



## Network Controller / Scrolling Message

# OPERATING INSTRUCTIONS FOR THE NETWORK CONTROLLER WITH INTEGRATED SCROLLING MESSAGE

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# The Network Controller

If your sign is outfitted with a Cousign network controller it will be preconfigured for use with your sign. This document describes the steps necessary to connect to your network-controlled sign and manipulate any displays connected to it. By default, your network controller will receive an IP address from your network (DHCP) and the controller configuration page can be **accessed by any computer or smartphone also connected to that network.**

## Before you begin

1. Ensure an active network cable is connected to the sign controller.
2. Apply power to your sign.
3. Once the controller has made a successful connection the **IP address** it has been assigned **will scroll across one or more of the attached numeric displays.**
4. Write this IP address down.

## Accessing your network controller

The **IP address is in the format XXX.XXX.XXX.XXX** and will be unique to your company's network. Enter it into your web browser of choice and press enter.



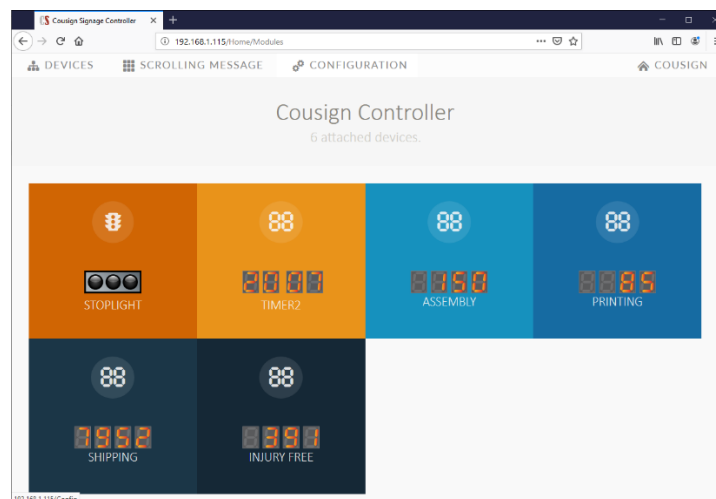
*Be sure to use http:// and not https://*

**NOTE:** YOU MAY MANUALLY TRIGGER THE CURRENT IP ADDRESS TO SCROLL ACROSS THE NUMERIC DISPLAYS BY PRESSING “ENTER ENTER ENTER” ON THE IR REMOTE CONTROL. THIS IS A SPECIAL KEY SEQUENCE THAT WILL PROMPT THE NETWORK CONTROLLER TO SCROLL THE CURRENT IP ADDRESS ON ANY DISPLAYS THAT SUPPORT IT.

AS THE IP ADDRESS ASSIGNED TO THE CONTROLLER MAY CHANGE FROM TIME TO TIME IT IS RECOMMENDED THAT YOU WORK WITH YOUR IT DEPARTMENT TO CONFIGURE A DHCP RESERVATION AND A CORRESPONDING DNS NAME TO ACCESS THE SIGN MORE EASILY USING A FRIENDLY NAME.

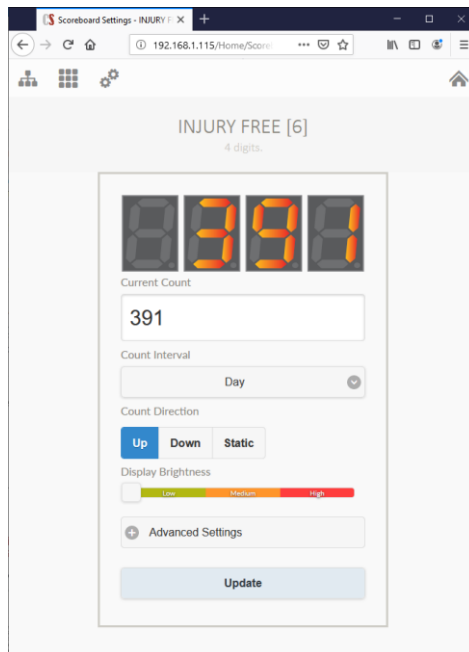
## Devices Page

After entering the configuration URL into your web browser you'll be presented with the device list which will display all detected modules on your sign. Icons for each device show information pertinent to the connected display. Click on the icon to modify the settings of a device.



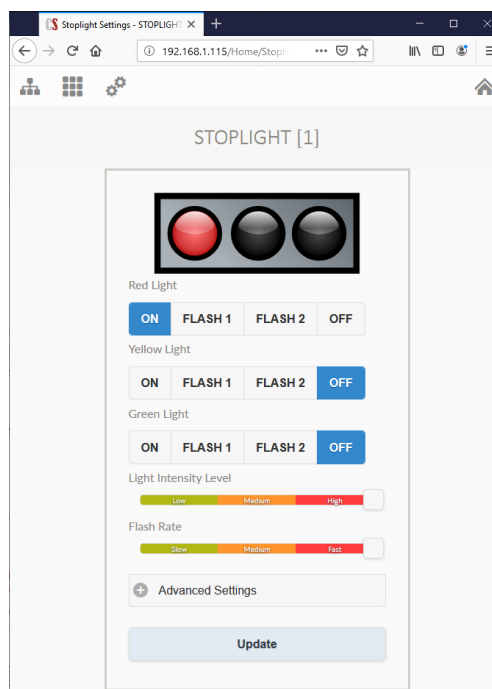
## Configure Numeric Display

Available configuration settings will be displayed and can be modified by typing new values into the textboxes or selecting options from drop down menus. When finished making changes click the **Update** button at the bottom of the screen. Your changes will be saved to the device.



