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cousign

FLEX MATRIX DISPLAY

OPERATING INSTRUCTIONS FOR THE FLEX MATRIX DISPLAY

Document Version 1.30 – 6/19/2024

Contents

Flex Matrix Display Overview

The Flex Matrix module is a versatile display which can be configured for several modes of operation.

Mode	Application	Notable Features
Day Counter	Count days since an event Count days until an event	Color change when a value is exceeded Count multiple settings allows for flexible counting. For example, the hour counter can count every X hours to count shifts.
Hour Counter	Count hours to/from an event	
Minute Counter	Count minutes to/from an event	
Second Counter	Count seconds to/from an event	
Level Gauge (Goal Completion)	Show Goal Progress, percent complete	Define a goal and show if that goal has been reached or exceeded
Static Display	Show static text.	Show static text, programable colors, price display, any alphanumeric characters and some symbols supported ($ # @ - .)
Clock	Show the current time	A variety of display modes such as HH:MM:SS , Day HH:MM:SS, AM/PM or 24 hour formats
Calendar	Show the current date	A variety of display modes are available including MM/DD/YYYY, YYYY-MM-DD
Clock/Calendar	Show both current time and date	
DB Meter[-1]	Display the current sound pressure level in dB	Flexible display modes
Temperature/Humidity Display[-1]	Alternate Temperature/Humidity display	Requires additional sensor
Temperature Display[-1]	Show the current temperature in Fahrenheit or Celsius	Flexible display modes Display in °C / °F
Humidity Display[-1]	Show the current humidity	Flexible display modes
Heat Index Display[-1]	Show the current Heat Index	Appendix: Heat Index Calculation
Timer	Count up or down from a specified time. Reset to defined count or pause.	Flexible configuration options
Date Difference	Display the timespan between a target date and the current date	Will show the time between the current date/time and a past or present date. Calculations considers leap years, etc. Target date must be after 1/1/2000

requires additional sensor[-1]

Selecting your Display

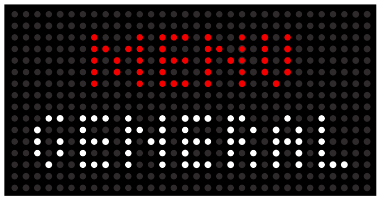
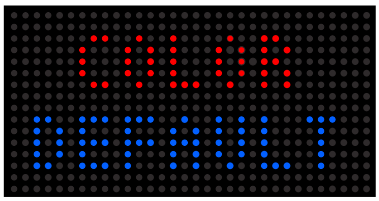
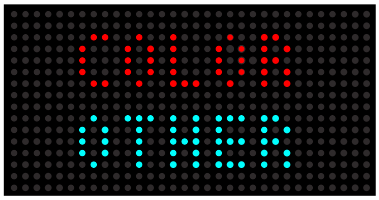
Your sign may contain multiple displays of various kinds. To select your flex matrix with the remote control, press the **NEXT** or **PREV** buttons to navigate to the display you wish to control. The currently selected display will flash to let you know it is listening to the remote control.

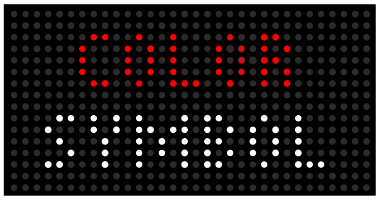
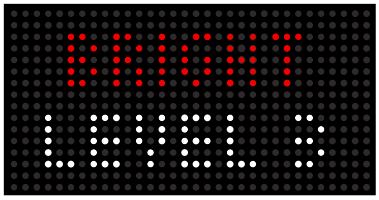
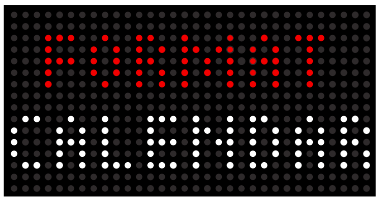
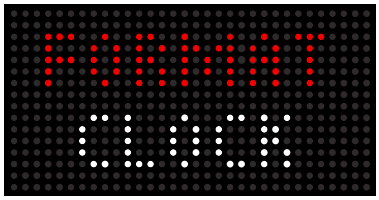
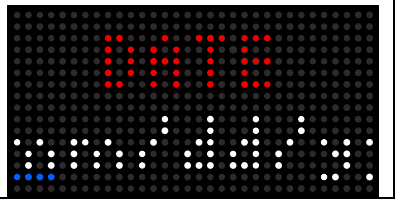
See relevant keys in **blue.** The two sets of buttons **PREV/NEXT** and **DEVICE +/-** are equivalent.

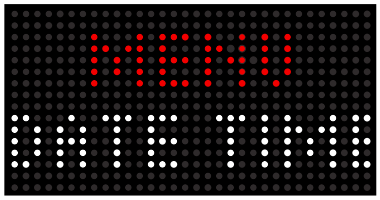
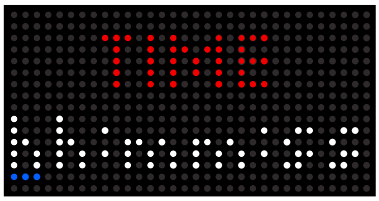
General Settings

Your flex matrix display allows for configuration of many settings arranged in various menus. To access these settings with the remote press **PROGRAM**. You can then choose a menu using the **LEFT** or **RIGHT** arrows.

When the desired menu is displayed, press **OK** to enter the menu.

Menu	Sub Menu	Notes	
General Settings 	Default Color (Default)	Set the default color for text displayed. This is the primary color your text will be displayed in **UP/DOWN** to adjust, **OK** to continue	
	Alternate Color (Other)	Set the alternate color for text displayed Some display modes make use of the alternate color to make certain information stand out. Choose a complementary color to your default color or for a monochromatic display choose the	

		same color as your default color. **UP**/**DOWN** to adjust, **OK** to continue	
	Symbol Color (Symbol)	Set the color for symbols such as . / : - $, etc This will cause symbols to stand out. If you prefer a monochromatic display, you may choose the same color as your default color. **UP**/**DOWN** to adjust, **OK** to continue	
	Brightness (5 Levels)	Define display brightness **UP**/**DOWN** to adjust, **OK** to continue	
	Calendar Format[-1]	Set the display format for showing the date portion of the current date/time **UP**/**DOWN** to adjust, **OK** to continue	
	Clock Format[-1]	Set the clock format when displaying the current time **UP**/**DOWN** to adjust, **OK** to continue	
	Current Date	Enter the current date using numeric keypad. When finished press **OK** **LEFT/RIGHT** to navigate if you make a mistake	

Date/Time Settings[-1] 	Current Time	Enter the current time in **24-hour format** using the numeric keypad. When finished press **OK**.	
Mode Settings[-1] 	Varies by Mode	If a mode specific menu is available for the current mode, it will display in the menu list. Press **OK** to enter menu	Mode specific settings are not available for all modes. If no menu appears the current mode does not have a settings menu.

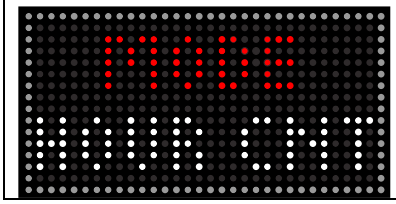
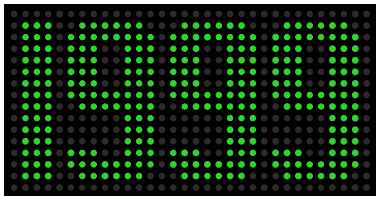
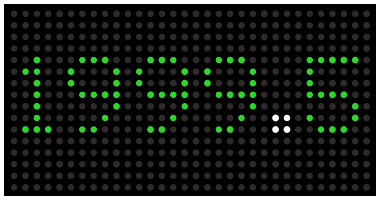
[-1] Only available if applicable for current mode

