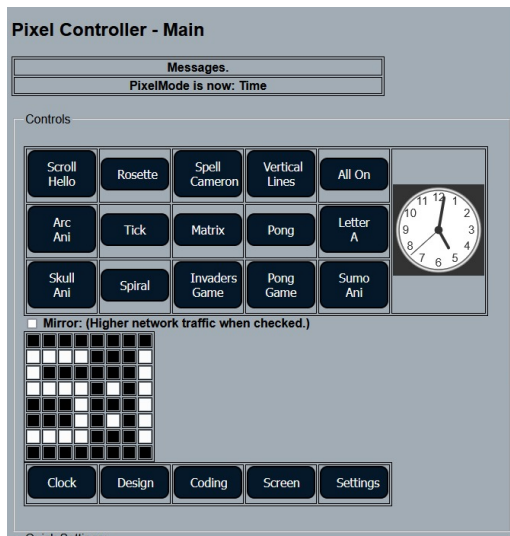


# Pixel Controller User Manual

14 November 2024

Version 1.1

Main Web Page



Scrolling Clock



Ping Pong Game



The Matrix



Sumo Wrestler



Space Invaders Game



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## 1. Introduction

Multi coloured LED panels are now available at low cost. This project allows you to control an 8 by 8 matrix LED panel display using WiFi and your smart device with various web pages. Some displays are also controlled with a gesture control module. The project is housed in a 3D printed box measuring 83x83x32mm.

The project was created for a Grandchild who has an interest in coding.

The features include:

- Real Time Clock Display with Alarm Facility (Internet Time Server).
- Text Scrolling, Animations and Design Matrix for Icon Creation.
- Settable Pixel Colours, Brightness, Scroll Speed, Fade and Random Colours.
- Up to 100 Icons can be designed and saved to the ESP32 SPI File System.
- Control is via a number of web pages or a hand gesture control module.
- 15 Customisable web page buttons that can be coded on the fly to display required Text, Letter, Game, Icon or Animations.
- 5 Fixed web page buttons for Time, Design, Coding, Screen and Settings.
- Low power audio amplifier provides sounds for some functions.

The heart of the Controller is an ESP32 WiFi Micro Computer with Arduino software to provide the control. The Micro Computer is simply called the Micro in this user manual.

## 2. Disclaimer

This device is a work in progress and is provided as an interesting circuit. There is no assurance of accuracy or reliability. These instructions and the software are provided without any assurance that they are fit for purpose or are completely accurate. Any person using these instructions does so at their own risk. The Author shall not be responsible in any way for the consequences of use nor if there is any loss arising. The Author's prototype is a Beta test unit that has not undergone full in service testing. Consequently, there will be bugs and problems that are apparent over time. If these conditions are not accepted then use is prohibited. E&OE.

## 3. How does it work

The Pixel Controller can be divided into 5 parts.

### 1. The WiFi enabled ESP32 micro controller.

The micro is the brain of the Pixel Controller and runs an Arduino Sketch (Actually around 72 .ino files). I have used a 30 Pin ESP32 Dev Kit but almost any ESP32 module will work provided the correct board is selected in the Arduino IDE and the Pin allocations are corrected in the sketch to accommodate the different ESP32 board. The micro connects to your local WiFi network using the credentials you initially enter into the sketch. It then runs web and web socket servers to allow you to call up the web pages to control your Pixel Display using your smart device. The web pages allow you to choose the displays required such as a Clock, Text,

Letters, Designs(Icons) Animations and Games. Also included are pre-set buttons to access programming web pages such as Design, Coding, Screen and Settings.

The Web server serves the Web page data using HTML, CSS and JavaScript code. The Web Socket server allows rapid bi directional data between the Server and Micro client. The Server to Client data is a text string made up of data segments with a ~ (Tilda or wavy line ) being used as a field separator. The Client to Server data is generally a Command/Data pair to indicate the request. For example, "brightness=50" sets the brightness to 50% .

