info@cousign.com +1(269)290-1222

cousign

FLEX MATRIX DISPLAY

OPERATING INSTRUCTIONS FOR THE FLEX MATRIX DISPLAY

Document Version 1.00 – 7/26/2022

Contents

Flex Matrix Display Overview 3
Selecting your Display 3
General Settings 4
Mode Specific Configuration 6
Day/Hour/Minute/Second Counter 6
Level Gauge/Goal Completion 8
Static Display 9
Clock/Calendar 10
Decibel Meter 10
Temperature/Humidity 12
Timer 13
Base Menu 15
Entering the Base Menu 15
Circuit Board 15
Remote Control 15
Base Menu Options 16
Network Controller 17
Display Render 17
General Settings: 17
Mode: Clock Only/Calendar Only 19
Mode: Counter (Day, Hour, Minute, Second) 19
Mode: Decibel Meter 20

Mode: Temperature/Humidity 21
Mode: Timer 22
Mode: Level Gauge 22
Mode: Static Text Display 23
Common Task: Select Display for Control (Remote Control) 23
Common Task: Change Mode of Operation 24
Common Task: Configure General Settings 25
Common Task: Configure Day Counter to count up by 1 every day 26
Common Task: Configure Hour Counter to count up by 1 every 12-hour shift from Monday – Friday 27

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
Timer	Count up or down from a specified time. Reset to defined count or pause.	Flexible configuration options

requires additional sensor[-1]

Selecting your Display

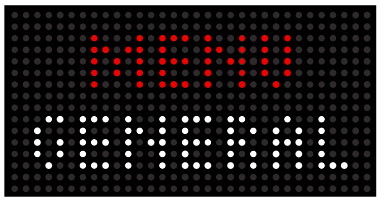
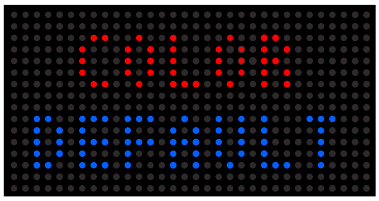
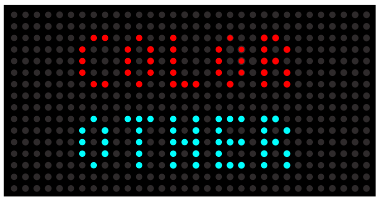
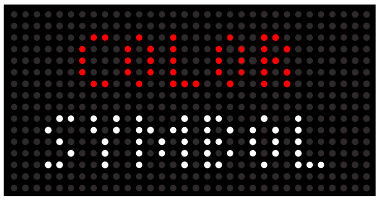
Your sign may contain multiple displays of various kinds. To select your flex matrix with the remote control, press the **NEXT** or **PREV** buttons to navigate to the display you wish to control. The currently selected display will flash to let you know it is listening to the remote control.

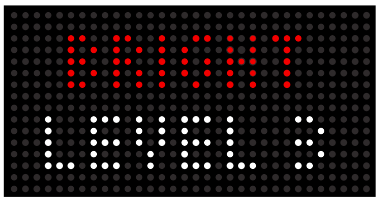
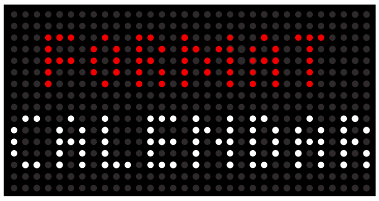
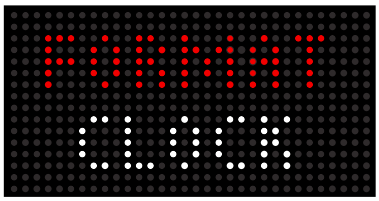
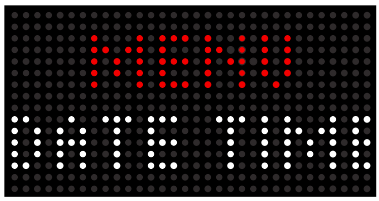
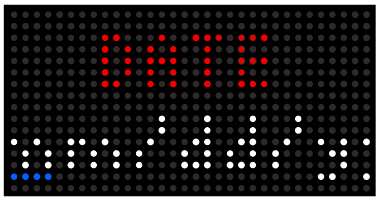
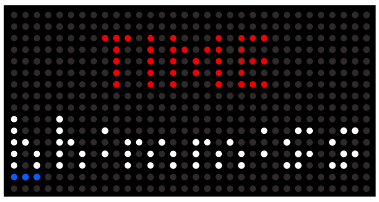
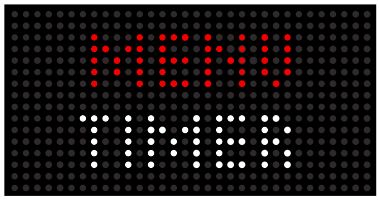
See relevant keys in **blue**

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 use an alternate color. Choose a complementary color to 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 more muted 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 when showing the data 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	
Date/Time Settings[-1] 	Current Date	Enter the current date using numeric keypad. When finished press **OK**	
	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.