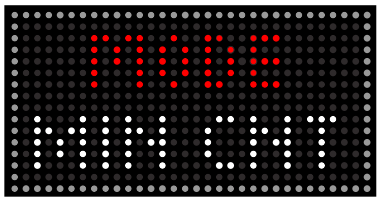
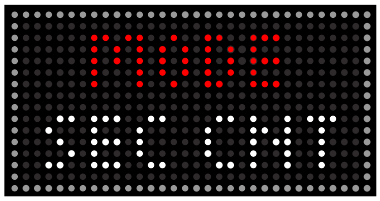
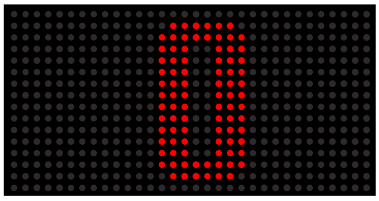
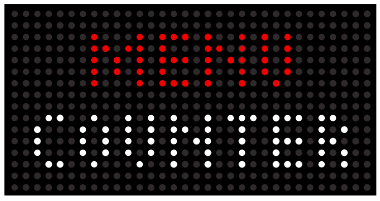
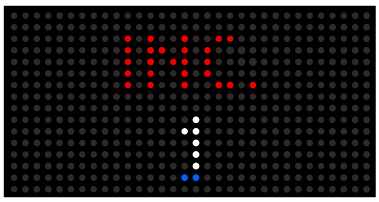
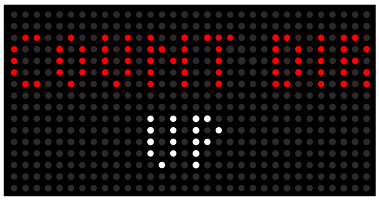
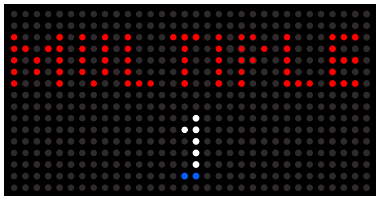
Mode Specific Configuration

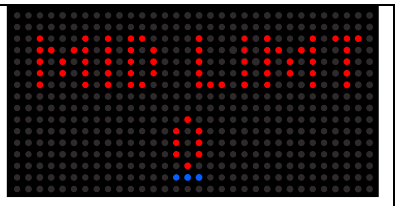
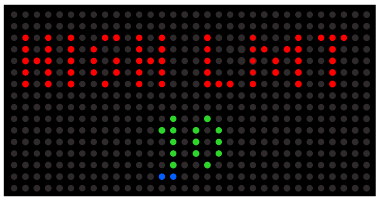
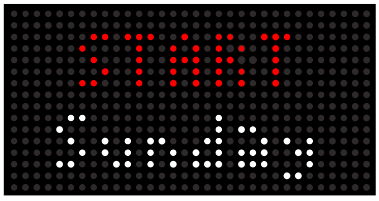
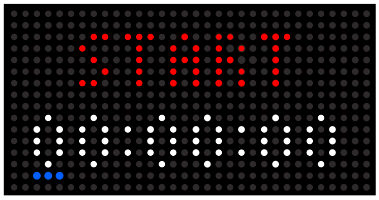
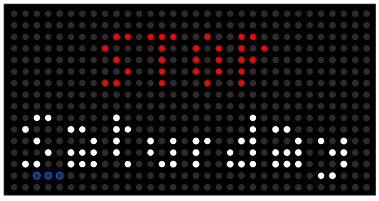
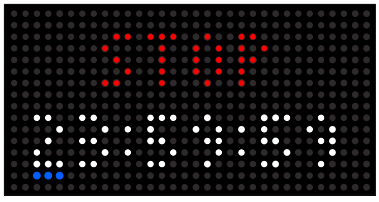
The mode for each of your displays will be configured for your sign at the factory. For details on how to change the mode and other low-level functionality of your display please see Base Menu.

When your display is powered on it will enter normal operation. To navigate to a different menu, start by pressing **PROGRAM** followed by **LEFT / RIGHT** to make a menu selection and finally **OK** to enter the chosen menu. Navigate the menu using the key presses defined in the **Options** column

Day/Hour/Minute/Second Counter

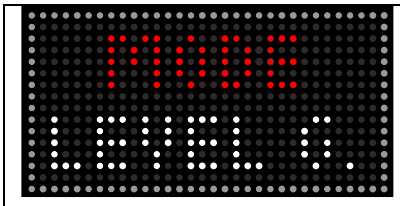
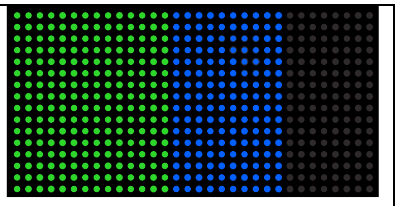
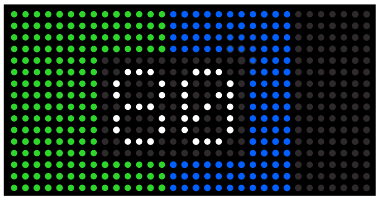
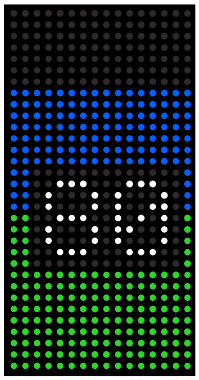
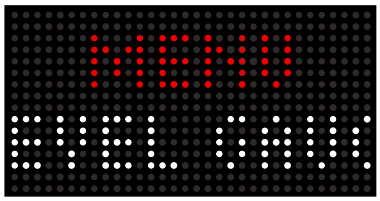
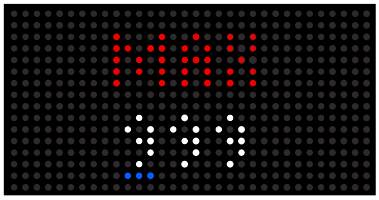
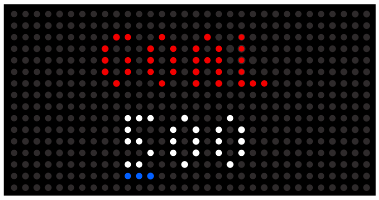
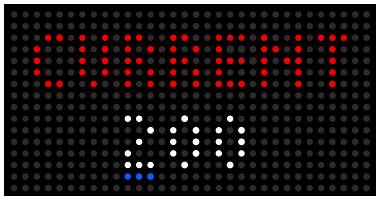
Menu	Screen	Options	Example Screen
Normal Operation Day Counter  Hour Counter 		**OK/RESET** Reset the current count to 0 **UP/DOWN** Adjust the current count **LEFT/RIGHT** Adjust Display Format 1999 1999.5 1999.51 **Number Pad**	**Example: 16x32 Display**  

Minute Counter  Second Counter 		Enter a new count **PROGRAM** Navigate to a programming menu	 
Mode Specific Menu 	**Increment** The amount to count up or down by at each count interval. **Default**: 1	**LEFT/RIGHT** Navigate **Number Pad** Enter value	
	Count Direction. **Default**: UP	**UP/DOWN** Adjust value UP DOWN OFF	
	Count Multiple Define how many intervals should pass before incrementing the count. **Example**: An hour counter to increment by 1 every 12 hours to count the number of 12-hour shifts. Multiple = 12. **Default**: 1	**LEFT/RIGHT** Navigate **Number Pad** Enter value	
	Mid Limit Show numbers greater than or equal to this number in the specified color	**UP/DOWN** Adjust Color **LEFT/RIGHT**	

	Default: 0 / Red By default, numbers 0-9 will display as red.	Navigate **Number Pad** Enter value	
	High Limit Show numbers greater than equal to this number in the specified color Default: 10 / Green By default, numbers 10 and greater will display as green	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate **Number Pad** Enter value	
	Start Day Define the day to start counting. **Default**: Sunday	**UP/DOWN** Adjust value	
	Start Time Time to start counting **Default**: 00:00:00 (Midnight)	**LEFT/RIGHT** Navigate **Number Pad** Enter value hh:mm:ss	
	Stop Day Day to stop counting **Default**: Saturday		
	Stop Time **Default**: 23:59:59	**LEFT/RIGHT** Navigate **Number Pad** Enter value hh:mm:ss	

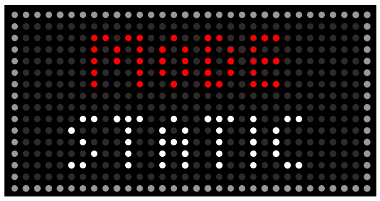
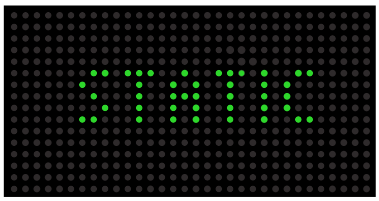
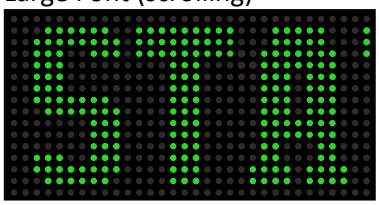
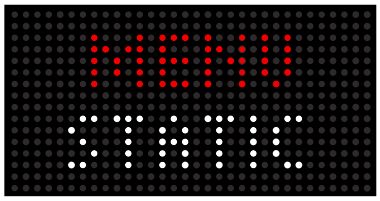
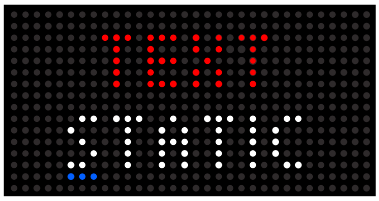
Level Gauge/Goal Completion

