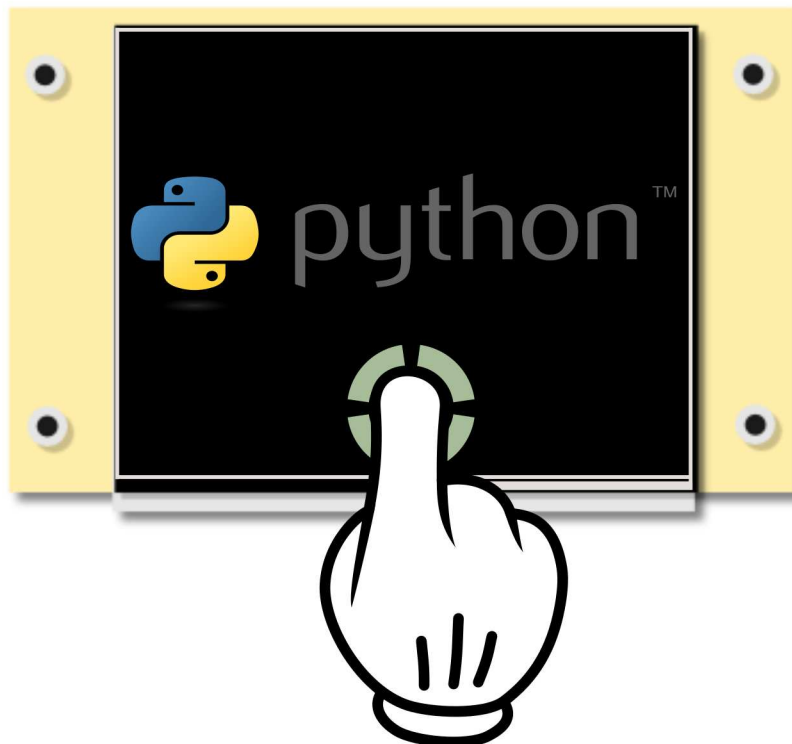


## ezLCD Python Module 1.02



Generated by Doxygen 1.8.4

Sat Jul 20 2013 13:53:46



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# Chapter 1

## Installing the Module

install info here

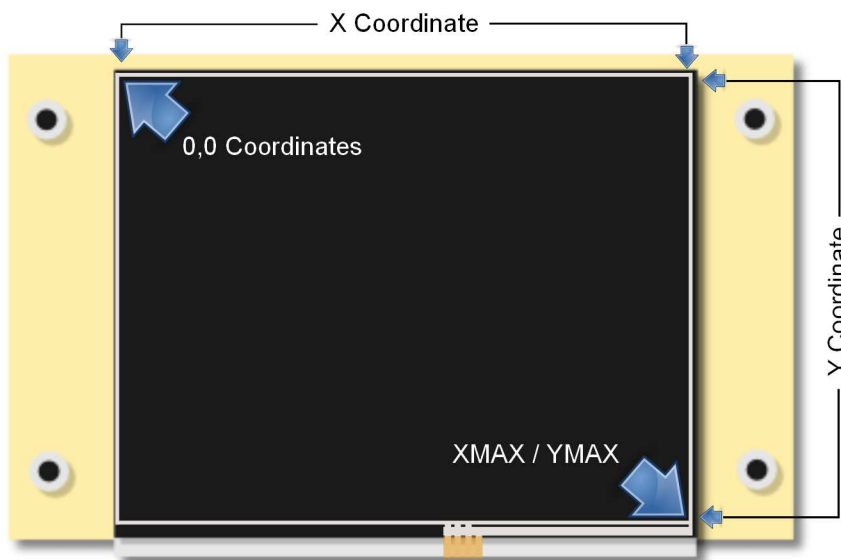
requires pySerial <http://pyserial.sourceforge.net/>





## Chapter 2

# Introduction To The Coordinates System



The ezLCD uses a X Y coordinates system to specify the location for all graphics commands .

**One thing to note is that the displays X Y start at 0, so even though you have a display that is 480x272 pixels wide XMAX is 479 and YMAX is 271.**

X direction is horizontal across the display starting at the left 0 and ending at the max width of the display.

Y direction is vertical starting at the top 0 and ending at the bottom of the display.

XMAX and YMAX Values for the ezLCD 3xx Line

arLCD 319 239

ezLCD-301 399 239

ezLCD-302

ezLCD-303 319 239

ezLCD-313 319 239

ezLCD-304 479 271



## Chapter 3

# Introduction To The Hardware

The ezLCD module contains a GPU and related circuitry to drive a LCD display, USB interface

Internal 4mb MSD flash drive for storage of fonts, bitmaps and macros.

Display can be controlled through USB CDC Serial or TTL 3.3v Serial .

Once power is applied to the display it starts up and executes startup.ezm, it will look in /EZUSER/MACROS and if not found will look in /EZSYS/USERS .

What this file does is set all defaults for the Display and communications port.

Including some default widget fonts and themes.

It's best to have a minimal one in the /EZUSER/MACROS directory with only the relevant settings in it .

Sample minimal startup.ezm.

```
'minimal startup.ezm

'Turn off verbose echo of commands
verbose off

'Set command port to USB CDC
cmd cdc

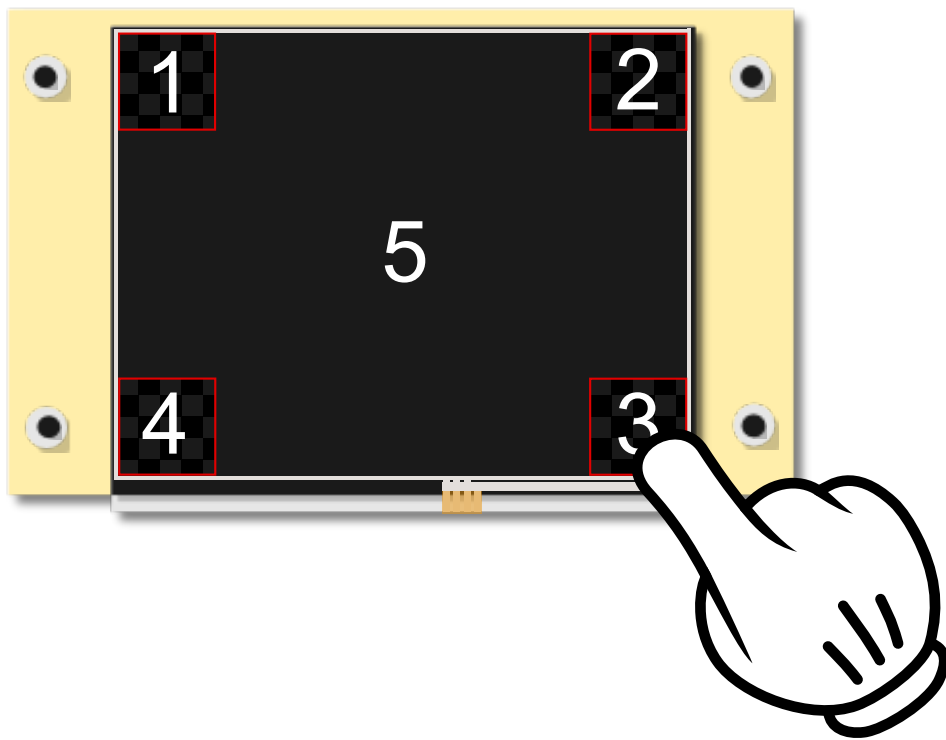
'set some fonts for widgets
fontw 0 0
fontw 1 0
fontw 2 0
fontw 3 serif24
fontw 4 serif24
fontw 5 serif24
fontw 6 serif24
fontw 7 serif24

'Set some themes for widgets
theme 0 1 2 0 0 0 3 3 1 0 0
theme 1 155 152 3 3 3 24 4 5 0 1
theme 2 5 20 3 3 3 4 4 5 0 2
theme 3 9 3 0 0 0 8 8 9 0 3
theme 4 7 3 0 0 0 6 6 6 6 4
theme 5 126 118 3 3 3 35 35 36 0 5
theme 6 111 106 3 3 3 12 12 101 0 6
theme 7 58 48 3 3 3 14 14 54 0 7

color white
print "Python CDC Mode 115200 Baud "
'print device model
print 65
print " "
'print firmware version
print 66
```

The ezLCD by default will load startup.ezm but you can have startup1.ezm through startup5.ezm

So if you press the touch screen at power up in any of the areas shown below you can execute the other startup macros.



## Chapter 4

# Introduction To The Software

Commands are sent to the ezLCD though the serial interface, Commands are text based and end with a carriage return **cr**.

So if you send **cls** ending with a **cr** the device will clear the screen and return a **cr** when the command is complete,

some widgets take a bit of time (in the millisecond range) to complete so after sending a command allways wait for a **cr** to comeback before sending another command.

Minimal example will open the ezLCD port clear the screen and print 'Hello From Python' in red



```
1 # Minimal ezLCD Python demo
2 #
3
4 import platform
5 import sys
6
7
8 sys.path.append('module')
9 from ezLCD3xx import *
10
11 LCD = ezLCD(None)
12 comPort = LCD.findezLCD()
13
14 #check what OS we are on
15 #Windows
16 if platform.system() == 'Windows':
17     LCD = ezLCD(comPort[0][0])
18 #Mac
```

```
19 elif platform.system() == 'Darwin':
20     LCD = ezLCD('/dev/tty.usbsomething')
21 # Bail out if comport error
22 if LCD.openSerial()==False:
23     print 'Error Opening Port'
24     raise SystemExit
25
26 # Turn verbose off
27 LCD.verbose(OFF)
28 # Turn off button press info from ezLCD
29 LCD.wquiet(ON)
30 # CLear screen
31 LCD.cls()
32 # Set draw color to red
33 LCD.color(BLUE)
34 # Print string at coordinates x=80 and y=100
35 LCD.printString("Hello From Python",80,100)
36 # Close serial port
37 LCD.closeSerial()
38
```

## Chapter 5

# Introduction To Themes

Themes will specify the colors used on widgets (buttons, sliders ect)

You can have 16 themes numbered 0-15.