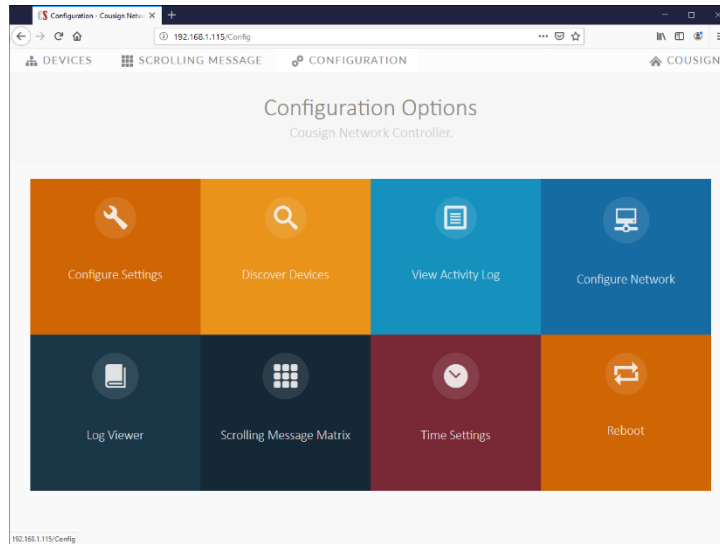
## Configure Stoplight Display

Available configuration settings will be displayed and can be modified by typing new values into the textboxes or selecting options from drop down menus. When finished making changes click the **Update** button at the bottom of the screen. Your changes will be saved to the device.



# Configuration Options

The configuration page can be accessed by clicking the Configuration link located in the header of all pages. This page allows for configuration of the controller itself.



## Configure Settings

Configure basic settings for the controller. Aside from controller name these settings should be left at their default values.

### Controller Name

Define a unique name for the controller to be displayed on the main device page.

Note: This setting does not affect the hostname of the controller.

### Controller Address

The communications address used on the RS485 bus by this controller. This setting should remain at the default value. Display devices are addressed 1-50, master devices use address 51 by default. If you have multiple master devices attached to the same bus, this address can be modified but should be done so only when required.

### Communications Port

The hardware port used for communicating with devices on the RS485 bus. This setting should be modified only if using custom hardware.

### Port Read Timeout

(Recommended Value: 500)

Time in milliseconds to wait for a timeout on the bus. This setting can be increased in electrically noisy environments where device communication faults are persistent.

### Enable Debug Tools

(Recommended Value: Unchecked)

Enabling debug tools will display additional tools on the device specific configuration pages used to troubleshoot communication issues. This setting should be unchecked unless troubleshooting is required.

### Software Update

Enables uploading a software update package to provide bug fixes and enhancements to the device.

## Discover Devices

If one of the devices is not appearing on the main page, you can force the controller to perform a device discovery by clicking this button. The detected device cache will be updated for quick access to critical connected device information.

## View Activity Log

View details of interactions with attached devices and configuration changes.

## Configure Network

Display the current network connection status including IP addresses and DHCP status of the Ethernet and Wireless connections. Allow for changes to the device hostname, IP Address settings, and easy Wireless network connection setup.

### Network Interface Status

This section provides details about the current network configuration of the device including the current IP addresses assigned to each interface and type of connection.

### General (Set Hostname)

Configure the hostname for this device.

### IP Addresses (DHCP)

Configure the IP addresses for the ethernet port and wireless interface.

**Note:** We strongly recommend keeping DHCP enabled and configuring a DHCP reservation for the controller

### Wireless

Connect to a Wireless network.

**Note:** The wireless connection is not as reliable as a hard wired ethernet connection and is not supported.

## Log Viewer

Easy viewing tool for several system logs.

*Time Broadcast Service:* Show the latest activities performed by the time broadcast service used to keep all connected device times as accurate as possible.

*Device Discovery Service:* Latest activity for device discovery service performed at boot. This log provides details about what devices were detected when the controller last booted.

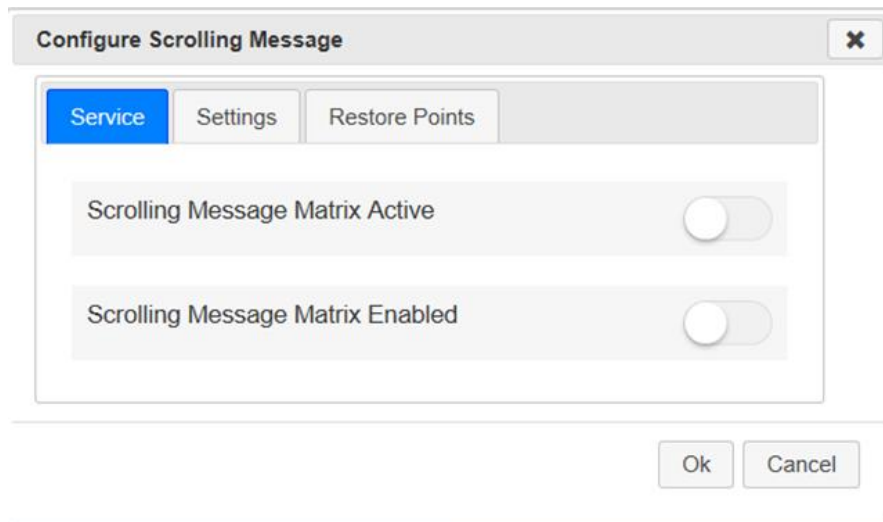
*Scrolling Message Matrix Service:* Latest activity performed by the scrolling message display. This log can be useful for determining why certain messages are not being played.