Menu	Screen	Options	Example Screen
Normal Operation		**UP/DOWN** Adjust Level	**Example: 16x32 Display**

		**LEFT/RIGHT** Adjust Label None Value Percent Right Angle Value	  
Level Gauge Settings **Enter settings menu by pressing** **PROGRAM, PROGRAM, OK** 	**Maximum** Maximum value. **Note**: For 0 to 100% use 100. For % complete of a total X, then enter X	**LEFT/RIGHT** Navigate Number **Number Pad** Enter Number (up to 999)	
	Goal Set a goal. When the display reaches the goal, any lines above the goal will display in the alternate color **Note**: If you do not wish to display a goal, set this value equal to the maximum value	**LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	
	Current Set your current value.	**LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	

Static Display

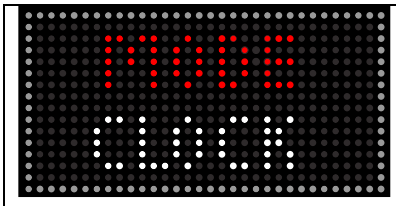
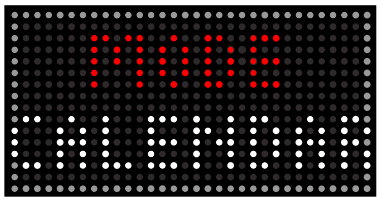
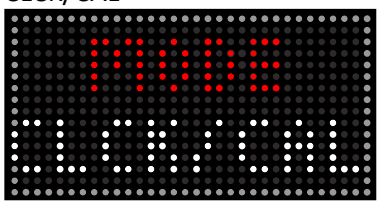
Display a static text message on the screen.

Menu	Screen	Options	Example Screen
Normal Operation 		**LEFT/RIGHT** Scroll Mode **FIT:** Display in largest possible while ensuring text fits on screen **LEFT:** Scroll left **BOUNCE:** Scroll left off screen, scroll right off screen **UP/DOWN** Adjust font size **Note**: If the text is too large to fit on the screen it will scroll left/right	**Example: 16x32 Display**  Large Font (scrolling) 
	Set the text to be displayed	**LEFT/RIGHT** Move cursor **Number Pad** Multiple presses to set character. **OK** Accept changes	

Clock/Calendar

Options for displaying the current time, date, or both. Many display formats to choose from.

Menu	Screen	Options	Example Screen
Normal Operation CLOCK		**LEFT/RIGHT** Adjust Display Format **Note**: Clock and Calendar Formats can also be set in	**Example: 16x32 Display**

 CALENDAR  CLCK/CAL 		the General Settings Menu.	
Advanced Feature: Date Time Offsets will allow for displaying a date X days,hours,minutes in the past or future.			

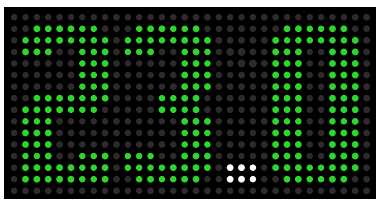
Decibel Meter

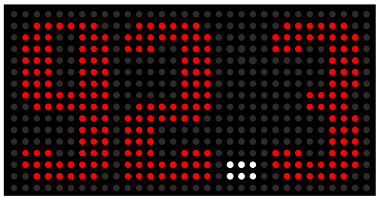
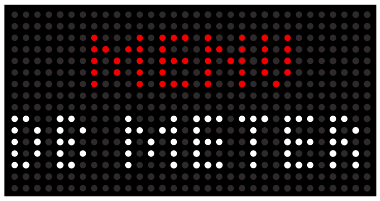
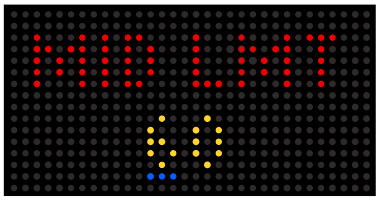
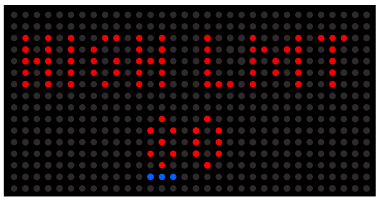
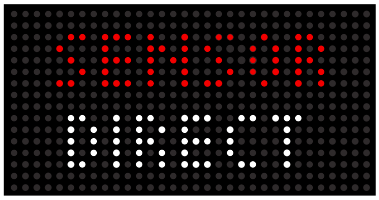
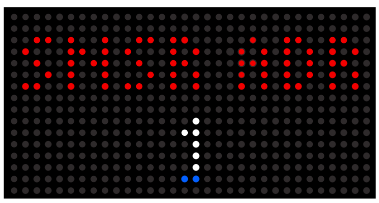
Decibel Meter / Sound Pressure Level Meter

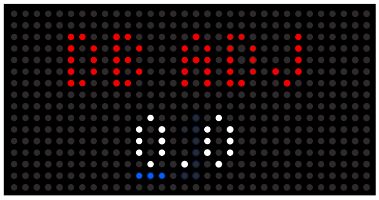
The decibel meter display will show the current DB reading for the environment immediately around your sign. The display can be configured to show the value in different colors based on the reading.

Note: This functionality requires a supported sensor to be attached.

Accuracy Note: Decibel readings may fluctuate significantly depending on environmental conditions. While we attempt to make the reading accurate, they are not meant to be exact. This is a display to draw attention to the need for hearing protection only. Please use an industrial grade SPL meter for accurate readings of environmental sound pressure.

Menu	Screen	Options	Example Screen
Normal Operation 		**UP/DOWN** Adjust Display Type 36 36.5 36 dB 35.5 dB	**Example: 16x32 Display** 

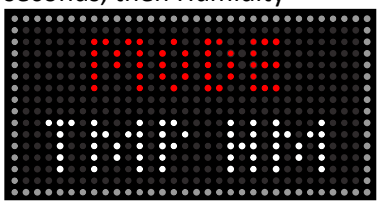
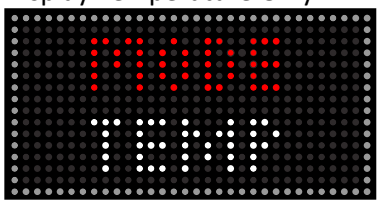
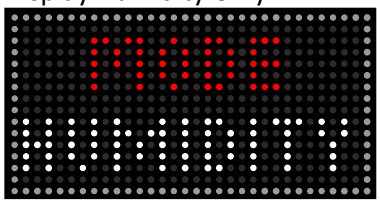
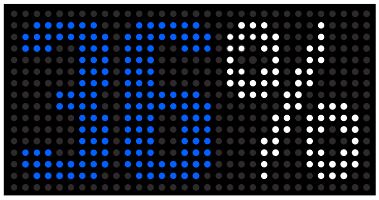
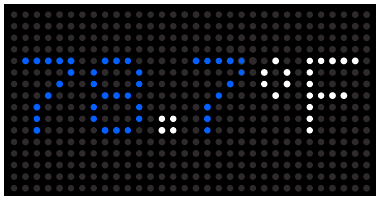
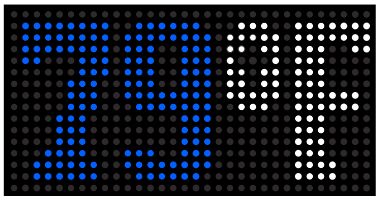
			 
Decibel Meter Settings **Enter settings menu by pressing** **PROGRAM, PROGRAM, OK** 	**Mid Limit** Values at or over the limit will display in the selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	
	High Limit Values at or over the set limit will display in selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	
	Sensor Define Attached Sensor	**UP/DOWN** Select Sensor DIRECT AUX	
	Sensor Address Define Address of Attached Sensor	**UP/DOWN** Select Address Default: 1	

