TM-Manager Application

**** Installation and Operation Manual ****

Version 1.06

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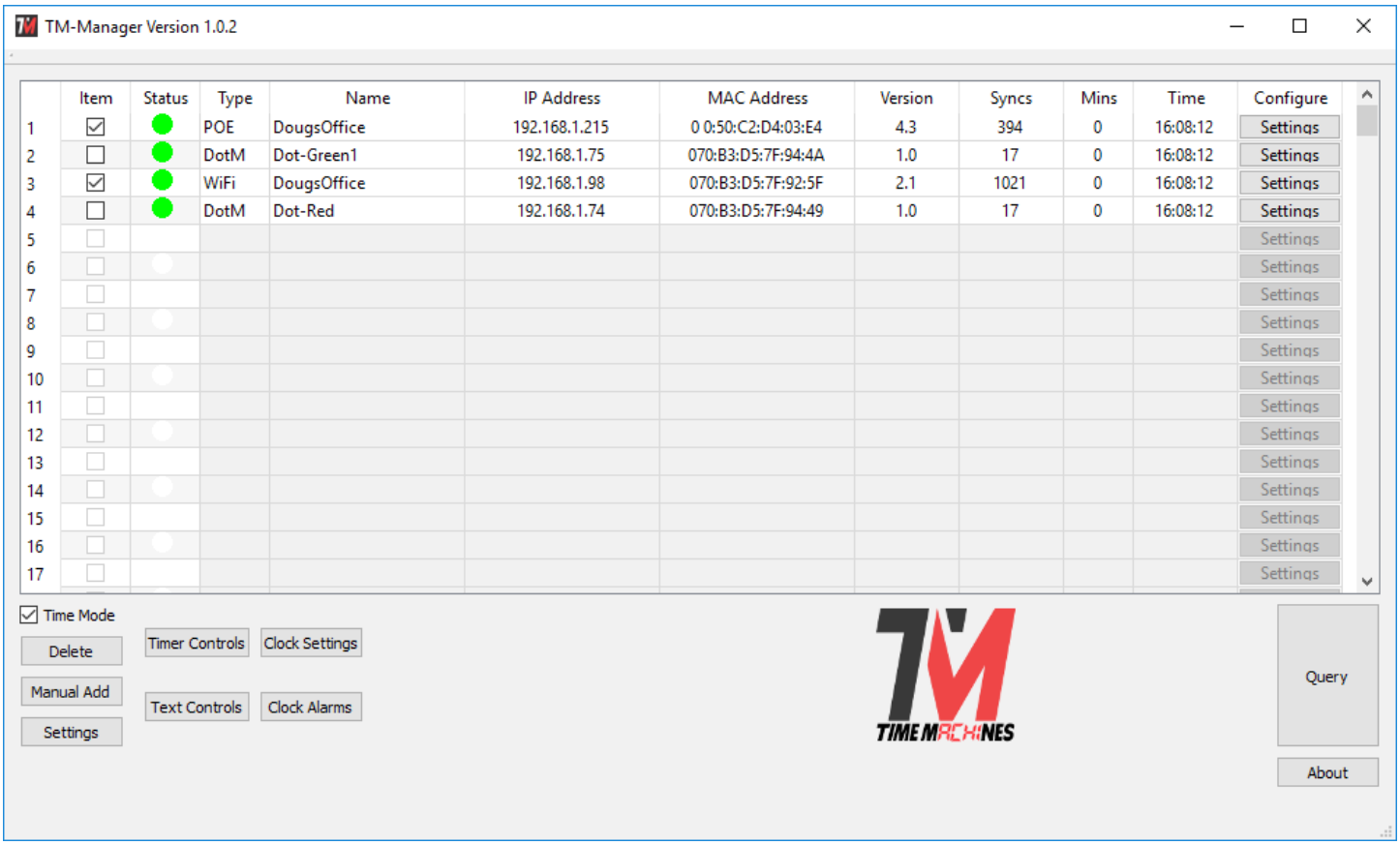
1 Introduction

The TimeMachines TM-Manager Windows application is used for monitoring and configuring a growing number of TimeMachines products including POE and WiFi Clocks, and the Dot-Matrix displays. It has the ability to discover the devices on the network, monitor the function of the individual devices, update the most common of their parameters, control their timer functions across multiple devices simultaneously, and display text message on multiple Dot-Matrix displays enabling a cost effective mass notification option.