*IR Remote Service:* View recent activity detected from the Remote control. This log shows the last commands received and forwarded to other devices or consumed by the matrix service.

*Website Service:* View recent activity related to the web interface.

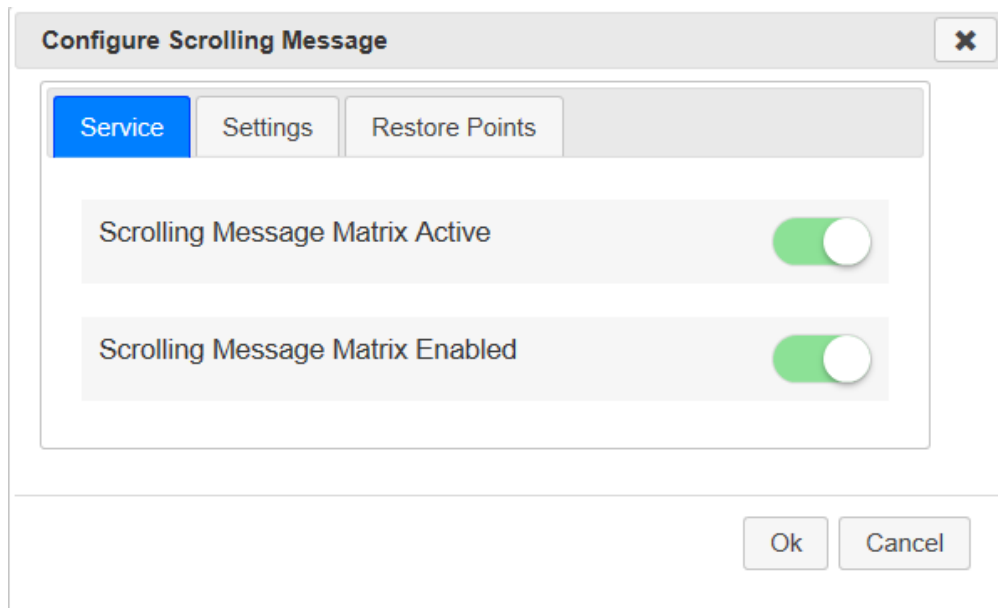
## Scrolling Message Matrix

These configuration options will only be applicable if your sign is equipped with a scrolling message display. If there is no display attached please ensure these services are disabled to avoid unnecessary processor utilization.



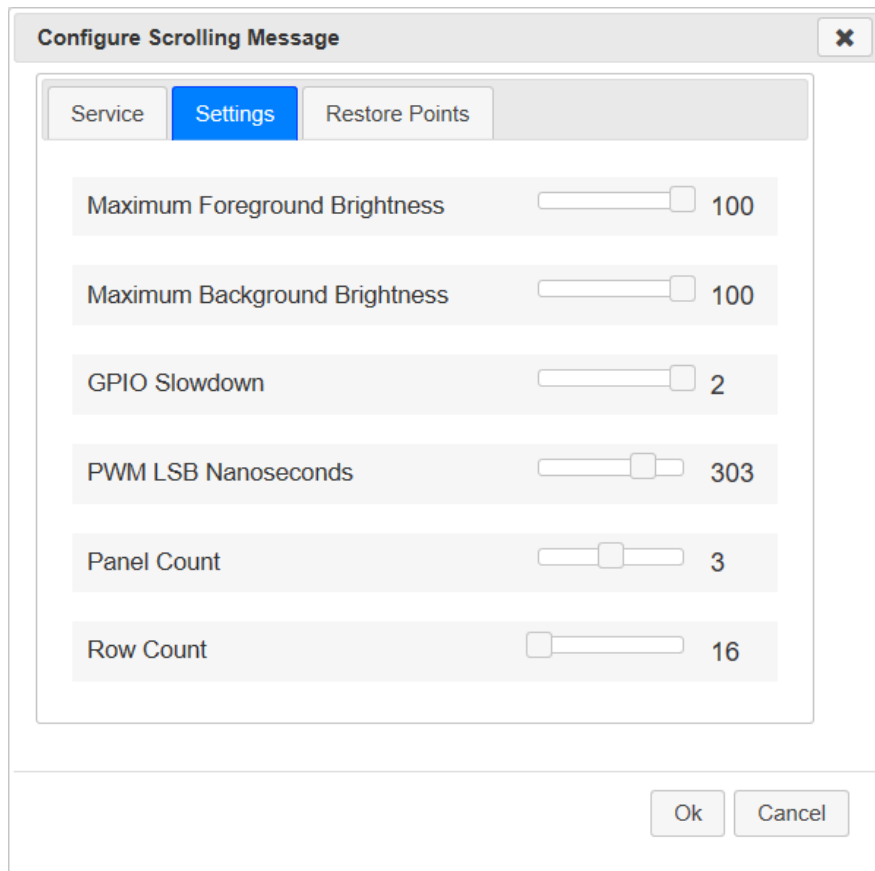
### Service Tab

To enable output on the scrolling message display, ensure the scrolling message matrix service is both Active and Enabled. The Active setting will enable or disable the display for the current boot. The Enabled setting will determine if the service is enabled at boot time by default.