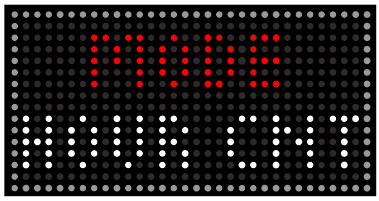
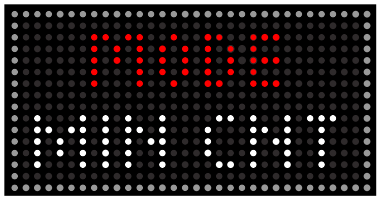
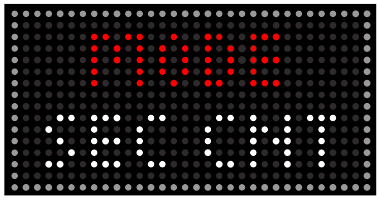
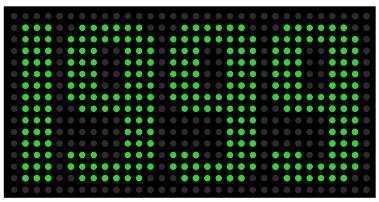
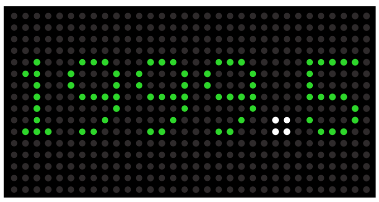
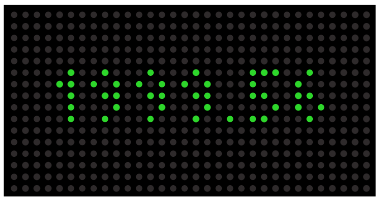
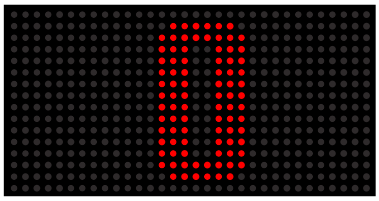
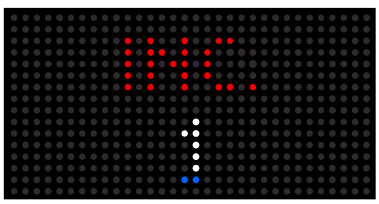
[-1] Only available if applicable for current mode

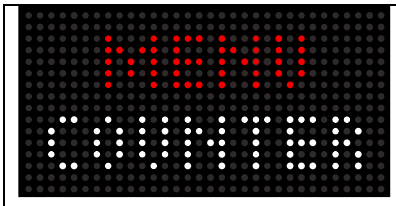
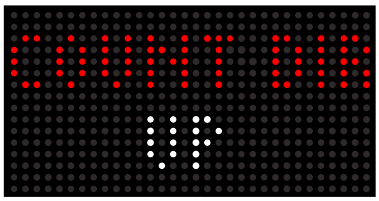
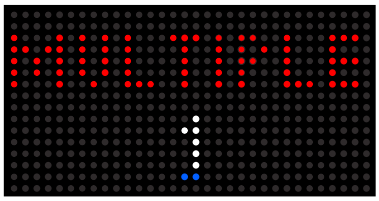
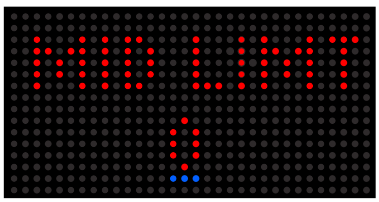
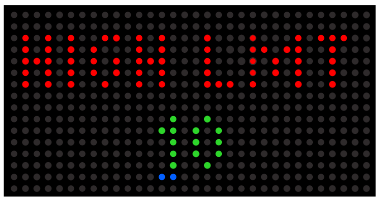
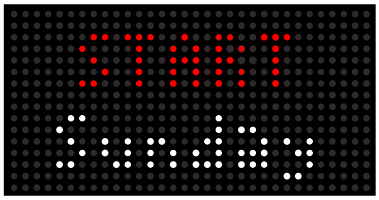
Mode Specific Configuration

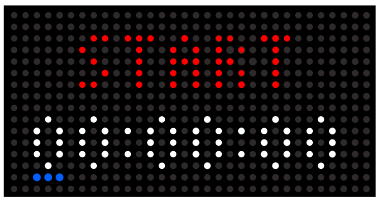
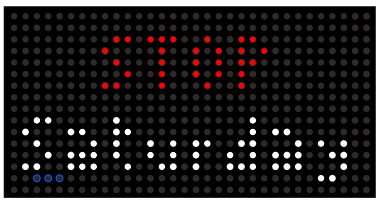
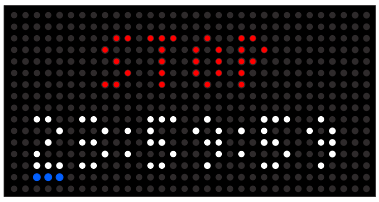
The mode for each of your displays will be configured for your sign at the factory. For details on how to change the mode and other low-level functionality of your display please see Base Menu.

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

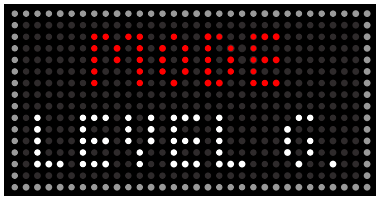
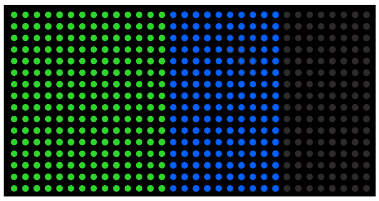
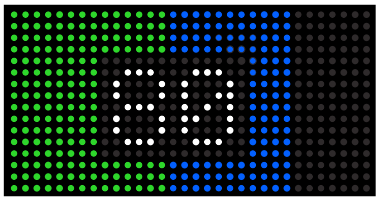
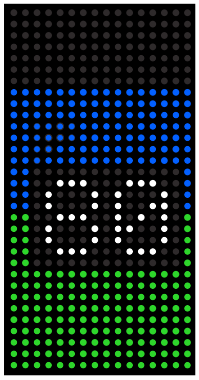
Day/Hour/Minute/Second Counter