2 Installation

Installation of the TM-Manager 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.

3 Main Window Overview



The Main Window shows an overview of all known devices that have been found through discovery or direct entry. There is a significant amount of information available from this screen and setting options.

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3.1 Main Window Overview

The columns of the main window give a great deal of information about each device. The column meanings are as follows.

3.1.1 Item Column

The first column contains a checkbox that allows the user to select this device for multiple device operations like timer controls, text displays, global parameter updates, and alarm setting updates.

3.1.2 Status Column

The status column is a Red, Yellow, Green indication of the status of the device. If a device is functioning normally, updating its time regularly, and responding to status queries from TM-Manager, this indicator will be green. If there is a potential problem, it will turn yellow, and if it has failed to respond or isn't updating its sync count often enough, it will turn Red. See the “Mins” column information for additional information.

The indicator has slightly different meanings for the TM1000A. A red indicator is displayed if the GPS is not locked. A yellow indicator is used if the TM1000A hasn't incremented its NTP Lookup count for a period of time. This may or may not indicate and issue, but may simply be caused by low traffic to the TM1000A.

3.1.3 Type Column

The Type column displays the type of device reported when queried. This can be a POE clock, WiFi clock, Dot-Matrix display, or as of version 1.03 a TM1000A time server.

3.1.4 Name Column

The Name column displays the name of the device as set in the devices web page. This field is editable and when the cursor leaves the field after a change, it will immediately be updated on the device. Generally it would reflect the location of the device, or some other identifying value.

3.1.5 IP Address Column

This is the IP address of the device as reported when queried.

3.1.6 MAC Address Column

This is the MAC address of the device as reported when queried.

3.1.7 Version Column

This is the software version of the device as reported when queried.

3.1.8 Syncs Column

Syncs is the number of times the clock has synced with a time source since being powered on or last reset. In the case of the TM1000A, it is the number of NTP sync requests received and served.

3.1.9 Mins Column

The Mins column shows the amount of time since a device llast responded to a query for status. This will increment until a response is received. Response time greater than 10 minutes and less than 15 minutes will

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turn the status indicator Yellow. If it goes above 15 minutes, the Status LED will turn Red. A general query is sent every 6 minutes.

3.1.10 Time Column

The Time column shows the approximate time currently displayed on the clock. If the clock has a time zone error, then this will be reflected here. It is updated each time a device responds to a query, but is incremented by an internal 1 second timer in the TM-Manager software. It is generally pretty accurate, but not synced to NTP time as the clocks are.

3.1.11 Configure Column

The Configure column holds a settings button that when clicked will open a browser window directly to the associated device. The user can then log in to the device and update parameters as needed. By default, Google Chrome is set as the browser. It can be changed in the application settings to another browser.

3.1.12 Query Button

When clicked, this button will send a broadcast to the IP address set in the Settings dialog. All clocks that receive the broadcast will respond back to the source, which is the TM-Manager computer, so that they can be located. If the device is already in the displayed list, it will have its information updated.

3.1.13 About Button

The About button displays information about the TM-Manager application and contact information for TimeMachines.

3.1.14 Delete Button

The delete button will remove all devices that are checked in the Item column. No data is lost in this process. If the device subsequently responds to a Query, it will be re-added to the list.