### Settings Tab

Your display will be configured appropriately when shipped. The default settings for the 16Hx96W scrolling message display are as follows.



#### Maximum Foreground Brightness

How bright the foreground of any message is allowed to be. The global setting will override a setting in the message itself.

Example: If the global setting is set to 90 but a message has the foreground set to 100, the 90 value will be used.

#### Maximum Background Brightness

Similar to the setting above but applies to the background of any message.

#### GPIO Slowdown

Timing related settings to ensure proper operation of the display.

(Recommended Value: 2)

#### PWM LSB Nanoseconds

Timing related setting to ensure proper operation of the display.

(Recommended Value: 300)

#### Panel Count

How many RGB panels are in the HUB 75 chain.

#### Row Count

How many pixels high are the panels that make up your matrix display.

#### Multiplexing

Defines the multiplexing system used by the attached panels.

#### Row Addressing Type

Defines the row select behavior of the attached panels.



### Scan Mode

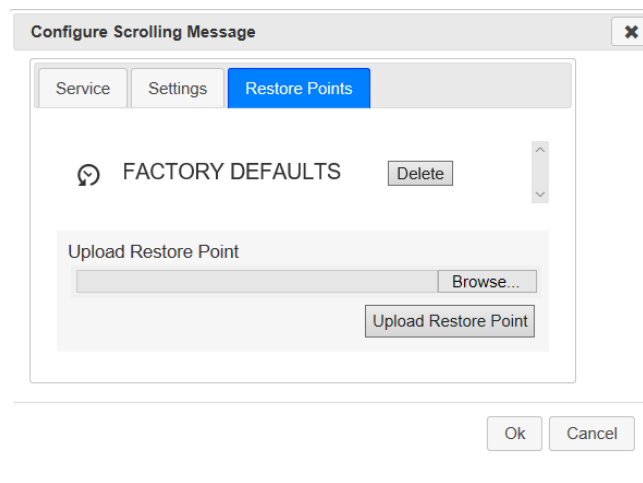
Define how the image will be refreshed.

### Row Count

Define a pixel mapper. For double height displays where you have two levels of panels you will need to specify the U Mapper, all single panel height displays should be set to default.

## Restore Points

The scrolling message control page allows you to create backups of your work on demand. These backups are called restore points and can be managed via this tab. To delete a restore point click the **Delete** button next to the restore point you wish to remove. To download a restore point for import into another device click the restore point name. To upload a restore point browse to a “.csbkp” file and click **Upload Restore Point**.



## Time Settings

Configure the current time, time zone, and NTP (Network Time Protocol) settings for the device.

### Broadcast Server Time

The network controller is configured to periodically broadcast the current time to all attached devices automatically, but this option allows you to force the broadcast.

### Time Zone

To easily set your time zone click the help icon to the right of the Time Zone dropdown. Pick your geographic location from the global map and the time zone will be set accordingly.

### Network Time

(Recommended Value: Enabled)

If enabled the current time will be retrieved from the time server provided.

(Recommended Time Server: pool.ntp.org or an internal time server on your network)

If disabled the device will maintain its own time using the on-board real time clock provided a CR1220 battery is properly installed. To set the initial time use the **“Set Server Time”** button to sync the device time with your client clock.

## Reboot

Force a reboot of the controller.



# The Scrolling Message

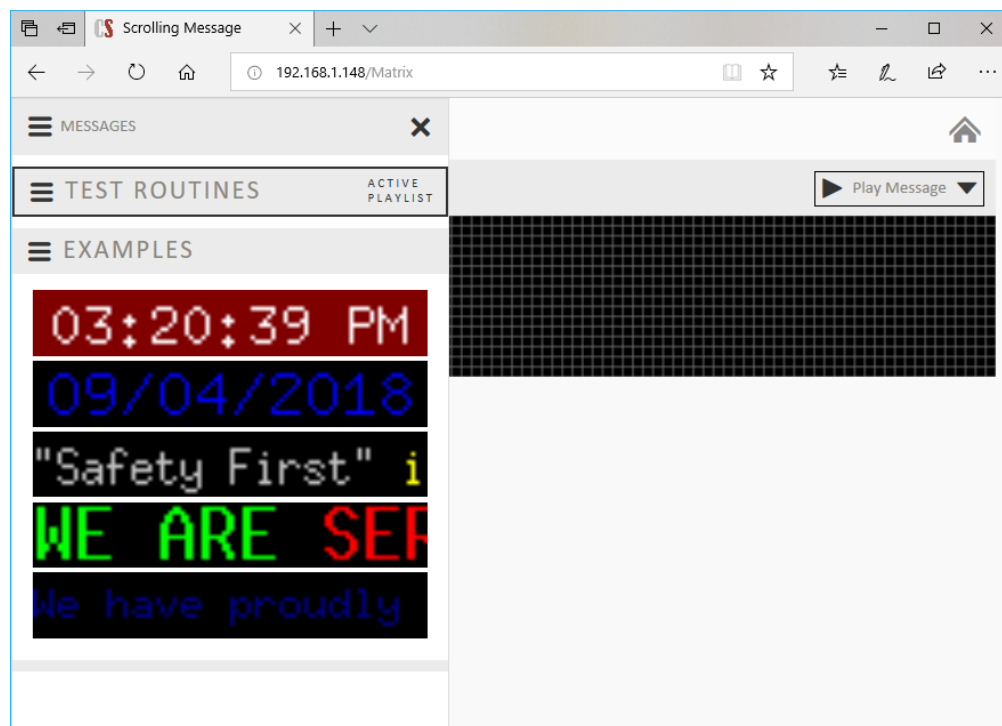
Once your scrolling message display is activated using the Service Settings in **Configuration | Scrolling Message Matrix** you will see a new header link appear on each of the network controller pages. Click this link from any page to manage your messages.