The software includes arrays for both upper and lower case alphanumeric characters. Users can also programme up to 100 custom displays with any pixel set to any colour or brightness. These displays are called designs (D0 to D99) or icons and can be named as well. Animations can be created using consecutive designs to give the illusion of motion.

A simple coding language allocates a label and action to be specified for buttons on the main web page to display preferred designs or text.

Designs, Names and Coding definitions are saved to the micro's SPIFF file system.

Default settings such as WiFi credentials and Screen Colours etc are saved to EEPROM.

## 2. The WS2812B 8 x 8 Pixel Module

The pixel display comprises an 8 by 8 array of WS2812B RGB LED chips. As well as containing the LED, each chip includes intelligent digital control and digital data shaping circuits for data transfer. Each LED has a data in and data out pin so that the LEDs are series connected and the data signal passed through each from the DIin pin to the DOut pin. The LEDs operate at 5 Volts.

The micro sends a 24 bit data stream on Input/Output pin13 to the Pixel Module to switch the Pixels on or off and set their colours.

By turning specific pixels on, alphanumeric letters can be displayed as well as the ability to create colourful icons and scrolling text.

## 3. The PAJ7620 Gesture Module

The Gesture module provides an alternative control input to the Web Page Buttons and controls using hand movement. The Gesture Module is connected to the micro via an I2C interface using Input/Output pin 22 for SCL and Pin 21 for SDA.

## 4. The PAM 8302 Audio amplifier and Speaker.

A low power audio amplifier and speaker provides the ability to create a limited range of sounds. The micro pulses Input/Output pin 12 to provide sounds.

## 5. The Power Supply.

The unit is powered by a 5V 1 Amp USB plugpack.

Each LED can draw up to 50mA at full brightness. The software limits the maximum brightness

so that the maximum current drawn with all LEDs on with white colour is around 0.5A. D1 appears to be over rated but this keeps temperature rise down at higher currents. If the 5V plugpack supply is not connected and the micro is powered from your PC via the micro's USB port, D2 prevents 5V back feed to the Pixel panel and avoids the potential for computer USB port overloading.

## 4. Interfaces.

The controller has two user interfaces.

- **Web Pages.**

The unit connects to your local WiFi network with a fixed IP address so that the web pages can be accessed by typing the local IP Address of the controller in the web browser of your smart device See section titled: Initial Setting of the WiFi Network.

There are 7 Web pages available:

Main. (Home screen)

Design.

Coding.

Screen.

Settings.

Invaders Game.

Ping Pong Game.

- **Gesture Module.**

Some features can be controlled by hand/finger gestures as follows:

**Clockwise Finger:**

Switch to Time display and increase Brightness.

**Ant-Clockwise Finger:**

Switch to Time display and decrease Brightness.

**Right Swipe:**

If Alarm is Flashing, stop Alarm or:

Select the next web page button and show that display.

If Pong game is playing, move the bat up. If Invaders game is playing, Fire and move Right.

**Left Swipe:**

If Alarm is Flashing, stop Alarm or;

Select the previous web page button and show that display.

If Pong game is playing, move the bat down. If Invaders game is playing, Fire and move Left.



## 6. Components and Specifications:

- 8\*8 Matrix Multicoloured LED Panel (GlowBit 8\*8 Core Electronics CE08033).
- ESP32 Dev Kit 30 Pin Module (or similar ESP32 Module)
- PAJ7620 Gesture Module ( Jaycar XC3742)
- Audio amplifier PAM3802 or equivalent (Core electronics ADA2130)
- Mini Loud Speaker 8 Ohm (Jaycar AS3002, Core electronics ADA1890)
- Or Combined module of mini speaker with amplifier (Jaycar XC3744)
- 390R 0.5 w Resistor
- 1000uF 16V Capacitor
- 0.1uF ceramic Capacitor
- IN5822 40V 3A Schottky Diode
- IN5819 40V 1ASchottky Diode
- Hook up Wire
- USB Plug and cable
- Project Box (3D printed 82x82x32mm with gesture module aperture at the top right side and the micro USB socket accessible from the right hand side.
- 5V USB plugpack
- Supply Voltage: 5V DC 1 Amp from USB Plug Pack.
- Supply Current: Variable up to 1A.
- Programming Interface: USB to Host Computer
- Indoor Use Only.