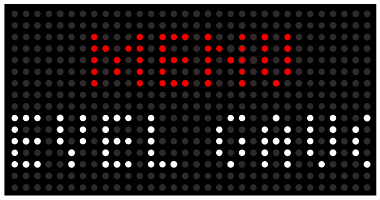
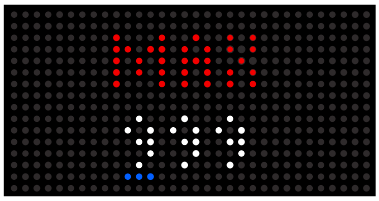
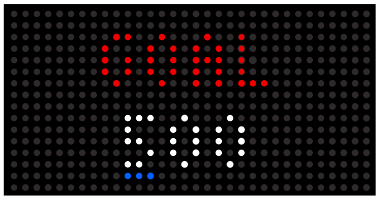
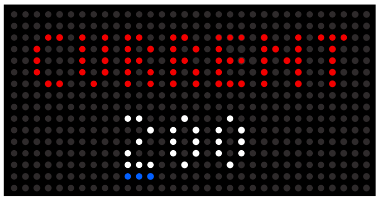
Menu	Screen	Options	Example Screen
Normal Operation Day Counter Hour Counter  Minute Counter  Second Counter 		**OK/RESET** Reset the current count to 0 **UP/DOWN** Adjust the current **LEFT/RIGHT** Adjust Display Format 1999 1999.5 1999.51 **Number Pad** Enter a new count **PROGRAM** Navigate to a programming menu	**Example: 16x32 Display**    
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 Default: 0 / Red By default, numbers 0-9 will display as red.	**UP/DOWN** Adjust Color **LEFT/RIGHT** 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	

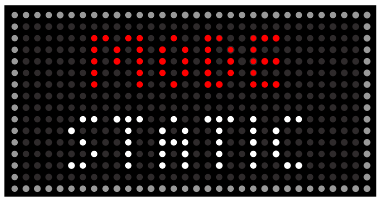
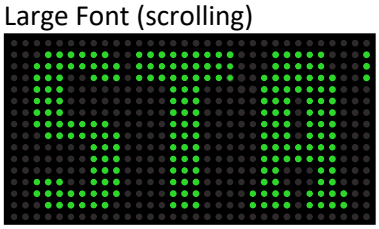
Level Gauge/Goal Completion

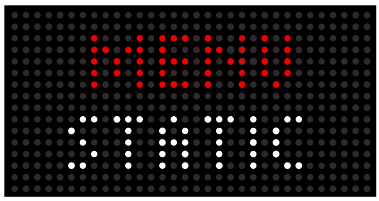
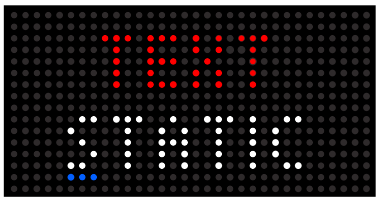
Menu	Screen	Options	Example Screen
Normal Operation 		**UP/DOWN** Adjust Level **LEFT/RIGHT** Adjust Label None Value Percent Right Angle Value	**Example: 16x32 Display**   

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

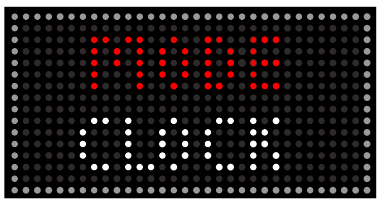
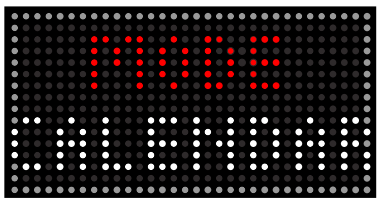
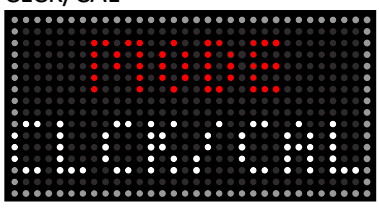
Display a static text message on the screen.

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	**Example: 16x32 Display** Large Font (scrolling) 

		the screen it will scroll left/right	
	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  CALENDAR  CLCK/CAL 		**LEFT/RIGHT** Adjust Display Format **Note**: Clock and Calendar Formats can also be set in the General Settings Menu.	**Example: 16x32 Display**

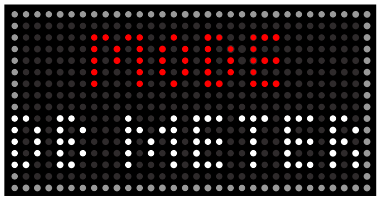
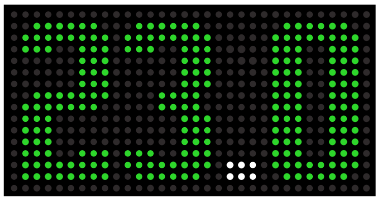
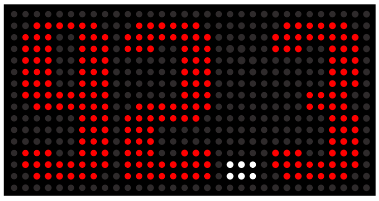
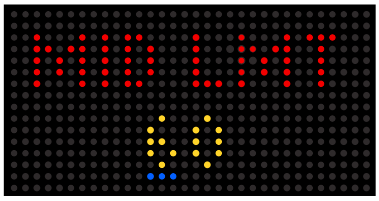
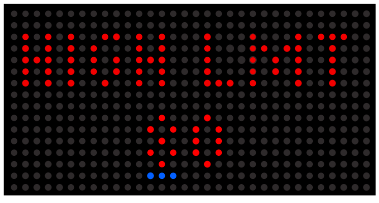
Decibel Meter

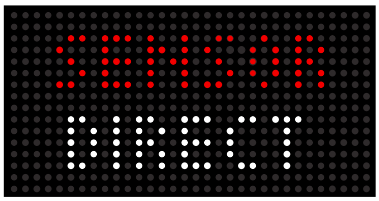
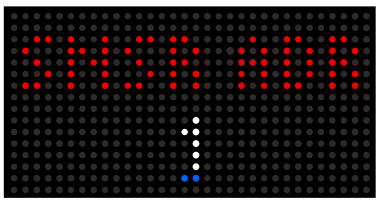
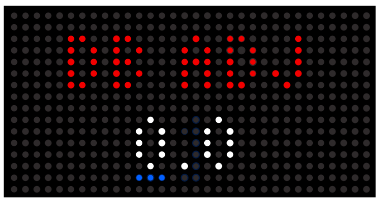
Decibel Meter / Sound Pressure Level Meter

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.