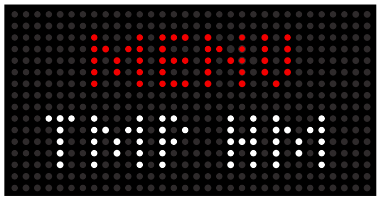
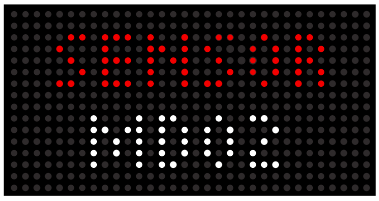
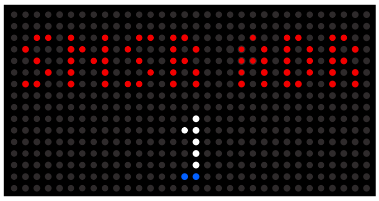
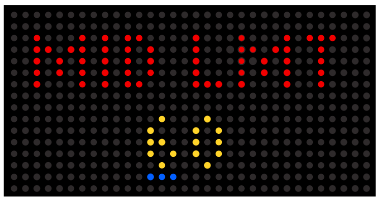
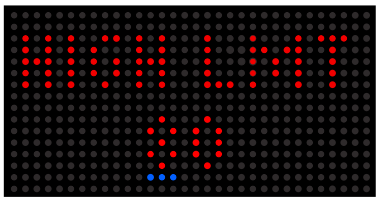
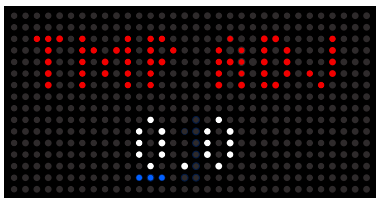
	Decibel Adjust Add a value to raw sensor value before being displayed	Enter a value using the numeric keys. Navigate with **LEFT / RIGHT** Add negative sign or decimal by pressing 0 multiple times	

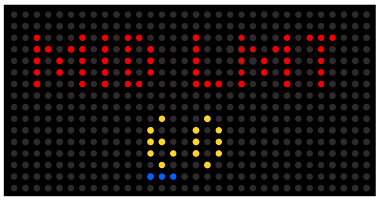
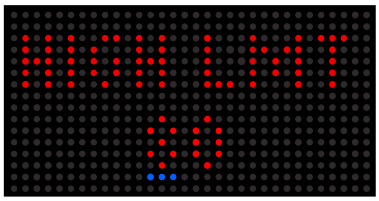
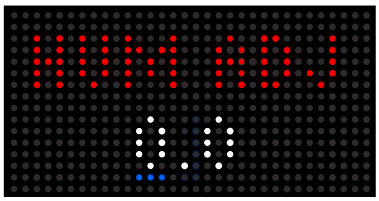
Temperature/Humidity/Heat Index

Several modes are available to support displaying the current Temperature or Humidity.

Note: This functionality requires a supported temperature/humidity sensor to be attached to at least one display on your sign

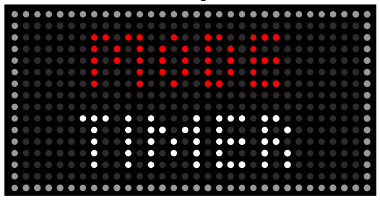
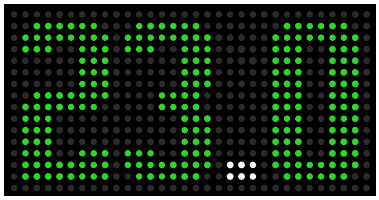
Menu	Screen	Options	Example Screen
Normal Operation Modes: **TMP HM** Display Temperature for 30 seconds, then Humidity  **TEMP** Display Temperature Only  **HUMIDITY** Display Humidity Only  **HEAT INDX** Display the heat index based		**UP/DOWN** Adjust Display Type 36 36.5 36 %/C/F 35.5 %/C/F **OK** Toggle Celsius / Fahrenheit	**Example: 16x32 Display**   

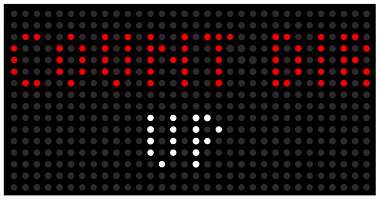
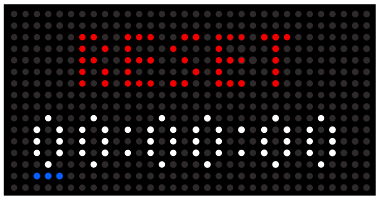
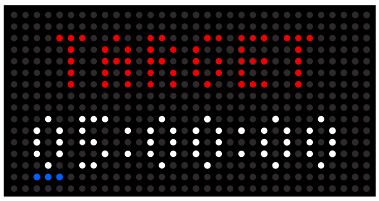
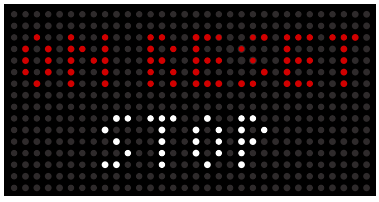
on the temperature and humidity readings availably to this display.			
Temperature Humidity Settings **Enter settings menu by pressing** **PROGRAM, PROGRAM, OK** 	**Sensor** Define Attached Sensor See: Temperature Sensors	**UP/DOWN** Select Sensor MODBUS MB SWAP XYMD02 MD02 B CAST	
	Sensor Address Define Address of Attached Sensor	**UP/DOWN** Select Address Default: 1	
	Temperature Mid Limit Values at or over the limit will display in the selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	 **TMP MID**
	Temperature High Limit Values at or over the set limit will display in selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	 **TMP HI**
	Temperature Adjust Add a value to raw sensor value before being displayed	Enter a value using the numeric keys. Navigate with **LEFT / RIGHT** Add negative sign or decimal by pressing 0 multiple times	

	Humidity Mid Limit Values at or over the limit will display in the selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	 **HUM MID**
	Humidity High Limit Values at or over the set limit will display in selected color	**UP/DOWN** Adjust Color **LEFT/RIGHT** Navigate Number **Number Pad** Enter Number	 **HUM HI**
	Humidity Adjust Add a value to raw sensor value before being displayed.	Enter a value using the numeric keys. Navigate with **LEFT / RIGHT** Add negative sign or decimal by pressing 0 multiple times	

Timer

The timer mode allows you to define a start time, target time and count up or down from the start time toward the target time. You have the option to choose what happens when the target time is reached. You can either continue to count past the number in a different color, or you can stop counting at the target number. You also have the option to choose the desired behavior of the **OK/RESET** button. When pressed the reset button can cause the timer to reset to the target time, or pause the timer (resume by pressing OK/RESET again, reset by pressing UP/DOWN or Long Pressing OK/Reset)

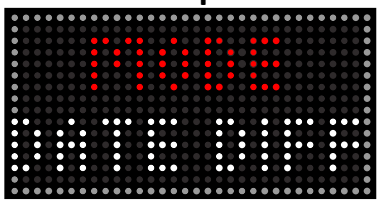
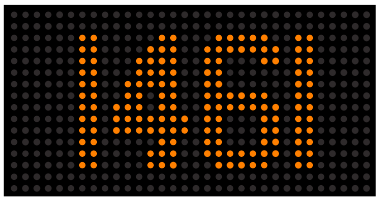
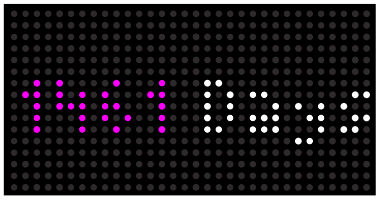
Menu	Screen	Options	Example Screen
Normal Operation 		**OK** Start / Pause / Resume when Reset Behavior = PAUSE or Start / Stop / Reset when Reset Behavior = STOP **UP/DOWN**	**Example: 16x32 Display**  Example: 16x64 Display

		Reset Timer to configured Start Time **LEFT/RIGHT** Adjust display type	
Timer Settings **Enter settings menu by pressing** **PROGRAM, PROGRAM, OK** 	**Count Direction** Direction to count	**UP** Count up from start time **DOWN** Count down from start time	
	Reset Time Time to reset to when OK/Reset is pressed	HH:MM:SS	
	Target Time Time to count toward	HH:MM:SS	
	At Target Behavior What to do when target is reached?	**CONTINUE**: Continue counting past the target time. Count will display in alternate color after exceeding target. **STOP**: Stop counting at the target time	
	On Reset Behavior What to do when **OK/RESET** is pushed?	**STOP**: **OK** will cause the timer to top. Second **OK** will reset the timer to start time. **PAUSE**: **OK** will cause the timer to pause. Second **OK** will resume counting from time displayed. To reset the time to	

		start time, **LONG PRESS OK** or press **UP/DOWN**	

Date Difference

The date difference mode allows you to define a target date and show the timespan between today's date and the target date. Various display options are available to show the timespan including options for days only, days with a label, years months days and others.

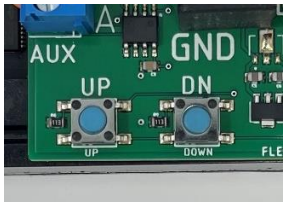
Menu	Screen	Options	Example Screen
Normal Operation 		**OK** Set the target date **LEFT/RIGHT** Change the display type	**Example: 16x32 Display**  1461 total days between current time and target date  4 years 0 months 0 days  Example: 16x64 Display  12 years, 0 months and 24 days 

Base Menu

The flex matrix control board can drive many different types of RGB panels and operate in various modes. The base menu provides access to these low-level settings.