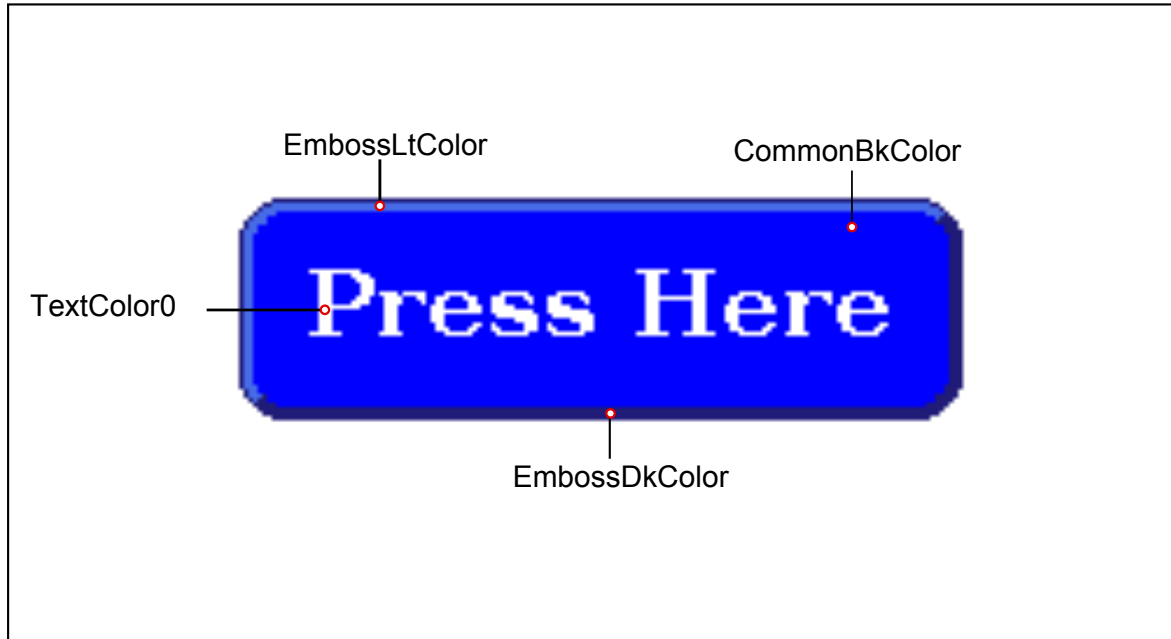
**LCD.theme( 1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1 )**

### Theme Component Description

Theme ID number.	
EmbossDkColor Dark emboss color used for 3-D effect of Objects.	
EmbossLtColor Light emboss color used for 3-D effect of Objects.	
TextColor0	
TextColor1	
TextColorDisabled Text color used for Objects that are disabled.	
Color0	
Color1	
ColorDisabled Color used to render Objects that are disabled.	
CommonBkColor A common background color of Objects.	
Font number defined with the fontw command.	

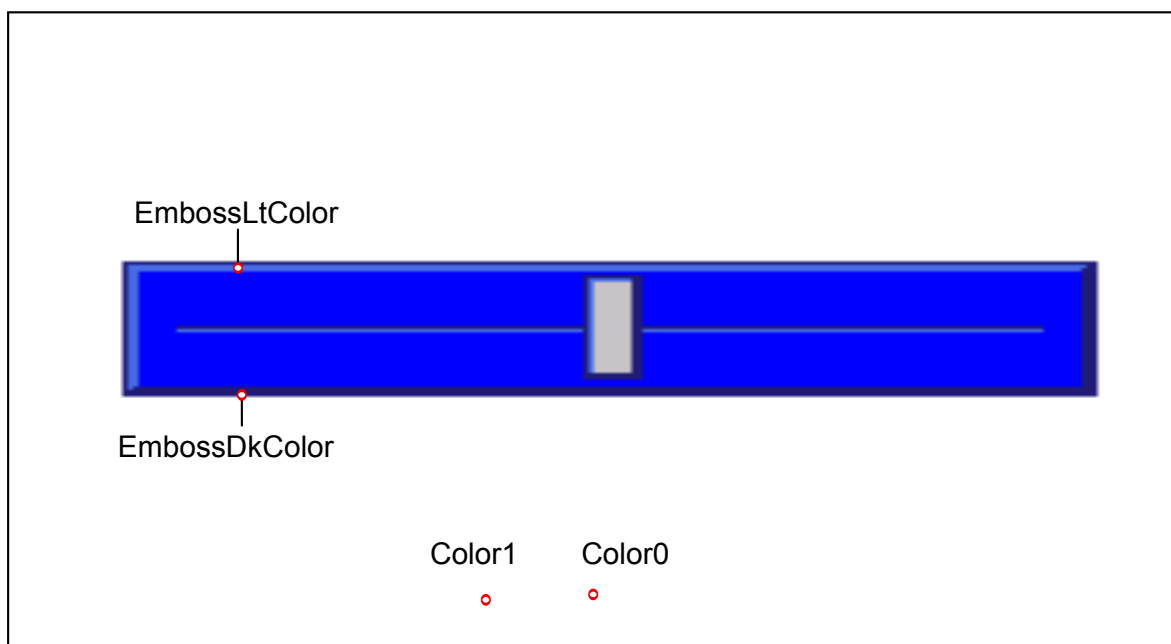
## 5.1 Themes on Buttons

**Theme Button Layout**



## 5.2 Themes on Sliders

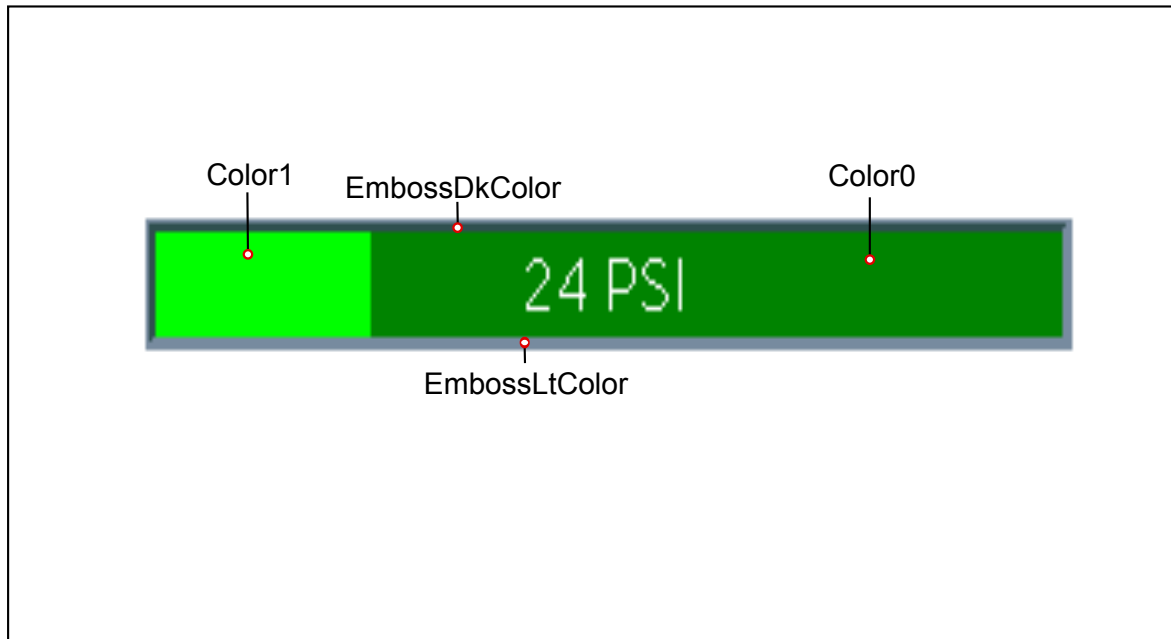
**Theme Slider Layout**





## 5.3 Themes on Progress Bar

### Theme Progress Bar Layout

























































































## Chapter 6

## Color Table

0	Black 0, 0, 0	1	Gray 128, 128, 128	2	Silver 192, 192, 192	3	White 255, 255, 255	4	Red 255, 0, 0	5	Maroon 128, 0, 0
6	Yellow 255, 255, 0	7	Olive 128, 128, 0	8	Lime 0, 255, 0	9	Green 0, 128, 0	10	Aqua 0, 255, 255	11	Teal 0, 128, 128
12	Blue 0, 0, 255	13	Navy 0, 0, 128	14	Fuchsia 255, 0, 255	14	Magenta 255, 0, 255	15	Purple 128, 0, 128		
16	IndianRed 205, 92, 92	17	LightCoral 240, 128, 128	18	Salmon 250, 128, 114	19	DarkSalmon 233, 150, 122	20	LightSalmon 255, 160, 122	4	Red 255, 0, 0
22	Crimson 220, 20, 60	23	FireBrick 178, 34, 34	24	DarkRed 139, 0, 0	25	Pink 255, 192, 203	26	LightPink 255, 182, 193	27	HotPink 255, 105, 160
28	DeepPink 255, 20, 147	29	MediumVioletRed 199, 21, 133	30	PaleVioletRed 219, 112, 147	31	LightSalmon 255, 160, 122	32	Coral 255, 127, 80	33	Tomato 255, 99, 71
34	OrangeRed 255, 69, 0	35	DarkOrange 255, 140, 0	36	Orange 255, 165, 0	37	Gold 255, 215, 0	6	Yellow 255, 255, 0	38	Yellow 255, 255, 0
40	LemonChiffon 255, 250, 205	41	LightGoldenrodYellow 250, 250, 210	42	PapayaWhip 255, 239, 213	43	Moccasin 255, 228, 181	44	PeachPuff 255, 218, 185	45	PaleGoldenrod 238, 232, 170
46	Khaki 240, 230, 140	47	DarkKhaki 189, 183, 107	48	Lavender 230, 230, 250	49	Thistle 216, 191, 216	50	Plum 221, 160, 221	51	Violet 238, 130, 238
52	Orchid 218, 112, 214	53	Fuchsia 255, 0, 255	53	Magenta 255, 0, 255	54	MediumOrchid 186, 85, 211	55	MediumPurple 147, 112, 219	56	BlueViolet 138, 43, 226
57	DarkViolet 148, 0, 211	58	DarkOrchid 153, 50, 204	59	DarkMagenta 139, 0, 139	60	Purple 128, 0, 128	61	Indigo 75, 0, 130	63	SlateBlue 106, 90, 205
62	DarkSlateBlue 72, 61, 139	65	GreenYellow 173, 255, 47	66	Chartreuse 127, 255, 0	67	LawnGreen 124, 252, 0	8	Lime 0, 255, 0	69	LimeGreen 50, 205, 50
70	PaleGreen 152, 251, 152	71	LightGreen 144, 238, 144	72	MediumSpringGreen 0, 250, 154	73	SpringGreen 0, 255, 127	74	MediumSeaGreen 60, 179, 113	75	SeaGreen 46, 139, 87