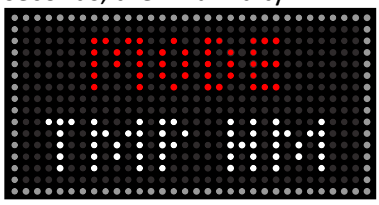
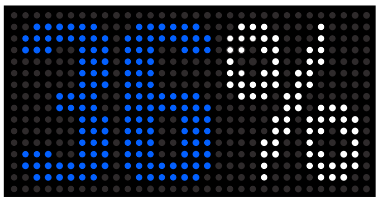
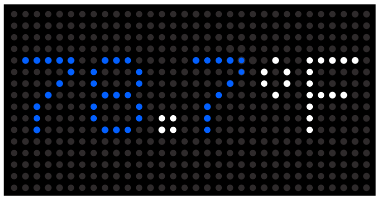
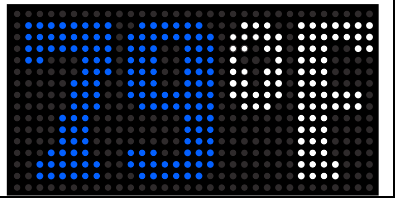
Menu	Screen	Options	Example Screen
Normal Operation 		**UP/DOWN** Adjust Display Type 36 36.5 36 dB 35.5 dB	**Example: 16x32 Display**  
Decibel Meter Settings **Enter settings menu by pressing** **PROGRAM, PROGRAM, OK** 	**Mid Limit** Values at or over the limit will display in the selected color	**UP/DOWN** 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	

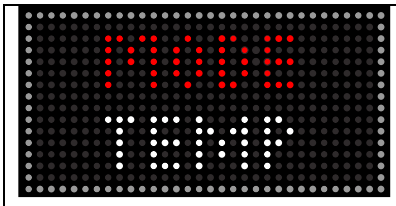
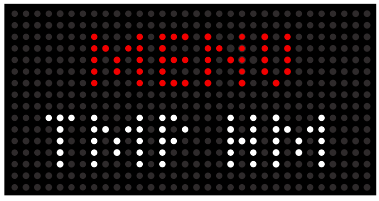
	Sensor Define Attached Sensor	**UP/DOWN** Select Sensor DIRECT AUX	
	Sensor Address Define Address of Attached Sensor	**UP/DOWN** Select Address Default: 1	
	Decibel Adjust Add a value to raw sensor value before being displayed	Enter a value using the numeric keys. Navigate with **LEFT / RIGHT** Add negative sign or decimal by pressing 0 multiple times	

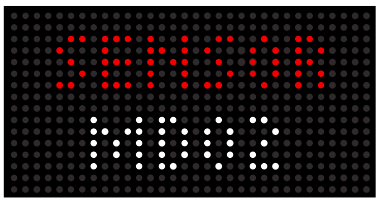
Temperature/Humidity

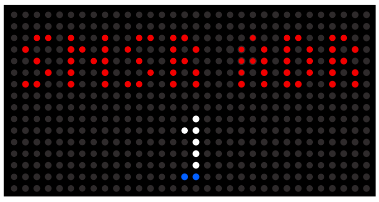
Several modes are available to support displaying the current Temperature or Humidity.

Note: This functionality requires a supported temperature/humidity sensor to be attached

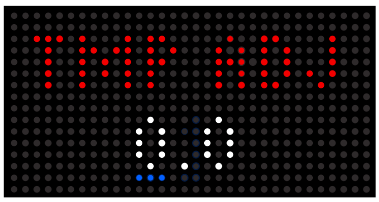
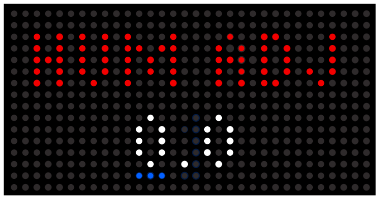
Menu	Screen	Options	Example Screen
Normal Operation Modes: **TMP HM** Display Temperature for 30 seconds, then Humidity  **TEMP** Display Temperature Only		**UP/DOWN** Adjust Display Type 36 36.5 36 %/C/F 35.5 %/C/F **OK** Toggle Celsius / Fahrenheit	**Example: 16x32 Display**   

<table>
<tr>
<td> 
HUMIDITY
Display Humidity Only
 </td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td rowspan="4">Temperature Humidity Settings
Enter settings menu by pressing
PROGRAM, PROGRAM, OK
  </td>
<td>Sensor
Define Attached Sensor</td>
<td>UP/DOWN
Select Sensor

STNDRD
XYMD02
MD02</td>
<td>  </td>
</tr>
<tr>
<td>Sensor Address
Define Address of Attached Sensor</td>
<td>UP/DOWN
Select Address

Default: 1</td>
<td>  </td>
</tr>
<tr>
<td>Temperature Adjust
Add a value to raw sensor value before being displayed</td>
<td rowspan="2">Enter a value using the numeric keys.