The software arranges items to display into messages and playlists. A message is a grouping of text segments or an image that will be shown on the display and is the basic unit of work. A playlist is a group of messages that will play starting with the first message in the playlist and following through in order to the last message in the playlist. Messages can be skipped according to a defined schedule so that certain messages in your playlist will only be played at certain times or days of the week. When the last message in a playlist has finished, playback will resume starting again with the first message in the playlist.

## Managing Messages

After clicking “Scrolling Message” you’ll be presented with the following screen which will show you all your playlists, and messages.



## New Playlist

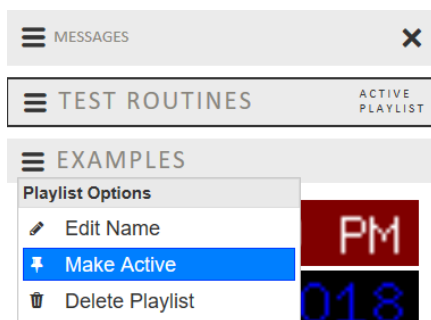
To add a new playlist, expand the playlist menu and choose New Playlist.

## Setting the Active Playlist

Only one playlist is active at any given time. The active playlist is the group of messages that will be cycled through until the active playlist is manually changed. You will probably find that a single playlist is enough for most use cases, but the option to define multiple playlists exists so that various sets of messages can be defined ahead of time and easily called up when needed.

**Note:** You may have one playlist that is your “go to” list and used most of the time, with several other playlists defined for use at certain times of the year for annual events like an annual safety week.

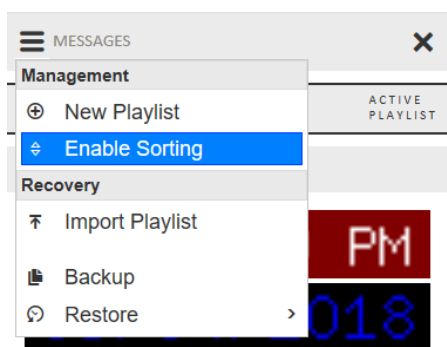
To set the active playlist expand the menu for the playlist you want to activate and choose **Make Active**



## Sorting Messages

Messages will play in sequential order within the playlist. To change the order in which messages appear, choose “Enable Sorting” from the top sidebar menu. You can now drag and drop your messages to define a new order.

**Note:** To move a message from one playlist to another, ensure both playlists are expanded and drag the message from one playlist to the desired location in the second list.



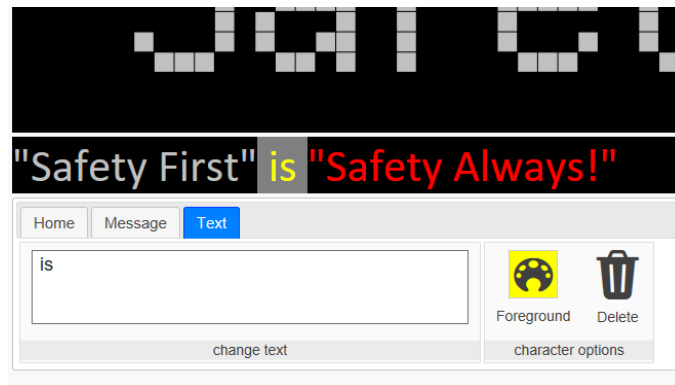
## Editing Messages

To edit a message, click on it from the side navigation menu. You will be presented with a preview window approximating what the message will look like when displayed.

Some message properties apply to the whole message, and some apply just to the text segment.

Options on the **Home** and **Message** tabs such as image, animation, schedule, background color, font, and brightness apply to the entire message. Settings such as foreground color can be set at the text segment level allowing multiple text colors to be defined in a single message.

Edit existing text by clicking on it in the text display window just under the preview window.



Make changes to the text in the 'change text' box, change the color or delete the text.

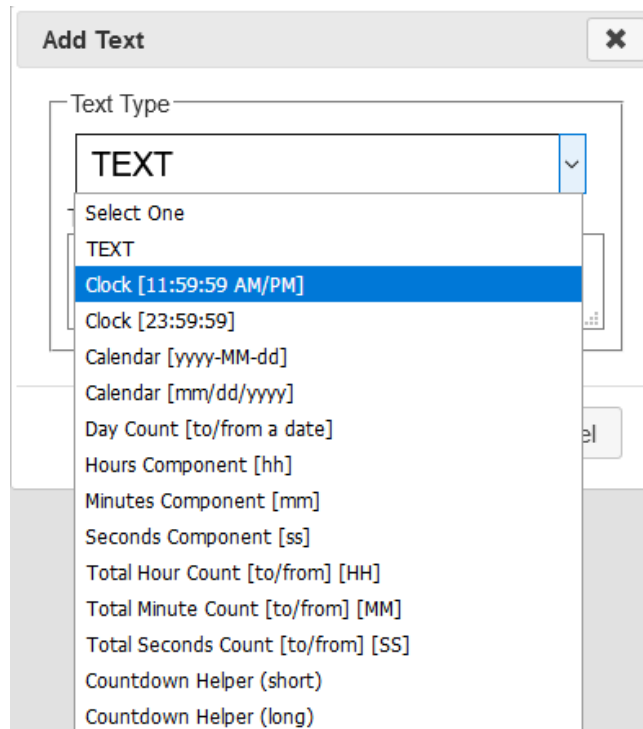
## Adding Text

To add text to your message, click the **Add Text** button. You will be presented with a dropdown for the type of text you want to add. The most common "TEXT" option represents a static text segment that will not change.

