

GLCD 128x64 interfacing with PIC18F4550 Microcontroller.

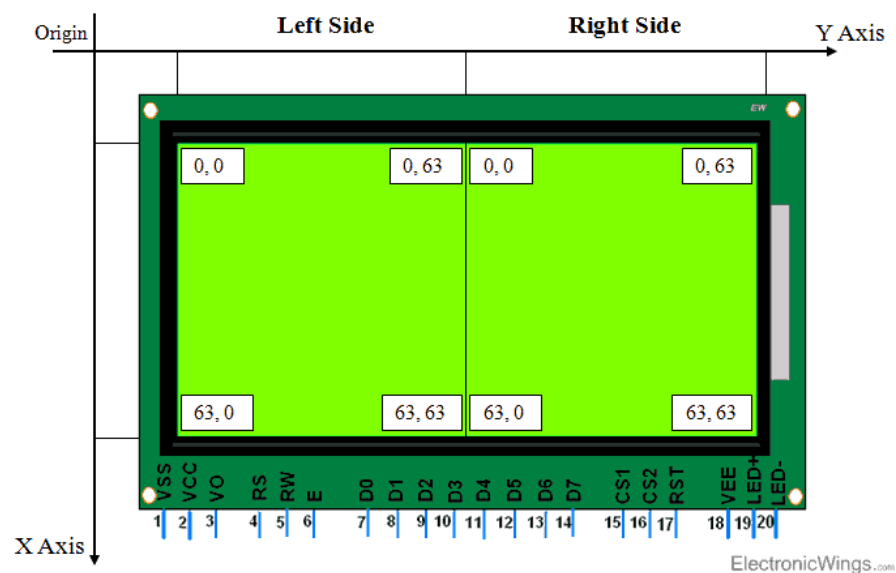
Overview of GLCD 128x64

GLCD is a display device that can be used in embedded systems for displaying data and/or images/custom characters.

- Basically, 128x64 Graphical LCD is a matrix of pixels.
- Each pixel is accessed by their X and Y address.
- We can simply visualize any pixel by making its value HIGH (1).

Hence, we can make any graphical design pixel by pixel using GLCD.

To get familiar with GLCD pins and their functions refer to GLCD 128x64 (<http://electronicwings.com/sensors-modules/glcd-128x64>).



Basic Structure of GLCD 128x64 Displays

Programming GLCD

Let's program the PIC18F4550 microcontroller to print text character on GLCD JHD12864E.

Initialization

To initialize the display, we need to do below steps,

- Send Display OFF command i.e. 0x3E
- Send Y address e.g. here 0x40 (Start address).
- Send X address (Page) e.g. here 0xB8 (Page0).
- Send Z address (Start line) e.g. here 0xC0 (from 0th line).
- Now send Display ON command i.e. 0x3F



```
void GLCD_Init()      /* GLCD Initialization function */
{
    Ctrl_dir = 0;      /* Make Control pin as output */
    Data_dir = 0;      /* Make Data pin as output */
    OSCCON = 0x72;      /* Internal 8MHz OSC Frequency */
    RST = 1;           /* Make reset pin High */
    CS1 = 1; CS2 = 1;   /* Select Left half of display */
    MSdelay(20);
    GLCD_Command(0x3E); /* Display OFF */
    GLCD_Command(0x40); /* Set Y address (column=0) */
    GLCD_Command(0xB8); /* Set x address (page=0) */
    GLCD_Command(0xC0); /* Set z address (start line=0) */
    GLCD_Command(0x3F); /* Display ON */
}
```

Command Write

To write a command do the below steps

- Send command on data pins.
- Make RS = 0 (Command Register) and RW = 0 (Write Operation).
- Make High to Low transition on Enable pin of min 1 us period.

GLCD_Command function

Input arguments: It has an input argument of Command.

Return type: It does not return any data type.

```
void GLCD_Command(char cmd) /* GLCD Command function */
{
    LCD_data = cmd;          /* Copy command on data pin */
    RS = 0;                  /* Make RS LOW for command register */
    EN = 1;                  /* Make HIGH-LOW transition on Enable */
    NOP();
    NOP();
    EN = 0;
    NOP();
    NOP();
}
```

Data Write

To write data do the below commands

- Send Data on data pins.
- Make RS = 1 (Data Register) and RW = 0 (Write Operation).
- Make High to Low transition on Enable pin of min 1us period.

GLCD_Data function

Input arguments: It has input argument Data.