## 7. Tips and Tricks.

**Cannot connect to the Pixel Controller using the web Address.** The best way of fault finding is to connect the Pixel Controller to your PC using the serial/USB connection, select the right port at 115200 baud and open the Serial Monitor. Press the micro reset button and observe the Serial monitor data. This should give you clues as to the problem.

**Displays do not respond to Web page commands.** The web socket connection must be refreshed whenever you close the web Browser or navigate away and then back to the Pixel Controller Web pages. **Use the Web Browser refresh button** or re-enter the Pixel Controller web address in your browser address bar and press enter or return.

**Displays don't update immediately.** Sometime there is a short delay before a web page updates. Watch the message table. When the message changes, the page is ready to operate.

**Selected Display is not visible.** This may be due to the brightness being set too low from a previous display, especially if the pixel colour is set to blue. **Increase the Brightness to 100%** and colour to white to check.

**Colour is different to selection from Palette.** Pixel colours are selected using the full Web colour palette (256\*256\*256 ~ 16 Million Colours) but are stored in 332RGB format (only  $8*8*4 = 256$  Colours)

**WiFi Network Settings.** If you make changes to the WiFi credentials using the Setting Web page and they are incorrect, the unit will not connect to the required WiFi network. The Pixel Controller will attempt a WiFi connection but timeout after about 30 seconds.

The unit will then switch to Access Point Mode and broadcast a "Pixel Controller" SSID. The temporary IP address of 192.168.4.1:85 will scroll across the Display.

On your smart device, open Settings/WiFi and choose the "Pixel Controller" Network with password of 12345678. When connected, open a browser and enter 192.168.4.1:85 in the address bar. Press enter and the Pixel Controller Main page should appear. Navigate to Settings page and enter the correct Network Credentials into the Network text boxes followed by a return key. When all is good, press the Submit Network Button and the Unit should reboot to the correct network.

**SPIFFS File Upload.** If the upload fails with a port error, try closing the serial monitor and repeat upload.

**Transmission Error.** If you get this message in the Serial Monitor, it indicates that the Gesture Module is not functioning correctly. **Check wiring etc.**

**Not using the Gesture Module.** If you don't want to use the gesture module then comment out all references to the paj7620 module and the gestures() function.

**Mirror.** Mirror is turned off when returning to the home screen.

## 8. Files Included.

The following files are included:

Pixels.zip. This zip file contains the Arduino .ino files and a data folder with Coding, Design and Names files.

The ESP32 Library (for the ESP and webserver) is Large and is not included. You will need to follow the link in the variables declarations section of the sketch.

Pixel Controller User Manual.pdf This pdf file is the user manual for the Pixel Controller.

Pixel Controller Schematic.pdf This pdf file is the schematic wiring diagram.

Pixel Libraries.zip. This zip file contains Libraries for websocketserver, neopixel, time, paj7620.

Pixel Controller Movie.mov. This movie file contains a short movie of the Pixel Controller scrolling the current time.

## 9. Arduino Sketch Installation

If you are unsure of any of the following steps then conduct a www search as there are a number of web sites that provide information and tutorials to help.

Firstly install the Arduino IDE if not already installed. I am using the legacy version 1.8.19 and are yet to update to the latest version. You can scroll down past the current version to find 1.18.19 or go with the latest. Choose your OS.

Install the IDE from <https://www.arduino.cc/en/software>

For IDE versions 2.0.0 and onwards Install the ESP32 boards using the Board Manager Icon in the Left hand Panel. Filter for ESP32 and install the Boards ESP32 by Espressif.