76		ForestGreen 34, 139, 34	9		Green 0, 128, 0	78		DarkGreen 0, 100, 0	79		YellowGreen 154, 205, 50	80		OliveDrab 107, 142, 35	7		Olive 128, 128, 0
82		DarkOliveGreen 85, 107, 47	83		MediumSlateBlue 102, 205, 170	84		DarkSeaGreen 143, 188, 143	85		LightSeaGreen 32, 178, 170	86		DarkCyan 0, 139, 139	11		Teal 0, 128, 128
10		Aqua 0, 255, 255	10		Cyan 0, 255, 255	90		LightCyan 224, 255, 255	91		PaleTurquoise 175, 238, 238	92		Aquamarine 127, 255, 212	93		Turquoise 64, 224, 208
94		MediumTurquoise 72, 209, 204	95		DarkTurquoise 0, 206, 209	96		CadetBlue 95, 158, 160	97		SteelBlue 70, 130, 180	98		LightSteelBlue 176, 196, 222	99		PowderBlue 176, 224, 230
100		LightBlue 173, 216, 230	101		SkyBlue 135, 206, 235	102		LightSkyBlue 135, 206, 250	103		DeepSkyBlue 0, 191, 255	104		DodgerBlue 30, 144, 255	105		CornflowerBlue 100, 149, 237
105		MediumSlateBlue 123, 104, 238	106		RoyalBlue 65, 105, 225	107		Blue 0, 0, 255	108		MediumBlue 0, 0, 205	109		DarkBlue 0, 0, 139	13		Navy 0, 0, 128
111		MidnightBlue 25, 25, 112	112		Cornsilk 255, 248, 220	113		BlanchedAlmond 255, 235, 205	114		Bisque 255, 226, 196	115		NavajoWhite 255, 222, 173	116		Wheat 245, 222, 179
117		BurlyWood 222, 184, 135	118		Tan 210, 180, 140	119		RosyBrown 188, 143, 143	120		SandyBrown 244, 164, 96	121		Goldenrod 218, 165, 32	122		DarkGoldenrod 184, 134, 11
123		Peru 205, 133, 63	124		Chocolate 210, 105, 30	125		SaddleBrown 139, 69, 19	126		Sienna 160, 82, 45	127		Brown 165, 42, 42	5		Maroon 128, 0, 0
3		White 255, 255, 255	130		Snow 255, 250, 250	131		Honeydew 240, 255, 240	132		MintCream 245, 255, 250	133		Azure 240, 255, 255	134		AliceBlue 240, 248, 255
135		GhostWhite 248, 248, 255	136		WhiteSmoke 248, 248, 245	137		Seashell 255, 245, 238	138		Beige 245, 245, 220	139		Oldlace 253, 245, 230	140		FloralWhite 255, 250, 240
141		Ivory 255, 255, 240	142		AntiqueWhite 250, 235, 215	143		Linen 250, 240, 230	144		LavenderBlush 255, 240, 245	145		MistyRose 255, 228, 225	146		Gainsboro 220, 220, 220
147		LightGrey 211, 211, 211	2		Silver 192, 192, 192	149		DarkGrey 169, 169, 169	150		Gray 128, 128, 128	151		DimGray 105, 105, 105	152		LightSlateGray 119, 136, 153
153		SlateGray 112, 128, 144	155		DarkSlateGray 47, 79, 79	0		Black 0, 0, 0	0		Black 0, 0, 0	0		Black 0, 0, 0	0		Black 0, 0, 0



## **Chapter 7**

# **Introduction To Fonts**





## Chapter 8

# Introduction To Bitmaps

picture supports gif, jpg and bmp



## Chapter 9

# Introduction To Widgets

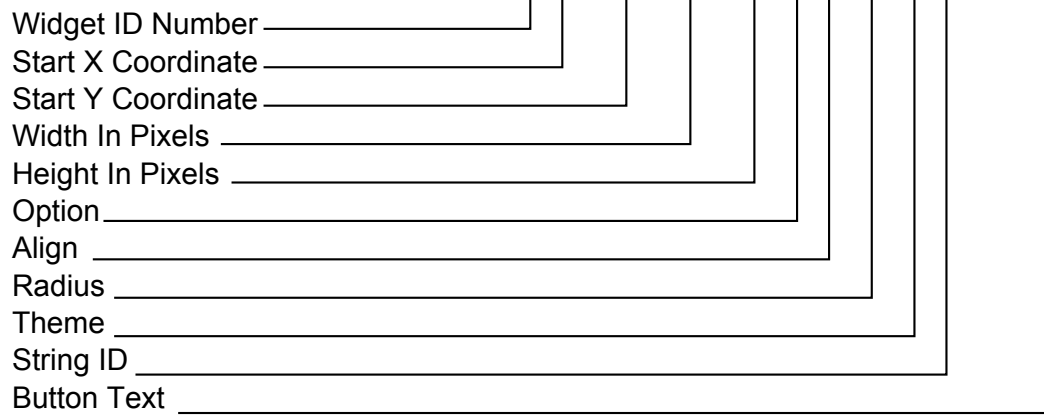
### 9.1 Over View of Widgets

text text

### 9.2 Buttons

Buttons Buttons everywhere

```
LCD.button( 1, 80, 150, 155, 50, 1, 0, 10, 6, 3, 'Press Here')
```

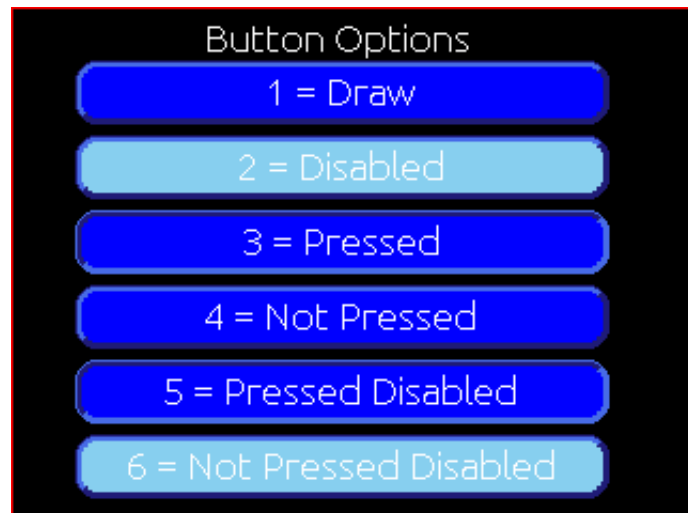


Option : 1 = Draw  
 2 = Disabled  
 3 = Pressed  
 4 = Not Pressed  
 5 = Pressed Disabled  
 6 = Not Pressed Disabled

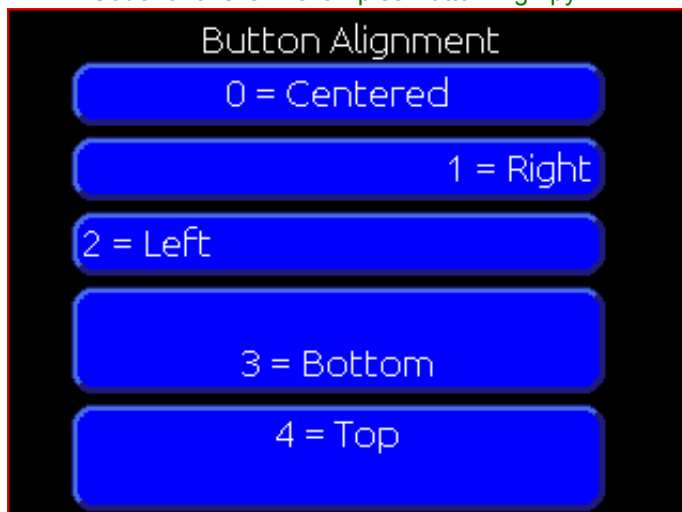
Align : 0 = Centered  
 1 = Right  
 2 = Left  
 3 = Bottom  
 4 = Top

Radius :

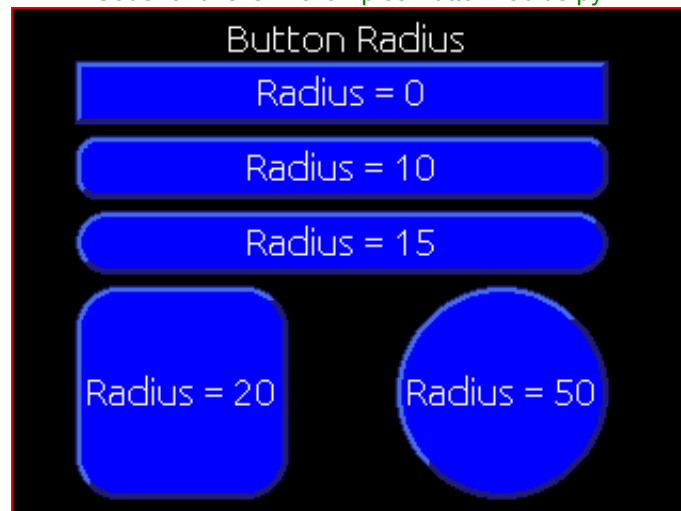
Code for this is in examples ButtonOptions.py



Code for this is in examples ButtonAlign.py



Code for this is in examples ButtonRadius.py



## 9.3 TouchZone

TouchZones work like buttons but do not display any graphics on their own

You have to supply the image.

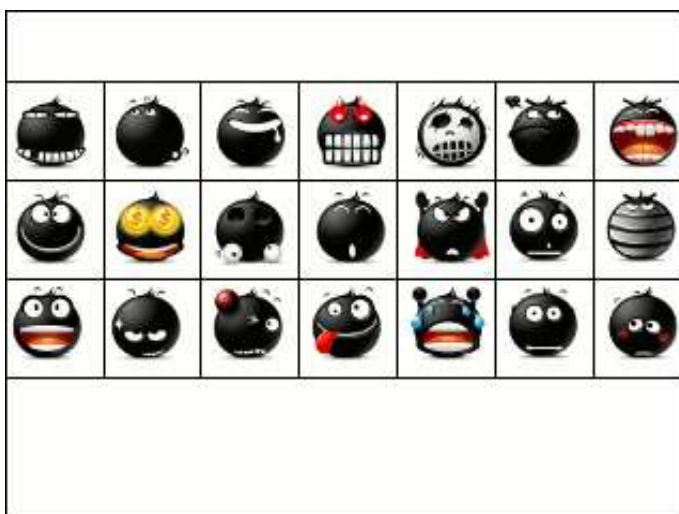
So we can take the image below and can make 21 TouchZones one for each Emoticon

`LCD.touchZone( ID, X, Y, Width, Height, Enable )`

Widget ID \_\_\_\_\_  
 Start X Coordinate \_\_\_\_\_  
 Start Y Coordinate \_\_\_\_\_  
 Width In Pixels \_\_\_\_\_  
 Height In Pixels \_\_\_\_\_  
 Enable \_\_\_\_\_