These settings will be configured at the factory and should not need to be adjusted. Adjusting these settings can result in the display becoming unreadable. Please do not change these settings unless instructed to do so.

Entering the Base Menu



Circuit Board

LONG PRESS UP to enter the menu

QUICK PRESS UP or DOWN to adjust current setting

LONG PRESS UP to advance to the next option.

QUICK PRESS
Push the button and release quickly.

LONG PRESS
Push the button and keep it depressed for at least **THREE** seconds, then release.

Remote Control

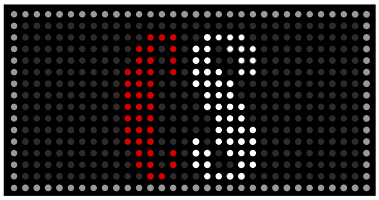
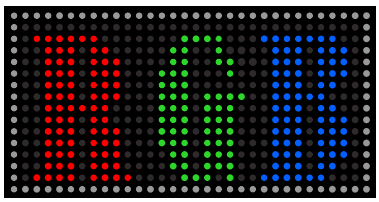
To enter the menu, press the unlabeled button in the upper left corner of the remote, just below the “Down” button

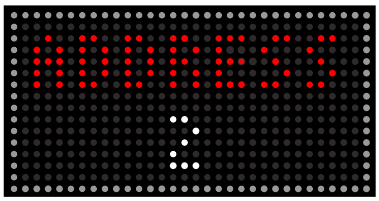
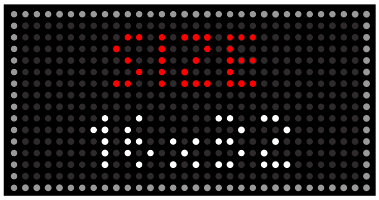
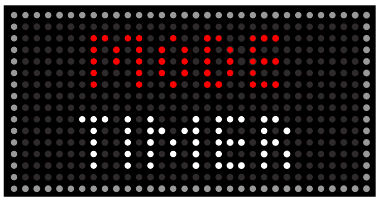
Press **UP** or **DOWN** to adjust the current setting

Press **OK** to advance to the next option

Note: Settings other than mode can only be set using the push buttons on the circuit board. When using the remote you will see the current value but not be able to change it

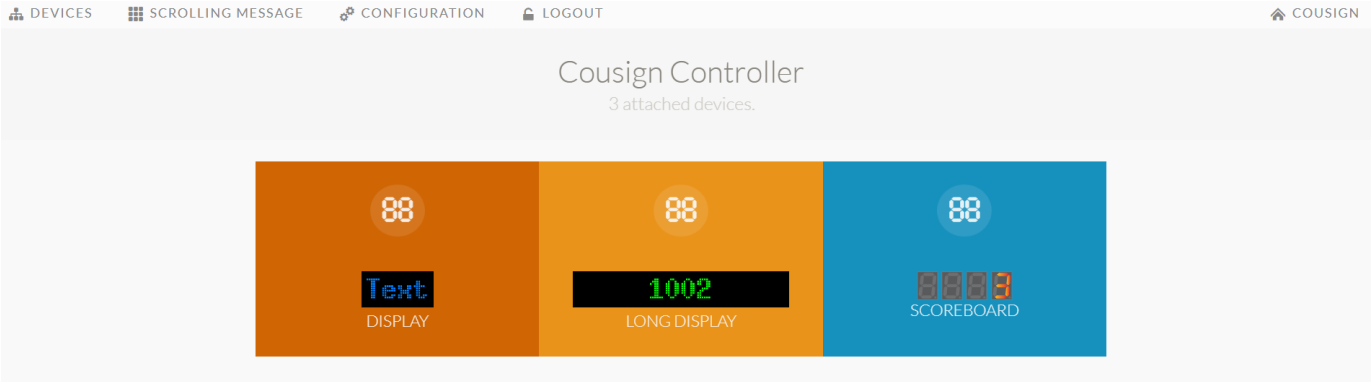
Base Menu Options

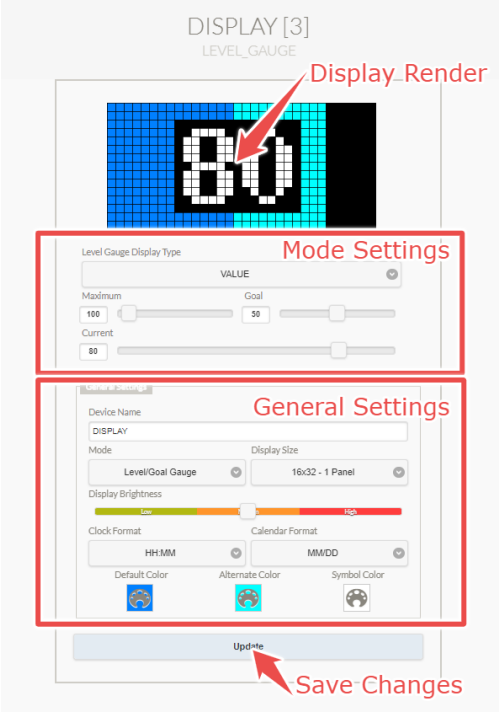
Panel Type	Flex Matrix supports a variety of different RGB panel types. The display will appear garbled and illegible until the correct panel type is selected. **UP/DOWN** to cycle through panel options until the “CS” logo appears correctly. Incorrect options will appear garbled.	
RGB Order	Define the order that red, green, blue values are sent to the display. **UP/DOWN** to cycle through options until the R appears red, G is green, and B is blue	

Address	Each display on your sign must be configured with a unique address to ensure the remote and network control options can function correctly. **UP/DOWN** to choose an address from 1 to 50	
Display Size	The flex matrix supports several sizes of screens including 16x32, 16x64, and 16x96 pixels. **UP/DOWN** to choose a display size until the border extends completely around the perimeter of your display.	
Mode	Choose your mode of operation **UP/DOWN** to choose your desired mode of operation.	

Network Controller

If your sign is outfitted with a network controller you can more easily make changes to your display via the network controller webpage. Your Flex Matrix display will show in device list. Click the controller to select it.



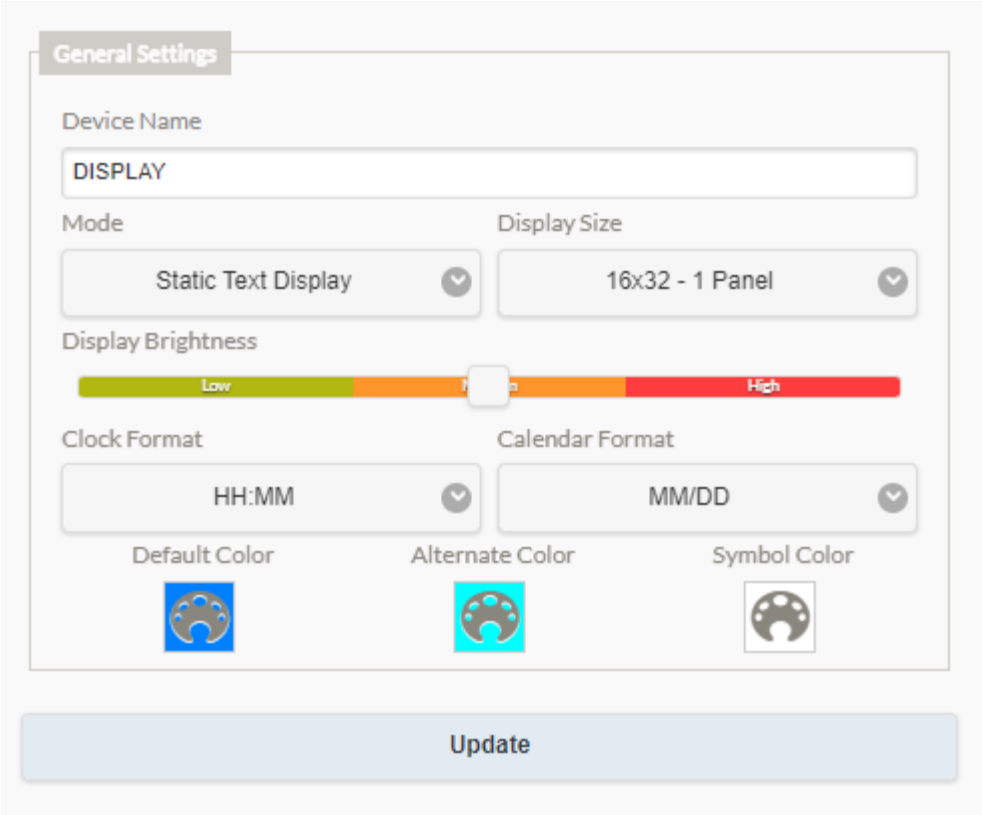


Display Render

The display render area provides some visual cues about how the display will appear based on your selections. This is a rough guide only and will not be accurate in all scenarios. Save your changes and refer to the physical display for exact appearance.