For IDE versions below 2.0.0 Install the ESP32 boards into the Additional Boards Manager URLs in the File/Preferences menu of the IDE.

Add the following into the Additional Boards Manager URLs text box:

[https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package\\_esp32\\_index.json](https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json)

To install the Pixel Controller sketch, unzip the Pixels. zip file to the location of your sketch files. (Location is found in the Arduino IDE File Menu/Preferences.

Open the Arduino IDE and File/Open menu navigate to and open the Pixels folder then open the Pixels.ino (or in fact any of the .ino files). All of the sketch files should be seen along the tabs in the Arduino IDE. To access files that are not shown on the tabs, use the drop down arrow just under the Serial Monitor Hour Glass Icon to the top right of the Arduino IDE screen.

At the top of the Pixels.ino sketch you should see the additional Arduino Libraries that may need to be installed and where to look on Git HUB or elsewhere. Try compiling first as the libraries may already be installed on your system. The libraries are also included in the Included files Package. Installing them involved opening the

If you need to install the libraries there are two options:

Option 1. Install from the Included File Libraries Package.

Use the IDE menu Sketch/Include Library/Add.Zip Library. Navigate to the location of the required .Zip library and click open. If all is well a success message will appear.

Option 2. Install from the Links in the sketch variable declarations section.

Click on the Link and when GitHub opens, download each as a ZIP file (click green Code button then Download ZIP, then install them using the Arduino IDE menu Sketch/Include Library/Add .ZIP Library.

Note that the Variable declaration `#include "paj7620.h"` has a link to download the file that worked for my paj7620 module. You may find that your module may not initialise with the provided code. If so you will have a choice to either not use it and remove all gesture related sketch entries or rewrite the code. If your paj7620 module requires a different Library, you will have to modify the code to suit. To see how to use a different library, open the Examples menu in the IDE, select and open the required example for your gesture library and copy the code into your sketch into the relevant sections. The string variable `gest` will need to be added for each gesture. For example `gest = "Up", Gest ="Clockwise"` , `If(gest == "UP"){//Do something}`

Also before Uploading the Sketch to the micro, make sure to enter the Network Credentials in the sketch as described in the next section.

## 10. Initial Setting of the WiFi Network

This procedure is required for initial setup if the unit has not been connected before .

If the Sketch is uploaded before entering the network credentials, the pixel controller will not connect to the WiFi network and you will have to use the AP setup procedure. See the Network section in Tips and Tricks.

Enter your WiFi credentials in the variable declarations section near the top of the Sketch (Pixels.ino) Network section.

WiFi SSID (or Network Name).....

WiFi Password.....

Enter the IP Address that you want for the Pixel Controller. Select the last number that is about 50 more or less than the last number of your router. eg if your router is 192.168.0.1 then use 192.168.0.85. If your router is 10.0.0.138, use 10.0.0.85

IP Address Gateway (the router IP Address)

IP Address Subnet Mask (Usually 255.255.255.0)

Note the router DNS IP is the same as the Gateway IP address.

The server port used is 85. So that when you call up the Pixel Controller web page in your browser you would enter the Pixel Controller address followed by a colon and the number 85. eg 192.168.0.85:85

From the Tools/Board menu Select ESP32 Dev Module.

Connect the board to your USB and check the correct port is selected in Tools/Port.

Click upload and when done, the controller should be accessible on your smart device. Note that the initial upload is via USB and subsequent uploads can be via OTA. The only change is that the port associated with the micro IP address must be selected as per the next section.

If the Unit cannot connect using the credentials entered then the unit will switch to AP mode. See the Network section in the Tips and Tricks section above.

Optionally, you can also upload a preprepared set of Designs, Names and Coding files using the ESP32 Sketch Data Upload tool. See Section below.