Code for this in in examples TouchZoneIM.py



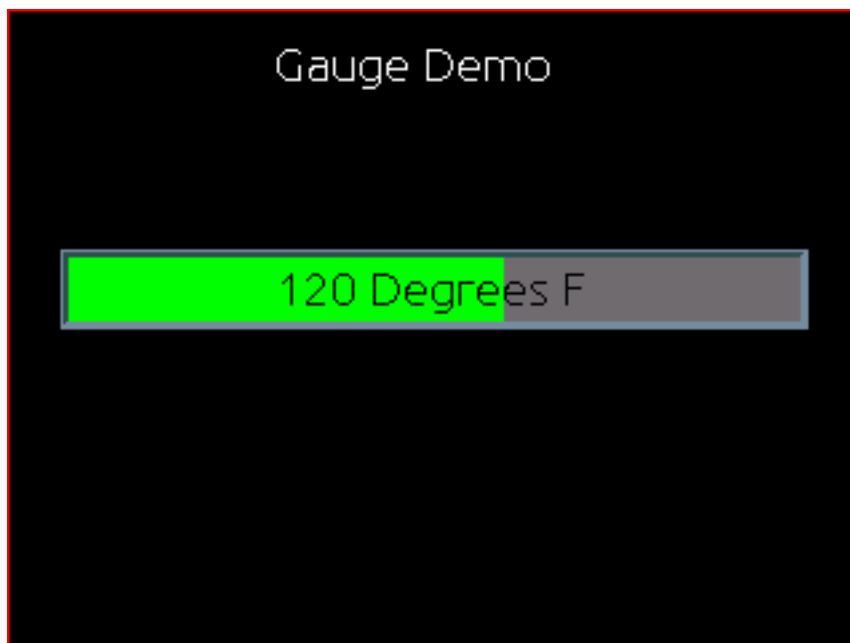
## 9.4 Slider

text text

## 9.5 ProgressBar

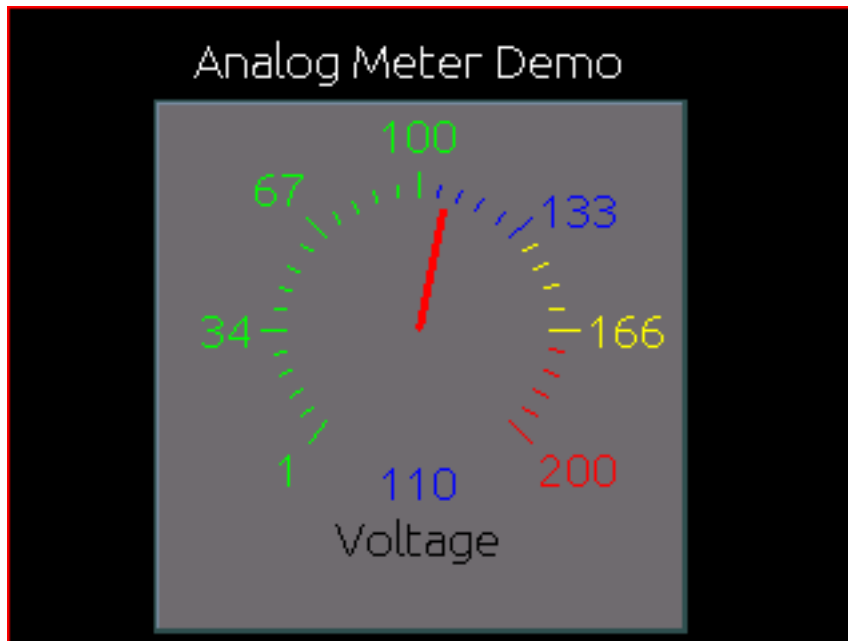
text text

## 9.6 Gauge



text text

## 9.7 AnalogMeter



text text

## 9.8 DigitalMeter

text text

## 9.9 StaticText

text text

## 9.10 GroupBox

text text

## 9.11 Dial

text text

## 9.12 Choice

text text

## 9.13 CheckBox

text text

## 9.14 Radio Buttons

text text



## Chapter 10

# Examples

Button example will display a button widget then poll for button presses and update screen <br>



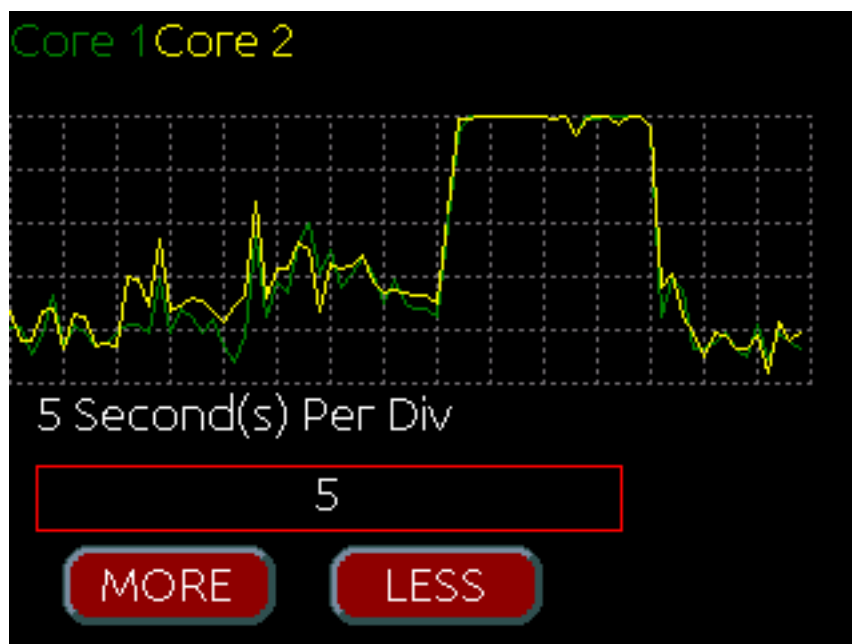
```
1 # Button ezLCD Python demo
2 #
3
4 import platform
5 import sys
6 sys.path.append('module')
7 from ezLCD3xx import *
8
9 LCD = ezLCD(None)
10 comPort = LCD.findezLCD()
11
12 #check what OS we are on
13 #Windows
14 if platform.system() == 'Windows':
15     LCD = ezLCD(comPort[0][0])
16 #Mac
17 elif platform.system() == 'Dawrrwin':
18     LCD = ezLCD('/dev/tty.usbsomething')
19 #Linux
20 elif platform.system() == 'Linux':
21     LCD = ezLCD('/dev/ttyACM0')
22
23 # Bail out if comport error
24 if LCD.openSerial()==False:
25     print 'Error Opening Port'
26     raise SystemExit
27
28 # Turn verbose off
```

```

29 LCD.verbose(OFF)
30 # Turn off button press info from ezLCD
31 LCD.wquiet(ON)
32 # Clear screen
33 LCD.cls()
34 # Set draw color to red
35 LCD.color(RED)
36 # Set widget font 0
37 LCD.fontw(0,'1')
38 # Set widget font 1
39 LCD.fontw(1,'0')
40 # Set theme #1
41 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
42 # Print string at coordinates x=80 and y=100
43 LCD.printString("Hello From Python",80,100)
44 # Draw button widget with a ID of 1
45 LCD.button( 1, 80, 150, 155, 50, 1, 0, 10, 6, 3,'Press Here')
46 # Draw a staticText box
47 LCD.staticText(2, 35, 30, 250, 30, 8, 1, 1,'Press Button')
48 # Clear widget stack
49 LCD.wstack(CLEAR)
50 while True:
51     # check widget stack this will return widget updates (button press ect.) last in first out order
52     (ID, Info, Data) = LCD.wstack(FIFO)
53     # print ID, Info, Data
54     # check if ID = 1 widget 1 and info = pressed
55     if ID == 1 and Info == 4:
56         # clear the stack just to be safe
57         LCD.wstack(CLEAR)
58         # change draw color to yellow
59         LCD.color(YELLOW)
60         # change change string 1 for text on static text ID 2
61         LCD.string(1,'Button Pressed')
62         # redraw static text box ID 2 3=redraw
63         LCD.wstate(2, 3)
64     # check if ID = 1 widget 1 and info = pressed and released
65     if ID == 1 and Info == 1:
66         # clear the stack just to be safe
67         LCD.wstack(CLEAR)
68         # change draw color to yellow
69         LCD.color(YELLOW)
70         # change change string 1 for text on static text ID 2
71         LCD.string(1,'Button Pressed and Released')
72         # redraw static text box ID 2 3=redraw
73         LCD.wstate(2, 3)
74
75

```

Load example will display the cpu load as a graph



```

1 #!/usr/bin/env python
2 # Python Serial library for ezLCD3xx
3 # http://www.ezlcd.com/
4 #

```

---

```

5 # You need the pySerial Library by Chris Liechti
6 # http://pyserial.wiki.sourceforge.net/pySerial
7 #
8
9
10 # END SerLCD Class Definition -----
11
12 # Start Test Program -----
13 import commands
14 import os
15 import re
16 import time as timer
17 import sys
18 import platform
19 import time
20 import psutil
21
22 sys.path.append('module')
23 from ezLCD3xx import *
24
25 def drawGrid():
26     LCD.lineType(2)
27     LCD.xy(0,30)
28     LCD.color(BLACK)
29     LCD.box(300,110,1)
30     LCD.xy(0,0)
31     LCD.color(GREEN)
32     LCD.printString('Core 1')
33     LCD.color(YELLOW)
34     LCD.printString('  Core 2')
35     LCD.color(155)
36     LCD.color(LIME)
37     LCD.font('1')
38     LCD.font('0')
39     LCD.color(151)
40     for y in range(6):
41         LCD.xy(0,(y*20)+39)
42         LCD.line(300,(y*20)+39)
43     for x in range(16):
44         LCD.xy(x*20,39)
45         LCD.line(x*20,139)
46     LCD.xy(300,39)
47     LCD.line(300,139)
48     LCD.lineType(0)
49
50 def drawTime(res):
51     LCD.xy(10,140)
52     LCD.color(BLACK)
53     LCD.box(300,30, FILLED)
54     LCD.color(WHITE)
55     Time=str(res)+' Second(s) Per Div'
56     LCD.printString(Time)
57
58     LCD.string(5, str(res))
59     LCD.wstate(7,REDRAW)
60
61 LCD = ezLCD(None)
62 comPort = LCD.findezLCD()
63
64 #check what OS we are on
65 #Windows
66 if platform.system() == 'Windows':
67     LCD = ezLCD(comPort[0][0])
68 #Mac
69 elif platform.system() == 'Dawrwini':
70     LCD = ezLCD('/dev/tty.usbsomething')
71 #Linux
72 elif platform.system() == 'Linux':
73     LCD = ezLCD('/dev/ttyACM0')
74 # Bail out if comPort error
75 if LCD.openSerial()==False:
76     print 'Error Opening Port'
77     raise SystemExit
78
79 LCD.ping()
80 LCD.verbose('OFF')
81 LCD.wquiet(ON)
82 LCD.cls()
83 LCD.fontw(0,'1')
84 LCD.fontw(1,'0')
85 LCD.fontw(2,'serif24')
86 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
87 LCD.backlight(100, 5, 10)
88 LCD.cls()
89 LCD.font('0')
90 LCD.fonto(0)
91 info = ' '

```

---

```

92 LCD.string( 1, '%' )
93 LCD.color(WHITE)
94 LCD.cfgio(8,'analog')
95 print LCD.xmax()
96 print LCD.ymax()
97 print LCD.string(65)
98 print LCD.string(66)
99
100
101 LCD.button( 5, 20, 200, 80, 30 , 1, 0, 10, 1, 2, 'MORE')
102 LCD.button( 6, 120, 200, 80, 30 , 1, 0, 10, 1, 3, 'LESS')
103 LCD.staticText(7, 10, 170, 220, 25, 8, 1, 5, 'test')
104 drawGrid()
105 x=0
106 y1=239
107 y2=239
108 lx=0
109 ly1=239
110 ly2=239
111 res=5
112 drawTime(res)
113 LCD.wstack(CLEAR)
114 while True:
115
116     oldinfo = info
117     cores=psutil.cpu_percent(interval=1, percpu=True)
118     y1 = 139 - cores[0]
119     y2 = 139 - cores[1]
120     if x!=0:
121         LCD.color(GREEN)
122         LCD.xy(lx,ly1)
123         LCD.line(x, y1)
124         LCD.color(YELLOW)
125         LCD.xy(lx,ly2)
126         LCD.line(x, y2)
127     ly1 = y1
128     ly2 = y2
129     lx = x
130     x += 20/res
131
132     if x >= 300:
133         x=0
134         y1=239
135         y2=239
136         lx =0
137         ly1 =239
138         ly2 =239
139         drawGrid()
140         (ID, info, data) = LCD.wstack(LIFO)
141         LCD.wstack(CLEAR)
142         if ID == 5 and info==1:
143             res +=1
144             drawTime(res)
145         if ID == 6 and info==1:
146             if res > 1:
147                 res -=1
148                 drawTime(res)
149 LCD.closeSerial()
150 # End Test Program -----