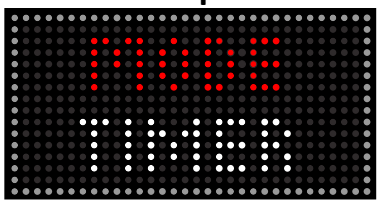
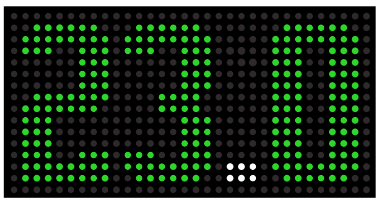
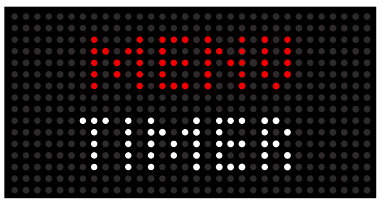
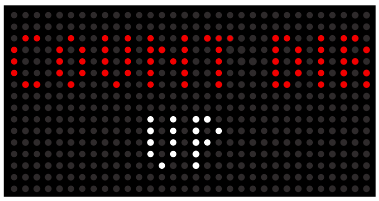
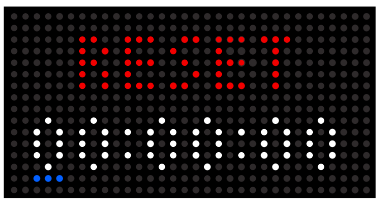
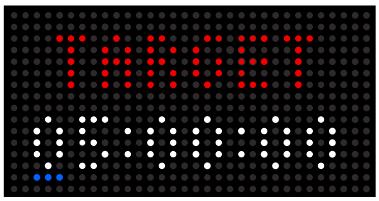
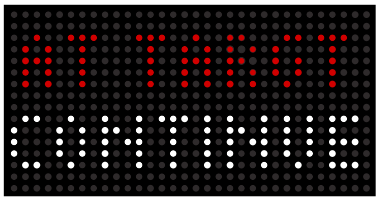
Navigate with LEFT / RIGHT

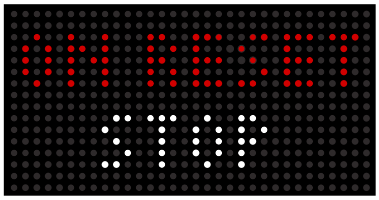
Add negative sign or decimal by pressing 0 multiple times</td>
<td>  </td>
</tr>
<tr>
<td>Humidity Adjust
Add a value to raw sensor value before being displayed</td>
<td>  </td>
</tr>
</table>

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** Reset Timer to configured Start Time **LEFT/RIGHT** Adjust display type	**Example: 16x32 Display**  Example: 16x64 Display
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	

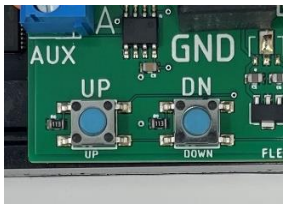
	On Reset Behavior What to do when **OK/RESET** is pushed?	**STOP**: **OK** will cause the timer to top. Second **OK** will reset the timer to start time. **PAUSE**: **OK** will cause the timer to pause. Second **OK** will resume counting from time displayed. To reset the time to start time, **LONG PRESS OK** or press **UP/DOWN**	

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.

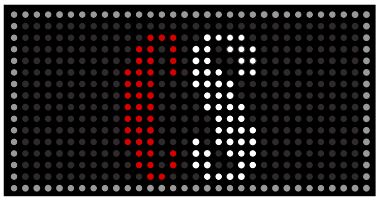
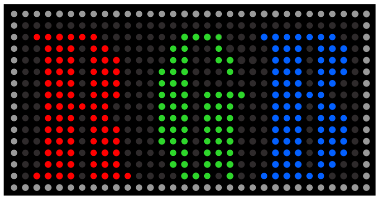
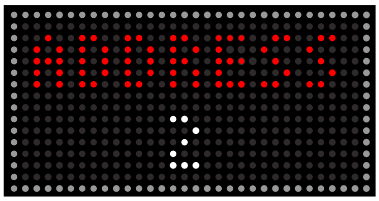
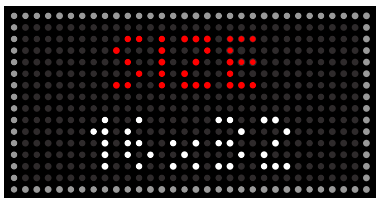
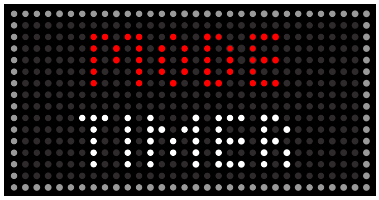
These settings will be configured at the factory and should not need to be adjusted. Adjusting these settings can result in the display becoming unreadable. Please do not change these settings unless instructed to do so.

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

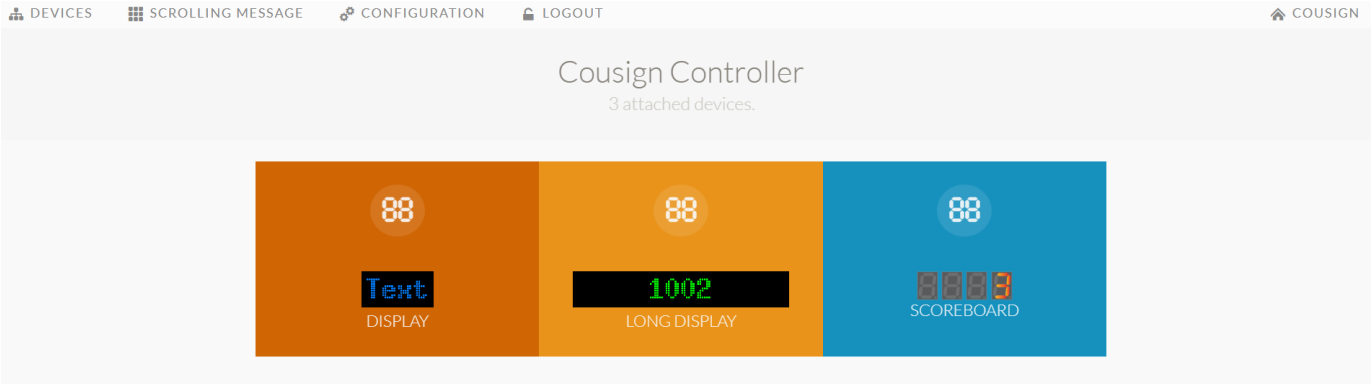
	Note: Settings other than mode can only be set using the push buttons on the circuit board. When using the remote you will see the current value but not be able to change it