3.1.15 Manual Add Button

The Manual Add button allows a device's IP address to be manually entered. This may be useful if a device does not responds to the Query button because it is on another subnet. Periodic status is done through UDP IP uni-cast messaging, so as long as the device is at an IP address that is routable on the network, devices outside of the local broadcast domain can be monitored. The list of IP addresses is saved when the application is closed and will re-appear when the application is opened. Other fields will be filled in as queries are completed.

3.1.16 Time Mode Checkbox

At times, some displays may be in timer or text display modes. To return them to time display, this check box can be toggled and all devices that are checked in the Item column will be reset to display time from whatever mode they might have been in.

3.1.17 Timer Controls Button

This button opens the multi-device timer control. See that section of the manual for more information on how to utilize it.

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3.1.18 Text Controls Button

This button opens the multi-device text control. See that section of the manual for more information on how to utilize it.

3.1.19 Clock Settings Button

This button allows update of the most common clock parameters to all checked devices. See the Clock Settings section of this document for more information.

3.1.20 Clock Alarms Button

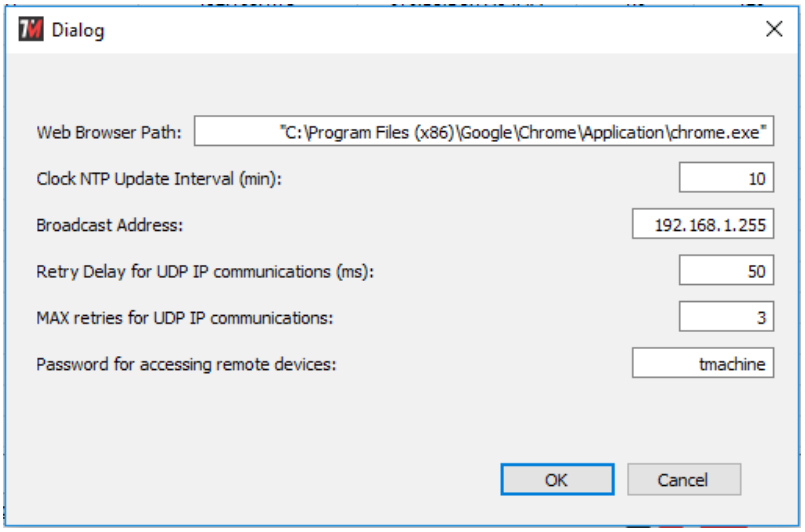
This button allows update of the alarm settings of all checked devices. See the Clock Settings section of this document for more information.

3.1.21 Setting Button

This button opens the dialog box for TM-Manager application settings. See the section of this document on the meanings of those settings.

3.2 Application Settings

There are a few settings that can be reached by clicking the "Settings" button on the main screen. The dialog to the right will be displayed.



3.2.1 Web Browser Path

This setting is the path and program name of an internet browser. By default set to Google Chome's default installation location, but can be changed to any other browser location desired. When the "Settings" button on a given row of the main window is clicked, the IP address of the device is appended to this path and a browser is opened to enable a quick connection for all the settings of a given device.

3.2.2 Clock NTP Update Interval

This setting should generally match the setting of the clocks. TM-Manager checks each clock in the main window to see that its "Syncs" count is increasing. If this setting is lower than that of the clocks, TM-Manager will think that an update of the time has not occurred and will mark the device as having a possible fault.

***Note: This value is not used at this time and the assumption is that the clocks are set to a 10 minute or less update interval.

3.2.3 Broadcast Address

This setting controls the address used for broadcasting queries. A broadcast is sent to a specific port on the network and all TimeMachines displays will respond to it allowing the TM-Manager application to locate clocks

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on the local LAN segment. Once the devices are discovered, UDP IP query messages are sent uni-cast to each individual clock to maintain status. The broadcast address will generally be the local subnet address with a 255 in the octets that are variable on the local subnet. Consult your IT staff for more information on how this should be set.