```

# Chapter 11

## Module Index

### 11.1 Modules

Here is a list of all modules:

Commands . . . . .	39
Primitive Drawing Commands . . . . .	43
Widgets . . . . .	47
Bitmaps and Fonts . . . . .	55



## Chapter 12

# Namespace Index

### 12.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

<a href="#">module.ezLCD3xx</a> . . . . .	57
---	----





## Chapter 13

# Hierarchical Index

### 13.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

object	
module.ezLCD3xx.ezLCD . . . . .	61



## Chapter 14

# Class Index

### 14.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">module.ezLCD3xx.ezLCD</a> . . . . .	61
---	----



# Chapter 15

## Module Documentation

### 15.1 Commands

#### Functions

- def [module.ezLCD3xx.direct](#)  
*The direct command will send a string direct to the GPU.*
- def [module.ezLCD3xx.verbose](#)  
*The Verbose command will turn on or off more verbose errors.*
- def [module.ezLCD3xx.xmax](#)  
*The xmax command will return the max x of current display.*
- def [module.ezLCD3xx.ymax](#)  
*The ymax command will return the max y of current display.*
- def [module.ezLCD3xx.ping](#)  
*the ping command*
- def [module.ezLCD3xx.backLight](#)  
*The backlight command will set backlight brightness and timeout.*
- def [module.ezLCD3xx.wquiet](#)  
*The wquiet command disables the touch event data being sent to the console port.*
- def [module.ezLCD3xx.cfgio](#)  
*The cfgio command will configure io pins.*
- def [module.ezLCD3xx.io](#)  
*The io command use to set and clear io pins.*
- def [module.ezLCD3xx.play](#)  
*The play command will play a macro stored on the drive of the [ezLCD](#).*
- def [module.ezLCD3xx.run](#)  
*The run command will run a macro stored on the drive of the [ezLCD](#).*
- def [module.ezLCD3xx.reset](#)  
*The reset command will reset the [ezLCD](#) and run startup.ezm same as power up.*
- def [module.ezLCD3xx.snapshot](#)  
*The snapshot command will write a copy of the current display to the flash drive as a bmp.*
- def [module.ezLCD3xx.calibrate](#)  
*The calibrate command will re calibrate the touch screen.*
- def [module.ezLCD3xx.touchX](#)  
*touchX return last press x*
- def [module.ezLCD3xx.touchY](#)  
*touchY return last press x*

- def `module.ezLCD3xx.touchS`  
*touchS return last press x*
- def `module.ezLCD3xx.getPixel`  
*getPixel return last press x*

### 15.1.1 Detailed Description

### 15.1.2 Function Documentation

#### 15.1.2.1 `def module.ezLCD3xx.backLight ( self, brightness, timeout = None, level = None )`

The backlight command will set backlight brightness and timeout.

##### Parameters

<i>brightness</i>	1
<i>timeout</i>	2
<i>level</i>	3

#### 15.1.2.2 `def module.ezLCD3xx.cfgio ( self, pin, function )`

The cfgio command will configure io pins.

##### Parameters

<i>pin</i>	
<i>function</i>	

#### 15.1.2.3 `def module.ezLCD3xx.direct ( self, string )`

The direct command will send a string direct to the GPU.

##### Parameters

<i>string</i>	string to send
---------------	----------------

#### 15.1.2.4 `def module.ezLCD3xx.getPixel ( self, x, y )`

getPixel return last press x

#### 15.1.2.5 `def module.ezLCD3xx.io ( self, pin, level = None )`

The io command use to set and clear io pins.

##### Parameters

<i>pin</i>	
<i>level</i>	

**Returns**

io level

15.1.2.6 `def module.ezLCD3xx.ping ( self )`

the ping command

**Returns**

0

15.1.2.7 `def module.ezLCD3xx.play ( self, filename )`

The play command will play a macro stored on the drive of the [ezLCD](#).

**Parameters**

<i>filename</i>	macro filename
-----------------	----------------

15.1.2.8 `def module.ezLCD3xx.reset ( self )`

The reset command will reset the [ezLCD](#) and run startup.ezm same as power up.

15.1.2.9 `def module.ezLCD3xx.run ( self, filename )`

The run command will run a macro stored on the drive of the [ezLCD](#).

**Parameters**

<i>filename</i>	macro filename
-----------------	----------------

15.1.2.10 `def module.ezLCD3xx.snapshot ( self, x, y, w, h, filename )`

The snapshot command will write a copy of the current display to the flash drive as a bmp.

**Parameters**

<i>x</i>	starting x position
<i>y</i>	starting y position
<i>w</i>	width
<i>h</i>	height
<i>filename</i>	filename.bmp Make sure you have space on the internal flash drive !

15.1.2.11 `def module.ezLCD3xx.touchS ( self )`

touchS return last press x

15.1.2.12 `def module.ezLCD3xx.touchX ( self )`

touchX return last press x

**Returns**

x x coor of last press

15.1.2.13 `def module.ezLCD3xx.touchY ( self )`

touchY return last press x

**Returns**

y y coor of last press

15.1.2.14 `def module.ezLCD3xx.verbose ( self, state )`

The Verbose command will turn on or off more verbose errors.

**Parameters**

<i>state</i>	0=off 1=on
--------------	------------

15.1.2.15 `def module.ezLCD3xx.wquiet ( self, state )`

The wquiet command disables the touch event data being sent to the console port.

**Parameters**

<i>state</i>	0=off 1=on
--------------	------------

15.1.2.16 `def module.ezLCD3xx.xmax ( self )`

The xmax command will return the max x of current display.

**Returns**

x-horizontal resolution in pixels starting from 0

15.1.2.17 `def module.ezLCD3xx.ymax ( self )`

The ymax command will return the max y of current display.

**Returns**

y-vertical resolution in pixels starting from 0



## 15.2 Primitive Drawing Commands

### Functions

- def `module.ezLCD3xx.cls`  
The `cls` command will clear the screen to black if no color is given.
- def `module.ezLCD3xx.color`  
The color command see `ezLCD3xx` manual for colors.
- def `module.ezLCD3xx.colorID`  
The `colorID` command.
- def `module.ezLCD3xx.xy`  
The `xy` command will set or return the `x y` coordinates.
- def `module.ezLCD3xx.plot`  
The `plot` command will set a pixel to current color and if used `x y`.
- def `module.ezLCD3xx.lineType`  
The `lineType` Command will set the line type for the line command.
- def `module.ezLCD3xx.lineWidth`  
The `lineWidth` Command will set the line width for the line command.
- def `module.ezLCD3xx.line`  
The line command will draw a line from current `xy` to `line(x,y)`
- def `module.ezLCD3xx.box`  
The box command will draw a box starting from the current `xy` in width and height with option for filled.
- def `module.ezLCD3xx.circle`  
The circle command will draw a circle in the current `xy` with radius and optional filled.
- def `module.ezLCD3xx.pie`  
The pie command will draw a pie slice at current `xy`.
- def `module.ezLCD3xx.arc`  
The arc command will draw a arc i the current `xy` optional filled.
- def `module.ezLCD3xx.clipArea`  
The `cliparea` command allows you to designate a rectangular/box area that you can draw in.
- def `module.ezLCD3xx.clipEnable`  
The `clipenable` command enables or disables `cliparea`.

### 15.2.1 Detailed Description

### 15.2.2 Function Documentation

#### 15.2.2.1 def module.ezLCD3xx.arc ( self, radius, start, end, fill = 0 )

The arc command will draw a arc i the current `xy` optional filled.

#### Parameters

<i>radius</i>	radius of arc
<i>start</i>	start angle
<i>end</i>	end angle
<i>fill</i>	1=filled arc 0=outline only *optional defaults to outline

15.2.2.2 `def module.ezLCD3xx.box ( self, width, height, fill = 0 )`

The box command will draw a box starting from the current xy in width and height with option for filled.

#### Parameters

<i>width</i>	width of box in pixels
<i>height</i>	height of box in pixels
<i>fill</i>	1=filled box 0=outline only *optional defaults to outline

15.2.2.3 `def module.ezLCD3xx.circle ( self, radius, fill = 0 )`

The circle command will draw a circle in the current xy with radius and optional filled.

#### Parameters

<i>radius</i>	radius of circle
<i>fill</i>	1=filled circle 0=outline only *optional defaults to outline

15.2.2.4 `def module.ezLCD3xx.clipArea ( self, left, top, right, bottom )`

The cliparea command allows you to designate a rectangular/box area that you can draw in.

Any surrounding area will be protected and no changes can be made to it

#### Parameters

<i>left</i>	
<i>top</i>	
<i>right</i>	
<i>bottom</i>	

15.2.2.5 `def module.ezLCD3xx.clipEnable ( self, enable )`

The clipenable command enables or disables cliparea.

#### Parameters

<i>enable</i>	0=off 1=on
---------------	------------

15.2.2.6 `def module.ezLCD3xx.cls ( self, Color = None )`

The cls command will clear the screen to black if no color is given.

#### Parameters

<i>Color</i>	color to clear screen to
--------------	--------------------------

15.2.2.7 `def module.ezLCD3xx.color ( self, color = None )`

The color command see [ezLCD3xx](#) manual for colors.

## Parameters

<i>color</i>	number
--------------	--------

## Returns

color as a tuple

15.2.2.8 `def module.ezLCD3xx.colorID ( self, ID, R=None, G=None, B=None )`

The colorId command.

## Parameters

<i>ID</i>	color ID number
<i>R</i>	Red Value
<i>G</i>	Green Value
<i>B</i>	Blue Value

## Returns

color as a tuple if r g b is None

15.2.2.9 `def module.ezLCD3xx.line ( self, x, y )`

The line command will draw a line from current xy to line(x,y)

## Parameters

<i>x</i>	
<i>y</i>	

15.2.2.10 `def module.ezLCD3xx.lineType ( self, option )`

The lineType Command will set the line type for the line command.

## Parameters

<i>option</i>	0 = solid, 1= dotted (1 pixel spacing between dots), 2 = dashed (2 pixel spacing between dashes)
---------------	--

15.2.2.11 `def module.ezLCD3xx.lineWidth ( self, width )`

The lineWidth Command will set the line width for the line command.

## Parameters

<i>width</i>	thin line (width = 1) or a thick line (width =3). Only [width] = 1 or 3 are available.
--------------	--

**15.2.2.12** `def module.ezLCD3xx.pie ( self, radius, start, end )`

The pie command will draw a pie slice at current xy.

#### Parameters

<i>radius</i>	radius of pie
<i>start</i>	start angle
<i>end</i>	end angle

**15.2.2.13** `def module.ezLCD3xx.plot ( self, x=None, y=None )`

The plot command will set a pixel to current color and if used x y.