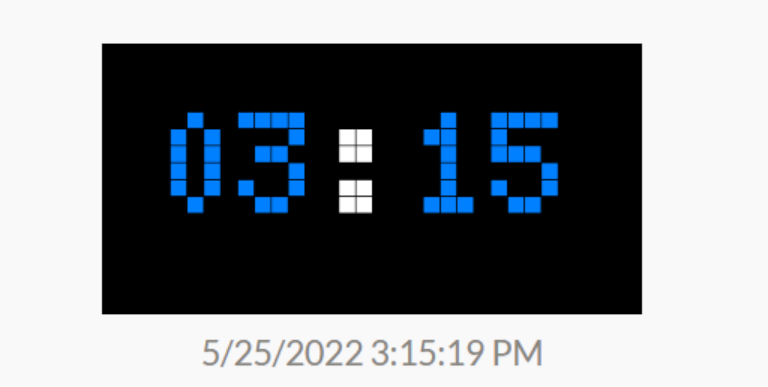
General Settings:

General Settings apply regardless of the mode your flex matrix display is operating in. General settings include a name for the device, brightness, display size, and text color options. Additional mode specific settings will be displayed above the general settings section.



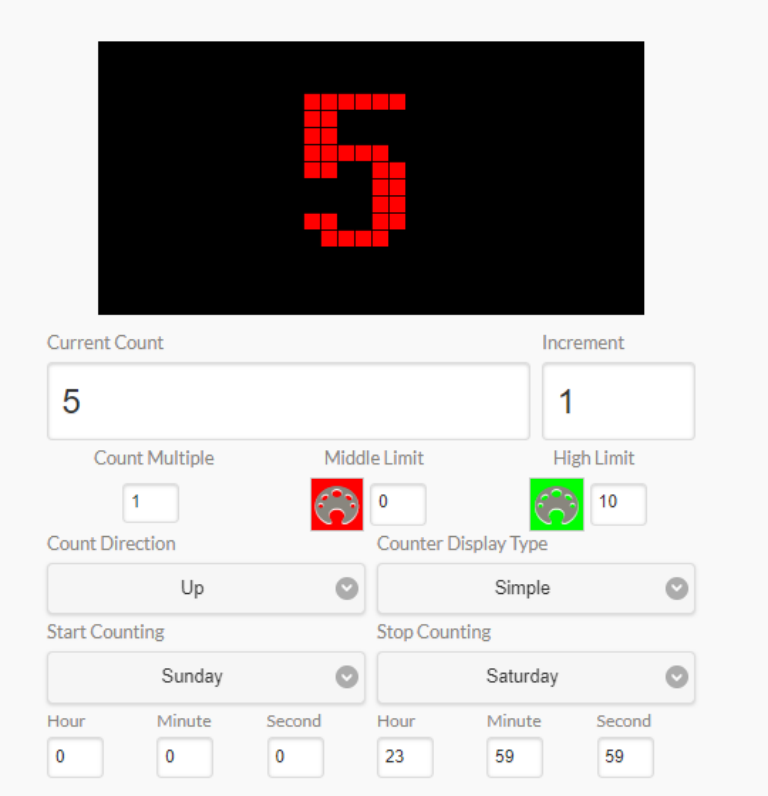
Device Name	A friendly name used to differentiate it from others. i.e., LINE A vs LINE B
Mode	The current mode your display is operating in. i.e., Clock vs Calendar vs Counter
Display Size	The size of your display. This setting should not be changed unless you are adding panels.
Display Brightness	How bright your display is
Clock Format	The system format of your clock. i.e., 1:00 PM vs 13:00
Calendar Format	The system format of your calendar. I.e. MM/DD/YYYY vs YYYY-MM-DD
Default Color	The default color for any text written on your display
Alternate Color	An alternate color used in some display modes. For example, the level gauge will show anything over the goal quantity in the alternate color. Many modes will not use the alternate color.
Symbol Color	Color for symbols. Choose the same color as the default color for a muted display or choose a contrasting color to make symbols such as % or : pop when displayed.

Mode: Clock Only/Calendar Only



No mode specific options are available for the clock + calendar modes of operation.

Mode: Counter (Day, Hour, Minute, Second)



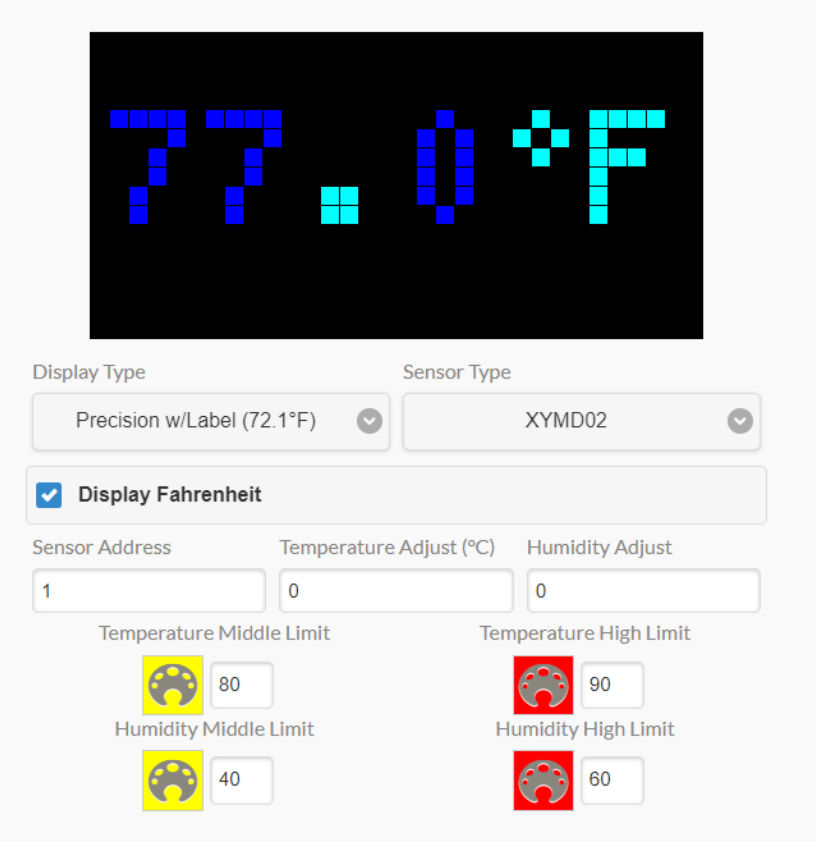
Device Name	**A friendly name used to differentiate it from others. i.e., LINE A vs LINE B**
Current Count	The current value to display
Increment	How much to count by? Default: 1
Count Multiple	How many units of time should pass before incrementing or decrementing the count? Default: 1. Example: To count the number of 12-hour shifts, an hour counter would have it's count multiple set to 12 so that 12 hours pass before incrementing the count.
Middle Limit	Change the text color when the value to be displayed reaches this value. Default: 0/Red
High Limit	Change the text color when the value to be displayed reached this value. Default: 10/Green
Count Direction	Count up or down or do not count (Static)
Counter Display Type	Format for values on the screen.
Start Counting	Day/Time to start counting. Default: Sunday 00:00:00 (First day of week, Midnight)

	Example: Hour counter counting M-F 9AM – 5PM use value Monday 09:00:00
Stop Counting	Day/Time to stop counting. Default: Saturday 23:59:59 (Last day of week, Before Midnight) Example: Hour counter counting M-F 9AM – 5PM use value Friday 16:59:00