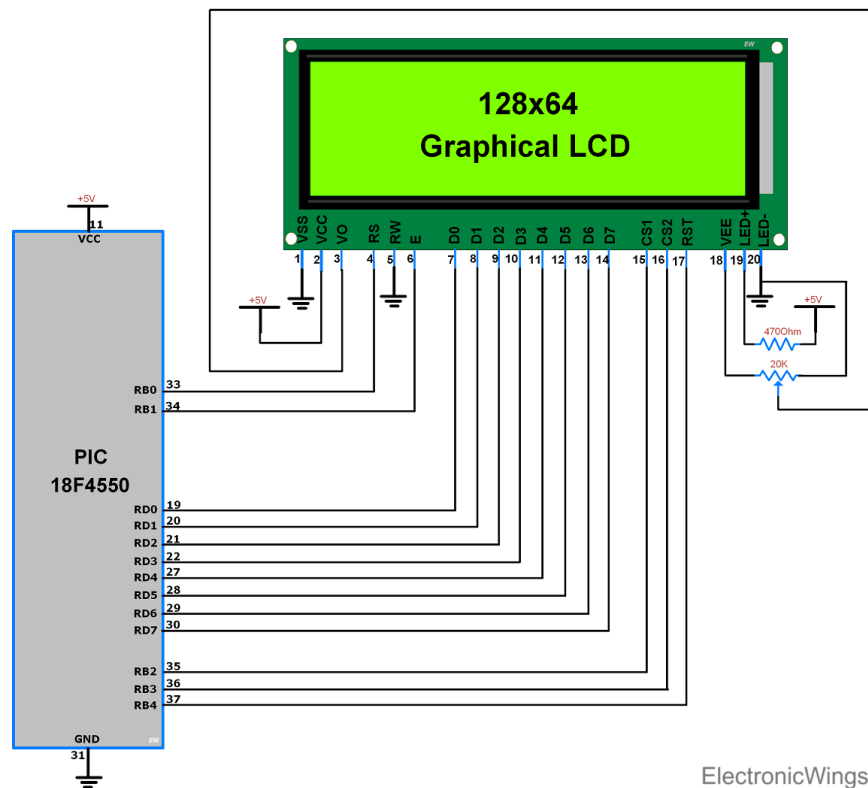
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```
void GLCD_Char(char data) /* GLCD Data function */
{
    LCD_data = data;
    RS = 1;                /* Copy Data on data pin */
    /* Make RS HIGH for data register */
    EN = 1;                /* Make HIGH-LOW transition on Enable */
    NOP();
    NOP();
    EN = 0;
    NOP();
    NOP();
}
```

Connection Diagram of GLCD 128x64 to PIC18F4550



ElectronicWings.com

Graphical LCD interfacing with PIC18F4550

GLCD 128x64 Text Print Code for PIC18F4550



```

LCD_data = data; /* Copy Data on data pin */
RS = 1; /* Make RS HIGH for data register */
EN = 1; /* Make HIGH-LOW transition on Enable */
NOP();
NOP();
EN = 0;
NOP();
NOP();
}

void GLCD_String(char page_no, char *str)/* GLCD string write function */
{
    unsigned int i,column,Page=((0xB8)+page_no),Y_address=0;
    float Page_inc=0.5;
    CS1 = 1; CS2 = 0; /* Select Left half of display */
    GLCD_Command(Page);
    for(i=0;str[i]!=0;i++) /* Print char in string till null */
    {
        if (Y_address>(1024-(((page_no)*128)+5)))
            break;
        if (str[i]!=32)
        {
            for (column=1;column<=5;column++)

```

Output Image



Print Image on GLCD 128x64 using PIC18F4550

Programming PIC18F4550 to Display Image on GLCD

We are using the same function that used for displaying text except for GLCD_String, which we have modified here to print image data on GLCD.

Image Display Code for PIC18F4550



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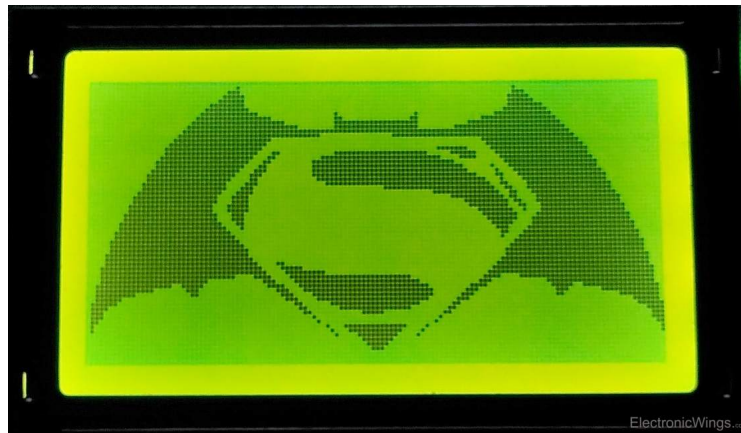
* GLCD128x64 interface with PIC18F4550
* <http://www.electronicwings.com>