#### Parameters

<i>x</i>	optional
<i>y</i>	optional

**15.2.2.14** `def module.ezLCD3xx.xy ( self, x=None, y=None )`

The xy command will set or return the x y coordinates.

#### Parameters

<i>x</i>	x position
<i>y</i>	y position

#### Returns

x y if x and y not supplied

```

1 # Set x y to 100 100
2 LCD.xy(100,100)
3 # Get Current x y
4 (x,y)=LCD.xy()
```

## 15.3 Widgets

### Functions

- def `module.ezLCD3xx.ameter`  
*The ameter widget.*
- def `module.ezLCD3xx.ameter_color`  
*The ameter\_color command.*
- def `module.ezLCD3xx.dmeter`  
*The dmeter widget.*
- def `module.ezLCD3xx.button`  
*The button widget.*
- def `module.ezLCD3xx.choice`  
*The choice widget allows you to print a string and display buttons for the user to choose a response.*
- def `module.ezLCD3xx.groupBox`  
*The groupBox widget.*
- def `module.ezLCD3xx.radioButton`  
*The radioButton widget.*
- def `module.ezLCD3xx.staticText`  
*The staticText widget.*
- def `module.ezLCD3xx.slider`  
*The slider widget.*
- def `module.ezLCD3xx.progressBar`  
*The progressBar widget.*
- def `module.ezLCD3xx.gauge`  
*The gauge widget.*
- def `module.ezLCD3xx.touchZone`  
*The touchZone command.*
- def `module.ezLCD3xx.dial`  
*The dial widget.*
- def `module.ezLCD3xx.theme`  
*The theme command sets the colors for widgets.*
- def `module.ezLCD3xx.fontw`  
*The fontW command will set the font for widget.*
- def `module.ezLCD3xx.string`  
*The string command will set or return a internal string.*
- def `module.ezLCD3xx.wstack`  
*The wstack command will return the stack of widgets pressed 32 levels.*
- def `module.ezLCD3xx.wvalue`  
*The wvalue command will set or return a value to or from a widget.*
- def `module.ezLCD3xx.wstate`  
*The wstate command.*

#### 15.3.1 Detailed Description

#### 15.3.2 Function Documentation

- 15.3.2.1 `def module.ezLCD3xx.ameter ( self, ID, x, y, width, height, options, value, minV, maxV, theme, stringID, meterType = 0, text = None )`

The ameter widget.

**Parameters**

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>value</i>	
<i>minV</i>	
<i>maxV</i>	
<i>theme</i>	
<i>stringID</i>	
<i>meterType</i>	
<i>text</i>	optional text

15.3.2.2 `def module.ezLCD3xx.ameter_color ( self, ID, color1, color2, color3, color4, color5, color6 )`

The ameter\_color command.

**Parameters**

<i>ID</i>	
<i>color1</i>	
<i>color2</i>	
<i>color3</i>	
<i>color4</i>	
<i>color5</i>	
<i>color6</i>	

15.3.2.3 `def module.ezLCD3xx.button ( self, ID, x, y, width, height, options, align, radius, theme, stringID, text = None )`

The button widget.

**Parameters**

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>align</i>	
<i>radius</i>	
<i>theme</i>	
<i>stringID</i>	
<i>text</i>	optional text for button

15.3.2.4 `def module.ezLCD3xx.choice ( self, string, theme, string1 = None, string2 = None, string3 = None )`

The choice widget allows you to print a string and display buttons for the user to choose a response.

## Parameters

<i>string</i>	the text about the buttons
<i>theme</i>	the theme ID
<i>string1</i>	string for left button *optional defaults to YES
<i>string2</i>	string for center button *optional defaults to NO
<i>string3</i>	string for right button *optional defaults to CANCEL

## Returns

1=left button  
 0=center button  
 -1=right button

15.3.2.5 `def module.ezLCD3xx.dial ( self, ID, x, y, radius, option, resolution, value, maxx, theme )`

The dial widget.

## Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>radius</i>	
<i>option</i>	
<i>resolution</i>	
<i>value</i>	
<i>maxx</i>	
<i>theme</i>	

15.3.2.6 `def module.ezLCD3xx.dmeter ( self, ID, x, y, width, height, options, value, digits, dp, theme )`

The dmeter widget.

## Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>value</i>	
<i>digits</i>	
<i>dp</i>	
<i>theme</i>	

15.3.2.7 `def module.ezLCD3xx.fontw ( self, fontnumber, name )`

The fontW command will set the font for widget.

## Parameters

<i>fontnumber</i>	number of the font
<i>name</i>	filename of font '0' and '1' are internal fonts

15.3.2.8 `def module.ezLCD3xx.gauge ( self, ID, x, y, width, height, options, initial, mmin, mmax, theme, stringID = None, text = None )`

The gauge widget.

## Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>initial</i>	
<i>mmin</i>	
<i>mmax</i>	
<i>theme</i>	
<i>stringID</i>	
<i>text</i>	

15.3.2.9 `def module.ezLCD3xx.groupBox ( self, ID, x, y, width, height, options, theme, stringID )`

The groupBox widget.

## Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>theme</i>	
<i>stringID</i>	

15.3.2.10 `def module.ezLCD3xx.progressBar ( self, ID, x, y, width, height, options, value, mmax, theme, stringID, text = None )`

The progressBar widget.

## Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	



<i>value</i>	
<i>mmax</i>	
<i>theme</i>	
<i>stringID</i>	
<i>text</i>	

15.3.2.11 `def module.ezLCD3xx.radioButton ( self, ID, x, y, width, height, options, theme, stringID )`

The radioButton widget.

#### Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	Options: 1=draw , 2=disabled, 3=checked, 4=first, 5=first and checked.
<i>theme</i>	
<i>stringID</i>	

15.3.2.12 `def module.ezLCD3xx.slider ( self, ID, x, y, width, height, options, rrange, resolution, value, theme )`

The slider widget.

#### Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	
<i>rrange</i>	
<i>resolution</i>	
<i>value</i>	
<i>theme</i>	

15.3.2.13 `def module.ezLCD3xx.staticText ( self, ID, x, y, width, height, options, theme, stringID, text = None )`

The staticText widget.

#### Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	
<i>options</i>	Options: 1=left, 2=disabled , 3=right , 4=center, 5=left framed, 6=disabled framed, 7=right framed, 8=center framed , 9=redraw text.

<i>theme</i>	theme
<i>stringID</i>	stringID number
<i>text</i>	text to display *optional

15.3.2.14 `def module.ezLCD3xx.string ( self, stringID, string=None )`

The string command will set or return a internal string.

#### Parameters

<i>stringID</i>	number of string to set or return
<i>string</i>	string to set optional internal strings are used for text on buttons and other widgets Strings are defined as 128 characters. There are 64 strings (0 to 63). String 61-63 are used by the CHOICE command. String 64 is temp location. String 65 is the product string String 66 is the firmware string string cmd = 16

15.3.2.15 `def module.ezLCD3xx.theme ( self, ID, EmbossDkColor, EmbossLtColor, TextColor0, TextColor1, TextColorDisabled, Color0, Color1, ColorDisabled, CommonBkColor, Fontw )`

The theme command sets the colors for widgets.

#### Parameters

<i>ID</i>	Theme ID
<i>EmbossDkColor</i>	Dark color for 3d effect
<i>EmbossLtColor</i>	Light color for 3d effect
<i>TextColor0</i>	
<i>TextColor1</i>	
<i>TextColorDisabled</i>	
<i>Color0</i>	
<i>Color1</i>	
<i>ColorDisabled</i>	
<i>CommonBkColor</i>	
<i>Fontw</i>	widget font for theme

15.3.2.16 `def module.ezLCD3xx.touchZone ( self, ID, x, y, width, height, options )`

The touchZone command.

#### Parameters

<i>ID</i>	
<i>x</i>	
<i>y</i>	
<i>width</i>	
<i>height</i>	

<i>options</i>	
----------------	--

#### 15.3.2.17 `def module.ezLCD3xx.wstack ( self, option )`

The wstack command will return the stack of widgets pressed 32 levels.

##### Parameters

<i>option</i>	0=FIFO 1=LIFO 2=CLEAR FIFO First in First out LIFO Last in First out CLEAR Clear the stack
---------------	---

##### Returns

tuple of ID, Info, Data

##### Button Widget Values

- ID = widgetID of widget pressed
- Info 1=Pressed and released 2=Cancel 4=Pressed
- Data button state

##### TouchZone Widget Vaules

- ID = widgetID of widget pressed
- Info 1=Pressed and released 2=Cancel 4=Pressed
- Data button state

##### Slider Widget Values

- ID = widgetID of widget pressed
- Info 1 = value incremented 2 = value decremented
- Data slider value

##### CheckBox Widget Vaules

- ID = widgetID of widget pressed
- Info 4 = checked 1 = unchecked
- Data state

##### Dial Widget Vaules

- ID = widgetID of widget pressed
- Info 1 = turned clockwise 2 = turned counter-clockwise
- Data dial value

```
1 # check wstack for button presses
2 (ID, Info, Data) = LCD.wstack(LIFO)
```

#### 15.3.2.18 `def module.ezLCD3xx.wstate ( self, ID, option )`

The wstate command.

##### Parameters

<i>ID</i>	widget ID
<i>option</i>	0 = delete, 1 = enable, 2 = disable, 3 = redraw

#### 15.3.2.19 `def module.ezLCD3xx.wvalue ( self, ID, value = None )`

The wvalue command will set or return a value to or from a widget.

## Parameters

<i>ID</i>	
<i>value</i>	

## 15.4 Bitmaps and Fonts

### Functions

- def `module.ezLCD3xx.picture`  
The picture command will display a bitmap in bmp, jpg, gif formats with optional coordinates.
- def `module.ezLCD3xx.font`  
The font command will set current font to use for printString fonts are located in the /EZSYS/FONTS and /EZUSER/FONTS  
use the ezLCD-3xx Font Converter from earthlcd.com  
to convert truetype fonts to `ezLCD` format  
internal fonts will display faster than external fonts.
- def `module.ezLCD3xx.fonto`  
The FONTO command will change the orientation or direction the text prints.
- def `module.ezLCD3xx.printString`  
print string in current color and font and optional coordinates

### 15.4.1 Detailed Description

### 15.4.2 Function Documentation

#### 15.4.2.1 def module.ezLCD3xx.font ( self, font )

The font command will set current font to use for printString fonts are located in the /EZSYS/FONTS and /EZUSER/FONTS

use the ezLCD-3xx Font Converter from earthlcd.com

to convert truetype fonts to `ezLCD` format

internal fonts will display faster than external fonts.

#### Parameters

<i>font</i>	font name '0' and '1' are internal fonts '0' is medium and '1' is small  1 # Set font to internal medium font 2 LCD.font('0') 3 # Set font to LCD24 4 LCD.font('LCD24')
-------------	---

#### 15.4.2.2 def module.ezLCD3xx.fonto ( self, orientation = None )

The FONTO command will change the orientation or direction the text prints.