## 11. Default Settings

At boot, a check of EEPROM locations 25 and 26 is done to see whether they hold the values 25 and 26 respectively. If they don't match, the settings for the Pixel Controller such as WiFi credentials and screen colours are set from the values in the variables declaration section of the sketch and then saved to EEPROM. Subsequent changes to settings are then saved to EEPROM and loaded at each boot because EEPROM locations 25 and 26 values match their

location numbers. To restore defaults, temporarily comment the line: `readDefaultData();` in `setup()` , reflash, uncomment the line and reflash again.

## 12. SPIFFS File Uploading (Optional)

Designs, Names and Coding definitions are saved to the micro's SPIFFS file system. Included in the sketch folder is a sub folder named data that includes a set of files that you can upload to the micro rather than having a blank Pixel Controller. These files will help to understand how to use the Pixel Controller. Some of the Names may not initially match the Designs, but can easily be changed in the Design Screen.

If these files are not uploaded, the Pixel Controller will be blank (other than the Clock) and the Coding and Designs will have to be created from scratch.

Before these files can be uploaded, you must install the ESP32 Sketch Data Upload tool. This tool can then be accessed from the IDE using the Tools menu. When run , a drop down list appears. Select SPIFFS as the Filesystem.

For instructions on how to use this tool, search the web or use the following link.

<https://randomnerdtutorials.com/install-esp32-filesystem-uploader-arduino-ide/>

Note that when you use this tool, any micro files that exist with the same file name as the upload will be overwritten and the data lost. If you have already created data on the micro, you can save it by using the Export button on the Design View to send the current data out to the serial Port. This data can be viewed on the serial monitor (when a serial port is connected) and cut and pasted into files.

### 13. OTA.

OTA updating is available after first installing the sketch software from the Arduino IDE using the Com port/USB connection.

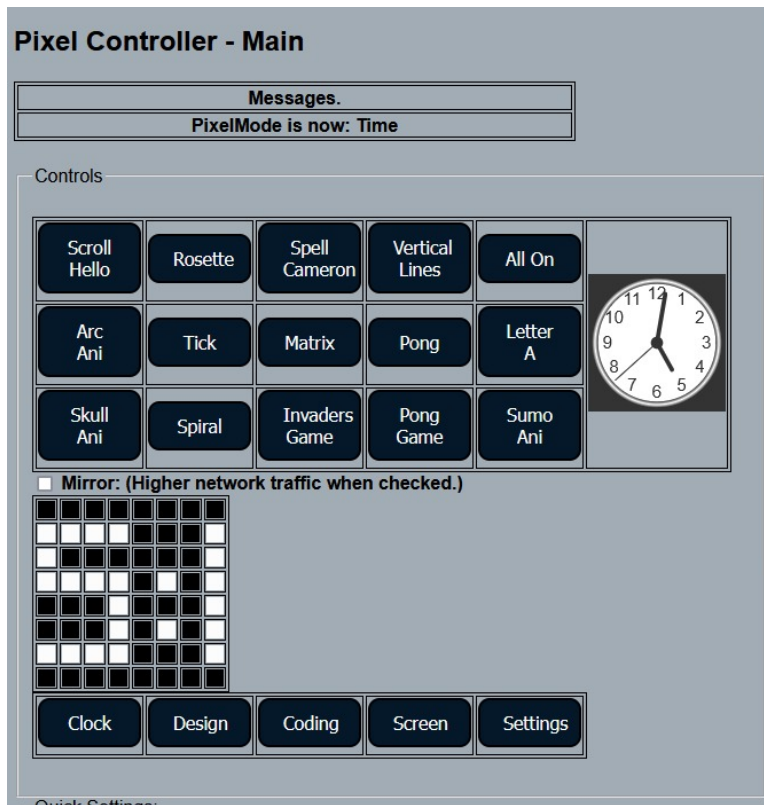
After first install, you should observe a new Network Port in the Tools/Port menu. The port item should also include the Pixel Controller IP Address and ESP 32 Dev Module.

If you select this port any sketch update will be done over WiFi and a cable connection is not required.

Note that the Serial monitor will not be available until you change the port selection in Tools menu back to the Serial Port.