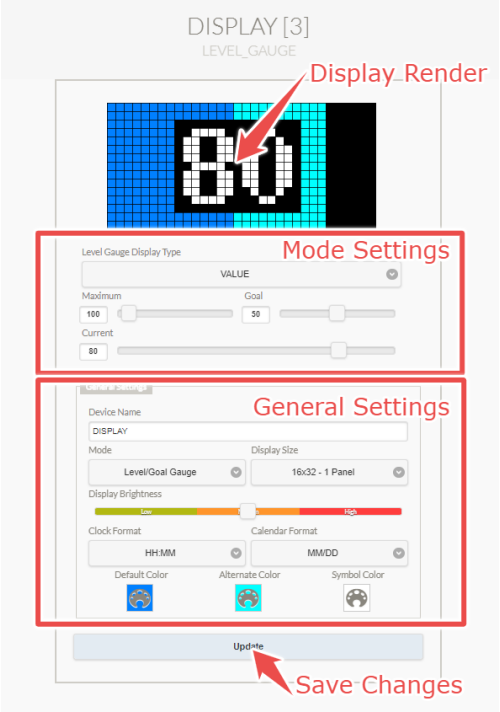
Base Menu Options

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.



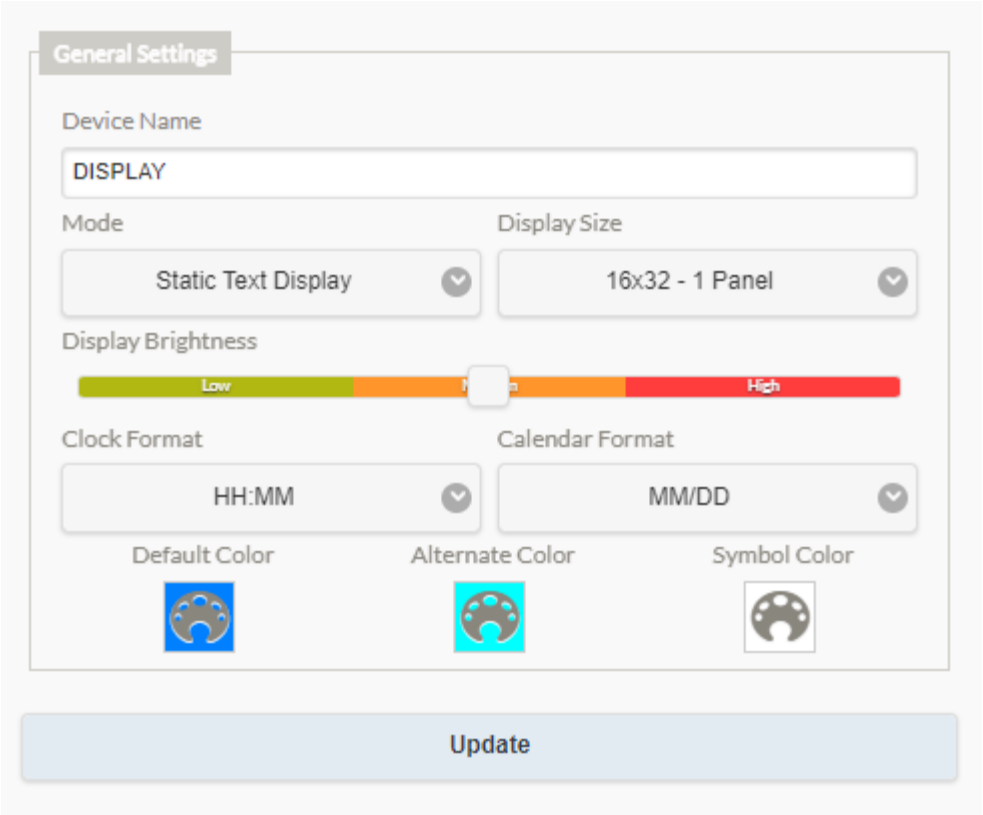


Display Render

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.

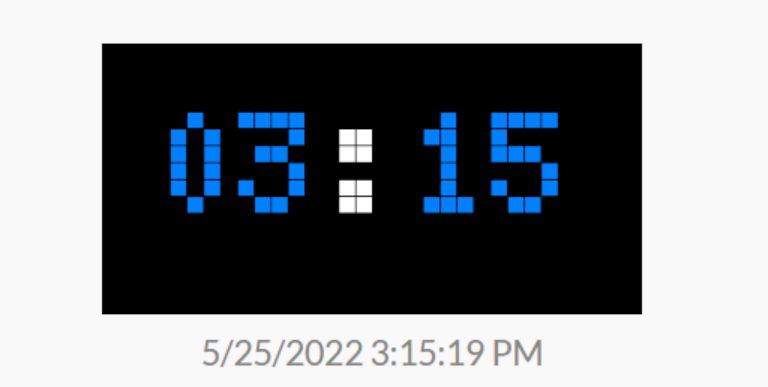
General Settings:

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.