#### Parameters

<i>orientation</i>	0 90 180 270
--------------------	--------------

#### Returns

orientation current orientation if orientation is not supplied

```
1 LCD.fonto(0)
2 LCD.color(YELLOW)
3 LCD.printString('Hello',100,100)
4 LCD.fonto(90)
```

```

5 LCD.color(RED)
6 LCD.printString('Hello',100,100)
7 LCD.fonto(180)
8 LCD.color(BLUE)
9 LCD.printString('Hello',100,100)
10 LCD.fonto(270)
11 LCD.color(GREEN)
12 LCD.printString('Hello',100,100)

```

#### 15.4.2.3 def module.ezLCD3xx.picture ( self, image, x=None, y=None )

The picture command will display a bitmap in bmp, jpg, gif formats with optional coordinates.

##### Parameters

<i>image</i>	filename of image 'logo.gif'
<i>x</i>	x coordinates
<i>y</i>	y coordinates x y are optional and if not supplied will display image at current xy  <pre> 1 # display python.gif at 10 10 2 LCD.picture('python.gif',10,10) 3 4 # display python.gif at current x y 5 LCD.picture('python.gif') </pre> image cmd = 24

#### 15.4.2.4 def module.ezLCD3xx.printString ( self, string, x=None, y=None, orientation=None )

print string in current color and font and optional coordinates

##### Parameters

<i>string</i>	string to print
<i>x</i>	x coordinates
<i>y</i>	y coordinates
<i>orientation</i>	rotate text direction x y are optional and if not supplied will print string at current xy orientation is optional but if used x y must be supplied ** orientation will be restored to previous orientation after printing string **  <pre> 1 # display string 'Hello World' at 10 10 2 LCD.printString('Hello World',10,10) 3 # display string 'Hello World' at current x y 4 LCD.printString('Hello World') 5 # display string 'Hello World' at 10 10 rotated 90 6 LCD.printString('Hello World',10,10,90) </pre>

# Chapter 16

## Namespace Documentation

### 16.1 module.ezLCD3xx Namespace Reference

#### Classes

- class [ezLCD](#)

#### Functions

- def [\\_\\_init\\_\\_](#)  
*ezLCD object*
- def [findezLCD](#)  
*findezLCD will scan comports 1 to 100 looking for exLCD's*
- def [openSerial](#)  
*openSerial port*
- def [closeSerial](#)  
*closeSerial*
- def [WaitForCR](#)  
*This is a internal use function.*
- def [getInt](#)  
*getInt will return a int from ezLCD*
- def [direct](#)  
*The direct command will send a string direct to the GPU.*
- def [verbose](#)  
*The Verbose command will turn on or off more verbose errors.*
- def [xmax](#)  
*The xmax command will return the max x of current display.*
- def [ymax](#)  
*The ymax command will return the max y of current display.*
- def [ping](#)  
*the ping command*
- def [backLight](#)  
*The backlight command will set backlight brightness and timeout.*
- def [wquiet](#)  
*The wquiet command disables the touch event data being sent to the console port.*
- def [cfgio](#)  
*The cfgio command will configure io pins.*

- def [io](#)  
The io command use to set and clear io pins.
- def [play](#)  
The play command will play a macro stored on the drive of the [ezLCD](#).
- def [run](#)  
The run command will run a macro stored on the drive of the [ezLCD](#).
- def [reset](#)  
The reset command will reset the [ezLCD](#) and run startup.ezm same as power up.
- def [snapshot](#)  
The snapshot command will write a copy of the current display to the flash drive as a bmp.
- def [calibrate](#)  
The calibrate command will re calibrate the touch screen.
- def [touchX](#)  
touchX return last press x
- def [touchY](#)  
touchY return last press x
- def [touchS](#)  
touchS return last press x
- def [getPixel](#)  
getPixel return last press x
- def [cls](#)  
The cls command will clear the screen to black it no color is given.
- def [color](#)  
The color command see [ezLCD3xx](#) manual for colors.
- def [colorID](#)  
The colorId command.
- def [xy](#)  
The xy command will set or return the x y coordinates.
- def [plot](#)  
The plot command will set a pixel to current color and if used x y.
- def [lineType](#)  
The lineType Command will set the line type for the line command.
- def [lineWidth](#)  
The lineWidth Command will set the line width for the line command.
- def [line](#)  
The line command will draw a line from current xy to line(x,y)
- def [box](#)  
The box command will draw a box starting from the current xy in width and height with option for filled.
- def [circle](#)  
The circle command will draw a circle in the current xy with radius and optional filled.
- def [pie](#)  
The pie command will draw a pie slice at current xy.
- def [arc](#)  
The arc command will draw a arc i the current xy optional filled.
- def [clipArea](#)  
The cliparea command allows you to designate a rectangular/box area that you can draw in.
- def [clipEnable](#)  
The clipenable command enables or disables cliparea.
- def [ameter](#)  
The ameter widget.
- def [ameter\\_color](#)



- The ameter\_color command.*
- def [dmeter](#)  
*The dmeter widget.*
- def [button](#)  
*The button widget.*
- def [choice](#)  
*The choice widget allows you to print a string and display buttons for the user to choose a response.*
- def [groupBox](#)  
*The groupBox widget.*
- def [radioButton](#)  
*The radioButton widget.*
- def [staticText](#)  
*The staticText widget.*
- def [slider](#)  
*The slider widget.*
- def [progressBar](#)  
*The progressBar widget.*
- def [gauge](#)  
*The gauge widget.*
- def [touchZone](#)  
*The touchZone command.*
- def [dial](#)  
*The dial widget.*
- def [theme](#)  
*The theme command sets the colors for widgets.*
- def [fontw](#)  
*The fontW command will set the font for widget.*
- def [string](#)  
*The string command will set or return a internal string.*
- def [wstack](#)  
*The wstack command will return the stack of widgets pressed 32 levels.*
- def [wvalue](#)  
*The wvalue command will set or return a value to or from a widget.*
- def [wstate](#)  
*The wstate command.*
- def [picture](#)  
*The picture command will display a bitmap in bmp, jpg, gif formats with optional coordinates.*
- def [font](#)  
*The font command will set current font to use for printString fonts are located in the /EZSYS/FONTS and /EZUSER/FONTS  
use the ezLCD-3xx Font Converter from earthlcd.com  
to convert truetype fonts to ezLCD format  
internal fonts will display faster than external fonts.*
- def [fonto](#)  
*The FONTO command will change the orientation or direction the text prints.*
- def [printString](#)  
*print string in current color and font and optional coordinates*

## Variables

- **interface**
- **ser**
- **sio**

### 16.1.1 Detailed Description

Python Module for earthlcd.com ezLCD 3xx line of displays  
<http://earthlcd.com>

(c)2013 ken segler  
ken@earthlcd.com  
requires pySerial <http://pyserial.sourceforge.net/>

### 16.1.2 Function Documentation

16.1.2.1 `def module.ezLCD3xx.__init__( self, interface )`

[ezLCD](#) object

16.1.2.2 `def module.ezLCD3xx.closeSerial( self )`

closeSerial

16.1.2.3 `def module.ezLCD3xx.findezLCD( self )`

findezLCD will scan comports 1 to 100 looking for exLCD's

Returns

: comPorts list of ports

16.1.2.4 `def module.ezLCD3xx.getInt( self )`

getInt will return a int from [ezLCD](#)

Returns

: var

16.1.2.5 `def module.ezLCD3xx.WaitForCR( self )`

This is a internal use function.

## Chapter 17

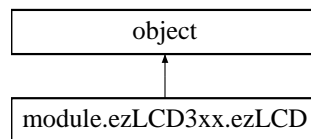
# Class Documentation

### 17.1 module.ezLCD3xx.ezLCD Class Reference

Inheritance diagram for module.ezLCD3xx.ezLCD:

The documentation for this class was generated from the following file:

- C:/Users/Segler/Documents/GitHub/ezLCD3xxPython/module/ezLCD3xx.py



# Chapter 18

## Example Documentation

### 18.1 ButtonAlign.py

```
1 # Button Align ezLCD Python demo
2 #
3
4 import platform
5 import sys
6 sys.path.append('../module')
7 from ezLCD3xx import *
8
9 #check what OS we are on
10 #Windows
11 if platform.system() == 'Windows':
12     LCD = ezLCD('com58')
13 #Mac
14 elif platform.system() == 'Dawrwini':
15     LCD = ezLCD('/dev/tty.usbsomething')
16 #Linux
17 elif platform.system() == 'Linux':
18     LCD = ezLCD('/dev/ttyACM0')
19
20 # Bail out if comports error
21 if LCD.openSerial()==False:
22     print 'Error Opening Port'
23     raise SystemExit
24
25 # Turn verbose off
26 LCD.verbose('off')
27 # Turn off button press info from ezLCD
28 LCD.wquiet(ON)
29 # CLear screen
30 LCD.cls()
31 # Set draw color to red
32 LCD.color(RED)
33 # Set widget font 0
34 LCD.fontw(0,'1')
35 # Set widget font 1
36 LCD.fontw(1,'0')
37 # Set theme #1
38 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
39 # Draw button widget with a ID of 1
40 LCD.color(WHITE)
41 LCD.printString('Button Alignment',90,4)
42 LCD.color(RED)
43 LCD.xy(0,0)
44 LCD.box(319,239)
45 LCD.button( 1, 30, 25, 250, 30, 1, 0, 10, 6, 1,'0 = Centered')
46 LCD.button( 2, 30, 60, 250, 30, 1, 1, 10, 6, 2,'1 = Right')
47 LCD.button( 3, 30, 95, 250, 30, 1, 2, 10, 6, 3,'2 = Left')
48 LCD.button( 4, 30, 130, 250, 50, 1, 3, 10, 6, 4,'3 = Bottom')
49 LCD.button( 5, 30, 185, 250, 50, 1, 4, 10, 6, 5,'4 = Top')
```

### 18.2 ButtonOptions.py

```
1 # Button Options ezLCD Python demo
2 #
3
```

```

4 import platform
5 import sys
6 sys.path.append('..\module')
7 from ezLCD3xx import *
8
9 LCD = ezLCD(None)
10
11 # @returns comPort device firmware string59
12 comPort = LCD.findezLCD()
13
14 # check what OS we are on
15 # Windows
16 if platform.system() == 'Windows':
17     for ez in range(0,len(comPort)):
18         if comPort[ez][3] == 'Unit1':
19             LCD = ezLCD(comPort[ez][0])
20             break
21 #Mac
22 elif platform.system() == 'Dawrwin':
23     LCD = ezLCD('/dev/tty.usbsomething')
24 #Linux
25 elif platform.system() == 'Linux':
26     LCD = ezLCD('/dev/ttyACM0')
27
28 # Bail out if comPort error
29 if LCD.openSerial()==False:
30     print 'Error Opening Port'
31     raise SystemExit
32
33 # Turn verbose off
34 LCD.verbose(OFF)
35 # Turn off button press info from ezLCD
36 LCD.wquiet(ON)
37 # CLear screen
38 LCD.cls()
39 # Set draw color to red
40 LCD.color(RED)
41 # Set widget font 0
42 LCD.fontw(0,'1')
43 # Set wodget font 1
44 LCD.fontw(1,'0')
45 # Set theme #1
46 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
47 # Draw button widget with a ID of 1
48 LCD.color(WHITE)
49 LCD.printString('Button Options',90,4)
50 LCD.color(RED)
51 LCD.xy(0,0)
52 LCD.box(319,239)
53 LCD.button( 1, 30, 25, 250, 30, 1, 0, 10, 6, 3,'1 = Draw')
54 LCD.button( 2, 30, 60, 250, 30, 2, 0, 10, 6, 4,'2 = Disabled')
55 LCD.button( 3, 30, 95, 250, 30, 3, 0, 10, 6, 5,'3 = Pressed')
56 LCD.button( 4, 30, 130, 250, 30, 4, 0, 10, 6, 6,'4 = Not Pressed')
57 LCD.button( 5, 30, 165, 250, 30, 5, 0, 10, 6, 7,'5 = Pressed Disabled')
58 LCD.button( 6, 30, 200, 250, 30, 6, 0, 10, 6, 7,'6 = Not Pressed Disabled')
59 #LCD.snapshot(0,0,320,240,"button0.bmp")
60