**Note:** To add the text **HELLO WORLD**, first add text *HELLO*. Then add another text element *WORLD*. Each word can then be colored. If you enter HELLO WORLD in a single Add Text operation, the entire phrase must be the same color.

## Dynamic Text Types

All text types other than **TEXT** will be dynamically updated as the message plays so you will see the current values update as appropriate.



The following is a listing of the various types of dynamic text and their function

*Clock [11:59:59 AM/PM] or [23:59:59]*

Insert the current time into a message

*Calendar [yyyy-MM-dd] or [mm/dd/yyyy]*

Insert the current date into the message

### *Day Count [to/from a date]*

Show the number of days to or from a provided date.

### *Hours Component [hh] / Minutes Component [mm] / Seconds Component [ss]*

Show component parts of total time (hours, minutes, or seconds) to or from a date.

**Example Usage:** “It has been [hh] hours [mm] minutes and [ss] seconds since our last accident

### *Total Hours Count [to/from] [HH] / Total Minute Count [to/from] [MM] / Total Seconds Count [to/from] [SS]*

Show total hours, minutes, or seconds to or from a date.

**Example Usage:** “It has been [hh] hours since our last accident

### *Countdown Helper (short) / Countdown Helper (long)*

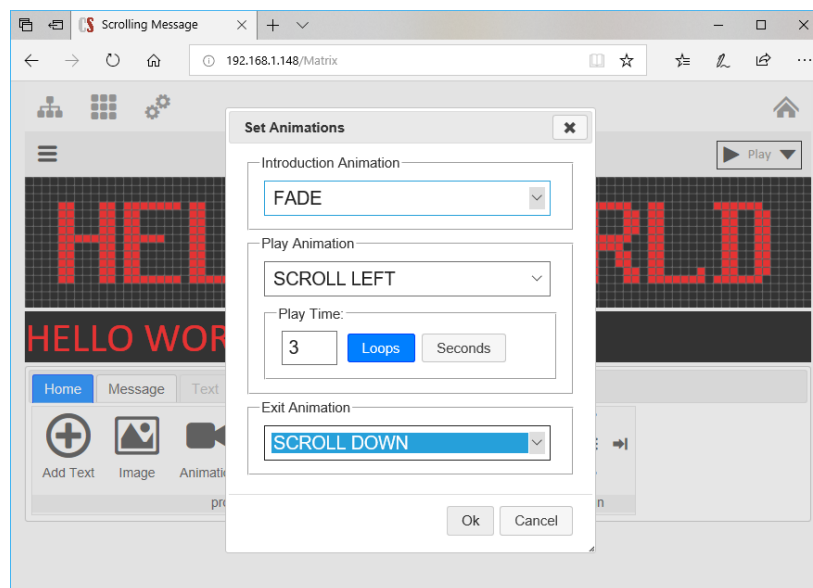
Helper options to insert common configurations at once.

**Example (short)** – DD:hh:mm:ss

**Example (Long)** – DD days hh hours mm minutes and ss seconds

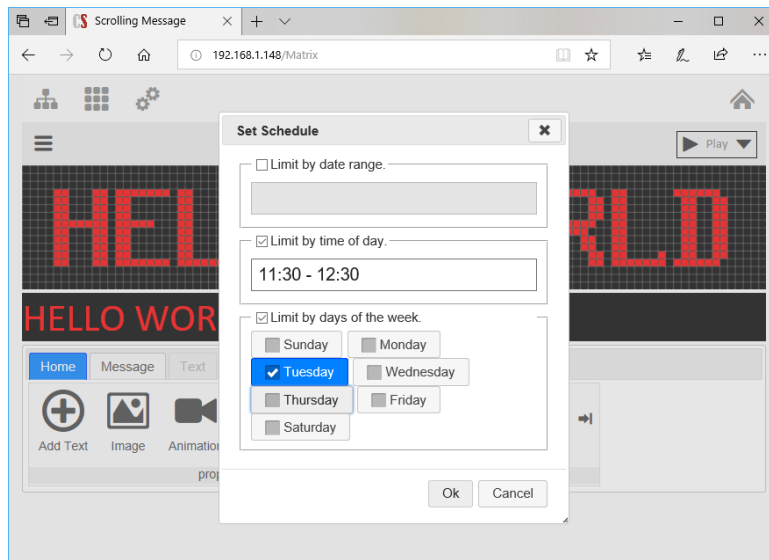
## Message Animation

Each message has three behaviors. The message appears with the **Introduction Animation**, it remains on the screen for a set number of loops or a set number of seconds cycling through a **Play Animation** and leaves the screen with an **Exit Animation**. For example, to have the text “Hello World” fade in, scroll left around the screen three times, and then scroll off the bottom of the screen the animation for the message as follows