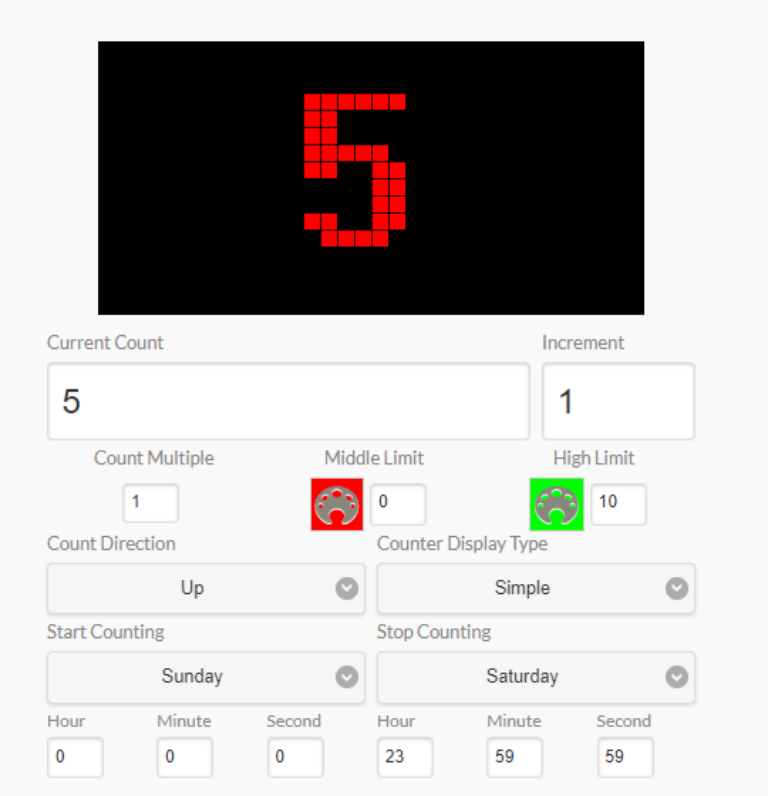
Device Name	A friendly name used to differentiate it from others. i.e., LINE A vs LINE B
Mode	The current mode your display is operating in. i.e., Clock vs Calendar vs Counter
Display Size	The size of your display. This setting should not be changed unless you are adding panels.
Display Brightness	How 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)



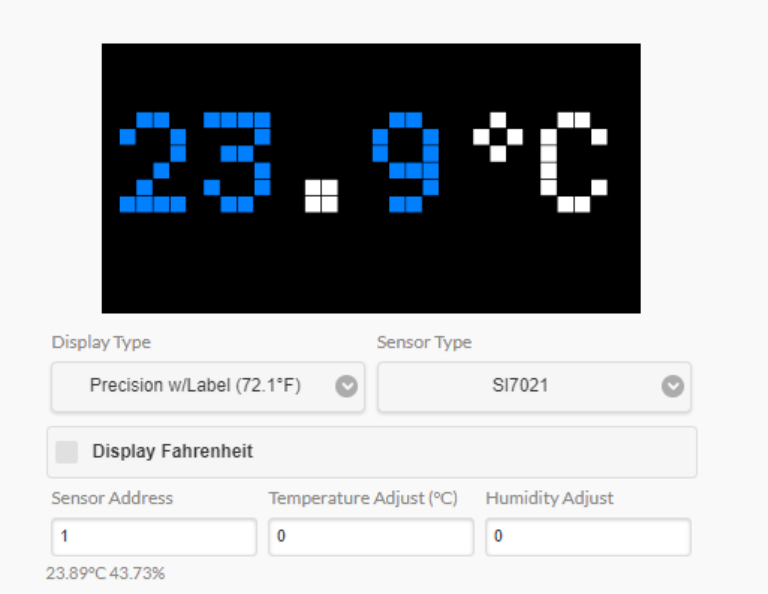
Device Name	**A friendly name used to differentiate it from others. i.e., LINE A vs LINE B**
Current Count	The current value to display
Increment	How much to count by? Default: 1
Count Multiple	How many units of time should pass before incrementing or decrementing the count? Default: 1. Example: To count 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

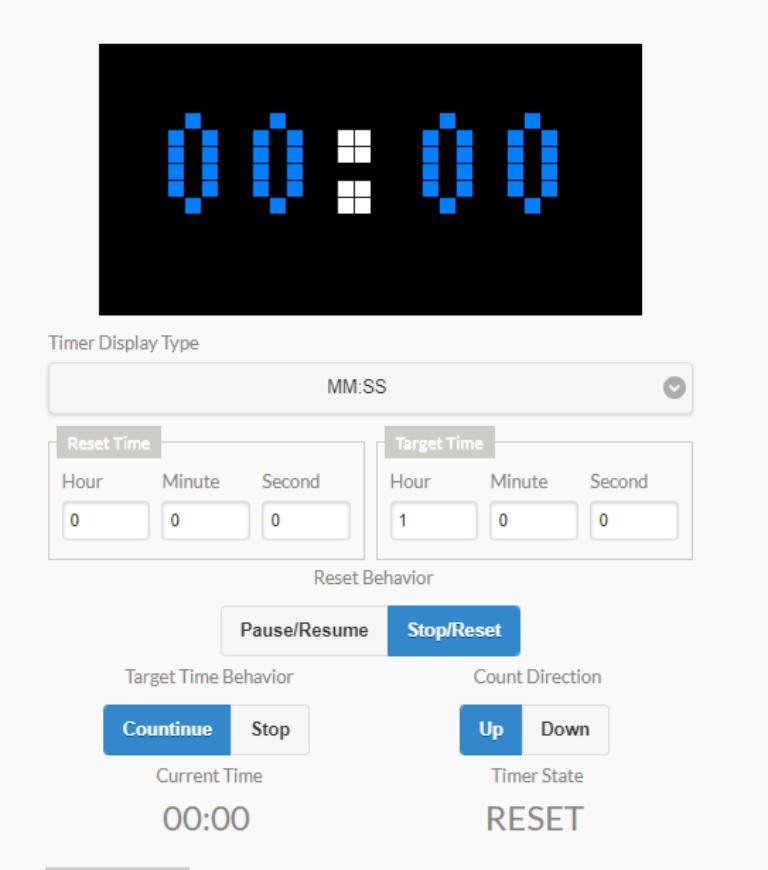
Display Type	Display format for value.
Sensor Type	Which sensor is attached to your display?
Sensor Address	Modbus address of the sensor (Not applicable for all sensors). Default: 1
Sensor Adjust	Decimal value to add to the reading. i.e., -2.3 to subtract 2.3 from the native sensor reading. This setting 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