3.2.4 Retry Delay for UDP IP Communications

Timer and Text displays to multiple devices are done with UDP-IP uni-cast messages. There is a simple acknowledgment sent from the devices for these messages. This setting is the amount of time allowed to pass before a retry is sent if the Ack hasn't been received. If devices are spread across a wide area network, or a busy WiFi network, then this value may need to be increased. If un-reliable control of timer functions is observed, try increasing this value.

3.2.5 MAX retries for UDP IP Communications

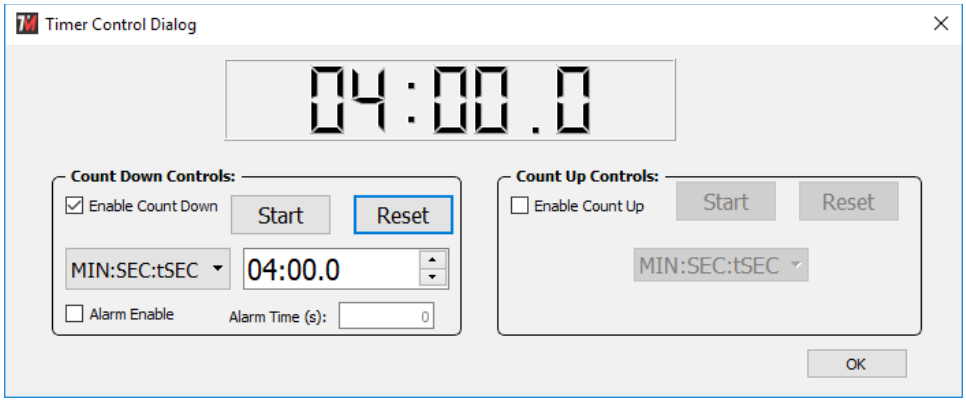
This setting works with UDP Retry delay and controls how many times the message will be resent if the acknowledgment isn't received within the timeout setting.

3.2.6 Password for accessing remote devices

This setting is used to authenticate TM-Manager for setting updates to the devices. It should match the password on the clocks being updated.

3.3 Timer Controls

The timer control dialog allows simultaneous control of all of the displays that are checked when the Timer Control dialog is entered. It supports control of both count-up and count-down features of the clocks as well as displaying the approximate time of the currently active timing function.



***Note: The time displayed in this dialog is maintained on the local machine running TM-Manager and is not synchronized to the displays. If the dialog is closed after a timing event is started, TM-Manager will not be able to display the timer time again. Re-opening the timer control will allow the event to be stopped or reset, and a different grouping of devices can be run independently.

3.3.1 Count Down Controls

Enable the Count-Down controls by checking the checkbox in that section. There are two display modes that can be used, one that displays Minutes:Seconds:Tenths of seconds (and hundredths when stopped) and a second that displays Hours:Minutes:Seconds, use the pulldown to select the one desired. The preset can be edited and the alarm relay can be energized for a programmable period of time at the end of the count down. Once the desired settings are made, click the Reset button to pre-load them to the selected devices. The Start button can

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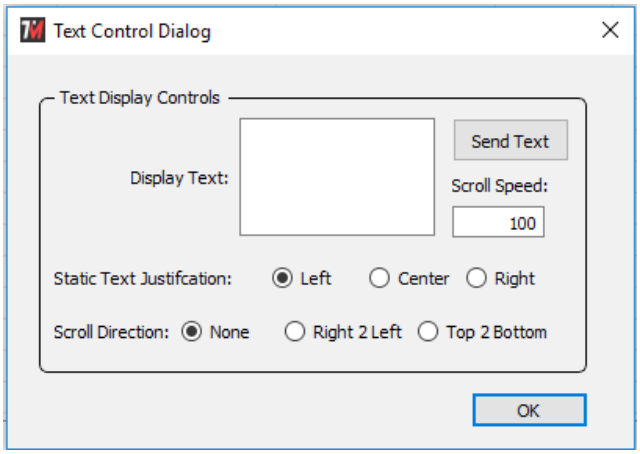
now be clicked to start the count-down on all selected devices. It can be paused while running as well. All devices will be closely synchronized, although each device maintains its own timing.

