



C Library Example

A Code example using the Matrix Orbital C Library for Alphanumeric Displays

Application Note

Revision 1.0

Introduction

The purpose of this example is to demonstrate a newly released C Library for Matrix Orbital Alphanumeric displays. The library consists of all of the commands that are listed in the all alphanumeric manuals, making it easier for the user to write higher lever C Language code for their display.

The files within the demo include "LK_Key_Demo.c", "AlphaDriver.h", "AlphaInterface.h", "ModuleTypes.h". "LK_Key_Demo.c" is the code of the demo, the user will enter the port settings here. "AlphaDriver.h" is the Driver and "AlphaInterface.h" is the Interface.

Within his or her Code the user will set the Com/TTY values creating the interface. The interface writes commands from the driver to the port and reads data from the port to the driver.

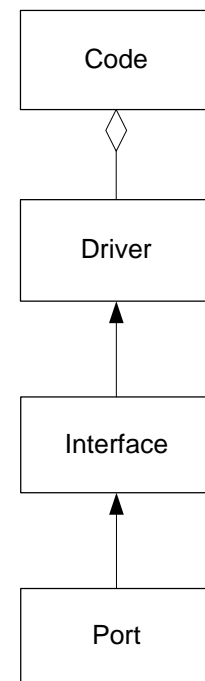


Figure 1: C Library Flow Chart

Instructions for building the project in Windows and Linux environments are found within README.txt.

Port Settings

Interfacing to any Matrix Orbital display begins with the correct selection of the serial port and associated attributes. In C a serial port object can be defined as an interface using the port name. For the sake of the demo please change the following line to reflect your port desired name in the code:

For Windows:

```
#define PORTNAME "\\\\.\\COM3"
```

For Linux:

```
#define PORTNAME "/dev/ttyUSB0"
```

Text

Once a serial port file is created and configured, text can be written to it as a series of bytes. In C a char allows bytes to be easily viewed as readable text.

```
char* menu_strings[] = { "Backlight", "Contrast", "LED Indicators", "Defaults" };  
...  
WriteString(menu_strings[i]);
```

Once defined, an array can be written to the display by using the WriteString() function.

Commands

Commands are transmitted in very much the same way as text. However, as they are often unprintable characters, they are usually defined within an array of bytes as decimal or hexadecimal values. For the sake of this demo, Matrix Orbital alphanumeric commands have been format below.

```
void ClearScreen(void)
{
    uint8_t command[] = { 254, 88 };
    Write(command, sizeof(command));
}
```

Again, the values are written to the serial port in the same way as a series of text characters.

On Reading

The easiest way to read key presses from a Matrix Orbital display is to use polling mode. First, turn off the auto transmission of key presses so they stay in the ten key buffer rather than being transmitted immediately to the serial port.

```
AutoTransmitKeyPressesOff()
```

Next, ensuring a key has been pressed, issue the command to poll the display. This will result in the key press being transmitted to the host.

```
PollKeyPress(key_press, 1)
```

If a key is not pressed, the function will return the value '0'. The demo code will continue to poll for a key press until a value is returned.

In Closing

This demo gives the user a practical example of the Matrix Orbital C Library for Alphanumeric Displays. This gives the user the ability to implement the Driver and Interface files to create their own higher level code without the worry of writing the basic underlying functions. If necessary the user may even alter existing or add new interfaces to the project.

Within the library the Driver defines the commands and Read and Write functions. The Port name and Baud Rate are passed to the Interface from the main Code. The Interface then creates the port file.

This demo has demonstrated the newly released C Library for Matrix Orbital Alphanumeric displays.

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