## 14. Main View

The Main Screen has 20 Buttons in 4 Rows of 5 Columns.



The first three rows of Buttons (0 to 14 ) can be programmed to have customised Labels and to Run specific displays on the Panel. See the Coding View section below.

A check box labelled “Mirror” allows for the Pixel LED display to be mirrored in an 8x8 table on the web page. Note that this increases network traffic and should normally be unchecked.

Button 15“Clock” shows the current Time (From NTP Server).

Button 16 “Design” shows the Design View to allow the creation of up to 100 Icons.

Button 17 “Coding” shows the Coding View that allow Buttons 0 to 14 to be assigned with a label and to Display Static Text, Scrolling Text, Letters, Icons, Animations(Sequence of Icons) or Games.

Button 18 “Screen” shows the Screen View that permits changes to the Web Page Screen Colours similar to AFL teams Colours. Only a few are included. Arduino re-coding is required to modify these items.

Button 19 “Settings” shows the Settings View to allow changes such as 12 or 24 Hour Time, Time Zone, Alarm times, Alarm On/Off and WiFi Network Settings.

Also includes are controls for:

Pixel Colour (Full Web Palette Picker Window)

Brightness (Drop Down List)

Scroll Speed (Drop Down List)

Fade Delay (Drop Down List)

Pixel Speed (Drop Down List)

Red Random (Check Box)

Green Random (Check Box)

Blue Random (Check Box)

Fade (Check Box)

Scrolling Text.

10 Programmable Scrolling Text Messages (New Text Shuffles list down, Last is lost)

Icons/Designs.

100 Icons + 10 Fixed Icons + Upper and Lower Case Characters.

Quick Settings:

Pixel Colour:

Brightness=

25 %

▼

Scroll Delay:

300

▼

Fade Delay:

160

▼

Pixel Delay:

300

▼

☐ Red Random:

☐ Green Random:

☐ Blue Random:

☐ Fade:

Scrolling Text:

Scrolling Text:

Text to Scroll:

Scroll Text:

Hi there sunshine

▼

Clear

List

Icons/Designs:

D0 - Trees

▼



## 15. Design View

The Design view permits the creation of up to 100 custom Designs or Icons.

**Pixel Controller - Design**

Messages.  
Design is now Index 99

Home	Clr	Run	Save	-
Copy	Paste	First	Last	+
Export	Copy Colour	Spare	Spare	Spare

Current Design is: D99 - Tick D99 - Tick v

Design Name: Length: 4 /36

Pixel Colour:

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63

1. Select the Design or Icon number from the Drop Down List.
2. Give it a Name in the Design Name Text Box.
3. Choose the Pixel Colour. This opens a Colour Palette. Choose the Colour required.
4. Click on one of the Pixel numbered boxes to turn the Pixel to the colour selected.
5. Repeated clicking on a pixel turns it Off, On and Resets.
6. Various controls are available from the buttons at the top as follows:

**Home.** Returns to the home Web Page.

**Clr.** Clears the current Design.

**Run.** Runs the current Design.

**Save.** Saves the current Design to a SPIFF file Named Dxx.txt where xx = 00 to 99.

**Minus.** Moves to the previous Design.

**Plus.** Moves to the next Design.

**Copy.** Copies the current Design to the clipboard.

**Paste.** Pastes the current Design from the clipboard.

**First.** Moves to Design 0.

**Last.** Moves to Design 99.

**Export.** Exports the Designs to the Serial Port.

**Copy Colour.** Selecting this button allows the copying of the colour of an existing Pixel to the Colour Palette by clicking on a pixel immediately after clicking the Copy Colour button. The usual actions associated with clicking on a pixel resume after a Pixel is clicked.

## 16. Coding View

The Coding View or Coding Screen allows the each of the 15 custom buttons on the main screen to be programmed to show text, letters, a Game, Icon or Icon range as well as other properties such as Brightness and Colour.

### Pixel Controller - Coding

Messages.