3.3.2 Count Up Controls

The Count-Up features can be enabled by checking the corresponding checkbox. Once the controls are active there are two formats of time display; one that displays Minutes:Seconds:Tenths of seconds (and hundredths when stopped) and a second that displays Hours:Minutes:Seconds, use the pulldown to select the one desired. The count-up can be controlled using the Start button and Reset to zero using the reset button.

3.4 Text Controls

The Text Control Dialog allows simultaneous control of all of the displays that are checked when the Text Control dialog is entered. This feature is only active for TimeMachines Dot-Matrix display products. The Dot-Matrix displays have the ability to display static and scrolling text. This can be controlled from the web page of the individual device as well.



3.4.1 Display Text

This is the text that will be displayed. The entry field supports single line text for Right to Left scrolling, as well as Multi-Line entries (carriage-return between lines) for Top to Bottom scrolling. The Dot-Matrix does not reformat the text for best display, it is up to the user to format it within this entry field.

3.4.2 Scroll Speed

This is a number between 0 and 999 that controls the speed of horizontal and vertical scrolling. A lower number if faster and a higher number is slower. 60 is a good default to start with.

3.4.3 Static Text Justification

When displaying a specific static word, the Dot-Matrix will attempt to place the entire word/phrase on the display and may adjust to a smaller font if the default Arial won't fit. This setting controls whether the word is Left, Center, or Right justified.

3.4.4 Scroll Direction

Using scrolling, longer messages can be displayed. When scrolling, use this setting to control the direction of the scroll.

3.4.5 Send Button

The Send button is used to update the display with the parameters for text display that are currently set on the web page.

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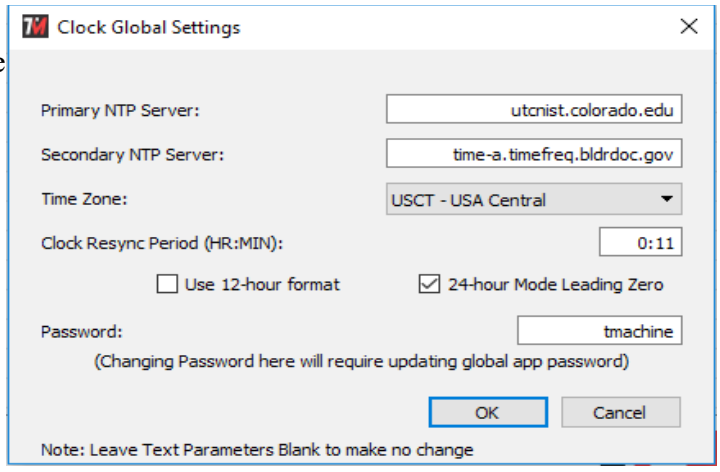
3.5 Clock Settings Dialog



