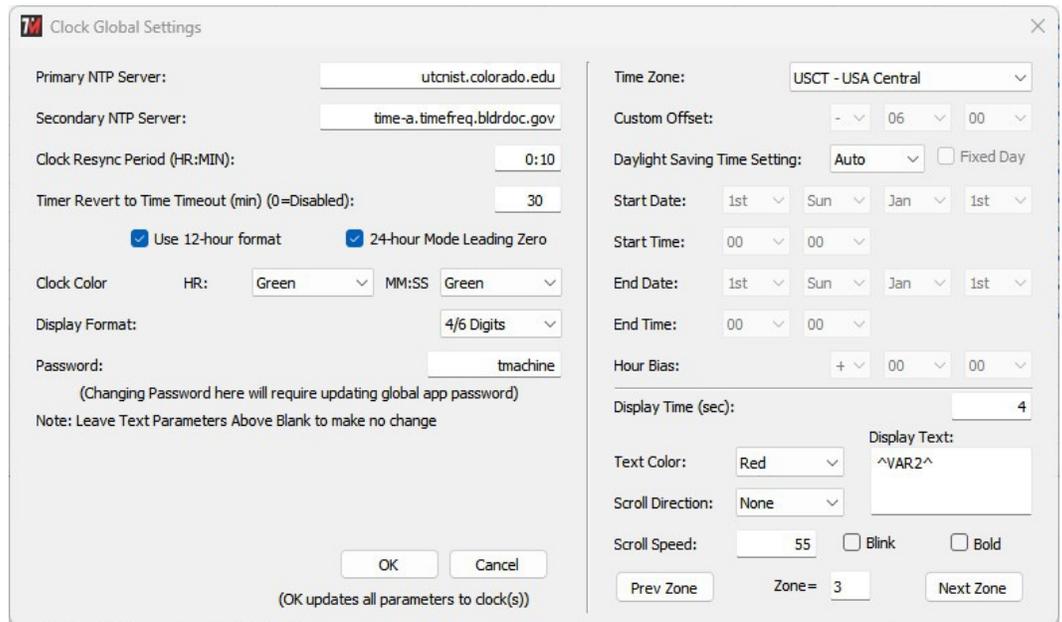
The third zone is showing ^VAR2^ which is the wind speed and direction in Lincoln, NE at a given time. It is also not set to scroll, but to display in the middle of the display.
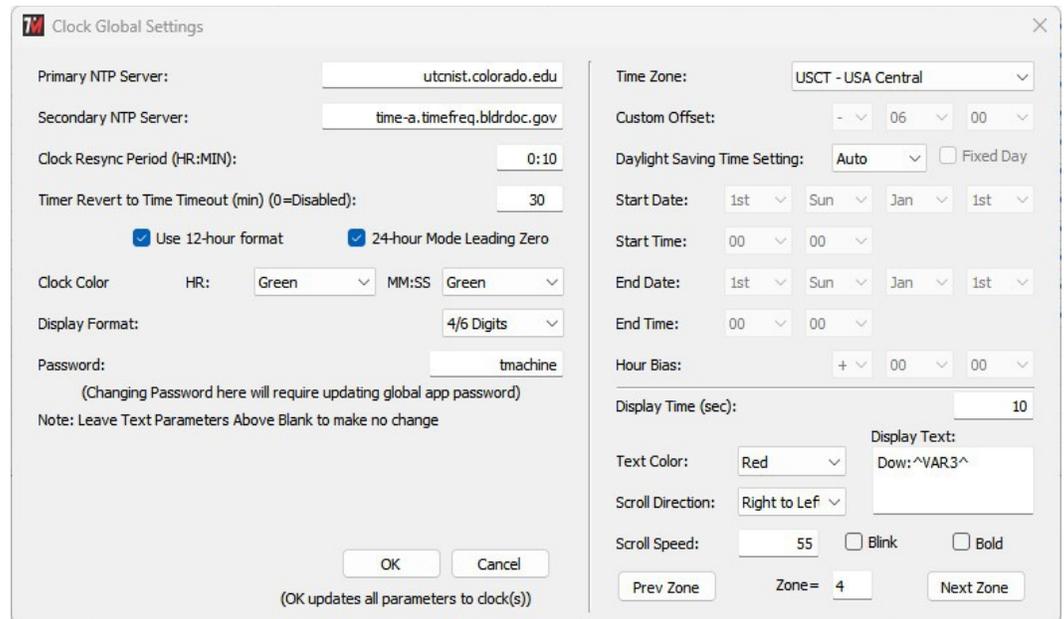
The 4th zone, is a bit more complicated. It is showing the ^VAR3^ value. However, there is some static text added "DOW:" and then along with the settings in TM-DataManager, it will display the DOW composite index along with the change since the opening bell of the exchange. This text is also set to scroll for 10 seconds because the overall text wouldn't fit on the display all at one time. The formatting of the text is completely up to the user to determine their preferred viewing method.
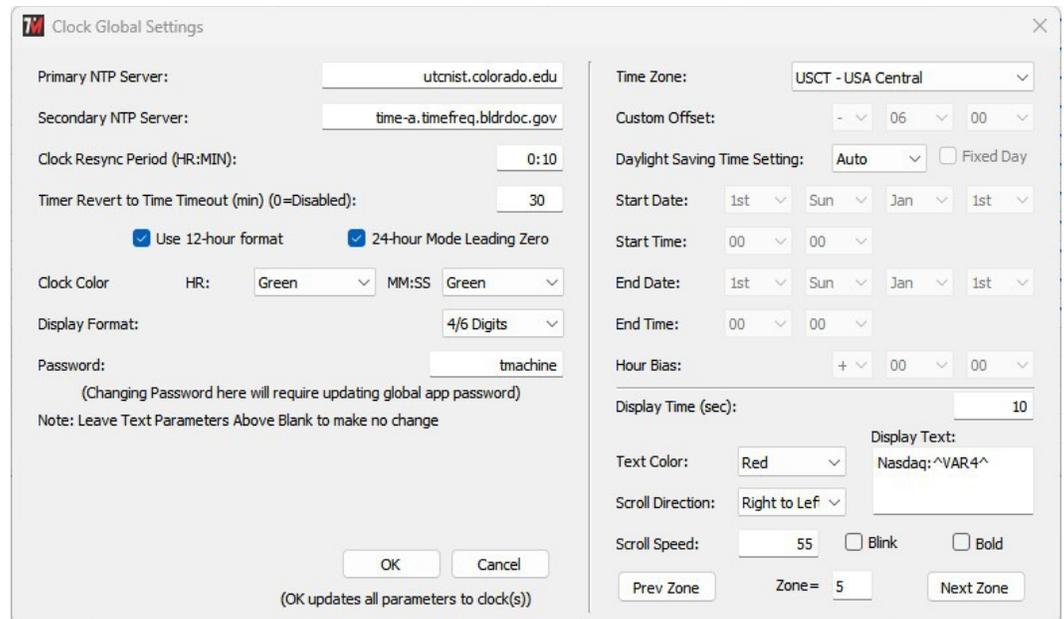
Finally the 5th zone is similar to the 4th, except it is showing a different ticker symbol. NDAQ in the case of the setup of the TM-DataManager main window. This is the ticker symbol for the Nasdaq company, not the index.