Coding View

Home

Save and Run

Set to Spare

Export Coding

Coding List: 

Button 1 - Rosette

Design/Icon List: 

D0 - Trees

Coding Window: Button: 1 Code Length:36 /100

<N>Button1  
<L>Rosette  
<A>Icon  
<T>D6

Coding Syntax Help:

\*Code Name: <N> Name  
\*Label: <L> Button label  
\*Action: <A> Scroll, Spell, Letter, Game, Icon or Ani  
\*Text: <T> Text, Letter, Icon Name or Icon Range  
Icon Name(eg <T>House), Icon Range(eg <T>I20I25)  
or Design Range(eg <T>D20D25)  
Game Name(eg <T>Invaders or <T>Pong)  
Brightness: <I>20 to 100 (Percent- Lower values may not be visible.)  
colour Red: <R>0 to 100  
colour Green: <G>0 to 100  
colour Blue: <B>0 to 100  
Red Random: <RR>0 to 100  
Green Random: <GR>0 to 100  
Blue Random: <BR>0 to 100  
Fade: <F>Yes or No

Note 1. \* Denotes mandatory entry.  
Note 2. Ani means Animation.  
Note 3. If an Icon/Design is used in the Text Field then the Pixel Colours are set and fixed in the Design View for that Item  
Note 4. Games are Invaders or Pong.  
Note 5. Sample Coding Entry could be as follows:  
First, Select the required Coding Button (0 to 14) from the Coding List.  
Then populate the Coding Window using the Mandatory and Optional Tags as follows:  
<N>Button x  
<L>Run Animation  
<A>Ani

A button is first selected from the drop down Coding List, then the Coding Window is used to programme the details.

The format is rigid and must use the syntax shown in the Coding Help text box. Functions are contained between <> symbols and the parameters follow.

For example: <N>Button XX is the name of the button selected.

<L> Sunset gives the selected button the Label "Sunset"

<A>..... specifies what the action is required.

<T>..... specifies the parameters for the required action.

To test the button coding press the Save and Run button at the top.

The function of the Top Buttons are:

**Home.** This returns to the Home (Main) Web page.

**Save and Run.** Saves All Coding files to Coding.txt and runs the current Programme.

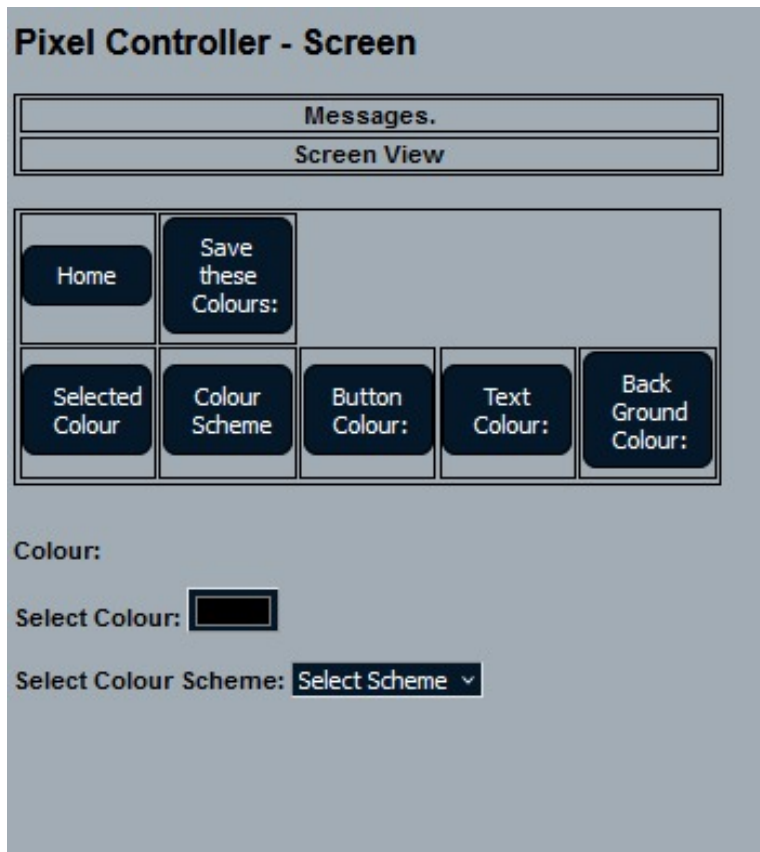
**Set to Spare.** Sets the current programme to spare or default.