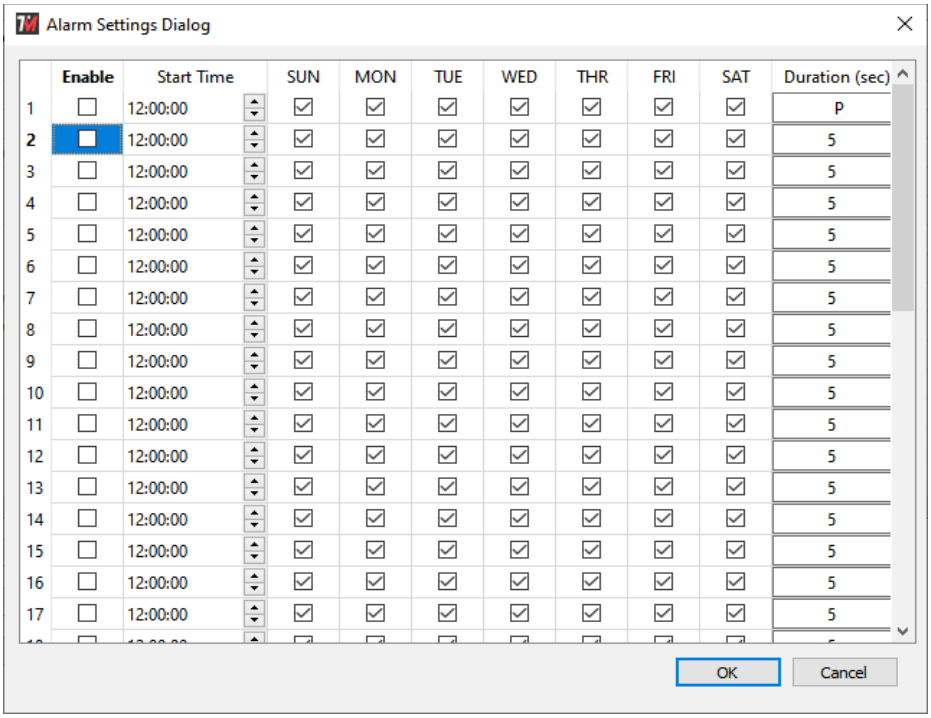
The Clock Settings Dialog allows setup of parameters that are typically common across multiple devices on the network. When this dialog is opened, it will affect all devices that were checked in the Item column of the main window.

The value of the parameters within the devices themselves are not read and displayed in this dialog, the update is one direction only, from TM-Manager to the devices. The settings in this dialog are stored on the TM-Manager computer when the application is closed.

Each of the parameters are explained in the individual product manuals available for download at http://www.timemachinescorp.com.

The parameters will be updated to each device when OK is clicked. A progress meter will be displayed on the main window during the update process.

3.6 Alarm Settings Dialog



The Alarm Settings Dialog allows setup of the alarm parameters of each device that is checked when the dialog is opened from the main window.

The alarm settings within the devices themselves are not read and displayed in this dialog, the update is one direction only, from TM-Manager to the devices. The settings in this dialog are stored on the TM-Manager computer when the application is closed.

The alarm relay feature is explained in the individual product manuals available for download at http://www.timemachinescorp.com.

The alarm parameters will be updated to each device when OK is clicked. A progress meter will be displayed on the main window during the update process. There is quite a bit of data posted to each device and each device gets several posts to be completed, so it does take a bit to update multiple devices.

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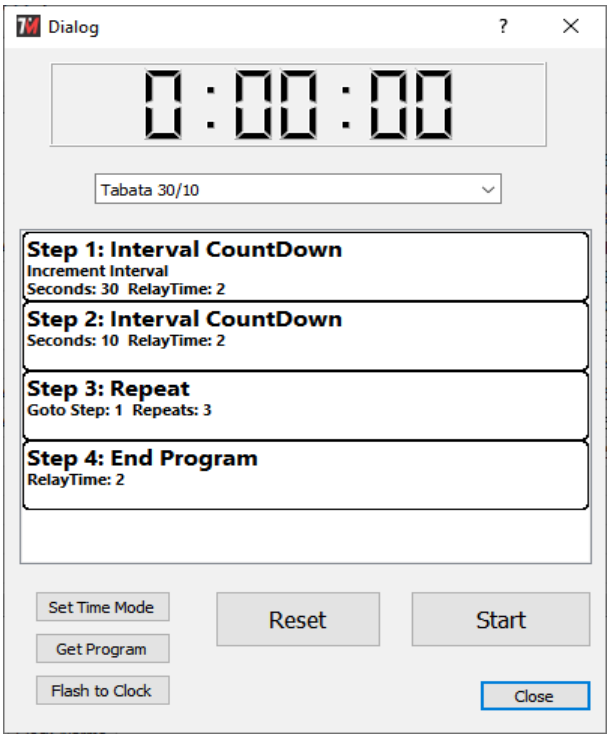
3.7 Timer Programs