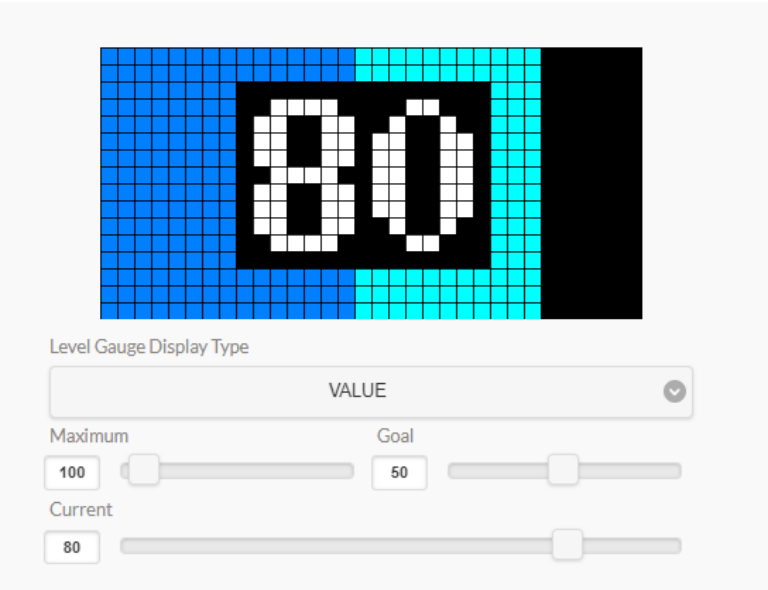
Display Type	Display format for value.
Sensor Type	Which sensor is attached to your display?
Display Fahrenheit	Show temperature in degrees Fahrenheit. If not checked temperature will display in Celsius
Sensor Address	Modbus address of the sensor (not applicable for all sensors). Default: 1
Temperature Adjust **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

Mode: Timer



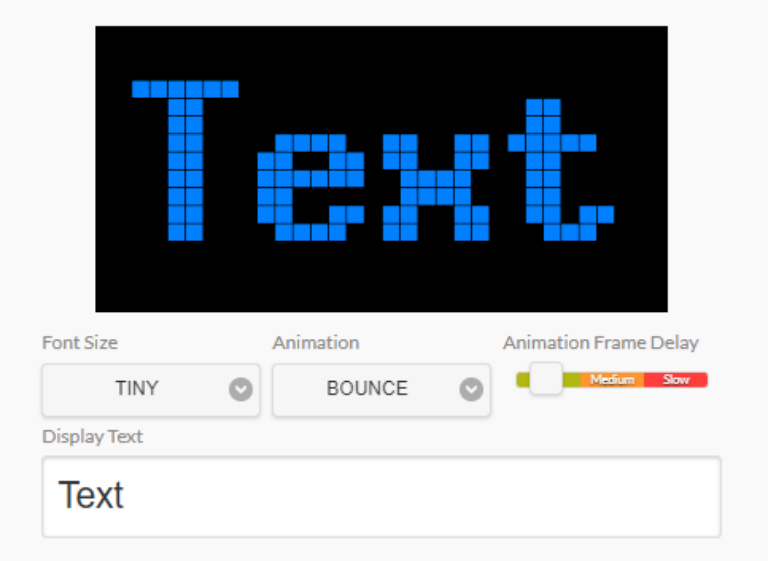
Display Type	Display format for value.
Reset Time	Time to reset to when timer is reset
Target Time	Time to stop counting at or change color when reached. (Depends on Target Time Behavior)
Reset Behavior	How should the timer behave when reset/OK is pushed
Target Time Behavior	What should happen when the 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.

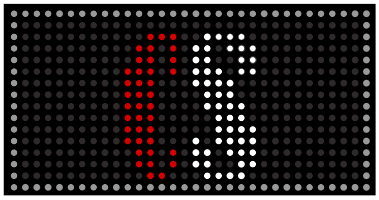
The display being controlled will flash to signify that it has been selected.

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

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

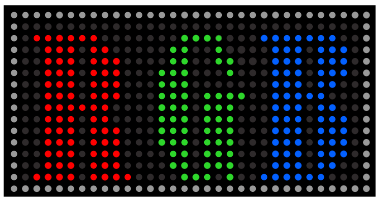
Common Task: Change Mode of Operation

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



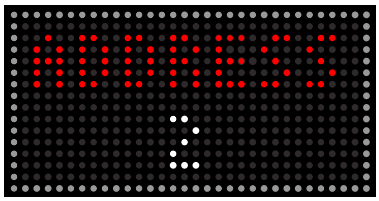
OK – To exit the panel type menu and move to RGB setting. Your panel should display

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



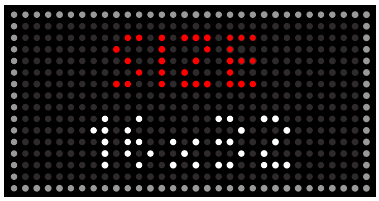
OK to confirm RGB menu.

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.



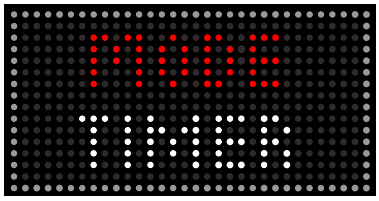
OK to confirm the Address.

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