```
#include <pic18f4550.h>
#include "Configuration_header_file.h"
#include "Image.h"
```

```
void GLCD_Init();
void GLCD_Command(char);
void GLCD_Char(char);
void GLCD_String(char *str);
void GLCD_Clear();
void MSdelay(unsigned int);
```

```
#define RS LATB0
#define EN LATB1
#define CS1 LATB2
#define CS2 LATB3
#define RST LATB4
// #define LATB LATB4
```

Output Image



Animation


To make animation on GLCD 128x64 JHD12864E display do the below steps,

- Take two or more images in a manner that their sequence will create an illusion of motion.
- Convert it to Binary image data using the Image2GLCD application.
- And print them on GLCD in a series of sequences. It will create animation.
- Note that provides a sufficient delay in between images.

Video of Image Display on GLCD 128x64 using PIC18F4550



Components Used



(https://www.mouser.in?utm_source=electronicswing&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Powered By

GLCD 128x64

GLCD 128x64 is a Graphical LCD having 128x64 pi...


X 1

 (https://www.mouser.com/ProductDetail/SparkFun/LCD-00710?qs=%2Fha2pyFadujGe%2FSxJkoD9UdARBBOHjVOCnG9uvDmCV%2FbXLeCDV%252BTIQ%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)


Components Used

PICKit 4 MPLAB
PICKit 4 MPLAB

X 1




(https://www.mouser.in/ProductDetail/Microchip-Technology/PG164140?qs=r5DSvIrkXmLKDuYNJImLWw%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)




Datasheet (/components/pickit-4-mplab/1/datasheet)

PIC18f4550
PIC18f4550

X 1



(https://www.mouser.in/ProductDetail/Microchip-Technology/PIC18F4550-I-P?qs=oKK8NaWdAJs8nLDXBGwMXw%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)



Datasheet (/components/pic18f4550/1/datasheet)


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Comments



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Faisal

(/users/Faisal/profile)
2018-05-20 23:20:46

hello sir

i am using your above code but it is giving error cant open the header file
can anyone plz say from where i can get the 3 header files.

```
#include <pic18f4550.h>
#include "Configuration_header_file.h"
#include "Image.h"
```

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lokeshc

(/users/lokeshc/profile)
2018-05-22 08:22:24 • Edited

Check your project properties. In that select xc8 linker for build configurations.
Select option categories and runtime option should select. In runtime, tick the
option "link in peripheral library".

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BlackTNA

(/users/BlackTNA/profile)
2022-05-20 21:20:29

it doesn't have the option "link in peripheral library"

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abelk020

(/users/abelk020/profile)
2019-02-18 00:37:37

Is Extended ascii supported. For example micro(mu) - ascii hex value = 230.

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lokeshc

(/users/lokeshc/profile)
2019-02-18 19:33:45

Yes, it is possible.

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engdoamonem


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[2019-09-12 03:30:16](#)

Thanks very much, this was a great help. However, I do need to use a smaller text font;

how can I implement this, please? Any help will be highly appreciated.

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[ait22016](#)

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[2020-03-04 23:33:46](#)

hello sir

when i use your code i get the following error:

Error [1214] constant expression expected in initializer

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[tanandachari](#)

[\(/users/tanandachari/profile\)](#)
[2020-07-21 16:21:05](#)

Very good sir

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[ShrikrishnaKulkarni](#)

[\(/users/ShrikrishnaKulkarni/profile\)](#)
[2021-05-01 20:38:32](#)

How can you give GLCD_Command((page_add+page_inc)), where

page_inc = 0.5 a float no. and not an integer?

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[hosseinnarimani](#)

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[2023-07-22 16:21:01](#)

THANK UIN PERSION MEAN'S DAMET GARM

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[MOHSENZAREIEE](#)

[\(/users/MOHSENZAREIEE/profile\)](#)
[2023-08-16 21:23:01](#)

Hi

thanks it was very usefull

Best regards

M.Zareiee

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