Timer Programs represent a unique and powerful capability of the TimeMachines networked displays. This feature set was created with release 1.2 of TM-Manager to work with POE Clock Firmware 4.6, WiFi Clock firmware 2.4, and DotMatrix version 2.2. It was added to the TM-Manager application in version 1.0.6. With an essentially infinite number of options for setting up timing sequences, nearly any timing need can be met. Round/Interval timing is now supported for athletic training purposes, and support for sequential count-down timers or count-up timers is now possible. Looping constructs are also available to repeat sections of timing programs. Relay closure control for buzzers is also possible within the programs. The various aspects and options for creating timer programs and how they interact with the TimeMachines networked displays follows.

3.7.1 Start/Pause Button

The Start/Pause Button starts the Timer Program running on the App screen as well as any selected network displays. The time display at the top of page will show approximately what is on the clock displays, and the currently executing step will be highlighted.

3.7.2 Reset Button

The Reset Button sends the entire currently displayed program to the network display and puts the display into the Timer Program execution mode. Clicking the Start button starts the program execution. The program that is sent by the Reset button, does not save the program in the clock to anything other than the RAM of the clock and the program will disappear from that memory if the clock is restarted. If a change is made to the program in the dialog, clicking Reset is required to send the updated program for execution on the clock.

3.7.3 Set Time Mode

This button will put the selected displays back in normal time display mode as setup from the device webpage. The Timer Program mode can be re-entered by pressing the Reset button which will send the program to the displays again. The displays are setup to revert to time mode after 30 minutes of no timer function being used.

3.7.4 Flash to Clock

The Flash to Clock button tells the clock to save whatever program is currently stored in the memory of the clock, having been uploaded to the clock by the last Reset button press, to the non-volatile flash memory of the clock so that it can be used by the Alarm functions of the clock and will be retained within the clock even after a reset.

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3.7.5 Get Button

The Get Button is used to retrieve the current program, in the first selected display (from the main dialog), to the TM-Manager application. This is a very useful option when programs exist on one users Smartphone or Desktop and another user wants a copy of them. One user can pick a program on their phone, click Reset to send it to the clock, and then another user can download the program by clicking Get. The program is then saved in the selected program slot. This can be repeated as needed by as many users as desired.

3.7.6 Starting a New Program

There are 10 available programs that are stored within the TM-Manager App. By default they are called Program 1 through Program 10 and can be changed by activating the pulldown below the time display. Clicking on the Program name allows the program name to be changed with the keyboard. By default, each program has one default step, End Program. All programs must have an end program step as the final step. Protections exist in the App to ensure this.

Each Step in a program is numbered 1 through 10. Information about the function and settings of each step is displayed on the main screen for the program. Each program step has a popup menu associated with it that is activated with the right mouse button. The menu contains the following entries:

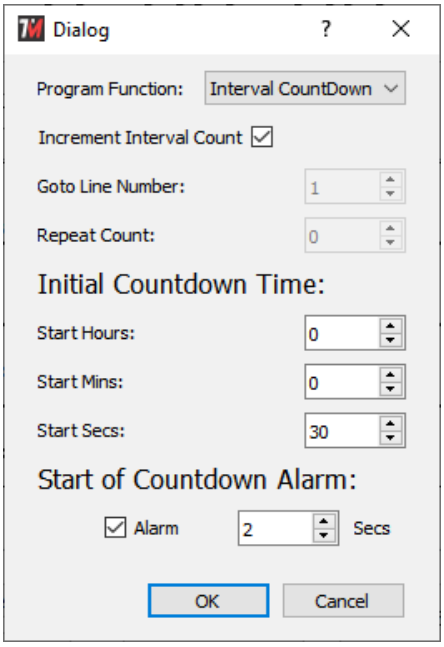
Edit – The Edit option opens a dialog that allows the specific settings of the program step to be changed between functions. The specific options in the Edit dialog box will be discussed later in the document.