Mode: Decibel Meter

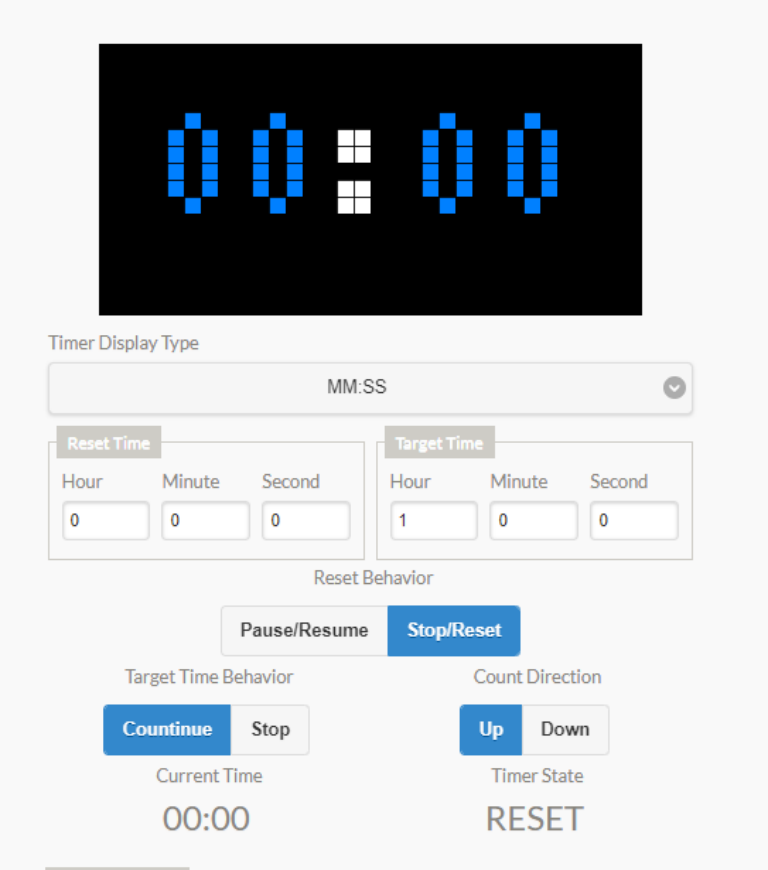
Display Type	Display format for value.
Sensor Type	Which sensor is attached to your display?
Sensor Address	Modbus address of the sensor (Not applicable for all sensors). Default: 1
Sensor Adjust	Decimal value to add to the reading. i.e., -2.3 to subtract 2.3 from the native sensor reading. This setting can be used to linearly adjust your readouts for uncalibrated sensors. Default: 0
Middle Limit	Show dB readings greater than or equal to this value, but less than the high limit value in this color. Default: 60/Yellow
High Limit	Show dB readings greater than or equal to this value in this color. Default: 80/Red

Mode: Temperature/Humidity



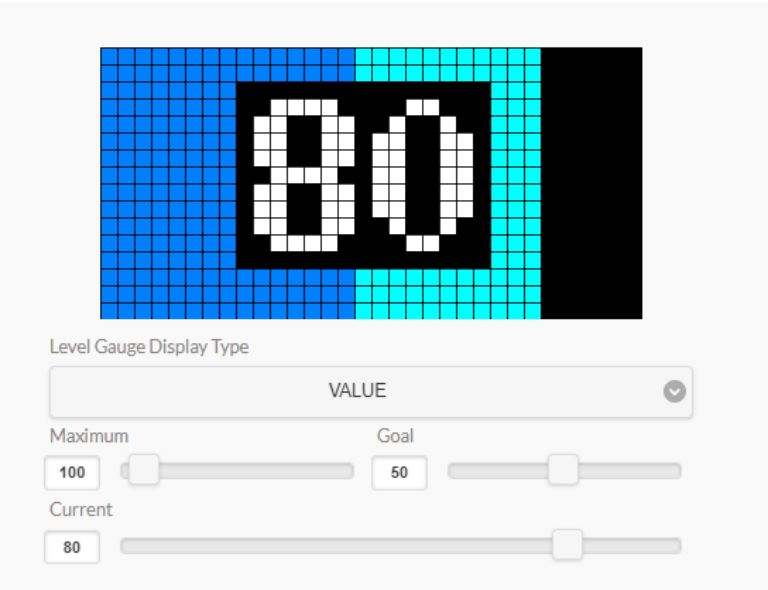
Display Type	Display format for value.
Sensor Type	Which sensor is attached to your display?
Display Fahrenheit	Show temperature in degrees Fahrenheit. If not checked temperature will display in Celsius
Sensor Address	Modbus address of the sensor (not applicable for all sensors). Default: 1
Temperature Adjust	Decimal value to add to the reading. i.e., -2.3 to subtract 2.3 from the native sensor reading. This setting can be used to linearly adjust your readouts for uncalibrated sensors. Default: 0
Humidity Adjust	Decimal value to add to the reading. i.e., -2.3 to subtract 2.3 from the native sensor reading. This setting can be used to linearly adjust your readouts for uncalibrated sensors. Default: 0
Temperature Middle Limit	When the temperature reaches the specified value, the display will switch to the color selected
Temperature High Limit	
Humidity Middle Limit	When the humidity reaches the specified value, the display will switch to the color selected
Humidity High Limit	

Mode: Timer



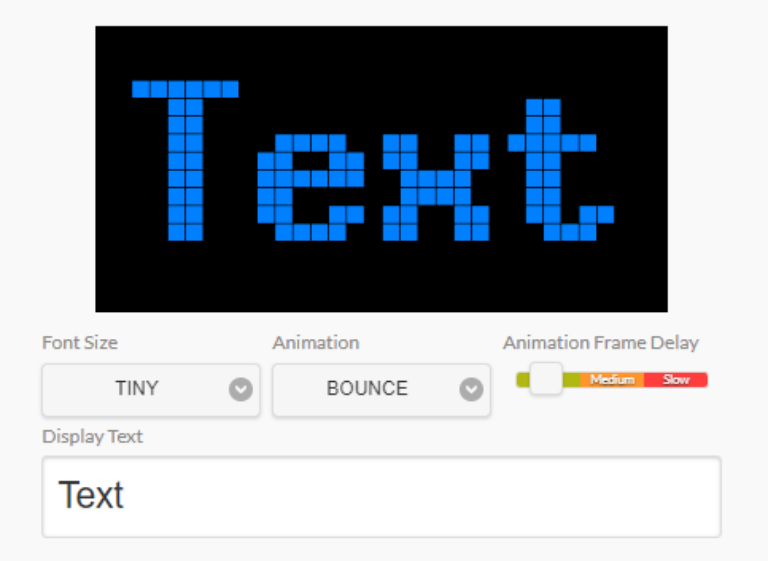
Display Type	Display format for value.
Reset Time	Time to reset to when timer is reset
Target Time	Time to stop counting at or change color when reached. (Depends on Target Time Behavior)
Reset Behavior	How should the timer behave when reset/OK is pushed
Target Time Behavior	What should happen when the target time is reached
Count Direction	Should the timer count up, or down from the reset time.

Mode: Level Gauge



Display Type	Display format for value.
Maximum	Maximum value for gauge
Goal	A goal value. Once the goal is exceeded, the color will change
Current	The current value of the gauge

Mode: Static Text Display



Font Size	How large should the font be
Animation	Bounce the text batch and forth, scroll left always, or fit the text to the display (override font size)
Animation Frame Delay	Set the speed of scrolling text
Text	The text to display. Max 25 characters

Common Task: Select Display for Control (Remote Control)

Press **NEXT** or **PREV** on the remote control to navigate between displays.

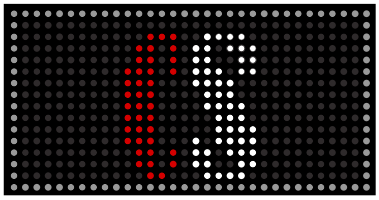
The display being controlled will flash to signify that it has been selected.

Continue to press **NEXT/PREV** until the desired display flashes.

This is the display that will respond to the remote control.

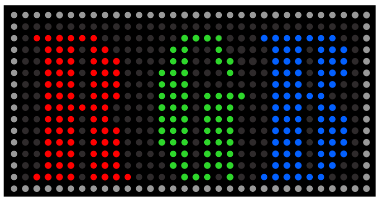
Common Task: Change Mode of Operation

PRESS **ROOT MENU** BUTTON to enter the root menu where the mode can be changed.



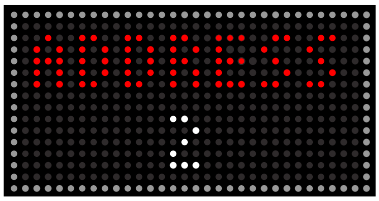
OK – To exit the panel type menu and move to RGB setting. Your panel should display

If your display is garbled the incorrect panel type is chosen. Use the UP button on the circuit board to cycle to the next panel type until the display shows correctly as pictured



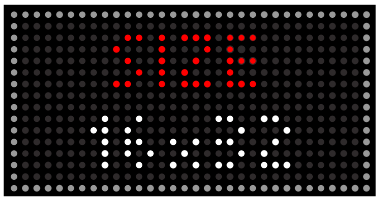
OK to confirm RGB menu.

If your display is not showing R = red, G = green, B = blue then your color order is not set correctly. Adjust with UP/DOWN buttons on the circuit board until the display is showing correctly as pictured.