## Scheduling Messages

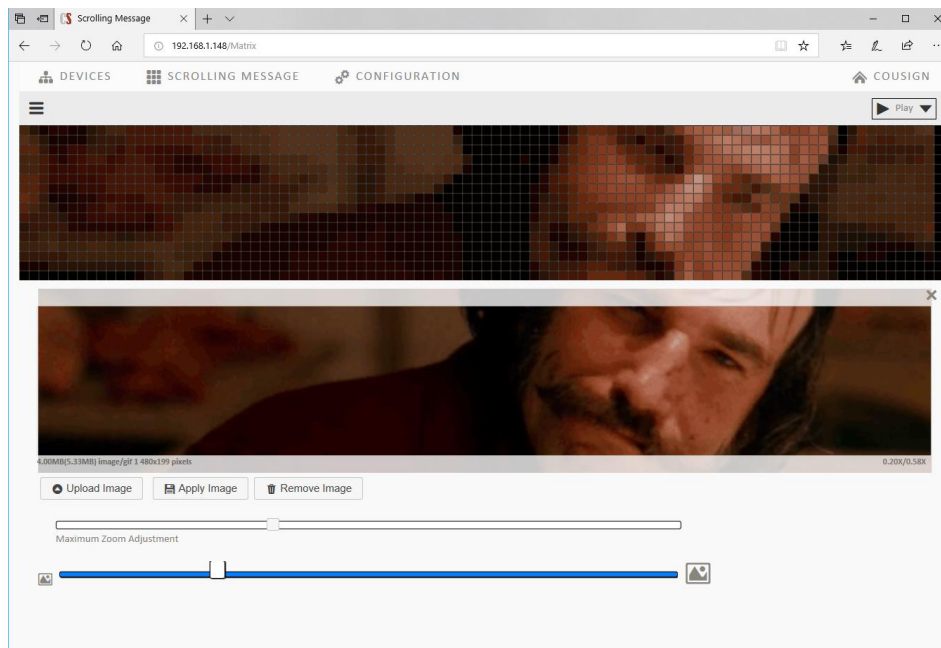
Before a message is displayed, the message is first checked to make sure all of its schedule criteria are met. If they are not met, the message will be skipped. You can ensure that messages only appear “in rotation” during certain times of the day, during a certain date range, only on certain days of the week, or any combination of these options. To ensure our “Hello World” message is only played on Tuesdays during lunch time we’ll configure the schedule as follows:



## Displaying Images

The scrolling message hardware is capable of displaying full color animated graphics. The controller software provides limited capabilities for zooming and cropping your own images to fit the display. The image tool will process static images, and animated gif files. To add an image to your message, click the image icon and upload your image. Use the zoom sliders and drag the image around until the you are happy with the result. Click “Apply Image” to see what the image will look like in the preview window.

**Note:** Only animated .gif playback is supported for animations. For static images you can upload .gif, .png, .jpg raster images which will be automatically converted to static gif images used by the controller.



**Note:** Locating images that will scale well to be displayed on such a small screen can be a challenge, but you may be surprised by some of the results that are possible. If you have a graphics team they may be able to create images specifically designed for such a small display.



## Scrolling Message Configuration via Remote Control

Some rudimentary functions of the scrolling message display can be configured with the IR remote control. Adding new simple text-based messages, editing messages including font size, foreground color, background color, changing animations, playlist selection, and several other options are available.

**Note:** Advanced options such as scheduling of messages, adding images, and reordering of messages *are not possible with the remote*. For this reason, we recommend using the web interface for all changes to the scrolling message display. If your company prohibits adding the controller to your network, this basic functionality of the display is still available.

Select the scrolling message display for control by using the **Device Select (NEXT/PREV)** buttons on the remote. When the scrolling message is selected for control it will flash a white border around the outside three times.

Upon selecting the display for control you will be entered into message selection mode. Press **UP/DOWN** to select the message you wish to alter.

Press **PROGRAM** on the remote to cycle through the top-level menus, when the menu you would like to enter is displayed press **(RE)SET** to select it.

### Add Message

Upon entering the add message menu, a white cursor will appear. Use the number/letter buttons on the remote keypad to cycle through the characters associated with that button. When the character you would like to choose is displayed press **ENTER** to advance the cursor forward. Continue entering characters until your message is complete. When finished press **PROGRAM** to lock in the text and move to the **Edit Message** menu. See details below for editing your new message.

**Note:** Press **(RE)SET** to move backward (backspace), and **ENTER** without selecting for space. Press **UP/DOWN** to move the cursor without affecting the entered text.

### Edit Message

Upon entering the edit message menu you'll be presented with a number of options to change the way the message is displayed. While in the edit message menu press **PROGRAM** at any time to cycle through the sub menu options below, and press **(RE)SET** to choose the displayed option.

**Note:** To move the cursor back and forth without deleting characters use the **UP/DOWN** buttons.

#### CHANGE FONT

Press **UP/DOWN** to cycle through the various font options. When your message is displayed in the font you would like choose **PROGRAM** to move to the next configuration option.

#### MOVE MESSAGE

Using the number pad buttons move the message around the display until you are happy with its location.

- (2) UP
- (4) LEFT
- (5) CENTER
- (6) RIGHT
- (8) DOWN

**Note:** This defines the start position of your message. If your message is longer than the display you can still set it up to scroll using the animation options in the RUN SETTINGS menu.

### TEXT COLOR

Press **UP/DOWN** buttons to cycle through the color options. When finished press **PROGRAM** to move to the next option.