Insert – The insert option will add another program step before the step where the Insert option is selected. The inserted step will default to an End Program step that can then be edited for another function.

Delete – The Delete option will delete the step from which the Delete option is selected.

Cancel – The Cancel option simply exists the menu.

Any change to any step of any given program is automatically stored within the App on the specific computer it was edited on.



3.7.7 Edit Timer Program Steps

When the Edit option is selected from a program step by right clicking on the step, the dialog to the right opens up. Numerous options are available within a program step and not all of them will be available for a given program element type. Each of these element types will be discussed with the associated options.

Interval CountDown – Interval CountDown uses a format of the type "ROUND – MM:SS". The option to increment the round number exists in these steps. If checked, then the round number will increment at the beginning of this step. The other features that are enabled for this option are the starting time for the count-down, set with the Hours, Minutes, and Seconds settings. Additionally, the alarm relay can be actuated at the beginning of the step which would serve as essentially a "go" bell. Putting an

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Alarm at the beginning of the next program step can serve as an “end” bell.

Interval CountUp – Interval CountUp uses a format of the type “ROUND – MM:SS”. The option to increment the round number exists in these steps. If checked, then the round number will increment at the beginning of this step. The other features that are enabled for this option are the ending time of the count-up. If set, the timer will count-up for the number of seconds specified by Hours, Minutes, and Seconds and then terminate the count-up and proceed to the next step. A setting for Hours, Minutes, and Seconds of zero will cause the count-up to continue forever essentially making it the last step of the program. Additionally, the alarm relay can be actuated at the beginning of the step which would serve as essentially a “go” bell. Putting an Alarm at the beginning of the next program step can serve as an “end” bell.

CountUp HH:MM:SS and MM:SS:TS – These two count-up options are the same except for the format of the number displayed during the count-up function. There is no round number displayed in this format. The other features that are enabled for this option are the ending time of the count-up. If set, the timer will count-up for the number of seconds specified by Hours, Minutes, and Seconds and then terminate the count-up and proceed to the next step. A setting for Hours, Minutes, and Seconds of zero will cause the count-up to continue forever essentially making it the last step of the program. Additionally, the alarm relay can be actuated at the beginning of the step. Putting an Alarm at the beginning of the next program step can serve as an “end” bell.

CountDown HH:MM:SS and MM:SS:TS – These two count-down modes are identical except for the format of the numbers displayed during the count-down function. There is no round number displayed in this format. The other features that are enabled for this option are the starting time for the count-down, set with the Hours, Minutes, and Seconds settings. Additionally, the alarm relay can be actuated at the beginning of the step which would serve as essentially a “go” or “end” bell depending on its position in the program. Putting an Alarm at the beginning of the next program step can serve as needed as well.

Goto Line – Goto Line provides a looping/repeat function. When set as the active command, the target step number can be set. This should be the step number that the program should jump to. The Repeat Count option sets how many times this step will be executed before it steps through to the next step. This step is useful in setting up Round/Interval count-down sequences. For example two count-down steps could be created, one that counts down from 1 minutes to 0 and increments the Interval number, followed by a second count-down step that goes down from 20 seconds and doesn't increment the interval number. The next statement could be a Goto that goes back to the first step and is allowed to run 3 times, making a timer that has three workout periods followed by three rest periods. After the third time the Goto was reached, it would pass through to the End Program step and the clock would resume its normal time display.

End Program – This is the final step of the program. When execution of the program gets to this point, the program will end and the display will return to its default time/calendar setting.

3.7.8 Example Programs

Several examples of timer programs can be found in the TM-Timer smartphone application manual as well as on the timemachinescorp.com website in the Application section.

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