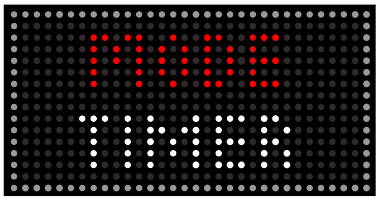
OK to confirm the Address.

Your display must be configured with a unique address in order for the control options like IR remote, and network controller to function. To adjust the address use the UP/DOWN buttons on the circuit board



OK to confirm size

Your display should show a border around the entire perimeter. **UP/DOWN** on circuit board to adjust



UP/DOWN on remote or circuit board to adjust mode to desired setting. **OK** to confirm and return to normal operation.

Common Task: Configure General Settings

1. Press **PROGRAM**
2. Press **OK** to choose the **GENERAL** settings menu
3. Press **LEFT/RIGHT** to choose default text color
4. Press **OK** to confirm selection
5. Press **LEFT/RIGHT** to choose alternate color
6. Press **OK** to confirm selection
7. Press **LEFT/RIGHT** to choose symbol color
8. Press **OK** to confirm selection
9. Press **UP/DOWN** to set display brightness
10. Press **OK** to confirm selection

Common Task: Configure Day Counter to count up by 1 every day

1. Select display to control.
   See: Common Task: Select Display for Control (Remote Control)
2. Set mode to **DAY CNT**
   See: Common Task: Change Mode of Operation
3. Configure General Settings (Optional)
   See: Common Task: Configure General Settings
4. Press **PROGRAM**
5. Press **RIGHT** until you see the value **COUNTER**
6. Press **OK** to enter the counter mode specific menu
7. Use number pad to set **INC./INCREMENT** = **1**
8. Press **OK** to confirm selection
9. Press **UP/DOWN** to set **COUNT DIR** = **UP**
10. Press **OK** to confirm selection
11. Use the number pad to set **MULTIPLE** = **1**
12. Press **OK** to confirm selection
13. Use the number pad enter **MID LMT** = **0**.
    Press **UP/DOWN** to choose color (**Default**: RED)
14. Press **OK** to confirm selection
15. Number pad to enter **HIGH LMT** = **10**.
    Press **UP/DOWN** to choose color (**Default**: GREEN)
16. Press **OK** to confirm selection
17. Press **UP/DOWN** to set **START/START DAY** = **Sunday**
18. Press **OK** to confirm selection
19. Use the number pad to enter **START/START TIME** = **00:00:00**
20. Press **OK** to confirm selection
21. Press **UP/DOWN** to set **STOP/STOP DAY** = **Saturday**
22. Press **OK** to confirm selection
23. Use the number pad to enter **STOP/STOP TIME** = **23:59:59**
24. Press **OK** to confirm selection and return to normal operation
25. Use number pad to enter current count
26. Press **OK** to confirm count
27. **Complete**. Your sign will count up by 1 every day from Sunday at midnight until Saturday at 23:59:59

Common Task: Configure Hour Counter to count up by 1 every 12-hour shift from Monday – Friday

1. Select display to control.
   See: Common Task: Select Display for Control (Remote Control)
2. Set mode to **HOUR CNT/HOUR COUNT**
   See: Common Task: Change Mode of Operation
3. Configure General Settings (Optional)
   See: Common Task: Configure General Settings
4. Press **PROGRAM**
5. Press **RIGHT** until you see the value **COUNTER**
6. Press **OK** to enter the counter mode specific menu
7. Use number pad to set **INC./INCREMENT** = **1**
8. Press **OK** to confirm selection
9. Press **UP/DOWN** to set **COUNT DIR** = **UP**
10. Press **OK** to confirm selection
11. Use the number pad to set **MULTIPLE** = **12**
    Shift Length. 8 for 8-hour shift, etc.
12. Press **OK** to confirm selection
13. Use the number pad enter **MID LMT** = **0**.
    Press **UP/DOWN** to choose color (**Default**: RED)
14. Press **OK** to confirm selection
15. Number pad to enter **HIGH LMT** = **10**.
    Press **UP/DOWN** to choose color (**Default**: GREEN)
16. Press **OK** to confirm selection
17. Press **UP/DOWN** to set **START/START DAY** = **Monday**
18. Press **OK** to confirm selection
19. Use the number pad to enter **START/START TIME** = **00:00:00**
20. Press **OK** to confirm selection
21. Press **UP/DOWN** to set **STOP/STOP DAY** = **Friday**
22. Press **OK** to confirm selection
23. Use the number pad to enter **STOP/STOP TIME** = **23:59:59**
24. Press **OK** to confirm selection and return to normal operation
25. Use number pad to enter current count
26. Press **OK** to confirm count
27. **Complete**. Your sign will count up by 1 every 12 hours on Monday through Friday

Appendix: Heat Index Calculation

When operating in heat index mode, the temperature displayed is the heat index calculated from the temperature and humidity readings taken from the attached sensor or those broadcasted from another device. The heat index value is calculated in accordance with the NOAA heat index equation that follows:

The computation of the heat index is a refinement of a result obtained by multiple regression analysis carried out by Lans P. Rothfusz and described in a 1990 National Weather Service (NWS) Technical Attachment (SR 90-23). The regression equation of Rothfusz is

HI = -42.379 + 2.04901523*T + 10.14333127*RH - .22475541*T*RH - .00683783*T*T - .05481717*RH*RH + .00122874*T*T*RH + .00085282*T*RH*RH - .00000199*T*T*RH*RH

where **T** is temperature in degrees F and **RH** is relative humidity in percent. **HI** is the heat index expressed as an apparent temperature in degrees F. If the **RH** is less than 13% and the temperature is between 80 and 112 degrees F, then the following adjustment is subtracted from **HI**:

ADJUSTMENT = [(13-RH)/4]*SQRT{[17-ABS(T-95.)]/17}

where **ABS** and **SQRT** are the absolute value and square root functions, respectively. On the other hand, if the **RH** is greater than 85% and the temperature is between 80 and 87 degrees F, then the following adjustment is added to **HI**:

ADJUSTMENT = [(RH-85)/10] * [(87-T)/5]

The Rothfusz regression is not appropriate when conditions of temperature and humidity warrant a heat index value below about 80 degrees F. In those cases, a simpler formula is applied to calculate values consistent with Steadman's results:

HI = 0.5 * {T + 61.0 + [(T-68.0)*1.2] + (RH*0.094)}

In practice, the simple formula is computed first and the result averaged with the temperature. If this heat index value is 80 degrees F or higher, the full regression equation along with any adjustment as described above is applied.

The Rothfusz regression is not valid for extreme temperature and relative humidity conditions beyond the range of data considered by Steadman.

Source: https://www.wpc.ncep.noaa.gov/html/heatindex_equation.shtml

Appendix: Temperature Sensors

SL67	PREMIUM
 ** Cousign Standard Temperature Sensor as of Jan/2024.	
MODBUS	**XYMD02**
	 Your sensor is labeled XY-MD02 or MD02. Please choose the corresponding setting
MD02	**B CAST**
 Your sensor is labeled XY-MD02 or MD02. Please choose the corresponding setting	**Broadcast Sensor**. Use this setting if another display on your sign has one of the above sensors physically attached. That display will broadcast its readings to all other devices on your sign. The B CAST setting tells this display to show the values received.

Advanced Feature: Date Time Offsets

The static text mode of operation will allow you to enter a static date that never changes. For example, if you are working toward a project end date that is set and will not change. However, what if you need to display a date that is always some number of days, hours, minutes in the past or the future. For example: Let's say your perishable supplies are no longer viable after 30 days on the shelf and you would like to show the current manufacture cutoff date based on today's date. You can configure your clock or calendar display with offsets to accomplish this task.

Example: I want to show a date that is always 30 days in the past relative to the current date/time.

First configure your display to mode: CALENDAR, CLOCK, or CLOCK/CALENDAR and set the current date/time.

Once your display is showing the current date you are ready to configure the -30 days, 0 hours, 0 minutes offset.

1. While in normal operation (the date is being displayed) press **ENTER**
2. You will be prompted with a menu asking for **OFT DAYS** (Offset Days)
3. Press **0** (SYM) for symbols until the negative (**-**) sign is displayed.
4. Press the **RIGHT** arrow to advance the cursor to the right.
5. Press **3** on the number pad, the cursor will auto advance.
6. Press **0** on the number pad, the cursor will auto advance.
7. Verify **-30** is displayed. Press **OK**
8. You will be prompted for **OFT HRS** (Offset Hours). This value should be 0 by default.
9. Ensure the value is displayed as 0. Press **OK**.
10. You will be prompted for **OFT MIN** (Offset Minutes)
11. Press **OK**

You will be returned to normal operation and the date now shown on your display is 30 days in the past.

To adjust your offset, repeat the steps above while substituting your new offset values at each step. To show the current date time, make sure all offset values are set to 0.