### BACKGROUND COLOR

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

### CHAR FG COLOR (Advanced Usage)

You can change the color of a single character by first selecting it with the cursor in the main **Edit Message** menu. Once selected press program until **CHAR FG COLOR** is displayed on the screen. Press **(RE)SET** to choose the sub menu and then use the **UP/DOWN** buttons to alter the color of the single character. To repeat for another character return to the main menu by pressing **PROGRAM** until only your message and the cursor is visible on the display. Move the cursor with **UP/DOWN** and then access the **CHAR FG COLOR** menu again by pressing **PROGRAM**.

### FG BRIGHTNESS

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

### BG BRIGHTNESS

Press **UP/DOWN** buttons to cycle through the various color options. When finished press **PROGRAM** to move to the next option.

### RUN SETTINGS

Upon entering the menu you'll be presented with a prompt to select your *Intro Animation*. Use **UP/DOWN** to make your selection and then press **PROGRAM** to move to the next option. Repeat the process for *Play Animation* and then *Exit Animation*. Press **PROGRAM** again to be presented with the Display Mode prompt. Press **UP** to choose to display the message for X seconds or **DOWN** to loop X times. Use **UP/DOWN** to make your selection and **PROGRAM** to continue.

### SAVE

Press **(RE)SET** to **SAVE** the message.

### QUIT

Press **(RE)SET** to **QUIT** without making changes to the message.

## Delete Message

Press **(RE)SET** to delete the currently selected message or any other key to return to the message selection menu.

## Play Mode

When displayed press **(RE)SET** to resume playing of messages.

## Change Playlist

Press **UP/DOWN** buttons to select the active playlist. Press **(RE)SET** to select the playlist and begin playing.

# Scrolling Message Panel Configuration: P6 Single Line

Displays consisting of a total of 3 16x32 P6 panels arranged in a grid that is 1 panel high x 3 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	3
Row Count	<input type="range"/>	16
Multiplexing	<div>Direct</div>	
Row Addressing Type	<div>Default</div>	
Scan Mode	<div>Interlaced</div>	
Pixel Mapper Config	<div>Default</div>	

# Scrolling Message Panel Configuration: P10 Single Line Option 1

Displays consisting of a total of 5 16x32 P10 panels arranged in a grid that is 1 panel high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	5 *
Row Count	<input type="range"/>	16
Multiplexing	<div>Z Mirror Z Stripe ▾</div>	*
RGB Sequence	<div>Red Green Blue ▾</div>	*
Row Addressing Type	<div>Direct Row Select ▾</div>	*
Scan Mode	<div>Interlaced ▾</div>	
Pixel Mapper Config	<div>Default ▾</div>	*

## Scrolling Message Panel Configuration: P10 Single Line Option 2

Displays consisting of a total of 5 16x32 P10 panels arranged in a grid that is 1 panel high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	5 *
Row Count	<input type="range"/>	16
Multiplexing	<div>Spiral ▼</div>	*
RGB Sequence	<div>Red Green Blue ▼</div>	*
Row Addressing Type	<div>Direct Row Select ▼</div>	*
Scan Mode	<div>Interlaced ▼</div>	
Pixel Mapper Config	<div>Default ▼</div>	*

## Scrolling Message Panel Configuration: P10 Single Line Option 3

Displays consisting of a total of 5 16x32 P10 panels arranged in a grid that is 1 panel high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	5 *
Row Count	<input type="range"/>	16
Multiplexing	<input type="text" value="Inversed Z Stripe"/>	*
RGB Sequence	<input type="text" value="Blue Green Red"/>	*
Row Addressing Type	<input type="text" value="Default"/>	*
Scan Mode	<input type="text" value="Interlaced"/>	
Pixel Mapper Config	<input type="text" value="Default"/>	*

# Scrolling Message Panel Configuration: P10 Two Line Option 1

Displays consisting of a total of 10 Outdoor 16x32 P10 panels arranged in a grid that is 2 panels high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	10 *
Row Count	<input type="range"/>	16
Multiplexing	<div>Z Mirror Z Stripe ▾</div>	*
RGB Sequence	<div>Red Green Blue ▾</div>	*
Row Addressing Type	<div>Direct Row Select ▾</div>	*
Scan Mode	<div>Interlaced ▾</div>	
Pixel Mapper Config	<div>U Mapper ▾</div>	*

## Scrolling Message Panel Configuration: P10 Two Line Option 2

Displays consisting of a total of 10 Outdoor 16x32 P10 panels arranged in a grid that is 2 panels high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	10 *
Row Count	<input type="range"/>	16
Multiplexing	<div>Spiral ▼</div>	*
RGB Sequence	<div>Red Green Blue ▼</div>	*
Row Addressing Type	<div>Direct Row Select ▼</div>	*
Scan Mode	<div>Interlaced ▼</div>	
Pixel Mapper Config	<div>U Mapper ▼</div>	*



## Scrolling Message Panel Configuration: P10 Two Line Option 3

Displays consisting of a total of 10 Outdoor 16x32 P10 panels arranged in a grid that is 2 panels high x 5 panels wide

Maximum Foreground Brightness	<input type="range"/>	100
Maximum Background Brightness	<input type="range"/>	100
GPIO Slowdown	<input type="range"/>	2
PWM LSB Nanoseconds	<input type="range"/>	300
Panel Count	<input type="range"/>	10 *
Row Count	<input type="range"/>	16
Multiplexing	Inversed Z Stripe ▾ *	
RGB Sequence	Blue Green Red ▾ *	
Row Addressing Type	Default ▾ *	
Scan Mode	Interlaced ▾	
Pixel Mapper Config	U Mapper ▾ *	