```

## 18.3 ButtonRadius.py

```

1 # Button Radius ezLCD Python demo
2 #
3
4 import platform
5 import sys
6 sys.path.append('..\module')
7 from ezLCD3xx import *
8
9 #check what OS we are on
10 #Windows
11 if platform.system() == 'Windows':
12     LCD = ezLCD('com4')
13 #Mac
14 elif platform.system() == 'Dawrwin':
15     LCD = ezLCD('/dev/tty.usbsomething')
16 #Linux
17 elif platform.system() == 'Linux':
18     LCD = ezLCD('/dev/ttyACM0')
19
20 # Bail out if comPort error
21 if LCD.openSerial()==False:
22     print 'Error Opening Port'
23     raise SystemExit

```

```

24
25 # Turn verbose off
26 LCD.verbose('off')
27 # Turn off button press info from ezLCD
28 LCD.wquiet(ON)
29 # Clear screen
30 LCD.cls()
31 # Set draw color to red
32 LCD.color(RED)
33 # Set widget font 0
34 LCD.fontw(0,'1')
35 # Set widget font 1
36 LCD.fontw(1,'0')
37 # Set theme #1
38 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
39 # Draw button widget with a ID of 1
40 LCD.color(WHITE)
41 LCD.printString('Button Radius',100,4)
42 LCD.color(RED)
43 LCD.xy(0,0)
44 LCD.box(319,239)
45 LCD.button( 1, 30, 25, 250, 30, 1, 0, 0, 6, 3,'Radius = 0')
46 LCD.button( 2, 30, 60, 250, 30, 1, 0, 10, 6, 4,'Radius = 10')
47 LCD.button( 3, 30, 95, 250, 30, 1, 0, 15, 6, 5,'Radius = 15')
48 LCD.button( 4, 30, 130, 100, 100, 1, 0, 20, 6, 6,'Radius = 20')
49 LCD.button( 5, 180, 130, 100, 100, 1, 0, 50, 6, 7,'Radius = 50')
50

```

## 18.4 GaugeDemo.py

```

1 # # Gauge Python demo
2 # Ken Segler
3 #
4 #
5
6 import platform
7 import sys
8 import time as timer
9 import random
10
11 sys.path.append('../module')
12 from ezLCD3xx import *
13
14 LCD = ezLCD(None)
15 comPort = LCD.findLcd()
16
17 #check what OS we are on
18 #Windows
19 if platform.system() == 'Windows':
20     LCD = ezLCD(comPort[0][0])
21 # Mac
22 elif platform.system() == 'Darwin':
23     LCD = ezLCD('/dev/tty.usbsomething')
24 # Linux
25 elif platform.system() == 'Linux':
26     LCD = ezLCD('/dev/ttyACM0')
27
28 # Bail out if comPort error
29 if LCD.openSerial() == False:
30     print 'Error Opening Port'
31     raise SystemExit
32
33 # Turn verbose off
34 LCD.verbose('off')
35 # Turn off button press info from ezLCD
36 LCD.wquiet(ON)
37 # Clear screen
38 LCD.cls()
39 # Use internal medium font
40 LCD.fontw(1, '0')
41 # Set draw color to red
42 LCD.color(RED)
43 # set x y to 0
44 LCD.xy(0, 0)
45 # draw box
46 LCD.box(320, 240)
47 # set theme #1
48 LCD.theme(1, 155, 152, 0, 0, 0, 151, 8, 9, 0, 1)
49 # Set draw color to red
50 LCD.color(WHITE)
51 # Print string at coordinates x=80 and y=100
52 LCD.printString("Gauge Demo", 100, 10)
53 # LCD.printString(" Update Theme Based On Value", 30,40)

```

```

54 # def gauge(self, ID, x, y, width, height, options, initial, mmin, mmax, theme, stringID = None, text =
    None ):
55 LCD.gauge(1, 20, 90, 280, 30, 1, 1, 1, 200, 1, 1, ' Degrees F')
56 value = 1
57 low = -1
58 high = -1
59 average = -1
60 while True:
61     value +=1
62     if value >200:
63         value =0
64         timer.sleep(.1)
65         LCD.wvalue(1, value)
66
67
68
69

```

## 18.5 ProgressTheme.py

```

1 ## Progress bar Python demo
2 # Ken Segler
3 #
4 # This demo will display a progress bar and change the theme based on the value of the progress bar
5 # Starts with a green theme then at 30 changes to yellow then to red after 60
6 #
7
8 import platform
9 import sys
10 import time as timer
11 import random
12
13 sys.path.append('../module')
14 from ezLCD3xx import *
15
16 LCD = ezLCD(None)
17 comPort = LCD.findLCD()
18
19 #check what OS we are on
20 #Windows
21 if platform.system() == 'Windows':
22     LCD = ezLCD(comPort[0][0])
23 #Mac
24 elif platform.system() == 'Dawwin':
25     LCD = ezLCD('/dev/tty.usbsomething')
26 #Linux
27 elif platform.system() == 'Linux':
28     LCD = ezLCD('/dev/ttyACM0')
29
30 # Bail out if comport error
31 if LCD.openSerial()==False:
32     print 'Error Opening Port'
33     raise SystemExit
34
35 # Turn verbose off
36 LCD.verbose(OFF)
37 # Turn off button press info from ezLCD
38 LCD.wquiet(ON)
39 # Clear screen
40 LCD.cls()
41 # Use internal medium font
42 LCD.fontw(1,'0')
43 # Set text font to internal medium
44 LCD.font('0')
45 # Set draw color to red
46 LCD.color(RED)
47 # set x y to 0
48 LCD.xy(0,0)
49 # draw box
50 LCD.box(320,240)
51 # set theme #1
52 LCD.theme(1, 155, 152, 3, 0, 0, 9, 8, 9, 0, 1)
53 # Set draw color to red
54 LCD.color(WHITE)
55 # Print string at coordinates x=80 and y=100
56 LCD.printString("Progress Bar Demo",80,10)
57 LCD.printString(" Update Theme Based On Value", 30,40)
58 LCD.progressBar(1, 20, 150, 280, 30, 1, 1, 100, 1, 1, ' PSI')
59 LCD.color(8)
60 LCD.printString('LOW', 20,125)
61 LCD.color(6)
62 LCD.printString('MEDIUM', 120,125)
63 LCD.color(4)

```



```

64 LCD.printString('HIGH', 255,125)
65
66 value = 1
67
68 while True:
69     timer.sleep(.1)
70     value +=1
71     # update widget 1 value
72     LCD.wvalue(1, value)
73     if value == 30:
74         # change theme when value get to 30
75         LCD.theme(1, 155, 152, 0, 3, 0, 37, 6, 6, 6, 1)
76         # redraw widget 1
77         LCD.wstate(1, 3)
78     if value == 60:
79         # change theme when value get to 60
80         LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
81         # redraw widget 1
82         LCD.wstate(1,3)
83     if value==100:
84         # change theme when value get to 100
85         LCD.theme(1, 155, 152, 3, 0, 0, 9, 8, 9, 0, 1)
86         value = 1
87         # reset widget 1 to 0
88         LCD.wvalue(1,value)
89         # redraw widget 1
90         LCD.wstate(1,3)

```

## 18.6 TouchZoneIM.py

```

1 # Button Align ezLCD Python demo
2 #
3
4 import platform
5 import sys
6 sys.path.append('..\module')
7 from ezLCD3xx import *
8
9 LCD = ezLCD(None)
10
11 # @returns comPort device firmware string59
12 comPort = LCD.findezLCD()
13
14 # check what OS we are on
15 # Windows
16 if platform.system() == 'Windows':
17     for ez in range(0,len(comPort)):
18         if comPort[ez][3] == 'Unit1':
19             LCD = ezLCD(comPort[ez][0])
20             break
21 #Mac
22 elif platform.system() == 'Dawrrwin':
23     LCD = ezLCD('/dev/tty.usbsomething')
24 #Linux
25 elif platform.system() == 'Linux':
26     LCD = ezLCD('/dev/ttyACM0')
27
28 # Bail out if comPort error
29 if LCD.openSerial()==False:
30     print 'Error Opening Port'
31     raise SystemExit
32
33 tzData = ( 1, 0, 33, 2, 46, 33, 3, 92, 33, 4, 138, 33, 5, 184, 33, 6, 230, 33, 7, 276, 33,
34            8, 0, 79, 9, 46, 79, 10, 92, 79, 11, 138, 79, 12, 184, 79, 13, 230, 79, 14, 276, 79,
35            15, 0, 125, 16, 46, 125, 17, 92, 125, 18, 138, 125, 19, 184, 125, 20, 230, 125, 21, 276, 125)
36
37 # Turn verbose off
38 LCD.verbose(OFF)
39 # Turn off button press info from ezLCD
40 LCD.wquiet(ON)
41 # CLear screen
42 LCD.cls()
43 # Set draw color to red
44 LCD.color(RED)
45 # Set widget font 0
46 LCD.fontw(0,'1')
47 # Set wodget font 1
48 LCD.fontw(1,'0')
49 # Set theme #1
50 LCD.theme(1, 155, 152, 3, 0, 3, 24, 4, 5, 0, 1)
51 # Draw button widget with a ID of 1
52 LCD.picture('im.gif')
53 LCD.color(RED)

```

```
54 LCD.xy(0,0)
55 LCD.box(320,240)
56 LCD.printString('TouchZone Demo', 80, 10)
57 tzX = 0
58 tzY = 33
59 for count in range(0, 63, 3):
60     LCD.touchZone(tzData[count], tzData[count+1], tzData[count+2],43 ,43, ENABLE)
61
62 while True:
63     (ID, Info, Data) = LCD.wstack(FIFO)
64     if ID > 0 and Info == 4:
65         ID -=1
66         LCD.color(BLACK)
67         LCD.xy(tzData[(ID*3)+1],tzData[(ID*3)+2] )
68         LCD.box(43,45)
69         string ='TouchZone ' + str(ID+1) +' Pressed'
70         LCD.printString(string, 60, 200)
71     if ID > 0 and Info ==1 or Info ==2:
72         ID -=1
73         LCD.color(WHITE)
74         LCD.xy(tzData[(ID*3)+1],tzData[(ID*3)+2] )
75         LCD.box(43,45)
76         LCD.printString(string, 60, 200)
77
78
```

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