**Export Coding.** Exports the Coding File to the Serial Port.

At the bottom of the screen is a help file for the Coding Syntax to be used.

## 17. Screen View

The Screen view allow changes to the Screens Colour Schemes.



### Controls:

**Home** returns to the Home or Main screen.

**Save these Colours.** This button saves and applies the Colour Scheme that is shown on the Colour Scheme Button and the Background to all Views.

**Selected Colour.** Shows the currently selected Colour from the Select Colour Palette.

**Colour Scheme.** Is a preview of the Colour Scheme Selected.

**Button Colour.** Sets the Button Color to the Selected Colour.

**Text Colour.** Sets the Text Colour to the Selected Colour.

**Back Ground Colour.** Sets the Back Ground Colour to the Selected Colour.

**Select Colour:** This shows the Colour Palette to make the Colour Selection.

**Select Colour Scheme.** This is a drop down list of pre-programmed Colour Schemes.

## 18. Settings View

This view controls some of the settings.

### Pixel Controller - Settings

Messages.

WebSocket Ver 5 OTA 31/10/2024

Controls:

Home

24 Hour Mode

12 Hour Mode

Digital Clock

Analog Clock

Version

Turn Alarm On


Turn Alarm Off

Network Re-Scan

Clear Network

Submit Network

Re-Boot Micro



Time Settings:

TimeZone is: 10.5 UTC  
10.5 ▾  
Alarm is Off.  
Alarm is: 15:00  
Alarm Hour: 15 ▾ Alarm Minutes: 0 ▾

WiFi Network Settings:

SSIDs found: SSID List ▾  
SSID: WLAN01G  
Password: ●●●●●●●●  
IP Address: 10.0.0.78  
IP Gateway: 10.0.0.138

### Controls:

**Home.** returns to the Main screen.

**24 Hour Mode.** show the clock in 24 hours that is 1 pm is show as 13:00

**12 Hour mode.** shows the clock up to 12:00 maximum that is 10:00 means 10 am or 10 pm

**Digital Clock** is a digital display in HH:MM format.

**Analog Clock** is a display that shows the minutes around the outside in red and hours around the inside in Blue.

**Version** shows software version in the message box.

**Turn Alarm On.** Indicated by a dot at the top left of the digital Display or a centre dot on the analog display.

**Turn Alarm Off.** Also when alarm sounds, a swipe on the gesture sensor will silence it temporarily.

**Network Re-Scan.** re-scans the WiFi networks that can be seen in the SSIDs found drop down list.

**Clear Network.** Clears the Network Settings to allow new Credentials to be entered in the test boxes.

**Submit Network.** Saves the current Network Credentials to File.

**Re-Boot Micro.** Re-starts the micro .

**Time Settings:**

**TimeZone** drop down list allows time zone to be set or adjusted as will be required for Daylight Savings.

**Alarm Hour and Minutes** can be set in the drop down lists.

**WiFi Network Settings:**

Enter your WiFi credentials for your LAN as well as the IP address that you want to access your Controller. IP Gateway is your router address. Use a different last number for the IP Address for the Controller.

If you change these settings you must press the Submit Network Button to make the changes permanent. If you get these wrong, the unit will not connect to your WiFi network as expected. Instead it will switch to Access Point mode as per the Network section of Tips and Tricks above. Follow the procedure indicated to recover.

## 19. Problems

If you have problems, I can provide limited support. Contact Silicon Chip and they will forward your details to me.

Phillip Webb

Hope Valley SA 5090